

**THE APPLICATION OF THE  
POLYGRAPH IN THE  
CRIMINAL JUSTICE SYSTEM**

by

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requirements for the degree of

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**FEBRUARY 2001**

TO THE GIRLS; RIANA,  
CANDY & WENDY.

363.254 MART



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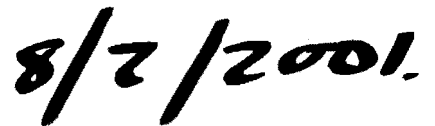
DECLARATION

I, Raymond Charles Martin (student number 3055-655-4), do hereby declare that The Application of the Polygraph in the Criminal Justice System is my own work and that all the sources that I have used or quoted have been indicated by means of complete references.

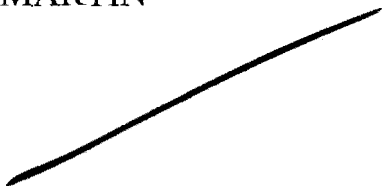


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Title : The Application of the Polygraph in the Criminal Justice System  
By : Raymond Charles Martin  
Degree : Master of Arts  
Subject : Penology  
Department : Criminology - University of South Africa  
Supervisor : Professor C.H. Cilliers

### SUMMARY

This dissertation, which is both exploratory and descriptive in nature, initially describes the development of the polygraph against a background of understanding society's rejection of the lying phenomenon. The theoretical foundations of polygraph thinking are then presented as forerunner to practical illustration of polygraph use in the private sector.

The criminal justice system represents the sphere of polygraph utilization central to the research. With strong American accent, polygraph use in all four components of the system is described in such a manner so as to provoke thought on the part of criminal justice functionaries as to polygraph possibilities in the execution of their functions.

Research findings and recommendations aimed at stimulating thought and improvement in the field of polygraphy conclude the dissertation.

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### KEY TERMS

Criminal Investigation

Employee Polygraph Protection Act (1988)

Lying

Polygraph

Polygraph Evidence

Polygraphist

Polygraph Rationale

Polygraphy

Psychophysiology

Sexual Offenders

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# **CHAPTER ONE**

## **GENERAL ORIENTATION TO THE RESEARCH PROJECT**

“Research is carried out in order to discover something about the world, a world conceived, albeit loosely and tentatively, in terms of concepts that characterise a discipline, whatever it might be” (Hughes 1996:10).

# CHAPTER ONE

## GENERAL ORIENTATION TO THE RESEARCH PROJECT

### 1.1 INTRODUCTION

Marston Bates describes research in the following manner:

“Research is the process of going up alleys to see if they are blind”  
(Abrams 1989:179).

These words were certainly appropriate at the onset of this research project. In 1998, researcher was introduced to Mr. Coen Pretorius (see sections 2.6.6 and 2.8.2) of the Polygraph Institute of South Africa. At that stage, researcher was vaguely aware of what a polygraph was. The general conversation which took place served to ignite an academic curiosity within researcher which culminated in the submission of an article which briefly explored polygraph utilization on various fronts. Said article, which was submitted in partial fulfilment of a Honours Degree, did not dampen any academic curiosity but only acted as catalyst for further research. This catalytic effect was born out of a realisation on the part of researcher of how much more there was to learn and by so doing, hopefully contribute to a more effective criminal justice system in South Africa.

So began this research project in an effort to bring light to alleys which to many appeared blind or only partially lit.

## 1.2 CONTENT AND DIRECTION OF RESEARCH

In the compilation of this dissertation, researcher has made every effort to provide an integrated theoretical and practical presentation. By so doing, it is hoped that the reader will enjoy understanding the theoretical foundations of polygraphy against a background of practical relevance. In this effort, some practical illustration outside of the criminal justice system has been provided. Before researcher was able to present illustration of how the polygraph was applied in the criminal justice system, it was necessary to embark on a journey of theoretical self-instruction as to the basis and rationale of polygraph thinking and technique. This journey reflects in the presentation of seven chapters aimed at unfolding the polygraph story in a logically coherent manner.

*Chapter One* provides a general orientation to the research by motivating the choice of the topic, stating the research objectives, describing the nature of the research, providing delimitations, defining key concepts and highlighting problems and possible deficiencies.

*Chapter Two* begins by examining lying as the phenomenon relevant to polygraphy. The development of the polygraph is then traced through the contributions of various pioneers and countries. Insight is provided into the major manufacturers of polygraph equipment as well as two polygraph associations.

The anatomical structures and physiological mechanisms integral to the psychophysiological basis of polygraphy are described in *Chapter Three*. The functioning of the polygraph instrument and the role of the polygraphist are also presented. Importantly, the procedure which is

followed during a polygraph examination as well as various techniques are explained. The chapter concludes by noting the methods of interpreting polygraph examinations and the various forms of countermeasures.

*Chapter Four* provides practical illustration of polygraph utilization outside of the criminal justice system when consideration is made of its role in private industry. An important piece of United States legislation, The Employee Polygraph Protection Act of 1988, is also summarised.

Against a background of extensive use in private industry, *Chapter Five* looks at polygraph utilization in the criminal justice system. More specifically, use by two components of this system, namely the police and courts, is examined. Polygraph's varied admissibility in United States courts is illustrated by the presentation of certain trials. Objections to polygraph use at trial are also noted. Finally, this chapter provides reader with insight into studies comparing polygraph evidence to some other forms of forensic evidence.

In *Chapter Six*, the remaining two components of the criminal justice system, corrections and social welfare are considered when polygraph utilization in penological context is presented. Special attention is paid to sexual offenders and the role the polygraph can play in their monitoring.

Finally, in *Chapter Seven* researcher presents findings and recommendations. Special attention is paid to studies concerning polygraph validity and reliability. Polygraphist training is also examined against a background of qualification as expert witness.

### 1.3 CHOICE OF RESEARCH TOPIC

Mouton & Marais (1990:34) report as follows:

“Research may be conducted for a variety of reasons. Quite often, the motivation is mere inquisitiveness about an interesting phenomenon or about something which presents a puzzle.”

While “inquisitiveness”, which researcher prefers to refer to as “academic curiosity” (see section 1.1), certainly was the forerunner in choosing this research topic, it certainly was not the only reason. A number of other reasons also provided the motivation for *The Application of the Polygraph in the Criminal Justice System* as research topic.

- Firstly, *ignorance on the part of researcher* as to the polygraphs functioning and role in the criminal justice system also motivated this research. As Mouton & Marais (1990:3) rightly say, “It is an essential part of being human to strive continually to know oneself and one’s environment better.” In this case, researcher needed to know more of an aspect of the criminal justice environment in which his field of academic interest is vested.
- Secondly, researcher became aware of a *general lack of knowledge on the part of various role-players in the criminal justice system* in South Africa as to the polygraph’s functioning and possibilities. In informal discussions prior to the onset of this research project, it became evident that only a handful of trained policemen (see section 5.4.2) had any adequate knowledge of the polygraph as a potential ally

in the fulfilment of their criminal justice functions. Knowledge on the part of those fulfilling a custodial and legal function ranged from scant to non-existent. Regarding those involved in the legal fraternity, Sevilla reports on the position in the United States as follows:

“With this trend toward increasing admission of the evidence, there will come an increasing necessity for lawyers and judges to become familiar with polygraph law, history and science” (Matte 1996:xi).

- Thirdly, it is researcher’s opinion that *all functionaries in the criminal justice system have a responsibility toward the improvement thereof*. While not a functionary in this system in the strict sense of the word, researcher nevertheless feels this responsibility and consequently chose a research topic which would hopefully enlighten functionaries in the South African criminal justice system and thereby contribute to its improvement.
- Fourthly, *a need for research* became evident during the informal discussions held with certain polygraphists prior to the onset of this research. Researcher was made aware of a desire for future academic involvement in the South African polygraph industry. Furthermore, this *need for research* was emphasised when reviewing the available literature on polygraph utilization in the criminal justice system. To the best of researcher’s knowledge, no research has been conducted in South Africa relating to this topic.

- Lastly, the choice of this research topic was motivated by the *academic challenge* it presented researcher as well as the opportunity of becoming aware of *future career possibilities* in the field of polygraphy. Researcher refers to an “academic challenge” because of the fact that subjects such as psychophysiology and the law of evidence fall outside the scope of any tertiary education received and consequently presented concepts foreign to researcher.

It is worth noting the words of Barzun & Graff (1970:20) who describe the choice of subject against a background of information sampling and collection which eventually gives rise to the various reasons for conducting the research, as follows:

“Fortunately, as you proceed, your judgement grows more and more assured about what belongs and what does not and soon you begin to *see your subject*. From then on you must not take your eyes off it. You must keep seeing it at every moment of fact-gathering and of composition.”

#### 1.4 OBJECTIVES OF THE RESEARCH

Mouton & Marais (1990:42) are of the opinion that the objectives of the research will determine the nature thereof. In keeping with the nature of exploratory and descriptive studies (see sections 1.5.1 and 1.5.2), researcher presents the objectives of this study.

Initially, the study aims *to provide insight into the phenomenon of lying* which is the basis for the existence of the object of study, the polygraph.

Next, the study attempts *to describe the development of the polygraph* so as to provide the reader with a historical background against which polygraph matters such as techniques are better understood.

The third objective of this study is the *explication of concepts central to polygraphy* so as to equip the reader *to understand the language of polygraphy*. Furthermore, by explicating these concepts, the study aims *to provide a better understanding of the functioning of the polygraph*.

By providing practical illustration of polygraph utilization in the criminal justice system, the research aims *to enable the various role-players in the system to become aware of the role the polygraph can play in the execution of their functions*.

The *identification of problems in the polygraph industry in South Africa* is a further objective. By so doing, researcher wishes *to provide criticism of a constructive nature* which may possibly lead to the polygraph becoming a greater role-player in the South African criminal justice system.

The most important objective of the study is found in the attempt *to provoke thought relating to polygraphy by both criminal justice functionaries and academics*. Lin (1976:5) is of the opinion that one of the reasons for conducting social research is “...to provide clues to possible solutions to social problems.” By provoking thought in these areas, possible polygraph solutions to criminal justice problems may be forthcoming as well as further academic studies.



Lastly, this research represents an attempt at *self-enlightenment* by researcher. In this regard, Mouton & Marais (1990:156) provide the following:

“...research may be defined as a collaborative activity by means of which a given phenomenon in reality is studied in an objective manner with a view *to establishing a valid understanding of that phenomenon*” (italics mine).

## 1.5 THE NATURE OF THE RESEARCH

As was mentioned in section 1.4, the research objectives determine the nature of the study which is to be conducted. Consequently, this study is exploratory and descriptive in nature, making use of various means of data collection.

### 1.5.1 EXPLORATORY RESEARCH

Dane (1990:5, 234) describes this form of research as “...*an attempt to determine whether or not a phenomenon exists*”, comparing ‘...it to the insistent question asked by columnist and *60 Minutes* commentator Andy Rooney: “Did you ever wonder about...?”.’ According to Lin (1976:8), exploratory research allows for the collection of a wide range of information on the research topic which allows one to “...gain insight into potentially important questions” which “...can then be formulated into explicit research problems for our future efforts.”

Mouton & Marais (1990:43) concur with Dane in describing the overall goal of an exploratory study as “...the exploration of a relatively

unknown research area.” Researcher’s academic curiosity thus necessitated research of an exploratory nature. Binder & Geis (1983:119) note that this form of research is often referred to as pilot research.

### 1.5.2 DESCRIPTIVE RESEARCH

“The spectrum of descriptive studies includes a large variety of types of research” write Mouton & Marais (1990:43) who continue as follows:

“On the one hand, it is possible to emphasize the in-depth description of a specific individual, situation, group, organization, tribe, sub-culture, interaction, or social object. On the other hand, one may emphasize the frequency with which a specific characteristic or variable occurs in a sample.”

This study relates to the “narrative type” of descriptive research which aims “...to describe that which exists as accurately as possible” (Mouton & Marais 1990:44). By so doing, the research aims to provide “...an elementary comprehension of certain activities and behaviors (sic)...” according to Lin (1976:8). It is interesting to note Reber (1995:200) who says that, “In the philosophy of science, description is generally held to be a necessary precursor of explanation.”

This study is thus neither exclusively exploratory nor descriptive in nature. Researcher has attempted to adopt a supplementary approach so as to meet the varying needs of the stated objectives (see section 1.4). When for example, the objective is to provide new insight into polygraphy or explicate concepts central thereto, an exploratory approach is needed. On the other hand, description is required when considering

the development of polygraphy or the evidential position of the polygraph in the United States. In short, this study has required the adoption of an approach which is receptive to both exploratory and descriptive approaches as the various research objectives created differing needs at varying times in the research effort.

Not only do the research objectives determine the methods of research but so too do they "...dictate the method of data collection..." and may necessitate "...the use of multiple methods of data collection..." (Lin 1976:203).

### 1.5.3 DATA COLLECTION

The following methods of data collection have been used in the compilation of this study:

- As with most studies, *the literature survey* represents "... the best initial approach to any research project..." (Lin 1976:137). In this study, abundant use has been made of books relating to the psychophysiological basis of polygraphy (see section 3.4) so as to provide theoretical understanding of polygraphy (see section 1.2). Use of journal articles, electronic media and newspaper reports is dominant when dealing with matters relating to the practical application of the polygraph. Books sourced through inter-library loans from other universities also proved useful in this regard.
- In keeping with a practical approach as stated in section 1.2, researcher conducted a number of *unstructured interviews*

with polygraphists and criminal justice functionaries. Howard (1985:217) points to possible advantages of an unstructured interview. Firstly, important aspects relating to the subject may emerge during the interview. Secondly, the subject can prioritise issues of importance. Thirdly, an absence of structure "...will lead to greater richness in data." Researcher built up a wonderful rapport with all those interviewed over the period of this research which resulted in concepts, which at first were difficult to grasp, being explained and prioritized. This rapport with present and potential polygraph role-players enhanced the research experience by providing further advantages.

- Researcher was allowed to be a *participant observer* in matters or cases relating to polygraphy. Not only did this provide researcher with a hands on feel to his subject but also provided information which otherwise would not have been obtained.
- Another method of data collection which resulted from the established rapport was that of *personal accounts*. Polygraphists especially, were prepared to relate their life experiences with researcher in an open manner. In this way, needs and shortcomings in the polygraph industry became apparent.

While not recorded as a method of data collection, a number of telephone conversations also took place. Researcher regards these as a secondary form of data collection as they were made simply to confirm or clear up matters arising from a primary source such as an interview. Limited personal correspondence is also included in the study. Again, this has

been the case when it has been necessary to confirm or elaborate on facts obtained from a primary source. Researcher has noted all of the unstructured interviews, personal accounts and telephone conversations by way of text references and bibliographic referral so as to enable the reader to identify names and places of such occurrences. So as not to be confused with literature referrals, such personal communications are merely indicated in the text by way of provision of name and year ( e.g. Watson 2000). This is the method suggested by Marlene Burger in her book *Reference Techniques (1992)*.

## 1.6 DELIMITATION

Dane (1990:16-18) regards “The Why and The How” of research as reflecting in the reason therefore and research methods respectively. These aspects have enjoyed attention in sections 1.3 and 1.5. “The Where and When” of the research project are now dealt in the form of geographic and periodic delimitations.

### 1.6.1 GEOGRAPHIC DELIMITATION

‘The “where” of research includes the physical and social environment, in which research is conducted’ (Dane 1990:16). In this study, researcher conducted physical research in the form of interviews and participant observation (see section 1.5.3) in the Gauteng Province of South Africa.

For the sake of this research, researcher has regarded the “social environment” as relating to the environment from which the various literature sources such as books, journal articles and newspaper reports were drawn. Because of accessibility and language considerations, the

study reflects a strong American flavour. Another reason for this is American leadership in the field of polygraphy (see section 2.1). Contributions from other countries are noted but these are purely in developmental context (see section 2.6). Contribution from the South African “social environment” is largely in the form of newspaper reports.

#### 1.6.2 PERIODIC DELIMITATION

“The time frame of a particular study may, of course, affect its utility, but it can also be the major purpose of the study” (Dane 1990:16). While not the major purpose of this study, researcher regards it as important to note the time during which the study was undertaken. This is especially so in South African context as the meeting of certain research objectives as stated in section 1.4, may in the future be measured against a time reference. By this is meant that not only will one be able to see if certain objectives are met, but one will also be able to reflect on how long it took for them to be met.

This research, which includes that relevant to the article mentioned in section 1.1, was conducted from October 1998 - November 2000. In an attempt to provide a study which was as contemporary as possible, researcher adopted an open approach to any new information obtained. This often resulted in sections of the study having to be re-arranged so as to provide the reader with a study which attempted to stay abreast of any new developments. This fact is illustrated by the final source referral being on 1 November 2000.

#### 1.7 DEFINITION OF KEY CONCEPTS

Researcher has provided a number of formal definitions as well as operational definitions in the text of this study. This has been done when researcher has considered such definition as being better understood in the context of the applicable chapter. For now, only those definitions which stand central to the study are presented.

### 1.7.1 POLYGRAPHY

Furedy (1989:431) describes polygraphy as follows:

‘The profession of polygraphy purports to provide a scientific way of detecting deception through measuring subtle changes in such autonomically controlled functions as changes in skin resistance (the “GSR”). Polygraphy is an application of the science of psychophysiology, which studies psychological processes by means of measuring changes in physiological functions.’

### 1.7.2 THE POLYGRAPH

Palmiotto (1998:93) defines as follows:

“A polygraph is a mechanical instrument that records physiological responses to questioning. It records blood pressure, pulse, respiration, galvanic skin response (GSR), and chest and abnormal breathing patterns.”

## 1.8 PROBLEMS AND DEFICIENCIES

Not all problems encountered during the compilation of this dissertation proved insurmountable. In fact, some served to enhance the research experience by presenting academic and practical challenges which when confronted, proved wonderful tutors. It is researcher's opinion that by stating those problems encountered during a study, will one make the reader aware of possible reasons for any deficiencies in the research. It is after all the reader who is the true determinant of the existence of deficiencies. Only then will researcher know to what extent he has surmounted the problems encountered.

### 1.8.1 LACK OF TRAINING

Researcher has received no formal training in the fields of polygraphy, criminal law or psychophysiology. This has resulted in researcher merely being able to present certain facts relating to polygraph utilization in the criminal justice system while not being able to expound on certain matters. An example of this situation is found in Chapter Five when consideration is made of the legal aspects relating to the polygraph and especially its evidentiary position.

### 1.8.2 THE PROBLEM OF READER

This problem experienced by researcher is closely related to that of lack of training. At varying times in this study, researcher found himself enquiring as to who would be reading this dissertation and how? Barzun & Graff (1970:33) write as follows:

“...the report-maker never knows to a man whom he is addressing. He knows only the general category of persons...in the world of



published research, it is impossible for the writer to foresee into whose hands his work will eventually fall...These circumstances impose on the writer a double duty. He must write so as to inform his immediate colleagues, employers, or other familiar audience, and he must also discharge his obligation to the Unknown Reader.”

Researcher was thus faced with the problem of venturing into certain unknown territory while engaging a reader who may be a specialist therein. Furthermore, knowledge of one specialist (eg: psychophysiological) had to be presented in such a manner so as to be understandable to another specialist (eg: penologist). In attempting to maintain some form of what researcher refers to as academic balance, deficiencies may be exposed or criticism elicited depending on the reader's relevant expertise. At all times, researcher has attempted to present a working-knowledge of the polygraph and criminal justice applications.

### 1.8.3 LACK OF SOUTH AFRICAN LITERATURE

Almost all literature used in this study was of American decent. South African input was virtually entirely in the form of newspaper reports. The net result is an almost complete American picture as was stated in section 1.6.1. The research is thus deficient in providing any meaningful comparison between these two countries concerning polygraph utilization in criminal justice context.

Having to make use of mainly American literature presented a further problem. Use of inter-library loan facilities resulted in time expenditure

waiting for literature to arrive while placing time constraints on the use of said literature.

#### 1.8.4 PENOLOGICAL LIMITATION

Researcher was unable to discover much literature relating to polygraph utilization in penological context. With this research being undertaken in an attempt to obtain a post-graduate degree in the subject of Penology, Chapter 6 may appear deficient to the penological reader. However this deficiency should be seen against the background of academic curiosity of a “penal role-player” in the criminal justice system wishing to improve thereon by provoking thought and imparting knowledge (see section 1.3).

#### 1.8.5 REPETITION

The questions of polygraph validity and reliability and polygraphist training are repeated a number of times during the study before being dealt with in Chapter 7. This is unfortunately so as a result of the format of each chapter designed by researcher to unfold the polygraph story. While these two questions repeatedly arose in the mind of researcher, they were deliberately left unattended to until the last chapter for two reasons.

- Firstly, by attending to the questions earlier, an element of bias may have been introduced to the study. Researcher has felt it necessary to allow the reader to understand how the polygraph functions and how it is utilized in the criminal justice system unencumbered from any prejudice which may have arisen from dealing with these aspects.

- Secondly, by repeatedly referring to these two aspects, researcher has attempted to provoke thought in this regard. It is researcher's opinion that these two aspects stand central to the future of polygraphy in the criminal justice system.

#### 1.8.6 PROFESSIONAL JEALOUSY

It is with regret that researcher has to report encountering a great deal of what can only be referred to as professional jealousy during the course of this study. While all those polygraphists interviewed were only too pleased to assist researcher in his endeavours, this was not the case when researcher attempted to confirm or compare information provided by any one with another. Researcher had to continually distance himself from apparent personal vendettas between polygraphists before arriving at the crux of the matter, the polygraph.

“Polygraph them all. I don't know anything about polygraphs and I don't know how accurate they are, but I know they'll scare the hell out of people” - President Richard Nixon (Sening 1989:235).

## **CHAPTER TWO**

### **THE DEVELOPMENT OF THE POLYGRAPH**

“It is in knowing the past that we are able to predict the future. And in knowing how an individual reacted before, we can best estimate his later responses”  
(Abrams 1989:1).

## CHAPTER TWO

### THE DEVELOPMENT OF THE POLYGRAPH

#### 2.1 INTRODUCTION

By examining the development of the polygraph, one is provided with insight into the following:

- the thinking of the early pioneers in the search for an instrument to test veracity
- the development of thought in this regard
- criticism levied at the polygraph and its applicability today
- the refining of the machine to its present day form.

Before embarking on this historical overview, researcher has felt it prudent to firstly examine the existence of the phenomenon of lying or deception and secondly to gain an understanding of the need for its antithesis, the truth. After all, these two opposing poles present the crux of the need to have developed the polygraph as means of verifying the truth. It is thus that section 2.2 in the form of an orientation follows. Furthermore, said orientation seeks to identify that aspect of the overall phenomenon which is applicable to this dissertation.

Returning to the actual development of the polygraph it is necessary to note certain aspects relating to the presentation of this chapter. While the United States can rightly be regarded as the leader in the field of polygraphy, the notion proposed by Lykken (1981:26-27) that "...instrumental lie detection -

polygraphic interrogation - is a 20<sup>th</sup> century phenomenon and as American as apple pie” is not accepted. The seeds of modern polygraphy will be seen to have been sewn beyond these periodic and geographic limits. When considering the various pioneers and major contributors in the field of polygraphy, American contribution and leadership in this regard is self-evident. For this reason, section 2.6 looks at contributions in the development of polygraphy made by some other countries.

Most sources have presented the various pioneers’ contributions in strict chronological order. Every attempt has been made to follow suit but this has been overridden when researcher has considered it more important to highlight relationships between the contributions of the various pioneers. It is important to note that various contributions to the field of polygraphy are in the form of development or improvement of questioning technique rather than to the actual instrument.

This chapter lastly presents an insight into the major manufacturers of polygraph instruments as well as a look at the two associations whose influence is most applicable to polygraphy in South Africa.

## 2.2 ORIENTATION

To enable researcher to put the justification, application and development of the polygraph in criminal justice perspective, the following questions should be considered:

- Why do people lie?
- Is lying unique to humans?
- How prevalent is lying or deceit in society?

- What kind of lie is relevant to polygraphy and more specifically to the criminal justice system?
- Why is it of such importance to uncover lies or alternately to find the truth?

These questions arose in the mind of researcher when considering the time span involved in bringing the polygraph to present day form coupled with the immense amount of academic energy expended in the pursuit of an instrument which can distinguish truth from falsehood. Debates and controversies as evident in psychophysiological and juridical literature further gave rise to these questions. This section represents an attempt to provide brief answers to these questions which in turn will provide an overall picture of the phenomenon which set off the search for and development of the polygraph.

### 2.2.1 LYING AND DECEPTION IN NATURE

“Natural history is full of guile. From the lowly insects to our primate cousins, animals have evolved a wide variety of methods for deceiving other animals, their enemies, their conspecifics or, most commonly, their prey. Some of these deceptions are structural in character; the animal has become a walking (swimming, flying) lie” (Lykken 1981:23).

From these words it is quite clear that lying is indeed part of nature. This statement is further reinforced when considering the fact that “Certain flowers” are able “...to resemble nubile insects” according to Nyberg (1993:116). Without looking at any further examples, it is obvious from many sources that lying or deception is commonplace in nature and that the reason therefore is an instinct for survival (Ben-Shakhar & Furedy 1990:1, Lockard

& Paulhus 1988:14, Nyberg 1993:116-117). Lying is thus not unique to humans.

Besides noting the prevalence of deceit in nature as compared to that in society (see section 2.2.2), one should take cognizance of the fact that all agree that survival is the motivating force for deception's place in nature. This notion of survival as lying's antecedent finds relevance in section 2.2.3.3, when consideration is made of man's reasons for lying.

### 2.2.2 PREVALENCE OF LYING AND DECEIT IN SOCIETY

The following examples illustrate the pervasiveness of lying and deceit in society:

- In describing the role of camouflage as early as 500 B.C., Sun Tzu, while acting for the Chinese army, stated that "All warfare is based on deception" according to Behrens (1981:9).
- Paul H. Weaver in his book *News and the Culture of Lying* (1994) provides insight into the ways newsmakers and newsmen interact to provide a scenario of slightly distorted facts in order to effect a certain reaction from the reading public. When this is the case he says, "...officials and journalists are usually lying. They're pretending that the events they're enacting and narrating are bona fide actions taken on the merits in the normal context of the newsmaker's jobs, whereas in fact, most news events and stories are performances" (1994:4).
- A seemingly exact science such as statistics is not free from manipulation and ultimately deception. Bowyer (1982:241)



reports that "...statistics gives a few useful ways to force numbers...". This view is supported by Robert Reichard who is of the opinion that, "The sheer number of quantitative distortions now seems to have reached the epidemic stage, threatening to mislead the innocent and instill (sic) an intense dislike for anything statistical or quantitative on the part of the more informed" (Sweitzer 1979:1).

- Supermarkets provide luring discounts when they have already increased the list price. Lawyers create a certain image of themselves by selecting cases to try and then filtering results to the press. Those looking to climb the corporate ladder provide false compliments to executives (Sweitzer 1979:17, 78-79, 130).

One could continue to provide endless examples of lying and deception in society. Souryal (1992:200) describes the pervasiveness of this phenomenon in the following way:

"Lying is perhaps the most common vice in any society. People lie at home, on the street and at the workplace. Liars include all kinds of people...".

Loyal Rue (1994:4) concurs in saying that "...every human practices deception in a multitude of ways."

In consideration of the question concerning the prevalence of lying in society, one must thus conclude that this phenomenon is embedded in everyday lives and affects all at some time or other. Having accepted this fact, researcher now seeks the answer as to what motivates people to lie.

### 2.2.3 THE ORIGIN OF LYING

The heading of this paragraph, as used by Souryal (1992:195) requires clarification. The word “origin” is to be understood in the context of being the ongoing explanation of why people lie and why this phenomenon continues to exist in society. Researcher has felt this necessary because the word “origin” may simply be seen to mean “a starting point” which may fail to provide continued explanation.

“The origin of lying” according to Souryal (1992:195), “has been perceived from two viewpoints; the religionist view, and the sociological view.” It is necessary to briefly examine these two views.

#### 2.2.3.1 THE RELIGIONIST VIEW

In short, this view propagates Christian belief which marries all behaviour to the sin of Adam in the Garden of Eden. Man is born with a tendency to do evil things. “Lying is, therefore, a manifestation of evil. Based on this view, as one grows into adulthood, the propensity to lie is actualised due to increasing unsavory (sic) social demands and the inevitable need to compete with other sinners” (Souryal 1992:196).

This adult competition, in the view of researcher, bears semblance to survival as motivating force in nature (see section 2.2.1), and turns man into an irrational being whose behaviour is pre-determined to be evil. Man is thus viewed in a deterministic light as his actions are seen to be the result of his circumstances and/or origin. If one were to accept this view, lying would be an inevitable phenomenon in society and there would be no motivation to

search for an instrument to detect truth. Furthermore, the religionist view cannot explain the existence of lying in non-Christian societies and is thus rejected by researcher.

#### 2.2.3.2 THE SOCIOLOGICAL VIEW

The sociological view has resulted from the rejection of religionist thought by behavioural and physical scientists. According to Souryal (1992:196-197), sociological thinking in this regard sees lying as "...a learned behavior (sic) that thrives more or less in proportion to one's level of socialization." The following reasons are used as justification for this view:

- no proof exists that lying has a genetic basis
- morality, and consequently the inclination to lie or not, is a learnt trait.

The significant others in a person's life such as parents, friends and teachers are the determinants of whether a person will lie or not as they are the models from which this phenomenon is learnt. This view, as with the religionist one, carries too much of a deterministic weight according to researcher. Furthermore, the reasoning abilities of man are also questioned by the view.

While both religionist and sociological views may generate endless debate and controversy, they are best confined to philosophical and psychological closets. Besides the inherent flaws mentioned by researcher, the views represent theoretical orientations which make little practical contribution to the understanding of the phenomenon which underlies the development of the polygraph. For this reason researcher now presents a more practical list of reasons against which the lying phenomenon is best understood.

### 2.2.3.3 THE REASONS PEOPLE LIE

“People lie. They lie for many reasons. Sometimes lying avoids hurting others, but most of the time deception is for self-serving purposes. People deceive to gain something or to stay out of trouble” (Abrams 1989:1).

In above words, the survival basis of lying as seen in nature (see section 2.2.1), becomes evident when considering man. Whereas lying in nature may serve survival in the strict sense of the word, survival as concerns man is more complex. Not only may man lie to ensure his continued existence, but factors such as the need for greater recognition or the protection of self-interests are also present (Schweizter 1979:38, Souryal 1992:200). In *Lying: A Critical Analysis* (1985), Warren Shibles provides the following list of reasons as to why people lie:

- ‘1. out of selfishness to obtain something we want.
2. to avoid being punished or blamed.

There are many other reasons for lying which we tend not to be aware of. We lie:

3. for social reasons and to be polite. Some have signed letters, “Your obedient servant.” I doubt if such people would be so obedient as to mow our grass and clean our house. There is a sense in which social lying is anti-social.
4. out of habit.
5. as a joke. We tell “tall” stories or exaggerate to create humor (sic).

Humor (sic) is produced when the person knows it is a lie and accepts the telling of the lie.

6. to indoctrinate into some fixed belief.
7. to help people who are in trouble.
8. because others around us lie.
9. because we are forced to.
10. to avoid unfairness.
11. to protect or help continue other people's false but comfortable beliefs.
12. to avoid embarrassment.
13. because we are irrational or not thinking clearly.
14. because we fail to understand the harm of lying.
15. because we do not wish to tell our private beliefs.
16. because of a mutual agreement to lie about certain things. A person may request to be told she will live a long life even if she knows she may not. Many, if not most, people do not want to know exactly when and how they will die. We may want to be flattered even if it is not true.
17. for convenience. We put an "out to lunch" sign on the office door even when we are not actually planning to eat. We just do not have another sign handy.
18. because we take it to be a "white lie." We may lie if we think the matter is quite unimportant and it would not matter whether or not we were found out. You say you left at 10 p.m., when you really left at 10:02. However, "white lies" may be extremely important, such as in a murder trial. Here, many small details may be used to solve the crime. We cannot know in advance how important the consequences of a "white lie" will turn out to be.

19. because we are unsure what is meant. We may say, "I will always love you," without knowing what is involved in such a promise. We are not sure whether we believe it or not.
20. out of carelessness or inaccuracy. We say we "cannot" do something, when we mean that we do not want to. We say we *need* something, when it is really a *want* or *desire*.
21. as a quick way of saying something to avoid lengthy discussion.
22. to avoid facing facts or reality – a cowardly lie.
23. to get revenge.
24. because we are encouraged to agree.
25. to escape from or avoid the truth. We may lie about the nature of death. These may be called "crucial lies."
26. as a boast, or to try to show superiority.
27. to protect someone from doing a foolish act.
28. because we think it is for someone's own good.
29. to pass an exam. You may not believe what you state, but know what is wanted on the test.
30. because in certain professions such as spying, we are trained to lie to accomplish the task. Detectives or military interrogators may lie to obtain information.
31. for no clear reason. Certain disturbed people cannot seem to stop lying. Some are called "pathological liars." Anyone may lie without knowing why he or she lies. A lie is a lie even if we have no motive or reason for telling it. In law, a motive is not needed to find one guilty of perjury.
32. not to mislead. We may lie because we know the other person will believe the opposite of what we say.
33. to achieve a goal. This raises the question of whether the means justifies the ends.

34. to produce irony. (Saying the opposite of what we believe.)
35. to help a patient feel better and so return to health more rapidly.
36. to create excitement and avoid boredom. This was the case with the shepherd who cried “wolf.”
37. to an irrational or disturbed person to prevent serious harm.
38. to keep up team spirit as in “pep talks.”
39. to show what a lie is and to analyze lies for students.
40. because we are confused about what a lie is and not sure whether it is good or bad.
41. to protect our beliefs’ (1985:129-133).

From this list it becomes apparent that lying is a multifaceted phenomenon as the reasons for its existence are diverse. In the light of this diversity, researcher now presents a definition of lying as applicable to the polygraph’s utilization in the criminal justice system. In this regard, Mouton & Marais (1990:37) advises that it is essential to understand ‘...the nature of the “object” of the investigation...and of which aspects characteristics or dimensions of the “object” need to be researched.’ While the polygraph remains the object of research in this dissertation, researcher has felt it necessary to examine its underlying phenomenon (see section 2.1) and thus logically argues for the need to specify the applicable aspects thereof.

#### 2.2.4 THE DEFINITION OF LYING AS APPLICABLE TO POLYGRAPHY

The words “lying” and “deception” have until now been used as synonyms. In the light of the fact that the polygraph test involves the examinee to answer questions verbally, it is necessary to differentiate between the two. While deception may occur in non-verbal form, such as a trick performed by a

magician, lying is taken to involve “something spoken or written” according to Shibles (1993:47). This differentiation will become clearer when considering the various definitions of a lie which follow. Before looking at the various definitions of a lie, it is important to note that a false statement does not necessarily always constitute a lie. Shibles (1985:27) provides an example of a scholar believing that “Paris is the capital of England.” The answer is merely incorrect and is not intended as a lie.

The following definitions of a lie reveal the most important elements in the forms of intent and expression:

- “A lie is believing (or knowing) one thing and saying (writing, or expressing) another” (Shibles 1985:31).
- Bok (Souryal 1992:194-195) defines a liar as “...one who intentionally undertakes to deceive others by communicating messages meant to mislead them. A lie must therefore include any intentionally deceptive message that is stated.”
- To lie, according to Schwarz, Davidson, Seaton & Tebbit (Robinson 1996:26) is “...to utter a falsehood with an intention to deceive; to give a false impression.”

Researcher now presents the following operational definitions of lying as applicable to polygraph application in the criminal justice system:

- Lying is the intentional stating of a falsehood in response to a question posed by one whose function it is to serve the criminal justice system, or



- Lying is the intentional stating of a falsehood in order to mislead a functionary of the criminal justice system so as to avoid self-incrimination or to falsely incriminate another party.

Last mentioned operational definition is the preferred choice of researcher as the reasons for the intent are apparent. (In this regard Chapter 4, which examines polygraph utilisation in private practice should not be seen as contradicting above definition but is merely an attempt to illustrate areas of polygraph use).

From this operational definition, it becomes clear that not all the reasons for lying as proposed by Shibles (see section 2.2.3.3) are the concern of this dissertation. Parents tell white lies to children to console them. Doctors often hide harsh reality from patients to spare them distress. Spouses may lie to one another while arranging some form of a surprise and socialites may even lie amongst themselves for the sake of politeness (Lockard & Paulhus 1988:16-17, Shibles 1985:129, 132-133). While these examples are probably the most pervasive in society, they do not form part of the lying phenomenon central to a study of polygraph application in the criminal justice system.

Having now seen what lying is, how prevalent it is in society, why people do it and what aspect thereof is relative to this dissertation, one can now look for the answer as to why society does not simply accept this pervasive phenomenon . The development of the polygraph is a manifestation of society's rejection of lying and a search instead, for the truth. The answer lies in the Doctrine of Veracity.

## 2.2.5 THE DOCTRINE OF VERACITY

“Why does the truth matter so much? What is it about the idea of truth that has so fascinated human minds for all of recorded history, and probably before that? Why does our society have such fierce prohibitions against all manner of denying, distorting, reversing, hiding and disrespecting the truth?” asks Nyberg (1993:29).

As with the two views put forward to explain the origins of lying (see sections 2.2.3.1 and 2.2.3.2), philosophical debate in attempting to answer these questions is abundant. In keeping with a practical approach, researcher presents the following brief outline of this doctrine as proposed by Souryal (1992:197-198):

- Veracity is essential in relationships and to society’s stability.
- This is so because continuity over time and between situations is ensured. To illustrate what is meant by this, Shibles (1985:97) reminds us of the little shepherd in Aesop’s fable who continually cried wolf. When eventually he did utter the truth he found that communication had broken down.
- The demise of the presumption of truth between society’s members will erode the social order as intentions will be mistrusted and fairness not applied.

It is clear that the truth is not primarily a mechanism to set man free but is rather the very foundation on which society continues to function and exist. In the words of Shibles (1985:19), “...communication is impossible without a minimum of trust and reliability. (Imagine a group of inveterate liars: could it count as a society?) The successful liar sabotages the interpersonal process of information-transmission by leading other into error as to his real beliefs, and thus leading them (if he is not himself in error) into error as to the real world.”

One can thus conclude that society seeks to eradicate lying as far as possible to ensure its continued existence. The criminal justice system, as the formal protector of social order, also needs to know the truth to successfully fulfil its function. Hence the search and development of an instrument to assist in this regard.

### 2.3 TRIAL BY ORDEAL

Man has from the earliest times used a vast array of barbaric means in an effort to ascertain the truth and thereby determine a person's guilt or innocence. Rather than representing any sound scientific basis for detecting truth from falsehood, trials by ordeal were rather physical and psychological endurance tests based on religious or magical beliefs (Abrams 1977:11-12, Palmiotto 1994:2-4). When considering the following examples, one realises the urgency with which man sought to verify the truth from early times:

- The Code of Hammurabi, who was "...the sixth king of a dynasty founded by Sumu-Abi..." and who "...probably ascended the throne about 2285 B.C." according to Cook (1903:17, 63-65), employed a test of innocence or guilt by using water. The person under suspicion was thrown into a river and left at the mercy of the "river-god (ilu Naru)" who would decide his or her fate. Thus, "In the waters of the Asbamaean Lake, the springs near Tyana, and the Stygian waters in the Syrian desert..." would remain the bodies of those who had supposedly not professed the truth.
- Water was also used in a trial by ordeal by the Church in England until 1219. This ordeal is described by Hibbert (1963:6) as being

performed inside a church where a bowl of water was brought to boil. In the midst of spectators, who asked God to "...make clear the whole truth...", the suspect's bandaged arm was submerged into the boiling water. Guilt was proved if the arm revealed scalding when the bandages were removed three days later. This practice later found its way to Africa (Abrams 1989:10).

- Many cultures regarded the body's ability to heal itself as an indication of truthfulness. Arabic practice simply meant applying a hot iron to the very part accused of uttering the falsehood, the tongue. The Asians first cut a man's arm then allowed the suspect to tell his story. The truth would stop the bleeding (Abrams 1989:10, Marston 1938:29).

There are numerous illustrations of these barbaric acts. What is of importance is the realisation of the lengths that man has gone to in order to ascertain the truth. This need for the truth has not changed. The changes that have occurred are in the methods for finding the truth which now have a more humanitarian accent.

## 2.4 THE PSYCHOPHYSIOLOGICAL LINK

The polygraph's basis is that of psychophysiological functioning (see section 3.4). Even though physical pain appears to have been the most common vehicle to the truth, there were early signs of awareness of the possible link between the body's functioning and the existence of guilt or untruthfulness. While not included as pioneers in the development of the polygraph (see section 2.5), the contributions which follow are noted in the context of the development thereof.

#### 2.4.1 THE ANCIENT HINDUS

In 900 B.C., a medical journal recorded how suspected poisoners, when accused, revealed their guilt in "...such physiological changes as blushing (facial vasodilation)" according to Ben-Shakhar & Furedy (1990:2). Furthermore, Hindu awareness of a psychophysiological link was revealed in the practice of requiring "...a suspect to chew a mouthful of rice and then attempt to spit it out upon a leaf from the sacred Pipal tree" writes Lykken (1981:26). The reasoning applied, and quite correctly so, was that salivation was slowed by the presence of fear (see section 3.4.1) and a dry mouth would thus experience difficulty in ridding itself of the rice (Abrams 1977:11, Harnon 1982:341).

#### 2.4.2 ERASISTRATUS - 250 B.C.

This Greek physician, of the Syrian royal court and Alexander the Great, is credited with discovering the relationship between pulse rate and emotional duress. This remains one of the measurements in modern polygraphy (see sections 3.4.1 and 3.5.3) (Ben-Shakhar & Furedy 1990:2, Graham 1986:1412).

#### 2.4.3 DANIEL DEFOE

In 1730, Defoe wrote in his essay, "An Effectual Scheme for the Immediate Prevention of Street Robberies and Suppressing All other Disorders of the Night", as follows:

"Guilt carries fear always about with it; there is a Tremor in the Blood of a Thief, that, if attended to, would effectually discover him..."

He admitted that those hardened in crime would outwardly be able to conceal guilt yet, if one were to "...take hold of his wrist and feel his pulse, there you will find his guilt;...A fluttering heart, an unequal Pulse, a sudden Palpitation shall evidently confess he is the man in spite of a bold Countenance or a false Tongue" (Matte 1996:11).

Thus while not predominant and certainly scattered over many years, psychophysiological thinkers as regards the detection of truth, did exist. The contributions of the various pioneers to the development of the instrument known as the polygraph and its associated questioning techniques, are now presented.

## 2.5 PIONEERS IN THE DEVELOPMENT OF THE POLYGRAPH

"The philosopher Diogenes is said to have carried a lantern around Athens at midday searching for an honest man. He was not alone. The search for truth is eternal, and people continue trying to determine what others think and feel. Because others cannot be trusted to be always honest, special techniques and instruments have been developed to produce results that are more reliable than the words of men and women" (Abrams 1989:9).

The Concise Oxford Dictionary (1990:905) defines a pioneer as "an initiator of a new enterprise, an inventor, etc." This definition presented researcher with a similar problem encountered in section 2.2.3 when explanation was required as to the ongoing nature of the word "origin" as used in explaining the lying phenomenon. The given definition of a pioneer may seem to imply not only singularity as concerns the initiator but also a definitive time at which the invention occurred. This is not true in the case of the polygraph. The

contributions of the pioneers which follow, will be seen to be supplementary in nature while being spread over time.

The pioneers or contributors to the development of the polygraph are those whose influence has been considered significant by researcher. Two of the chosen pioneers', Sticker (see section 2.5.3) and Binswanger (see section 2.5.6), Christian names and/or initials were unavailable from various literature searches.

### 2.5.1 CESARE LOMBROSO AND ANGELO MOSSO

The Italian father of the Positivist school of Criminological thought is generally credited with being the first to "...attempt to utilize a scientific instrument in an effort to detect deception..." according to Reid & Inbau (1966:1). Cesare Lombroso introduced an instrument known as a hydrosphygmograph in 1895. Although he was not the inventor of this instrument, as it had previously been used for medical purposes, he must be credited for recognising its potential as an aid in detecting deception. The hydrosphygmograph used pulse pattern and blood pressure changes as basic indicators of the presence of deception effort. The suspect was required to emerge his fist, in which he was holding a rod, into a tank of water which was then sealed with a rubber membrane. His physiological response to questions or pictures about the crime were then measured by changes in the water level which transferred to an air-filled tube from where they were recorded on a smoked-filled drum (Abrams 1989:2, Inbau & Reid 1953:2, Matte 1980:26-27).

While Lombroso's concern with lie-detection was limited, his most famous success in this regard was with a notorious thief Berson Pierre whom he

correctly identified as being innocent in the matter for which he was arrested while being guilty of another offence. He wrote of the 14mm drop in water level recorded by the hydrosphygmograph in response to the crime of which he was guilty as follows:

“I concluded, therefore, that he had no part in the railway robbery, but that he had certainly participated in the Torelli affair; and my conclusions were completely verified” (Abrams 1977:18).

Mosso was an Italian physiologist who was a student of Lombroso. He was, according to Matte (1996:12), encouraged by Lombroso to study the effect of emotion and fear on heart and respiratory functioning. His observation of increased cerebral pulse and brain size in response to fear of a patient, whose brain was partially exposed, further served to motivate his pursuit. He created the scientific-cradle to measure blood flow and pressure particularly in response to fear stimuli. This cradle is described by Matte (1980:27) as a “...heavy table at the center (sic) of which was a delicate knife-edge fulcrum.” A plank was placed on this fulcrum which was counterbalanced so as to prevent swaying in the case of “...each small oscillation of respiration.” When the subject experienced an emotion, specifically fear, blood would rush to the head and disrupt the balance of the cradle. Pressure on the metal bars supporting the cradle would change and this would be recorded on a tambour. This detection of fear (see section 3.4.3) is regarded as central to the detection of deception.

## 2.5.2 FRANCIS GALTON, WILHELM WUNDT AND HUGO MUNSTERBERG



While Galton's greatly acclaimed Word-Association Test may be seen as purely psychological in nature, Munsterberg saw its "...forensic application..." potential "...through the recording of physiological changes" in 1908 according to Matte (1980:28). Galton had 29 years previously argued that his test, which required the subject to utter the first thought produced by a given word, would reveal guilt when questions relevant to a crime were mixed with ones which were irrelevant. His reasoning was that when confronted with a relevant question, a guilty subject would attempt to provide "...an associated word lacking in culpability" (Matte 1996:14). This would manifest in one or more of the following:

- delayed reaction time
- quicker reaction time
- similar response to different words
- lack of response
- elaboration of response
- uncoordinated physical response.

Wundt was responsible for the standardisation of Galton's test. Munsterberg, as were most psychologists of the first generation, was a student of Wundt's. It is probably in last-mentioned manifestation of possible guilt (uncoordinated physical response), that Munsterberg realized that the measuring of physiological response in addition to psychological reaction would strengthen the credibility of the test for forensic application.

The seeds of the Guilty Knowledge Test had been sewn (see section 3.8.2.4).

### 2.5.3 STICKER

In 1897, Sticker introduced the psychogalvanometer, an instrument for measuring galvanic skin response (see section 3.5.2). The changes in the skin's resistance to electric current as a result of increased perspiration due to psychological functioning, had been tested mainly by Adamskiewicz who reported thereon in 1878 (Matte 1996:14, Reber 1995:305). Galvanic skin response remains central to modern polygraph technique (see section 3.5.2).

#### 2.5.4 S. VERAGUTH

Matte (1996:15) reports that Veraguth "...was one of the first scientists to use the Word-Association Test with the galvanometer...". He discovered that stimuli which were significant to the person produced larger ascending curves on the galvanometer than neutral stimuli. The Relevant-Irrelevant Questioning Technique (see sections 2.5.10 and 3.8.2.1), had begun its gestation period.

#### 2.5.5 VITTORIO BENUSSI

Born in 1878, Benussi received a Doctorate in Philosophy from the University of Graz at the age of 22. It appears that he was more educated in psychology which, as Matte (1996:16) reports, was not yet an independent science. The Marey pneumograph (see section 3.5.1) is associated with Benussi's contribution to the development of the polygraph.

This instrument was used to record a person's breathing patterns. Bamboo pens recorded inhalations (upward curve) and exhalations (downward curve) on moving flow charts from rubber tubes strapped around the subject's chest.

After numerous experiments in this regard, Benussi presented a paper to the Italian Society for Psychology in 1913 in which he explained how deception was identified by changes in the inspiration/expiration ratio or I/E rate. He explained that the extent of inspiration increased after the subject had lied while the opposite applied in the case of a truthful answer. A major contribution of Benussi was the realization of the existence of countermeasures (see section 3.10) (Matte 1980:28-29, Matte 1996:16-19, Reid & Inbau 1966:2).

#### 2.5.6 BINSWANGER

While not a major contributor to the development of the polygraph, Binswanger must be noted as it was he who, in 1919, first realised the matter of the outside issue (see section 3.8.1.4) and its effect on physiological response. His observations were the result of studying Veraguth's cases. According to Trovillo (Matte 1996:16), "...a suspect may give a large response, for example, not because he is guilty or (sic) robbing the place in question, but because he has robbed other or similar places."

#### 2.5.7 WILLIAM MOULTON MARSTON

In 1915, this former student of Munsterberg began researching blood pressure as mechanism for distinguishing between truth and deception. Two years later he presented what was called the "Discontinuous Technique". Building on his tutor's thoughts, he constructed an interview which would contain data both relevant and irrelevant to the crime. Using a sphygmomanometer, the instrument used for taking blood pressure, he would conduct the interview while measuring systolic blood pressure. When the pressure of the cuff

became too uncomfortable for the subject, it was released and questioning would continue later when measurements were again taken.

His findings of physiological reaction (increased blood pressure) in response to relevant and irrelevant questioning are of the first applications of the Relevant-Irrelevant Technique as used today (Abrams 1989:2-3, Matte 1980:29, Reid & Inbau 1966:2).

Benussi's measure of respiration was compared to Marston's discontinuous blood pressure technique by Burt who, according to Abrams (1977:19), reported in the latter's favour and went on to suggest that future lie detection should include both measurements.

#### 2.5.8 JOHN LARSON

Larson, a forensic psychiatrist, was employed by the Berkley Police Department in California. Having shown a keen interest in the work of Marston, he produced his own instrument for the detection of deception in 1921. Unlike Marston, Larson believed in continuous measurement. Furthermore, he propagated the measuring of blood pressure, pulse and respiration. According to Matte (1996:22), this instrument was known as a Jacquet polygraph. Larson later refined this polygraph, which had been based on one developed by Mackenzie in 1908, into portable form which was extensively used by the police (Abrams 1989:3-4, Matte 1996:22-23).

Larson also initially used Word-Association Tests but later reported greater success by requiring a simple "yes or no" answer. This would be in response to questions which were "...presented in a monotone so that reaction would not occur simply in response to the examiner's inflection" according to

Abrams (1977:20). Larson also examined the idea of using a galvanometer to measure skin response but decided that it would not be valid under severe emotional reaction. Abrams (1977:21) continues to add that, as opposed to Marston who vociferously advocated admitting polygraph results into court, Larson was more cautious and thought more time and refinement was needed when he stated "...it will only be by the correlation and standardization of thousand of cases by experts using uniform techniques that it will be time to present in court."

#### 2.5.9 A.R. LURIA

Modern polygraph technique does not require any motor activity from the examinee. Luria did however include this aspect in his studies as he used the theory of the Director of the Moscow Institute of Psychology during the mid 1920's, S. Kornalov, as basis for his testing according to Matte (1996:24). In short, this theory stated that there "...was a finite amount of energy available for a task, and that mental effort and physical effort competed for the use of energy."

Using Galton's Word-Association Test, which had been refined by Jung, Luria required the subject "...to engage in a motor project response simultaneously with each verbal associative response." When the results provided support for the theory, Luria moved to applying this in criminal matters where he discovered unique response as opposed to stable patterns of reaction, in the presence of an emotional state elicited by knowledge of the relevant crime (Matte 1996:24).

Besides the obvious contribution as regards Relevant-Irrelevant Technique and the Guilty Knowledge Test (see sections 3.8.2.1 and 3.8.2.4) by way of

utilizing word-association, Luria made another subtle contribution in the opinion of researcher. While this may appear accidental and rather due to the premise of Kornalov's theory, the use of motor activity as related to mental effort remains an integral part of polygraphy's problem of countermeasures (see section 3.10).

#### 2.5.10 LEONARDE KEELER

Keeler had been a high school pupil assisting Larson in his work at Berkley. It is thus not surprising that in 1925 he improved on the instrument which his tutor had created. A number of major contributions were made by this psychology major from Stanford University in the historical development of polygraph.

Firstly, he included the Psychogalvanometer (PGR) which measured galvanic skin response (GSR) in the polygraph (see section 3.5.2). While not a new instrument, it was designed as early as 1791 by Galvani, Keeler realised its forensic possibilities.

Secondly, he established the first Polygraph School for formal training of polygraphists.

Thirdly, while Marston had been recorded as using data which was both relevant and irrelevant to the crime in questioning subjects, Keeler formally developed the Relevant-Irrelevant Questioning Technique (see section 3.8.2.1).

Finally, he also developed the Stimulation Test and the Peak of Tension Test (see sections 3.7.3 and 3.8.2.4).

Keeler died in 1949 leaving the Keeler Polygraph which reflected the make-up of the modern polygraph (Abrams 1977:21-22, Abrams 1989:4, Inbau & Reid 1953:4, Matte 1996:24-29).

#### 2.5.11 CAPTAIN CLARENCE D. LEE

As an officer in the Berkeley Police Department, Lee improved on Keeler's polygraph in 1938 by creating a unit which measured pulse-blood pressure more accurately. However, Lee's greatest contribution is seen in his book *The Instrumental Detection of Deception* (1953). Herein he "...relates a technique for differentiating between a guilty subject and one who is innocent but nervous..." (Matte 1996:31). The Guilt Complex Control Question (see section 3.8.1.5) was thus devised by him.

#### 2.5.12 FRED E. INBAU AND JOHN E. REID

Two works produced by these pioneers, *Lie Detection and Criminal Interrogation* (1953) and *Truth and Deception* (1966), represent valuable sources in understanding polygraph development and technique.

Inbau, who directed the Scientific Crime Detection Laboratory for the Chicago police and later became a "...professor of law at Northwestern University" according to Matte (1996:32), appears to have made more of a literary contribution to the field of polygraphy than a practical one. He is however often mentioned in the same breath as Reid because of their writings and is as such included by researcher.

In 1941 the American Psychological Association had requested an evaluation of polygraph practice with a view to use during the war. In presenting an evaluation, Eliasberg found the instrument adequate yet criticized the number of available polygraphists stating that the examiner was the most important aspect in the procedure (Abrams 1977:23-24). Whereas early research had been enthusiastic in the hands of scientists, psychologists and physiologists, their interest in the field had waned. Reid was an attorney who realised the potential of polygraph and the need for scientific and objective procedure. In keeping with Eliasberg's thoughts on the importance of the polygraphist, Reid's studies revealed how the examiner's diagnosis could be adversely affected by the subject. As Inbau & Reid (1953:4) report, he discovered "...that by various forms of unobserved muscular activity a subject's blood pressure could be changed in such a manner as to affect the accuracy of the examiner's diagnosis." From this realisation, the Reid polygraph was born which in addition to pulse, blood pressure, respiration and psychogalvanic skin reflex, also recorded muscular activity.

Besides this major contribution, Reid, building on Lee's Guilt Complex Control Question (see sections 2.5.11 and 3.8.1.5), also devised the Control Question Technique as well as the Guilt Complex Test (see sections 3.8.2.2 and 3.8.2.5). His dedication to the formal training of polygraphists resulted in him establishing the Reid College of Detection and Deception (Lykken 1981:31-33, Matte 1996:36).

### 2.5.13 NORMAN ANSLEY

Ansley qualified as a polygraphist from the Keeler Polygraph institute in 1951 after serving four years in the United States Army. As is the case with Inbau (see section 2.5.12), his contribution is to be seen in polygraphy's literary



front. He has acted as an advisor on polygraph matters to various state departments (Matte 1996:37). Of importance to this dissertation is Ansley's contribution to the various studies of validity and reliability (see section 7.2.2.1) concerning polygraph measurement.

#### 2.5.14 CLEVE BACKSTER AND RICHARD O. ARTHUR

Backster was trained at Keeler's Polygraph Institute and served in the Counter-Intelligence Corps of the United States Army. Arthur had been a chief associate of John Reid for two years when in 1959 they formed the National Training Center of Lie Detection. While this New York based partnership lasted only three years, the Backster Zone Comparison Technique (see section 3.8.2.6) was developed in this period (1960) and represented a major contribution to the field of polygraphy. The introduction of standardised testing and the utilisation of a numerical scoring system (see section 3.9.2) led to increased validity and reliability of polygraph examinations (Abrams 1989:5, Lykken 1981:34, Matte 1996:39, 41-43).

#### 2.5.15 RICHARD I. GOLDEN AND SILVESTRO F. REALI

At an American Polygraph Association Seminar in 1969, Golden revealed how he had adapted Control Questioning (see sections 2.5.12 and 3.8.2.2) by "...requiring the subject to answer each test question twice, the first time truthfully and the second time with a lie..." according to Matte (1980:33). This allowed comparison between the true answer and the lie to the same question.

Building on this, Reali developed his Positive Control Technique (see section 3.8.2.3). He required the subject to first answer with a lie and then truthfully (Matte 1980:33-34, Matte 1996:61-62).

#### 2.5.16 DAVID C. RASKIN

Together with John Kircher, Raskin produced the Utah Zone Comparison Technique (UZCT) in 1980 (see section 3.8.2.6) which proved popular among forensic psychophysicologists. Later, between 1983 and 1987, Raskin added the Directed Lie Control Question (DLCQ) (see section 3.8.1.6) to this technique (Matte 1996:63).

#### 2.5.17 PAUL K. MINOR

In the same year that Raskin introduced the Utah Zone Comparison Technique, Minor adapted the Relevant-Irrelevant Technique (see sections 2.5.10 and 3.8.2.1). Known as the Modified Relevant-Irrelevant Technique (MRI) (see section 3.8.2.1), this method contained situational controls which were in the form of relevant questions aimed at introducing the subject to the issue at hand "...and allow possible guilt feelings, anger, frustration, and so forth to be vented in areas other than at the direct relevant questions" (Matte 1996:70).

#### 2.5.18 JAMES A. MATTE

Cleve Backster had the following to say as regards Matte's book *Forensic Psychophysiology using the Polygraph* (1996):

“I truly believe that this textbook laboriously (sic) compiled by Dr Matte will be the enduring source within the polygraph profession for many years, and it is without reservation that I highly recommend this text to all individuals directly and indirectly involved in psychophysiology using the polygraph” (Matte 1996:vii).

Researcher concurs with these words as this source has proved invaluable throughout this dissertation. Besides this work, Matte is also the author of *The Art and Science of the Polygraph Technique (1980)* as well as numerous articles relating to polygraphy. It is however not only in literary context that his contribution is to be seen but also in the following practical inputs:

- As a result of researching heart rate changes during polygraphic interrogation, he produced the first template for polygraph charts. Appropriately known as the Matte Polygraph Chart Template, its aim was to facilitate “chart interpretation” and provide “...accurate visual pulse rate calculation...” by allowing “...arcs to be drawn on the charts for subsequent evaluation” (Matte 1996:76).
- In response to a client who used deaf people in one department of a gold refinery, Matte developed an appropriate technique for examining those with such a handicap (see section 3.8.2.8) in 1974 (Matte 1996:78).
- In 1975, Matte researched means by which the effectiveness of Control Questions (see section 3.8.1.3) could be verified. The Matte Control Question Validation Test resulted from this research (see section 3.8.1.3) (Matte 1996:79, 431).
- 1977 saw him modify Backster’s Zone Comparison Technique (see sections 2.5.14 and 3.8.2.6) in developing the Polygraph

Quadri-Zone Comparison Technique (see section 3.8.2.6) which was later renamed the Quadri-Track Zone Comparison Technique. That year also saw him deliver the Suspicion Knowledge Guilt Test (SKG) (see section 3.8.2.7) (Matte 1996:81).

Matte can thus truly be regarded as one of the great pioneers in the polygraph profession.

## 2.6 POLYGRAPH DEVELOPMENT AND UTILIZATION IN VARIOUS COUNTRIES

As was mentioned in section 2.1, contributions in polygraphy have come from beyond the borders of the United States, however minor they may be. This section looks at some of these while also briefly sketching the role of polygraphy in the various countries.

### 2.6.1 JAPAN

Fukumoto (Matte 1996:23-24) reports that the Japanese psychologists, Akamatsu, Uchida and Togawa had become aware of electrodermal activity (galvanic skin response) in the 1920's. It is unclear whether they had become aware of the relationship between this bodily response and emotional stress from their own research or whether they had had contact with the writings of Adamskiewicz or Sticker (see section 2.5.3). However, early Japanese efforts at the detection of deception using an instrument were via the galvanometer (see section 3.5.2). The Yokokawa Denki Company manufactured such a machine during the Second World War. During the 1950's, the Yamakoshi

Seisakusho Company and the Takei Kikkogyo Company had produced machines modelled on that of Keeler's.

Today Japan uses polygraphic evidence extensively in court. This is based mainly on Guilty Knowledge Tests (see section 3.8.2.4) as Japanese legislation enables stricter control over a crime scene than in the United States. This results in important information being withheld from suspects which is then applied in the polygraph test.

### 2.6.2 CHINA

From 1940 to 1950, Chinese Military had polygraphists trained by the United States Intelligence Department. Under Russian influence, this Western device then fell into disuse until 1980 when Chinese scientists challenged the scientific basis of a film which had been made to discredit the polygraph. Consequently, a group was despatched to Japan to study polygraph practice there. This group, the specifics of which are not mentioned, concluded that polygraphy had a scientific basis.

Having previously imported American machines, the Chinese created an instrument of their own in 1987 through a psychology lecturer named Yue Jinghong. Together with American instruction, polygraph courses were then presented in 1990. In the same year, the Chinese Academy of Sciences Automation produced a LZ-1 polygraph. Deteriorating American-Chinese relations meant greater self-reliance for the Chinese and in 1991 a computerized polygraph known as a PG-1 was produced. As in Japan, the Guilty Knowledge Test is the preferred method in China (Matte 1996:32-34).

### 2.6.3 INDIA

An American trained polygraphist in Bangalore initially used a polygraph in attempting to solve the Mahatma Ghandi assassination in 1948. Use thereafter was sparse until when in 1974 the Central Forensic Laboratory began extensive testing.

Today Indian courts, while not ignoring polygraph results for the prosecution, "...are more receptive to the results of polygraph tests conducted by non-police examiners for the defence" according to Matte (1996:40).

#### 2.6.4 CROATIA

As in China, Russian influence played a role in inhibiting polygraph use in Croatia. Ivan Babic had with the knowledge of only a very few, conducted tests in 1959. Awareness and greater acceptance of polygraph tests occurred in November of that year when a certain D. Papes solved an intriguing criminal case, the details of which are not mentioned in the source. Throughout Croatia and Yugoslavia police use increased.

1967 marked a significant milestone in Croatian polygraph history when Zvonimir Roso, a criminal inspector and psychology student, had polygraph evidence admitted to the Croatian Supreme Court. This was a first in Europe. While the admissibility ruling was later changed, polygraphy in Croatia had arrived as a profession and today eight polygraph laboratories exist (Matte 1996:44-45).

#### 2.6.5 KOREA

Forensic Psychophysicologists of the United States Army who had been stationed in Korea in the 1950's, began training Koreans in this regard. Later, training was conducted in the United States at the Army Military Police Polygraph School. Korea is today a significant polygraph utilizer albeit that the practice is limited to "...military and law enforcement agencies; the private sector is excluded" writes Matte (1996:54).

#### 2.6.6 SOUTH AFRICA

Matte (1996:66) reports that a clinical psychologist, Brenda Selkon, first conducted a polygraph examination in South Africa in 1978. She had been trained at the Reid College in the United States and conducted the test for Fidelity Guards. Lodge Security also employed a Jerry Higgins to conduct polygraph testing. With the advent of American sanctions against South Africa, due to apartheid policies, polygraph training had to be undertaken in Israel. In 1985 two National Intelligence service officials, Coen Pretorius and Henk van Rooyen were trained in Israel and still practice in private capacity today.

The said Pretorius described a meeting arranged by the Johannesburg Chamber of Commerce in 1987 regarding polygraphy, as a "disaster" due to the dissension among the attendees. Many of the early American teething problems in polygraph practice reflect in South African development. The Polygraph Association of South Africa (see section 2.8.2) was established in an attempt to promote proper standards of practice (Matte 1996:67).

As will be seen in Chapters 4 and 5, polygraph use in South Africa is on the increase both in the criminal justice system and in private industry.

#### 2.6.7 ROMANIA

The Criminalistic Institute of this country was experimenting with various forensic methods in 1974 when it became aware of American polygraph utilisation in the fight against crime. In 1975 a psychologist, Tudorel Butoi, was employed by the police to work in the Institute. He was assigned the task of studying all available material on forensic psychophysiology. He reported his findings to the head of the Institute and was given the responsibility of pioneering polygraphy in Romania.

Machines were purchased from Japan because of American embargos on communist countries. Butoi's success in some difficult cases began winning police confidence in polygraph utilization. Due to the efforts of Butoi and later Adrian Coman, Romania today has a polygraph training school and several psychophysiological laboratories. Polygraph evidence is widely accepted in Courts of Law. What is of importance in Romanian polygraph thinking is the realisation of the necessity to have suitably qualified candidates for training as psychophysiologicals and that "...a department for scientific research in forensic psychology..." be established (Matte 1996:67-70). Researcher agrees with this view and argues for its implementation in South Africa (see section 7.4.1).

#### 2.6.8 RUSSIA

After years of spurning United States polygraph practice, Russia finally opened its own polygraph institute in Moscow in 1993. Two computerised polygraphs (Inex and Avex) are manufactured in Russia (Matte 1996:86).

### 2.7 THE MAJOR MANUFACTURERS OF POLYGRAPH EQUIPMENT



This section has been included by researcher so as to merely familiarise reader with the names and brief historical background of those manufacturers whose polygraphs are used extensively in the profession. It is not the intention to provide detailed technical specifications nor a catalogue of various models for comparative purposes.

### 2.7.1 STOELTING COMPANY

This Chicago based company began producing polygraph instruments in 1935. Models produced up until 1966 recorded on three channels: pneumo, cardio and GSR (see section 3.5). The basic recording devices were vacuum tubes which needed to warm up before use. These vacuum tubes were replaced by transistors in 1966 when Stoelting "...introduced the Emotional Stress Monitor, catalogue number 22600" according to Matte (1996:48). Models prior to this had been referred to as Deceptographs. Stoelting replaced its mechanical polygraphs with electronic instruments in 1974. Known as the Polyscribe series, these remained in use until 1979 when the more refined Ultra-Scribe series was introduced. Miller (Matte 1996:57) describes last-mentioned as being able to "...simultaneously record a person's heart beat, pulse rate and strength, and changes in mean blood pressure using both the conventional cardio cuff on the arm and the CAM on the wrist or thumb of the other arm" (see section 3.5.3).

The Matte Polygraph Chart Template (see section 2.5.18) was marketed by Stoelting. As with the other manufacturers mentioned in this section, Stoelting produce a movement sensor chair which detects use of muscle movement as a countermeasure (see section 3.10.2). Stoelting hold the distinction of producing the first fully computerised system produced in the United States in 1991. This was based on research conducted by Hoskin and

Kircher from 1986 to 1988. This represented a major advance in polygraph instrumentation. The algorithm for this machine was developed by Scientific Assessment Technologies (Matte 1996:40-41, 57, 75-76, 82-83).

### 2.7.2 AXCITON COMPUTERIZED POLYGRAPH, INC.

Based in Houston, Texas, this company was in 1989 selected by The John Hopkins University's Applied Physics Laboratory as having the most suitable computerised data collection system for its Polygraph Automated Scoring System. Known as Polyscore, this scoring system was developed by Dr. Dale E. Olsen and John C. Harris in the Hopkin's Laboratory. The selection of Axciton's data collection system was ahead of that developed by Hoskin and Kircher for Stoelting. The Axciton Computerised Polygraph System, as are the systems of the other leading manufacturers, is IBM compatible and "...includes 2 respiratory sensors, 1 galvanic skin conductance sensor, and 1 cardio cuff. An additional channel can be added for auxiliary sensors such as a plethysmograph, or an activity monitor" according to Matte (1996:84).

### 2.7.3 LAFAYETTE INSTRUMENT COMPANY

Lafayette began "...the electronic trend in polygraph instrumentation" in 1973 according to Matte (1996:56). This long time Indiana competitor of Stoelting also produced the Portable Activity Sensor which, when placed under the front legs of the examination chair, would detect muscular movement related to countermeasures (see section 3.10.2). Today, the Lafayette LX2000-305 represents this company's top computerized polygraph which makes use of Microsoft Windows software as opposed to DOS as used by Stoelting and Axciton (Matte 1996:56-57, 85, 425).

## 2.8 POLYGRAPH ASSOCIATIONS

The American Polygraph Association and the Polygraph Association of South Africa are two bodies representing the realisation of the need to regulate the polygraph industry as well as to prescribe ethical codes and standards of behaviour for polygraphists.

### 2.8.1 AMERICAN POLYGRAPH ASSOCIATION (APA)

This association was formed in August 1966 and initially consisted of 376 members. Today the association has about 2000 members. As in South Africa, membership of this Association is not compulsory for practising polygraphists. Researcher comments on this aspect in section 7.4.2. The following nine classes of membership are offered (Abrams 1977:28, Matte 1996:569):

- Full member
- Intern member
- Associate member
- Life member
- Science & Technology member
- Honorary member
- Retired member
- Divisional member
- International member.

“The goal of the American Polygraph Association is to provide mankind with a valid and reliable means to verify the truth of the matter asserted by:

- Serving the cause of the truth with integrity, objectivity and fairness to all persons
- Encouraging and supporting research, training and education to benefit members of the association as well as those who support its purpose and by providing a forum for the presentation and exchange of information derived from such research, training and education
- Establishing and enforcing standards for admission to membership and continued membership in the Association
- Governing the conduct of members of the Association by requiring adherence to a Code of Ethics and a set of Standards and Principles of Practice” (APA 1999).

### 2.8.2 POLYGRAPH ASSOCIATION OF SOUTH AFRICA (PASA)

Formed in Johannesburg in 1995, PASA aims are similar to those of APA. All the members of PASA are also members of APA. Many polygraphists practising in South Africa are only members of APA. Coen Pretorius (see section 2.6.6) is today the president of PASA which offers four classes of membership, full members, intern members, associate members and international members and has 32 members (PASA 1999).

## 2.9 SUMMARY

Societies throughout the world cannot simply embrace the pervasive phenomenon of lying if their existence in an orderly fashion is to be ensured. Man has realised this from early times and while his methods of veracity testing may have changed, the motive for doing so remains the same. The

polygraph, as one of the so-called tools of Diogenes, represents a humane and scientific attempt at verifying the truth. Just as early trial by ordeal represented crude veracity testing, so too may one see the early versions of the polygraph. The development has shown that the modern polygraph with its computerised base has long changed from Lombroso's early efforts and as may be seen, has made early criticism redundant. Having seen how the polygraph has developed over time one must now turn one's attention to understanding the psychophysiological principles which underlie its functioning.

“It will be clearer when you have heard the story” said Hercule Poirot (Lykken 1981:2).

## **CHAPTER THREE**

### **THE POLYGRAPH: ITS RATIONALE, TECHNIQUES AND OTHER RELATED MATTERS**

“If there is a threat to the subject, there will be fear; and when a person is fearful, there is an involuntary, animalistic preparation within the body for fight or flight - a prehistoric form of survival insurance” Weston & Wells (1990:195).

## CHAPTER THREE

### THE POLYGRAPH: ITS RATIONALE, TECHNIQUES AND OTHER RELATED MATTERS

#### 3.1 INTRODUCTION

Boshoff (1999:20) reports that according to Prof. Adrian Furnham of the University of London, a person who is lying can easily be detected by one or more of the following physical manifestations:

- an avoidance of eye contact
- hesitation in answering questions
- slower speech
- fewer hand gestures
- avoidance of using the word “I” and an inclination to rather speak in general terms
- relief at the end of a conversation brought about by the belief that the lies have been accepted.

The merits of these claims are not the concern of this chapter nor of this dissertation. Researcher has merely included them in an attempt to illustrate that in modern society, lying is still believed to manifest in some physical form. As was seen in the preceding chapter, man has believed this from the earliest times.

This chapter now seeks to provide the reader with the rationale underlying polygraph thinking as regards the physical manifestation of lying and its

detection. In order to understand the psychophysiological basis of polygraphy, it has been necessary to firstly provide a working knowledge of some human anatomical structures and physiological mechanisms. Sources such as James Allan Matte (1996) and Stanley Abrams (1989) provide thorough and detailed anatomical and physiological information on matters relating to the polygraph. This is understandable as their works are used in the formal training of polygraphists who one would expect to be familiar with the tools of their trade. This dissertation looks at the polygraph from a criminal justice perspective and therefore only provides that information which is essential to understanding the psychophysiological basis of the polygraph's functioning.

Furthermore, in illustrating the various questioning techniques, scoring and interpretation of results, only the basic concepts are considered as detail in this regard would lie in the hands of a formally trained and experienced polygraphist.

This chapter also provides insight into the functioning of the modern polygraph instrument itself and related matters such as the polygraphist, examination procedure and countermeasures. It is important to note that this chapter does not seek to justify nor condemn the existence of polygraphy but is rather intended to provide an overall presentation of its rationale and functioning.

### 3.2 ANATOMICAL STRUCTURES RELATING TO POLYGRAPHY

The following anatomical structures of the human body may be regarded as the “nuts and bolts” of the physiological mechanisms which underlie psychophysiological thinking:



### 3.2.1 THE CELL

The cell is described by Abrams (1989:17) as “The basic structural unit of all living matter...”. A cell may generally be divided into the following parts:

- The membrane which forms the outer surface and which due to its permeability, allows substances to pass from one cell to another. Oxygen, food and waste are examples of such substances.
- The nucleus which acts as director of cellular activity through a substance known as deoxyribonucleic acid or DNA.

The chemical transformations that occur in the human body which are collectively known as metabolism, are the processes of cells. Generally cells are differentiated into blood, reproductive, connective, nerve, gland and muscle cells (Abrams 1989:17-18, McClintic 1980:43-51, G-18, G-47, Solomon & Davis 1978:614).

### 3.2.2 THE NEURON

The specialised cells of the body which relate to the functioning of the nervous system (see section 3.3.4) are known as neurons. These cells specialise in the processing of information which relates to “Everything we do, think, feel, remember....” according to Brown & Wallace (1980:10).

### 3.2.3 TISSUE

Cells which specialise in performing the same function are referred to as tissue. Four types of tissue are identified:

- Connective tissue which
- supports and binds various body structures. Bone and tendon are two such tissues.
- Muscle tissue which allows movement by being able to contract.
- Nervous tissue which receives stimuli and transmits information.
- Epithelial tissue which acts as a cover for the body's external surface as well as a lining for inner organs (Abrams 1989:18, Solomon & Davis 1978:11-20).

#### 3.2.4 ORGANS

“When different tissues combine to serve a specialised function, they are considered an organ” says Abrams (1989:18). The eyes, lungs, heart, kidney and glands are examples of organs (Matte 1996:157).

#### 3.2.5 GLANDS

Substances which are either used by the body or removed therefrom are secreted by these structures. Perspiration is an example of such a substance (McClintic 1980:G-26, Solomon & Davis 1978:611).

#### 3.2.6 THE SKIN

The epithelial tissue (see section 3.2.3) consisting of cellular layers which covers the outside of the body, is known as the skin. The sweat glands are found herein (Abrams 1989:19, McClintic 1980:96).

### 3.2.7 THE BRAIN

The brain, which is situated in the skull, weighs approximately 1,4 kg. This organ (see section 3.2.4) is the best protected in the body as besides the skull, three membranes also serve a guardian function. The brain is divided into three major divisions which in turn have various sub-divisions (see figures 3.1 and 3.2). Consideration of these various divisions reveals the vast number of functions for which the brain is responsible (Jordaan & Jordaan 1990:160-162, Solomon & Davis 1978:238).

#### 3.2.7.1 THE HINDBRAIN OR RHOMBENCEPHALON

The hindbrain consists of the medulla oblongata, pons and cerebellum and is also referred to as the brain stem.

- The medulla oblongata contains “...reflex centres for certain life processes, such as breathing, control of heart beat, blood pressure and skeletal muscle tone” according to Jordaan & Jordaan (1996:170).
- The pons acts as relay station between the cerebrum and cerebellum. Furthermore, eye movement, taste, hearing and certain head muscles are controlled by the pons.
- The cerebellum is together with the pons known as the metencephalon. The main function of the cerebellum is to co-ordinate muscle movement by taking into account factors such as gravity, the source of danger etc. (Jordaan & Jordaan 1996:169-171, McClintic 1978:334-335, Solomon & Davis 1978:238, 240-242).

### 3.2.7.2 THE MIDBRAIN OR MESENCEPHALON

The midbrain is responsible for control of reflex actions related to vision and hearing (Jordaan & Jordaan 1996:171).

### 3.2.7.3 THE FOREBRAIN OR PROSENCEPHALON

The forebrain is divided into the diencephalon, which consists of the thalamus and hypothalamus, and the telencephalon consisting of the neocortex, basal ganglia and limbic cortex.

#### 3.2.7.3.1 DIENCEPHALON

- The thalamus is situated more or less in the middle of the brain and consists mostly of a number of different nerve nuclei. According to McClintic (1980:336), “The thalamus operates primarily in the reception and sorting of sensory information at primary and intellectual levels.” The sensory information is received from olfactory, auditory, tactile and visual stimuli. Analysis of this sensory information ‘...leads to expression of emotions, intellectual function, memory storage, and “moods” and “feelings” .’
- The hypothalamus, which is located below the thalamus, is the area of the brain which is of greatest importance to polygraphy. As will be seen in the functioning of the nervous system (see section 3.3.4) and the psychophysiologic basis of polygraphy (see section 3.4), the internal environment of the body is of the utmost importance in detecting the physical manifestation of the stress

associated with lying. As Jordaan & Jordaan (1996:176) explain, the hypothalamus is responsible for “...the regulation of the internal environment - i.e. the environment inside the skin (regulation of sexual maturation, ovulation, sexuality, temperature, water and food ingestion, salt balance in the blood, *blood pressure and heartbeat*, digestion, etc.) - participation in the regulation of sleep and wakefulness and emotive behaviour (such as the experience of *fear and aggression*)”(italics mine).

### 3.2.7.3.2 TELENCEPHALON

- The neocortex or cerebrum is the largest portion of the brain representing about 80% of its weight. All of a person’s higher mental processes derive from the neocortex. Four sets of lobes constitute the neocortex. The frontal lobes provide humans with the unique capability of being able to think abstractly. Motor activity and learned movement are controlled by these lobes. The parietal lobes govern skin and muscle sense relating to the experience of pain, heat, cold, pressure and touch. While the thalamus (see section 3.2.7.3.1) is also responsible for receiving tactile stimuli, the parietal lobes interpret these at a higher level to “...provide interpretation of textures, shapes and degrees of sensation (as in degrees of heat or cold)” according to McClintic (1980:343). The occipital lobes are responsible for interpreting visual stimuli. Sound perception is the function of the temporal lobes which contain Wernicke’s area for the understanding of speech and Broca’s area which enables one to speak (Jordaan & Jordaan 1996:195). It is important to highlight the fact that a source such as Solomon & Davies (1978) refer to the cerebrum as

synonymous with the telencephalon. Researcher has preferred the method of Jordaan & Jordaan (1996) who more specifically refer to the cerebrum as synonymous with the neocortex.

- The basal ganglia act as relay between the thalamus and the neocortex for the initiation of movement.
- The limbic system not only evaluates the pleasantness or unpleasantness of an experience, but also stores such evaluation in the memory so as to adjust behaviour should such circumstances arise again (Jordaan & Jordaan 1996:177-198, McClintic 1980:342-349, Solomon & Davies 1978:244-248).

### 3.2.8 THE SPINAL CORD

As can be seen from Figure 3.3, the vertebral column consists of 31 segments. Within the bony vertebrae is a hollow known as the vertebral canal which contains the spinal cord. Similar to the brain, the spinal column is also protected by three membranes or meninges. Each of the 31 segments has two nerves which are connected to the spine, one dorsally (i.e. on the back side of the spine) and the other ventrally (i.e. on the front side of the spine). The dorsal root or nerve is responsible for conveying sensory information to the brain from the body's receptors while the ventral root or nerve conveys motor information from the brain "...to the effectors (muscles and glands) in the trunk and limbs" according to Jordaan & Jordaan (1996:155).

### 3.2.9 THE HEART

The heart, which weights about 300 grams, lies mainly in the left half of the chest (two thirds is to the left of the midsternal line which divides the chest in two). McClintic (1980:476) describes the heart as being "...two pumps in one.

The right side of the heart acts as a pump to receive blood from the body generally and to send it to the lungs for oxygenation and carbon dioxide elimination...the left side of the heart receives blood from the lungs and pumps it to the body generally...”.

### 3.2.10 THE LUNGS

Fried & Grimaldi (1993:24) describe the lungs, of which there are two, as “...light and porous tissues that lie more or less freely in the thoracic cavity (chest) above the diaphragm. *The thoracic cavity varies in size with respiration*, since the rib cage and associated muscles are quite flexible”(italics mine). This increase in thoracic cavity size is of special concern to the polygraphist. The function of the lungs will become apparent when consideration is made of the respiratory system (see section 3.3.3). For now it is suffice to say that the function of the lungs is to provide the blood with oxygen and remove carbon dioxide therefrom (Solomon & Davis 1978:467).

### 3.2.11 THE BLOOD VESSELS

The blood vessels are divided into capillaries, veins and arteries with the last mentioned being of greatest interest to the polygraphist.

- The capillaries form a network to facilitate the exchange of various materials within the tissue.
- A vein carries blood toward the heart from the tissues.
- An artery transports blood from the heart to various body tissues (McClintic 1980:G-50, Solomon & Davis 1978:397).

The anatomic structures which have now been presented will be seen to be central to the physiological mechanisms which are discussed in the ensuing section.

### 3.3 THE PHYSIOLOGICAL MECHANISMS RELATING TO POLYGRAPHY

“A number of organs operating together to serve a particular purpose are an organ system” according to Abrams (1989:18). Seven such systems exist within the human body. The digestive, urinary and reproductive systems are not of concern to polygraphy. The remaining four being the endocrine, circulatory, respiratory and nervous systems are relevant as they are the determinants of those physical manifestations which polygraphists believe relate to the presence of deceit. Researcher has preferred to refer to these organ systems as physiological mechanisms in an attempt to provide continuity in thought as regards the psychophysiologic basis of polygraphy.

#### 3.3.1 THE ENDOCRINE SYSTEM

As mentioned in section 3.2.5, secretion is a basic function of the glands. Two classes of glands are found in the human body. Those having ducts to deposit substances such as saliva or sweat onto the body surface are referred to as excretory glands. The endocrine system consists of those glands which are ductless and secrete their chemicals into the blood or lymph (a colourless liquid in the tissues). The chemicals produced by the endocrine glands are referred to as hormones which produce either an inhibitory (restraining) or excitatory (stimulating) influence (Abrams 1989:18, Reber 1995:265, 371). The following glands, with the exception of sweat glands, of the endocrine system relate to polygraphy:



- The pituitary gland is found in a bone lying below the hypothalamus of the brain and contains a hormone called vasopressin. The blood vessels are affected hereby in an involuntary manner so as to control the amount of blood supplied to various parts of the body (Abrams 1989:18-19, McClintic 1980:660).
- The thyroid gland regulates growth and development. Of importance to the polygraphist is the effect it has in acting to increase the consumption of oxygen by body tissue (Solomon & Davis 1978:522).
- The adrenal glands, which are found on the kidneys, secrete the hormones epinephrine and norepinephrine. These hormones are central to the body's functioning when dealing with stress as they create those physiologic reactions related to activation of the sympathetic nervous system (see section 3.3.4.2.2.1) according to Abrams (1989:19).

While not part of the endocrine system, the sweat glands are of cardinal concern to the polygraphist as they are directly linked to one of the measurements of polygraphy, the galvanic skin response (see section 3.5.2). These glands act to regulate body temperature by excreting water to the skin where it evaporates. Emotional stress brings about greater sweat gland stimulation via the sympathetic nervous system (see section 3.3.4.2.2.1) (Abrams 1989:19-20, Solomon & Davis 1978:71-72).

### 3.3.2 THE CIRCULATORY SYSTEM

“The circulatory system is composed of structures that transport body fluids throughout the various regions of the body” according to Abrams (1989:20). The heart and blood vessels comprise a sub-system while the lymphatic system comprises another. Last mentioned is responsible for the transport of lymph (see section 3.3.1) from the tissues to the blood vessels. As the chief form of transport in the body, blood is responsible for providing the various cells with those substances necessary to perform secretion and metabolic activities.

The movement of blood through the body is facilitated by the heart. Deoxygenated blood is returned to the heart (the right side) by the veins. Via the pulmonary artery, the blood is carried to the lungs where it is oxygenated for use by the body again. The oxygenated blood is returned to the heart (the left side) via the pulmonary vein. When the heart contracts, the oxygenated blood is forced into the aorta for transport to the body. The contraction of the heart is referred to as a systolic phase while the diastolic phase represents the heart at rest (Abrams 1989:20-24).

Blood pressure refers to the pressure exerted on an artery “...during contraction and relaxation of the heart” according to McClintic (1980:G-9).

Pulse is described by Solomon & Davis (1978:616) as “...the rhythmic wave of distension in an artery due to blood ejected with each cardiac contraction.”

The cardiac output refers to the volume of blood which leaves the heart every minute and is dependent on pulse rate and the contraction force. While the actual heart beat originates within the heart itself, stimulation from the sympathetic nervous system (see section 3.3.4.2.2.1) can “...increase the rate and force of the contractions” according to Abrams (1989:25).

### 3.3.3 THE RESPIRATORY SYSTEM

“The principal function of the respiratory system” according to Fried & Grimaldi (1993:21), “is to extract oxygen (O<sub>2</sub>) from atmospheric air in the lungs, transport it to body tissues and evacuate excess carbon dioxide (CO<sub>2</sub>) and water vapor (sic) (H<sub>2</sub>O) by expelling them from the lungs back into the atmosphere.” Respiration is either external (oxygen intake and carbon dioxide discharge) or internal (gas exchange between circulatory fluids and cells). The lungs are central to the respiratory system which further consists of the airway passages of the mouth, nose, trachea, bronchi and tracheoles.

Air enters through the nose, and/or mouth from where it finds its way to the larynx containing the vocal cords. Continuing down the adjoining trachea (wind pipe) which divides into the bronchi, the air is lead to the right and left lungs. The oxygen and carbon dioxide exchange between blood and cells is facilitated by the lungs.

Of importance to the polygraphist is the fact that the respiratory cycle which consists of one inspiration and one expiration, brings about a change in size of the thorax (ribs, sternum and cartilage) which houses the lungs. During sympathetic dominance (see section 3.3.4.2.2.1), the muscle fibres of the bronchioli dilate to allow more air to be taken in (Abrams 1989:26-27, Fried & Grimaldi 1993:24-25, Matte 1996:157).

### 3.3.4 THE NERVOUS SYSTEM

The nervous system which is divided into the central and peripheral systems, represents the most important physiological mechanism in the rationale

underlying polygraphy. While being interrelated with the other systems or mechanisms and even being dependent thereon, its position as prime system is illustrated in the words of two Harvard neurophysiologists, W.G. and M.A. Lennox:

“Many look on the brain as at the mercy of the circulation and helpless in the face of failing blood-borne supplies. There is indeed a reciprocal relationship between brain and circulation, but the former is distinctly the ruler” (Fried & Grimaldi 1993:58).

While the brain is not synonymous with the nervous system, as can be seen from Figure 3.4, researcher feels justified in quoting these words of the Lennox’s. While all involuntary reflexes are regulated by the autonomic nervous system (see section 3.3.4.2.2), this in turn is controlled by the hypothalamus (see section 3.2.7.3.1). Figure 3.4 may create the impression that the central nervous system may be independent of the peripheral nervous system. This is not the case. Besides providing the reader with the important illustration of the concept of homeostasis, the following words of Matte (1996:156) provide greater clarity as concerns the relationship between the brain and the autonomic nervous system:

“Humans in their earliest development were endowed with an emergency system of nerves that reflexly and automatically prepared their body to meet situations that threatened their well-being. Their health and survival depends on the maintenance of a stable fluid and chemical balance in all the vital organs of their body despite sometimes drastic changes in the environment about them; this is referred to as homeostasis. The precision of the physiological mechanics in the maintenance of this stability is incredible. In the center (sic) of the

brain is located a regulating mechanism, the hypothalamus, that corrects the slightest deviation from a particular standard within very fine limits. Sleep, oxygenation of the blood body temperature, levels of potassium, sodium, calcium, magnesium and all the essential chemical substances that maintain the activity of all membranes are finely adjusted. Medical authorities discovered that the autonomic nervous system (...) is responsible for the regulation of all of these complex systems *and that its central control is in the hypothalamus*, a series of groups of nerve cells of the brain that control the entire endocrine-hormonal system. All of our involuntary reflexes - those that we cannot consciously control such as our *heart beat, pulse rate, increases and decreases in blood pressure, and the expansion and contraction of arteries* - are governed by the autonomic nervous system. We do not have to think about inspiration and expiration in order to breathe; our heart functions without deliberation; our sweat glands are not consciously regulated, nor is the flow of blood in our vascular system. When one of our senses detects a threat to our well being, it sends a signal to the autonomic nervous system, which activates its sympathetic division whether the threat is physical or *psychological*"(italics mine).

The fact that Matte refers to a psychological threat further reinforces the relationship between brain and autonomic nervous system as a cognitive consideration is implied.

The neuron (see section 3.2.2) acts as the conductor of nerve impulses which carry information "...to and from the central nervous system and within it" according to Abrams (1989:27). Consisting of an axon (for the sending of information) and a dendrite (for the receiving of information), the neurons or nerve cells do not make actual contact with each other but rather meet

functionally at what is known as a synaptic cleft since there is a small gap between the axon of the transmitting neuron and the dendrite of the receiving one. This gap is bridged chemically in humans by a process known as a synapse. Chemical substances known as neurotransmitters are released into the synaptic cleft by the transmitting axons which then have either an inhibitory or excitatory effect on the receiving dendrites (Abrams 1989:27-28, Jordaan & Jordaan 1996:123-125, 137-139).

The nervous system, which not only controls the internal “world” of the body, but also “...serves as the body’s link with the outside world” according to Solomon & Davis (1978:208), is presented with its various divisions in Figure 3.4. These various divisions are not of equal importance to the polygraphist. As a consequence, the remainder of this presentation of the nervous system pays greater attention to those divisions which are relevant.

#### 3.3.4.1 THE CENTRAL NERVOUS SYSTEM (CNS)

The brain and spinal cord constitute the central nervous system. The various divisions of the brain and their functions were presented in sections 3.2.7 - 3.2.7.3.2. The brain’s functions may be summarised as follows:

- the interpretation of sensory information received from the sensory organs which results in sensations such as taste and smell
- the mobilisation of effector organs to perform voluntary actions
- the initiation of involuntary actions as regulated by the hypothalamus
- the creation of emotions based on activities such as memory and awareness

- the activation of higher mental processes such as reasoning, thought and learning ability (Abrams 1989:28).

Within the central nervous system, the spinal cord fulfils two functions. Firstly, certain reflex actions are controlled thereby. Referred to as spinal reflexes or reflex arcs, these actions are not generated by the brain but rather by the spinal cord itself. An example hereof would be the immediate withdrawal of the hand when touching something hot. Secondly, the spinal cord serves to transmit information to and from the brain. The brain would thus be informed by the spinal cord that the object touched was hot, but only after the reflex had taken place (Solomon & Davis 1978:216, 236-238).

#### 3.3.4.2 THE PERIPHERAL NERVOUS SYSTEM

The Peripheral Nervous System consists of the Somatic and Autonomic Nervous Systems.

##### 3.3.4.2.1 THE SOMATIC NERVOUS SYSTEM

Solomon & Davis (1978:259) describe the somatic nervous system as including "...those receptors that react to changes in the external environment, the sensory neurons that keep the CNS informed of those changes, and the motor neurons that adjust the positions of the skeletal muscles in order to maintain the body's integrity and well-being." Receptors refer to those organs which respond to a specific stimulus such as the eye responding to light (McClintic 1980:G-42).

##### 3.3.4.2.2 THE AUTONOMIC NERVOUS SYSTEM (ANS)

Whereas the somatic nervous system is concerned with those motor neurons responsible for adjusting the skeletal muscles, the ANS concerns itself with those motor neurons "...not destined to innervate the skeletal musculature..." and which rather "...terminate in the smooth muscle of the heart, stomach, liver, sweat glands of the skin, adrenal glands, salivary glands, and other internal organs" according to Brown & Wallace (1980:68). The greatest distinguishing characteristic of the ANS is that almost all of its functions occur *involuntarily* (Sternbach 1966:12-14). The ANS is divided into sympathetic and parasympathetic branches which, according to Abrams (1989:30), "...have antagonistic effects on the organs..." so as to maintain homeostasis in the body.

#### 3.3.4.2.2.1 THE SYMPATHETIC NERVOUS SYSTEM (SNS)

"The SNS produces activities related to the protection of the individual; it is, in essence, an emergency system that responds to situations involving threat, stress and fear" writes Abrams (1989:30). The nerve fibres applicable to the SNS will in response to threatening or fearful situations release the neurotransmitters norepinephrine (on instruction from the hypothalamus) or acetylcholine (for the sweat glands) which will stimulate the organs controlled by the autonomic nervous system. The most applicable examples of sympathetic arousal relative to polygraphy are:

- sweat glands produce sweat over body
- blood vessels become constricted
- heart muscle increases rate and force of contraction
- bronchi of the lungs become dilated (Matte 1996:157, Solomon & Davis 1978:267).



#### 3.3.4.2.2.2 THE PARASYMPATHETIC NERVOUS SYSTEM (PNS)

Remembering that the SNS and PNS have antagonistic effects on the body, it is hardly surprising to read that "...most organs are innervated..." by both (Grings & Dawson 1978:11). Once the threat or emergency has passed, parasympathetic dominance takes place so as to bring about emotional calmness and physical relaxation. Parasympathetic arousal becomes evident in some of the following:

- dilation of blood vessels
- heart decreases contraction strength and resting heart rate returns
- lung bronchi constrict (Abrams 1989:31-32, Matte 1996:157, Solomon & Davis 1978:269).

The autonomic nervous system and especially the sympathetic nervous system represent the crux of the rationale underlying polygraphy. Having seen how sympathetic arousal affects the body, one is almost tempted to say that the physical manifestations brought about thereby are obvious signs of the fear associated with the detection of deceit or lying. It is however not that simple and in the ensuing section 3.4, researcher attempts to formulate the rationale of polygraph thinking by presenting those matters central thereto.

Before continuing, researcher has felt it necessary to reiterate the notion of providing a working knowledge of the anatomical structures and physiological mechanisms covered in this chapter thus far. Without wanting to appear academically condescending, researcher has attempted to present only salient information and in such a manner so as to enable the criminal justice reader to understand the basic foundations of psychophysiological thinking. In this

attempt, certain information has been simplified or even omitted when researcher has considered it superfluous.

### 3.4 THE PSYCHOPHYSIOLOGICAL BASIS OF POLYGRAPHY

Besides the referral to psychophysiology provided in section 1.7.1, consideration of the following provided by Andreassi (1980:3) makes for better understanding:

“The field of psychophysiology is concerned with the measurement of physiological responses as they react to behavior (sic). The behavioral (sic) situations that may be studied range from basic emotional responses (anger) to higher cognitive processes (thinking).”

Sternbach (1966:3) provides a further definition by referring to psychophysiology as “...the study of the interrelationships between the physiological and psychological aspects of behavior (sic).”

Fried & Grimaldi (1993:7) suggest that psychophysiology might rather be referred to as “psychophysometrics” since “...psychophysicologists are principally concerned with quantitative measures of physiology thought to be related to behavior (sic).”

From these definitions, researcher provides the following operational definition of psychophysiology as appropriate to polygraphy’s attempt at the detection of deceit:

Psychophysiology is that scientific study which attempts to establish a correlation between physical manifestations (such as heart beat) and

cognitive processes (such as lying) which generate emotions (such as fear) by using quantitative means (such as a polygraph).

### 3.4.1 THE PHYSIOLOGICAL SIGNS OF EMOTION

‘Why is emotion relevant to a discussion on lie detection? The answer is almost obvious: An individual who is subject to a series of often probing questions in an attempt to distinguish between his telling the truth and telling lies, knowing full well that his answers are being “scientifically” scrutinized by a rather nervous machine that he is electrically connected to, is bound to be experiencing a number of emotions’ writes Ney (1988:65).

People have very little control over the occurrence of an emotion and when an emotion occurs, “...physiological changes happen automatically without choice or deliberation” write Ekman & O’Sullivan (1989:299-300) who continue by describing this “...as a fundamental characteristic of emotional experience. People do not actively select when they feel an emotion; instead, they usually experience emotions as happening to them.” Thus, as emotions are automatically generated by cognitive processes such as memory or interpretation, so to do they generate automatic physiological reactions.

Grings & Dawson (1978:12-24) identify eleven “Bodily reactions accompanying emotion.” While these authors refer to “six primary responses” and “five additional bodily responses” researcher has listed these responses without priority:

- Heart rate, which can rise or fall depending on the emotion. Sympathetic stimulation will increase heart rate.
- Blood pressure, which will rise during sympathetic arousal.

- Blood volume through the heart and to the brains increases while it decreases to other parts during sympathetic arousal due to constriction of the blood vessels.
- Electrodermal responses, which refer to electrical properties of the skin or skin conductance. During emotional states, the skin becomes a better conductor of electricity.
- Respiration is affected as sympathetic arousal causes the bronchi of the lungs to dilate which allows for greater oxygen intake. (The physiological responses mentioned thus far are the concern of polygraphy as explained in sections 3.5.1 - 3.5.3).
- Muscle potential or muscle tension increases during stressful situations.
- The electrical potentials emitted by the brain, as measured by an electroencephalogram, vary. Beta waves, i.e. those with a frequency greater than 13 Hz (cycles per second - Hertz) are more prominent during alerted states.
- Temperature of the body is lowered due to increased sweat gland secretion and lower blood volume in certain body parts.
- Salivation, as was known to the ancient Hindus (see section 2.4.1), is inhibited by sympathetic arousal.
- Pupil size is increased by the sympathetic nervous system.
- Gastric motility is decreased during sympathetic dominance brought about by stressful emotion.

It is neither sufficient to know what the psychophysiological study field embraces nor is it sufficient to accept the fact that certain emotions bring about physiological reactions, in order to understand the rationale of

polygraph thinking. This rationale must be understood against the background of certain assumptions.

### 3.4.2 THE ASSUMPTIONS UNDERLYING THE RATIONALE OF POLYGRAPHY

Skolnick (Harlan 1985:8-9) provides two basic assumptions which he regards as central to the theory of polygraph use in detecting the presence of deceit:

“First, a regular relationship between lying and certain emotional states; second, a regular relationship between these emotional states and changes in the body.”

Ney (1988:66) provides the following four assumptions in this regard:

- “...individuals cannot *control* their physiology and behaviour;”
- “...specific emotions can be *predicted* by specific stimuli;”
- “...there are *specific relationships* between parameters of behaviour (such as what people say, how they behave and how they respond physiologically);”
- “...there are *no differences* between people such that most will respond similarly.”

It is the opinion of researcher that Ney provides a more comprehensive presentation of these assumptions. Not only does she include Skolnick’s notion of a “regular relationship” by way of referral to “specific relationships”, but also introduces the important concept of prediction which as Dane (1990:336) points out, enables one “...to speculate about one thing by knowing about some other thing.” In the case of the polygraphist, this would

knowing about some other thing.” In the case of the polygraphist, this would entail speculation about the presence of deceit knowing what physiological responses occurred in the presence of emotions brought about by a subject answering certain questions.

Against a background of psychophysiological definition, awareness of the physiological signs which accompany emotion and knowledge of the assumptions underlying polygraph thinking, researcher now moves to formulate the rationale for utilization of the polygraph in the detection of lying.

#### 3.4.3 THE RATIONALE UNDERLYING THE UTILIZATION OF THE POLYGRAPH IN THE DETECTION OF LYING

Skolnick provides a concise statement of the rationale or theory which underlies polygraphy's role in the detection of lying:

“The act of lying leads to conscious *conflict*; conflict induces *fear* or *anxiety*, which in turn results in clearly measurable physiological change” (Harlan 1985:8).

This formulation of polygraphy's rationale requires some clarification as it may create the impression that certain physiological changes, which the polygraph measures, are unique to the act of lying. Orne, Thackray and Paskewitz (1972:744) clarify this position as follows:

“Contrary to popular superstition, no specific physiological response has ever been identified as unique to lying. On the contrary, the kinds of behavioral (sic) and physiological responses associated with

deception are also characteristic of arousal, anxiety, stress, etc. The detection of deception depends upon a comparison of the subject's responses to two or more stimuli (questions) matched in their presumed ability to arouse the subject. Some of these stimuli (questions) are known not to be associated with deception, whereas one or more of the others may be associated with deception. If the individual's responses to these basically similar stimuli (questions) are considerably different in the case of those stimuli about which deception is suspected, a diagnosis of lying is made."

Researcher now summarises the rationale for utilization of the polygraph as a detector of deception as follows:

On the assumption that lying leads to an emotional state such as fear or stress, sympathetic arousal will generate physiological changes in the body which manifest in relation to the relevance of the stimuli or question. (The matter of question or stimuli relevance will become clearer to reader when consideration is made of questioning techniques in section 3.8.2).

The assumption underlying this rationale may give rise to many questions in the mind of the reader. This was indeed the case as concerns researcher. However, as was stated in the introduction to this chapter, researcher has not attempted to deliberate the merits of polygraphy's claims but has rather sought to merely provide a window to the world of polygraph thinking.

It is important to note that polygraphy consists of both polygraph instrument and polygraphist. In this regard, researcher now presents sections 3.5 and 3.6 respectively.

### 3.5 THE POLYGRAPH INSTRUMENT

West's Encyclopedia of American Law (1995:109) defines a polygraph as "...an instrument used to measure physiological responses in humans when they are questioned in order to determine if their answers are truthful."

The Concise Oxford Dictionary (1990:684) describes the lie-detector as "...an instrument for determining whether a person is telling the truth by testing for physiological changes considered to be symptomatic of lying."

These two definitions, in the opinion of researcher, may create the impression that a polygraph is synonymous with a lie-detector. This is not true. In fact the term lie-detector is a misnomer as no machine can determine whether or not a person is lying. As Ney (1988:66) correctly points out, "...the physiological response measured by the polygraph can only tell that some kind of reaction is taking place within the victim; it cannot, however, tell what that reaction is." In short, and as mentioned in section 3.4.3, the detection of deception as related to polygraphy lies in the hands of both polygraphist and polygraph instrument. This important aspect is summarised by Giannelli (1994:264) as follows:

"The machine, however, detects neither deception nor the fear of deception; it provides only a recording of physiological responses. It is the examiner who, based on these recordings, infers deception."

Researcher has not concerned himself with the technical specifications of the polygraph and considers it suffice to note that today computerized equipment is used by the majority of polygraphists while a small number still enjoy



utilising conventional or analogue instruments according to Smit (1999). Furthermore, it should be noted that the kymograph refers to that part of the instrument which "...controls the chart paper flow..." on which the various recordings are made by the chart marker which uses an inking system according to Abrams (1989:44-46). Some polygraphs also include a motion chair for the detection of countermeasures (see section 3.10).

What is of importance to the reader is to know what physiological measures are taken and how they are taken. As the American Polygraph Association (1989) says, 'The term "polygraph" literally means "many writings". The name refers to the manner in which selected physiological activities are simultaneously recorded.' The "physiological activities" resulting from sympathetic arousal which are appropriate to polygraph measurement are now presented.

### 3.5.1 THE PNEUMOGRAPH

That unit of the polygraph which measures respiration is referred to as the pneumograph. Depending on whether both thoracic and abdominal recordings are made, one or two pneumatic tubes are placed around a subject's chest. While one end of the tube is shut, the other is connected "...to a tambour or bellows system within the instrument. When the thoracic cavity expands during inspiration or when the abdomen is forced outward, the size of the tube is increased" according to Taylor (1984:210). A vacuum results in the system which decreases the pressure on the bellows, causing them to move backward. This movement relates as an upward movement of the chart marker or pen on the chart paper. The opposite process occurs during expirations (Abrams 1989:40-41; Grings & Dawson 1978:23, Nagle 1983:49).

### 3.5.2 THE GALVANOMETER

The galvanometer is that unit of the polygraph which measures the electrical response of the skin. This is also known as the galvanic skin response. During sympathetic arousal, the skin becomes a better conductor of electricity due to increased perspiration. Two electrodes are placed on two fingers of the same hand and a small amount of electrical current is then passed through. Conductance in response to various questions is then measured and marked on the chart paper. It should be noted that the hand used for measuring galvanic skin response should not be the same as the one being used for the blood pressure cuff (see section 3.5.3) (Abrams 1989:42-43, Grings & Dawson 1978:16-18, Nagle 1983:49-50).

### 3.5.3 THE CARDIOSPHYGMOGRAPH

Blood pressure (as related to blood volume) and pulse are measured by means of a blood pressure cuff which is attached to the upper arm of the subject. The cuff, which is inflated, covers the brachial artery which receives blood pumped into it by the heart's contraction. Depending on the amount of blood received, the distension of the artery will force air proportionately from the cuff and into the attached tubing. This translates into an upward marking on the chart. Each rise in marking represents a pulse. Pulse rate is thus easily determined. When the heart relaxes, the opposite occurs. Two variations of the cardiosphygmograph exist. The cardio activity monitor (CAM) measures blood pressure and heart rate by simply attaching a transducer to the subject's wrist or thumb. The plethysmograph measures blood volume by using light on the thumb or middle finger. The amount of blood in these fingers determines the opacity (degree of light penetration) of the tissue (Abrams

1989:43-44, Matte 1996:180-184). The cardiosphygmograph still remains the most popular means of measuring blood pressure and pulse rate.

The polygraph instrument has, as with most technical innovations, become more sophisticated and refined yet still finds the optimal fulfilment of its purpose dependent on the expertise of a human. As Reid & Inbau (1966:4) advise "...the most important factor involved in the use of any such instrument is the ability, experience education and integrity of the examiner himself."

### 3.6 THE POLYGRAPHIST

In addition to Reid and Inbau's comment on the importance of the polygraphist in the examining process (1966:4), the following sources also emphasise this aspect:

- "It has long been recognised that the examiner's skill has an important effect on the validity of polygraph tests. Examiner experience is an essential element reported by investigators and has often been used to explain differences in accuracy rate" (United States Office of Technology Assessment 1983:83).
- "The questions asked, the physiological responses to which are recorded, can vary widely, and so too can the methods by which various sources of data are combined to reach the final conclusion. The result is that polygraph testing is as much a consequence of the skill and experience of the examiner as it is of the instrument itself" (Miner & Capps 1996:24).

In the light of the emphasised importance of the polygraphist, researcher found it both surprising and disturbing to discover a paucity of literature in this regard. It thus appears that the training which is offered at present is regarded as sufficient. Researcher comments hereon in section 7.2.2.2. Furthermore, definition of the polygraphist, which one would expect to indicate both function and level of training, is virtually non-existent. In this regard, Barland (1988:82) comments as follows:

“Defining the typical examiner is difficult, because there is a broad range of examiner training, test techniques, what type of non-polygraphic data (if any) are included in the examiner’s decision, and the type of quality control system (if any) within which the examiner works.”

When looking at these words of Barland, it is difficult to imagine that present training can be adequate as it appears that there is a lack of standardisation. It is researcher’s opinion that standardisation in training is essential as it became apparent during various interviews with polygraphists in South Africa that a diverse occupational background, prior to entering the field of polygraphy, existed. This matter is also commented on in section 7.2.2.2. A further factor which researcher found worrying, was the almost non-existent selection criteria for candidates who wished to be trained as polygraphists. Typical requirements of admission are presented in section 3.6.2.

Why then do various authorities regard the role of the polygraphist as cardinal to the polygraph effort at the detection of deception?

### 3.6.1 THE NEED FOR POLYGRAPHIST COMPETENCE

“Because of the subjective nature of determining truthfulness through a polygraph examination, the competency of the examiner is uniformly recognised by authorities in the field as the most important factor in procuring accurate test results” comments Nagle (1983:52).

Lowe (1981:124-126) provides support for Nagle when, in arguing for “...state regulation of polygraph examiner competence”, he puts forward four reasons which reflect the necessity for suitably qualified polygraphists:

- “First, the analytical determinations made during a polygraph test are highly subjective, requiring adequate training and skill to assure correct interpretation of the test data. This is because the polygraph device itself does not detect this; rather, the examiner does so by interpreting the physiological changes recorded during the examination.”
- “Second, accuracy in polygraph test analysis requires complete co-operation by the examinee with the examiner. Since polygraph tests are said to inundate the work environment with suspicion and distrust, it is a plausible inference that these feelings detract from the willingness of an examinee to co-operate with the examiner in employment contexts. The inference then arises that reduced examinee co-operation results in enhanced difficulty in analyzing test data and increases the need for greater examiner training and skill.”
- “Third, pre-employment examinations (see section 4.5.1) pose particularly difficult problems of analysis in themselves. Accurate polygraph analysis requires data obtained from a specific area of inquiry. Polygraph tests in criminal matters, for example, are highly specific in scope. But unlike criminal

polygraph interrogations, pre-employment examinations are broad probes into the examinee's past behavior (sic) for the purpose of making general predictions about future conduct. This sort of probing presents two analytic hurdles for the examiner to overcome. First, valid predictions of future behavior (sic) are not always possible. Second, broad rather than specific area of inquiry are improper indicators for truth and deception determinations."

- "Finally, employers serve their own best interests by securing accurate test results. Employers continually rely upon the recommendations of polygraph examiners. It therefore follows that employers protect themselves by engaging the services of competent test administrators" (brackets mine).

Besides these specific reasons provided by Lowe, researcher regards the consequences of the polygraph examination for the examinee as the most pressing need for competent examiners. A person may as example, not be employed for a much needed job as the result of a polygraph examination. Not only may this result in dire financial consequences for a family, but the prospective employee may find himself a future victim of a stigma attached by a failed polygraph examination. In addition to this consequential need for polygraphist competence, the question of qualification as an expert witness also arises. Researcher comments on this aspect in section 7.2.2.3 and for now presents the training and requirements for admission which are intended to provide competent polygraph examiners.

### 3.6.2 POLYGRAPHIST TRAINING

Polygraph training normally lasts between fourteen and seven weeks according to Barland (1988:82). The content of a course recently presented in South Africa by the Veri-Dicus Group “...in conjunction with the prestigious Argenbright International School of Polygraph of the USA” is representative of that of a typical training programme presented by American Polygraph Association (APA) accredited schools (Dreyer 1999, Smit 1999):

- “Instrumentation
- The Law and ethics of polygraph
- Test question construction
- Mechanics of chart production
- Polygraph techniques
- Chart interpretation
- The physiology of polygraph
- The psychology of polygraph
- Communication about polygraph
- Interview and interrogation
- Examinations
- Instrument maintenance and calibration
- History and development of polygraph
- Computerized polygraph” Veri-Dicus Group (1999:3).

Training does not only have a theoretical orientation as the course makes provision for practical utilization of both analogue and computerised polygraphs. It is important to note the following “Extract from the bulletin of the Argenbright Institute” according to the Veri-Dicus Group (1999:2):

“The APA no longer require (sic) students of APA accredited schools to have a bachelors degree taking the position that the quality of education at the accredited schools was of primary importance. Therefore, it is possible to accept students at APA accredited polygraph schools who do not necessarily have a tertiary education.”

Not only is this a matter of great concern to researcher but so too are the “admission requirements” which follow:

- “Satisfactory prior academic record
- Good moral character
- At least 18 years of age
- No criminal record”.

Researcher comments fully on these aspects in section 7.2.2.2.

As at 22 November 1999, fifteen APA accredited schools existed which are now listed:

- Academy for Scientific Investigative Training, Pennsylvania.
- American Institute of Polygraph, Michigan.
- Argenbright International Institute of Polygraph, Georgia.
- Arizona School of Polygraph Sciences, Arizona.
- Axciton International Academy, Largo.
- Backster School of Lie Detection, California.
- Canadian Police College Polygraph Training School, Ottawa.
- DoD Polygraph Institute, Alabama (Training only for State and Federal agencies).



- International Academy of Polygraph, Florida.
- Israeli Government Polygraph School, Tel-Aviv (Training only for State and Federal agencies).
- Maryland Institute of Criminal Justice, Maryland.
- Texas Department of Public Safety Law Enforcement Polygraph School, Texas.
- Virginia School of Polygraph, Virginia.
- Western Oregon University School of Polygraph, Oregon.
- National Center for Polygraph Studies, Mexico (APA 1999).

These schools “...abide by the strict standards imposed by the APA...” as concerns training and the utilization “...of equipment that can withstand scientific scrutiny” (APA 1999). One can thus conclude that standardisation of training is sought amongst these accredited schools. However, as the APA has warned police chiefs and training officers, other institutions exist which offer cheaper training and over which no control, and consequently standardisation, exists. This fact, together with the lack of enforced membership of polygraph associations in the United States and South Africa (see section 2.8.1), is also cause for great concern and is highlighted in sections 7.2.2.2 and 7.4.2.

What then are the tasks which the polygraphist must perform which necessitate the competence which training schools aim to impart? Nagle (1983:52) describes these as “....interviewing the subject, designing the appropriate test questions, conducting the test, and evaluating and interpreting the charts...”. These important functions of the polygraphist are illustrated in the remaining sections of this chapter which look at examination procedure,

question types, questioning techniques, scoring and evaluation and lastly, countermeasures.

### 3.7 EXAMINATION PROCEDURE

This section aims to provide the reader with an overall view of the process involved in the actual administration of a polygraph test. In an attempt to provide this overall picture, researcher has briefly referred to the aspects of question types, questioning techniques, scoring and evaluation. These aspects are slightly more complex than the other steps in the process and are thus dealt with separately in sections 3.8 and 3.9 respectively.

“The polygraph examination must be administered much like a controlled scientific experiment. All of the variables must be controlled with the exception of those being studied” writes Abrams (1977:53).

According to Taylor (1984:220-221), “The polygraph examination consists of four separate phases: data collection, pretest interview, test administration, and the post-test interview.”

#### 3.7.1 DATA COLLECTION

During this phase the polygraphist gathers all information relevant to the examinee and the matter which has brought about the need for the test. This is done before meeting the examinee. Besides all the details of the case, “...factors that might influence the subject’s reactions during the test must be determined so that any history of medical, psychiatric, or educational problems can be evaluated through other sources” according to Taylor (1984:221). Together with the pretest interview, thorough data collection

enables any nuisance variables which may affect the validity of the test to be identified.

### 3.7.2 PRETEST INTERVIEW

“Polygraph experts, both supporters and opponents,” writes Natale (1989:562), “agree that the pretest interview is an essential element of the polygraph technique.” This interview, which normally lasts for about an hour, has as objectives the following:

- to enable the examiner to develop rapport with the examinee which results in the latter becoming aware of the examiner’s objectiveness which in turn leads to diminished fear of the unknown while increasing the fear of detection of deception
- to explain the functioning of the polygraph to the examinee and convince same of the instrument’s effectiveness
- to obtain more information from the examinee
- to inform the examinee of his rights, the procedure of the actual examination and his voluntary consent thereto
- to, importantly, formulate the questions and decide on questioning techniques to be used during the test
- to obtain any other information which may be relevant to the test
- to ensure that the examinee understands the questions to be asked and what is meant by an honest answer (Abrams 1989:52-54, Matte 1996:242-245, Orne 1975:112, Raskin 1989:255-256).

Having now completed what may be referred to as the “informal” part of the test the examiner continues by administering the actual polygraph test.

### 3.7.3 ADMINISTRATION OF THE POLYGRAPH TEST

Remembering that the polygraph test itself may be a cause of anxiety, the setting wherein it occurs should not further add to this. Reid & Inbau (1966: 5-10) have laid down the following guidelines in this regard:

- The setting should be free from outside noise.
- The room should not contain ornaments, pictures or objects which can distract the examinee.
- No excessive lighting should exist.
- Where possible, an observation room should adjoin which does not allow the examinee to see into it. (Only those with a professional interest should be allowed to observe).

The examiner may decide to apply a stimulation test (see section 2.5.10) which is described by Matte (1996:434-435) as "...a test using numbers, numbered cards or money envelopes with a known or unknown solution, for the purpose of reassuring the Innocent (sic) examinee, stimulating the guilty examinee, and determining the minimum capability of response." In short, the test involves asking the subject to say, choose a number between 1 and 9, and note this on a piece of paper which is kept secret from the examiner. With the instrument's transducers attached (see sections 3.5 - 3.5.3), the subject is asked to answer negatively to all the options offered by the examiner. The physiological response to the applicable lie is then shown to the examinee to convince him or her of the effectiveness of the instrument. This optional test has a number of variations (Abrams 1989:127-128, Smit 1999).

“During the actual test the suspect (examinee) is seated so that he cannot see the record on the machine or the interrogator (examiner)” (brackets mine) (Orne et al 1972:748). Having been informed that the test is to begin the appropriate questions (see section 3.8.1), as decided on by the examiner in the pretest interview, are then put to the examinee. Answering is in the form of a simple “yes” or “no”. The examiner, whose voice should reveal no inflection, asks the questions allowing “...about a fifteen to twenty second pause after the subject’s response and the start of the next question” (Abrams 1989:70-71). Each test, with its chosen questioning technique (see section 3.8.2), is recorded on a separate chart and contains 10 to 12 questions. A test lasts for approximately 5 to 7 minutes. The entire testing procedure consists of 3 or 4 administrations of the test which may be varied (Abrams 1989:71, Dreyer 1999, Smit 1999).

Having completed the testing procedure, the recordings or tracings are to be scored and evaluated (see section 3.9) by the examiner.

#### 3.7.4 POST-TEST INTERVIEW

Nagle (1983:58) describes this final part of the examination procedure as follows:

“After the charts produced during the tests have been analyzed and interpreted, the examiner discusses the results of the tests with the subject during the post-test interview.”

If deception has been indicated, this interview provides the examinee with an opportunity to explain according to Abrams (1989:85-86).

### 3.8 QUESTION TYPES AND QUESTIONING TECHNIQUES

If one is to regard the polygraph as the polygraphist's weapon in targeting the truth, then the question types and questioning techniques can be regarded as the ammunition. Together with the scoring and evaluation of the test, these two aspects of polygraphy probably reveal most as concerns examiner competence. Question types and questioning techniques have been subject to both modification and varying degrees of popularity over the years. In keeping with this chapter's aim of providing the reader with a working knowledge of polygraphy, researcher has only presented those aspects regarded as fundamental to the understanding of how various questions types and questioning techniques function to utilise the rationale applied in the psychophysiological detection of deception.

#### 3.8.1 QUESTION TYPES

Armed with the information gathered during the data collection (see section 3.7.1) and the pretest interview (see section 3.7.2) phases of the examination procedure, the examiner will compile the questions which are to be asked during the actual test (see section 3.7.3). It is important to note that the various questions which follow reflect development and refinement of the polygraph technique. When one looks at the purpose of each it becomes apparent that the origin thereof is due to the realisation that some factor or phenomenon was discovered which could affect the validity of polygraph testing.

##### 3.8.1.1 IRRELEVANT QUESTIONS

Also known as neutral questions, these relate to matters which are normally benign and factual and therefore easy to answer. Examples hereof would be:

“Is your name Ronald Smith?” or

“Were you born in Johannesburg?”

The truthful answer to such a question is known to the examiner. The purpose of irrelevant questions is twofold. Firstly, they “...provide a picture of the individual’s normal response pattern during the stress associated with taking the test” according to Abrams (1989:55). Secondly, should a relevant (see section 3.8.1.2) or control (see section 3.8.1.3) question have elicited a stressful physiological response from the examinee, an irrelevant question may be asked so as ‘...to bring the subject down to his “normal” physiological base line...’ writes Taylor (1984:228).

In short, irrelevant questions can be regarded as those whose purpose it is to provide the examiner with a physiological response which is indicative of the examinee’s state when responding to questions which are non-threatening. This “normal” physiological response is used as a basis for comparing physiological responses elicited by other types of questions.

### 3.8.1.2 RELEVANT QUESTIONS

These questions are described by both Abrams (1989:55) and Taylor (1984:228) as being “critical” to the test. Researcher likes to regard these questions as those designed to activate the sympathetic nervous system (see section 3.3.4.2.2.1) by presenting a possibility of discovery of knowledge which poses a threat to the well-being of the examinee. Matte (1996:246) has the following to say regarding this matter:

“The relevant question should be formulated so that it gets to the heart of the issue. It should be a direct question having an intense and specific relationship to the crime or issue. Its purpose is to elicit a reaction from a deceptive person.”

These questions are worded concisely and unambiguously as reflects in the following example provided by Taylor (1984:228):

“On June 5<sup>th</sup> at 8<sup>th</sup> and Vine did you rob the Safeway Store?”

Only one aspect of the issue being examined is covered by each relevant question.

A variation of the relevant question is referred to by Abrams (1989:62) as the throw-away relevant question which merely has as purpose “...to draw off some of the subject’s emotional reaction to the issue under study.” The response to the question as reflected on the chart is ignored.

An example of such a question may be:

“Are you going to answer every question relating to the murder of Ronald Smith truthfully?”

### 3.8.1.3 CONTROL QUESTIONS

The existence of control questions stems from the realisation “...that innocent subjects recognize the importance of the relevant questions, feel threatened by them, and react more strongly to them than to neutral question” according to



Horowitz (1989:3). Summers first called these questions “emotional standards” whose purpose was to “...evoke within the individual rather intense psychogalvanic reactions due to surprise, anger, shame or anxiety over situations which he would ordinarily prefer to conceal” (Horowitz 1989:4). Taylor (1984:220) elaborates on the purpose of the control question as follows:

“Its entire purpose is to serve as a basis of comparison with the relevant question, and without it, the relevant question is of little or no value. If the control question were not employed, a large reaction to a relevant question could be indicative of deception or simply demonstrate that the subject tends to be highly responsive.”

With relevant questions being easily recognizable, both innocent and guilty examinees would be aroused thereby. This would result in “...the detection of guilty persons...” being “...accompanied by a relatively high number of false positive errors” says Horvath (1988:198). (A false positive error refers to a finding of deception when the examinee is in fact truthful. A false negative refers to the deceitful examinee being found truthful). Thus, in an attempt to eradicate this problem, the control question is used.

“The control question” is described by Taylor (1984:229) as “...a known or assumed lie. In the case of the former, information is used that the subject is unaware that the polygraphist possesses, and in the test the subject is untruthful about it. The information might relate to some criminal activity in the past or some other background information obtained from a family member or the attorney. The assumed lie relates to an activity discussed with and denied by the subject and about which his being truthful in the denial seems highly unlikely. Probably, in an attempt to impress the examiner,

through creating a good impression, both guilty and innocent examinees avoid admitting to antisocial activities. Questions such as the following are rather typical of such denials:

Did you ever take anything of value from an employer?

Did you ever take advantage of a friend?"

The basis of utilising control questions to compare with relevant questions in making a finding of deception or not is explained in terms of "...the concept of psychological set..." by Backster (Abrams 1989:59).

In terms of this explanation, people are selective in their perception of stimuli. Priority is involuntarily given to those stimuli which pose an immediate threat to a person's well-being. The reasoning now applied is that the truthful examinee will find the control question more threatening than the relevant one and thus show greater physiological reactivity. The deceptive examinee on the other hand, will show greater reaction to relevant questions as his knowledge of the issue being examined heightens his awareness of stimuli related thereto.

Researcher regards control questions as those compiled by the examiner so as to provide a picture of the examinee's physiological reaction when lying so as to provide a comparative basis for those questions which are relative to the issue on hand.

As was mentioned in section 2.5.18, Matte has devised a test for determining the effectiveness of control questions. Known as the Matte Control Question Validation Test (MCQV), this procedure allows the polygraphist to ascertain whether the control questions which have been devised are in fact effective in

capturing the psychological set of the examinee and thus, fulfilling their intended purpose (Matte 1996:431).

The questions which follow are regarded by researcher as hybrids of control questions.

#### 3.8.1.4 THE OUTSIDE ISSUE QUESTION

This question aims "...to determine whether some other factors may be impinging on the test, thereby distorting the results." One such issue might be the examinee's fear that another crime might be discovered" writes Taylor (1984:232). Also known as the symptomatic question, this concept is illustrated in the following way by Abrams (1989:63):

"Are you afraid I'll ask a question that we didn't discuss?"

If the examinee shows any excessive reaction, the test is stopped so that the matter may first be resolved. Assurance must then be given that no question will be asked which had not already been discussed.

#### 3.8.1.5 THE GUILT COMPLEX CONTROL QUESTION

According to Taylor (1984:232), "This question is in actuality misnamed, for it probably does not relate to guilt...". Instead of looking to detect guilt, this question has as purpose "...to determine whether a person responds emotionally to any question that is accusatory in nature" notes Andreassi (1980:284), who continues to provide an example in which it is implied that the subject is guilty of a crime which is fictitious:

“Did you steal that gold coin collection?”

These questions will be introduced when an examinee has shown strong reaction to both relevant and control questions. Should the examinee show deceptive response in denying involvement in the fictitious crime, “...it might indicate that the examinee is not testable and possibly innocent of the original accusation” according to Abrams (1989:62). If no deceptive response is apparent, it is likely that the examinee’s previously strong reactions are indicative of deception.

#### 3.8.1.6 THE DIRECTED LIE CONTROL QUESTION

This form of question was introduced by David Raskin (see section 2.5.16) as a result of the following problems associated with traditional control questions:

- Because of a lack of training in psychological methodology, many polygraphists do not possess the necessary sensitivity or skill associated with the formulation and wording of questions. The examinee’s perception of and consequent response to questions may affect the validity of a test.
- This problem is further exacerbated by the diversity of characteristics which may be found among examinees. Varying degrees of anxiety, sensibility and perception of threat are examples hereof.
- Outsiders such as lawyers and judges who are exposed to the results of polygraph tests may not understand the role of control questions and may interpret strong response thereto as indicative of deception (Raskin 1989:269-271).

An example of a directed lie question and its application follows:

“Before age 25, did you ever tell even one lie?”

As with the stimulation test (see section 3.7.3), the examinee is told to answer the question negatively in the ensuing test while keeping in mind an instance when he or she had actually lied. (It is assumed that everyone has lied at some stage or other). In explaining this to the examinee, Raskin (1989:271) illustrates as follows:

“When I ask you that question of the test, I want you to lie by answering no, and when you answer, I want you to think about the time when you lied. That way, you and I will be sure that you are lying when you answer that question on the test, and I can make sure that you react appropriately and that you continue to be a *suitable* subject” (italics mine).

Similar to the rationale applied for control questions, directed lie questions assume that the guilty examinee will show greater response to the relevant questions. The distinguishing reasoning however applies to the truthful yet nervous or anxious examinee who may appear to be unsuitable for testing. In this case, Raskin explains as follows:

‘However, subjects who are truthful in response to the relevant questions will be most concerned that the “appropriateness” of their reactions to the directed lie questions will show that they are suitable subjects and will demonstrate that their reactions are different when they are truthful. This focus of concern should enhance the reactions of

truthful subjects to the directed lie questions, making them stronger than reactions to the relevant questions' (1989:271).

These various forms of questions used in varying combinations are the most prominent distinguishing feature between the various questioning techniques which follow.

### 3.8.2 QUESTIONING TECHNIQUES

While the content of each question is determined by the information obtained during the data collection and pretest interview phases, the type of question to be asked is dependent on the questioning technique which has been selected. The choice of questioning technique is a result of the interaction between the following factors:

- The nature of the issue which has given rise to the test being requested.
- The background information which has been supplied or gathered.
- Requirements of the client i.e. the person or instance requesting the test on the examinee.
- Characteristics of the examinee such as age, intellect, previous polygraph experience and culture.
- The School of Training at which the polygraphist was trained. Various schools tend to emphasise certain techniques based on the results of reliability studies (see section 7.2.2.1).
- Personal preferences of the polygraphist based on past experience (Dreyer 1999, Smit 1999).

There is no set rule governing which technique is to be applied to a specific case. However, “A forensic psychophysiological (polygraphist) will use only those polygraph techniques which have received *General Acceptance* within the field of forensic psychophysiology or *Published Validation*” (brackets mine) (Matte 1996:621). A polygraphist may decide to apply a different technique should a prior test have produced an inconclusive result or greater specificity is required when slight reaction was shown.

Researcher has selected the following techniques which illustrate the application of the various questions types in attempting to elicit comparative physiological responses so as to enable the polygraphist to make a judgement as to the presence of deceit or not.

#### 3.8.2.1 THE RELEVANT-IRRELEVANT TECHNIQUE

Developed by Keeler (see section 2.5.10), this technique is described by Minor (1989:143) as “...the polygraph examination testing sequence from which the other most common techniques originated.”

Raskin (1989:249-250) describes this technique and its rationale as follows:

‘The typical relevant-irrelevant test employs a series of 10 to 15 questions comprised of relevant questions (e.g., “Did you shoot Fred?”) and irrelevant (neutral) questions (e.g., “Are you sitting down?”). The questions are presented to the subject while continuous recordings are made with the polygraph.’

“The basic rationale of the relevant-irrelevant test is that a person who is deceptive in answering the relevant questions will be concerned about being discovered, which will cause involuntary autonomic reactions to occur with greatest strength in response to questions that are answered deceptively. Thus, guilty individuals are expected to show their strongest reactions to relevant questions, whereas truthful subjects are expected to show no difference in their reactions to relevant and neutral questions.”

While this technique may appear to be a simple duplication of the descriptions of relevant and irrelevant questions, its importance as the historical forerunner of modern techniques cannot be ignored. Through the realisation “...that even an innocent person is much more likely to display more physiological activity when (truthfully) responding to the relevant questions than to the irrelevant ones” as Bull (1988:13) reports, polygraphists realised that the technique required refinement.

The Modified Relevant-Irrelevant Technique (MRI) (see section 2.5.17), in addition to relevant and irrelevant questions, makes use of “...*relevant connected* questions referred to as *situational controls*...” which aim to “...provide a means for the truthful examinee to respond to the reasons he/she is tied to or associated to the target issue” according to Matte (1996:460). In this way, emotions which may otherwise have been directed at the direct relevant questions may be released. The following examples illustrate how the situational control questions are intended to allow the truthful examinee to vent emotions, and consequently the associated physiological reactions (see section 3.4.1), which may otherwise have been directed at the relevant questions and consequently have indicated the presence of deception:



- Irrelevant – “Is your first name John?”
- Situational Control – “Were you working at the First National Bank on 2 January 1996?”
- Situational Control – “Did you report \$5,000.00 missing from your bank on 2 January 1996?”
- Relevant – “Do you know for sure what happened to that missing money?”
- Relevant – “Did you steal any of that money?” (Matte 1996:461).

### 3.8.2.2 THE CONTROL QUESTION TECHNIQUE

Designed by John Reid (see section 2.5.12), this technique represents an improvement on the Relevant-Irrelevant Technique. In a panel discussion on polygraph techniques (Ansley 1975:225), Reid, who had laboratory experience of the Relevant-Irrelevant Technique, had the following to say:

“...I was not satisfied because I wanted some type of control to better evaluate the test responses. I wanted a yardstick to measure the responses. The relevant-irrelevant technique was not doing the job, and I can well understand why Len Harrelson leaned toward interrogation in using the relevant-irrelevant tests...I decided that I needed a known lie in the record and then I could use that to measure and compare the responses to the pertinent questions on the test.”

The introduction of a control question (see section 3.8.1.3) in this technique thus aims to overcome the problem of an innocent examinee showing response sensitivity to relevant questions. A typical Control Question Test will be formatted in the following manner:

- Question 1 Irrelevant
- Question 2 Irrelevant
- Question 3 Relevant
- Question 4 Irrelevant
- Question 5 Relevant
- Question 6 Control
- Question 7 Irrelevant
- Question 8 Relevant
- Question 9 Relevant
- Question 10 Control (APA 1981).

It is important to note that the content of the control questions used be removed in time and place from the relevant questions. This is so as to allow for a distinguished yet comparative response to control and relevant questions. Furthermore, while irrelevant and relevant questions may be similar for various examinees involved in the same issue, the control questions must be specifically designed for each examinee so as to extract a strong enough control response (Ben Shakhar, Bar-Hillel & Lieblich 1986:459-479, Dreyer 1999, Grings & Dawson 1978:155).

### 3.8.2.3 THE POSITIVE CONTROL TECHNIQUE

This variation of the Control Question Technique utilises the relevant question as its own control. According to Lykken (1981:135), each of the relevant questions is put to the examinee twice. The examinee is told to answer the question truthfully and then falsely. Each relevant question is thus associated with an answer which is true and one which is a lie.

The following example provided by Lykken illustrates the polygraphic reasoning applied in this technique:

A woman, “Mary X”, has accused “John Z” of forcibly raping her. She is requested to take a polygraph test in which the Positive Control technique is applied. The test contains two relevant questions:

“Did you voluntarily agree to have intercourse with John?”

“Did John use threats or force you to have intercourse with him?”

Mary X is told “...to lie the first time each question is presented and to answer the repetition truthfully. If Mary X had indeed been raped, the second answers (spontaneous answers) would be true while the first answers (forced answers) will be false.” According to the theory of the PCT, her polygrams will show stronger reactions to the forced answers, because they are untrue, than to the spontaneous answers, which are truthful” (1981:136). The opposite would be expected if her accusation was false.

#### 3.8.2.4 THE PEAK OF TENSION AND GUILTY KNOWLEDGE TECHNIQUES

These techniques differ from other techniques in that they “...do not directly assess the credibility of denials or assertions made by the subject. Instead, they measure the relative strengths of physiological reactions to specific items of information in order to determine if the subject has direct knowledge of that information” according to Raskin (1989:275). For this reason, these two techniques are referred to as Information Tests. While being highly effective, utilisation of these techniques is limited to circumstances where only guilty

suspects have knowledge of the issue. This is however rarely the case as “...information is readily available through the attorneys involved, the news media, and even the investigating officers” (Abrams 1989:87). As was stated in section 2.6.1, this form of testing enjoys popularity in Japan where strict control over crime scenes enables information to be withheld from suspected criminals. The nature of these techniques becomes clearer when considering the following example provided by Abrams:

An Oregon State Police polygraphist administered a control question test on a suspected thief whose wife had disappeared. The test indicated that the suspect was responding deceptively when questioned about his wife’s disappearance. The examiner then applied a Peak of Tension Test which contained the following five questions:

- “Is your wife’s body in the river?
- Is your wife’s body by the railroad tracks?
- Is your wife’s body in the potato field?
- Is your wife’s body by the farm buildings?
- Is your wife’s body by the house?”

The examinee showed physiological reaction to the question relating to the farm buildings. Another peak of tension test was applied with the questions relating to the various buildings on the farm. The question concerning the farm buildings created physiological reaction. The body of the suspect’s wife was found buried under the shed (1989:88).

Peak of Tension Tests are divided into two types:

- Known Solution Peak Tests where the information is known to both examiner and examinee.
- Searching Peak Tests in which the information is only known to the guilty suspect (Abrams 1989:88, Raskin 1989:276).

The Guilty Knowledge Technique, also referred to as the Concealed Knowledge Technique, is a modification of the Peak of Tension Technique. “The Concealed Knowledge Test” according to Raskin (1989:276-277), “consists of a series of multiple-choice questions, each of which deals with an independent item of information. Each question has six equally plausible alternative answers, the first of which serves as a buffer and is not evaluated. The correct alternatives are rotated across positions two through six.” Raskin continues to provide an example of such a question relating to the “...theft of a ring from an office...”:

“Q3. Regarding the number of the room that the ring was in, do you know if it was

- |             |             |              |
|-------------|-------------|--------------|
| 1. Room 800 | 2. Room 820 | 3. Room 810  |
| 4. Room 816 | 5. Room 814 | 6. Room 803” |

The correct alternative to each such question will be known to the examiner.

### 3.8.2.5 THE GUILT COMPLEX TECHNIQUE

The realisation that innocent examinees may be nervous or anxious and thus appear deceptive (see section 2.5.11), is the basis for this technique which utilises the Guilt Complex Control Question (see section 3.8.1.5). The following circumstances justify the administration of a Guilt Complex Test:

- Analysis of the facts or the examinee's behaviour point to truthfulness while the test results reveal deception.
- The examinee has reacted emotionally during the pretest interview to the issue and produced charts which are indicative of deception.
- Equal reaction is exhibited to both relevant and control questions.
- There is a necessity to illustrate the validity of the control questions. The examinee can be shown to respond thereto when questioned about a fictitious crime.

The sequence of the questions in the Guilt Complex Technique is similar to that of a normal Control Question Test except for the introduction of Guilt Complex Questions. The examiner informs the examinee that he or she is to be tested on a different issue from the actual one. This different issue is in fact fictitious yet the examinee is to be convinced it is real. It is of vital importance that the crime the examiner creates has no bearing on the examinee whatsoever. This is to ensure that differentiated responses are elicited to the relevant and guilt complex control questions.

A typical question sequence of such a test may be:

- Question 1 Irrelevant
- Question 2 Irrelevant
- Question 3 Guilt Control
- Question 4 Relevant
- Question 5 Irrelevant
- Question 6 Guilt Control
- Question 7 Relevant
- Question 8 Control

Question 9 Guilt Control

Question 10 Relevant

Question 11 Control (Abrams 1989:124-125).

### 3.8.2.6 ZONE COMPARISON TECHNIQUES

The Backster Tri-Zone Comparison Test (see section 2.5.14), Utah Zone Comparison Test (see section 2.5.16) and Matte Quadri-Track Zone Test (see section 2.5.18) represent a few varying versions of Zone Comparison Questioning Techniques. While these are not the only forms of Zone Comparison Tests, researcher has considered it advisable to present this section as an overall view of such techniques rather than distinguishing between the various versions thereof. In this attempt, terms which are common to Zone Comparison Techniques as well as the basic functioning thereof are explained.

- Similar to the underlying principle of the Control Question Technique (see section 3.8.2.2), the *psychological structure* of a Zone Comparison Technique aims to provide a threat to guilty and innocent examinees. Threat to guilty examinees is by way of relevant questions while that to innocent subjects is via control questions. This threat is explained in terms of a *psychological set* (see section 3.8.1.3) which causes the mind to engage in *selective attention* focussing on that information (stimulus) which is the most important to a person's present well-being. This "...engaging in *selective attention* may *time out* test questions of a lesser threat," according to Matte (1996:323), "hence causing an *anticlimax dampening effect* on all questions except that which has gained the examinee's selective attention."

- A *Zone* is a period of time (20-35 seconds) on the polygraph chart (see section 3.5) which is "...initiated by a question having a unique psychological focussing appeal..." according to Matte (1996:323). A relevant question would thus aim to draw the psychological focus of the guilty examinee. Zones are colour-coded as follows:

Green Zone - Control Questions

Red Zone - Relevant Questions

Black Zone - Outside Issue / Symptomatic Questions

- A *Spot* is defined "...as one of four permanent locations on all zone comparison sequences which can only contain a relevant question. In the Matte Quadri-Track ZCT, a *Spot* also identifies a *Track* containing a pair of control/relevant questions which are *compared and quantified* for a determination of truth or deception to the target issue" (Matte 1996:323). In other words, a spot may be regarded as that location in a Zone Comparison Test which contains the question relevant to the issue under examination and against which quantified comparison with the other types of questions are made (Pretorius 1999). (The concept of quantified comparison is explained in section 3.9.3).
- *Spot Analysis* refers to that analysis made of each spot and/or track "...to determine if each type of test question is functioning as designed and whether remedial action is needed prior to the conduct of the next test (chart)" according to Matte (1996:325). If, as example, the polygraphist were to notice that the examinee was showing strong response to black zone questions (symptomatic) when applying the spot analysis, the question of



an outside issue would first have to be addressed before the test moved to the following chart.

Whereas a Control Question Test (see section 3.8.2.2) may have irrelevant questions positioned between relevant and control questions, this would not be the case with a typical Zone Comparison Test. The reasoning applied is explained by Matte (1996:324) as follows:

“It is expected that the *Anticlimax dampening* effect of the question which elicited the examinee’s psychological set will douse the potential arousal of its neighboring (sic) question whether that be a control or relevant question.”

This dousing of the neighbouring question creates what researcher likes to refer to as an “exaggerated comparison effect” between relevant and control questions because the physiological response shown to the non-threatening question (control or relevant) is directly comparable to that elicited by the threatening question (control or relevant) and is not absorbed by an irrelevant question. In other words, the “physiological relief” evident at answering the non-threatening question (control or relevant) will be fully manifest and may not dissipate into a neighbouring irrelevant question. Exaggerated comparison between relevant and control questions is thus possible which makes a finding on the presence of deception or not, easier.

While Zone Comparison Techniques have been developed to deal with multiple-issues, many polygraphists believe that the real strength thereof lies in dealing with a single-issue (Dreyer 1999, Pretorius 2000, Smit 1999). This was after all what Cleve Backster had in mind when developing the first such technique (see section 2.5.14). The concept of a single-issue refers to the fact

that all the relevant questions will refer to the same issue. If as example, a person had broken into a house, murdered the owner and the stolen the T.V., the polygraphist would in conjunction with the investigating office decide on which aspect of the crime the suspect be tested first. Assuming that the murder charge enjoyed greatest priority, this would become the issue for the first test. Any other issues would singularly become the issue of further tests (Matte 1996:322).

### 3.8.2.7 THE SUSPICION KNOWLEDGE GUILT TEST

As devised by Matte (see section 2.5.18), this technique (S-K-G) aims "...to provide the polygraphist with a single test capable of identifying the examinee(s) who has major involvement, some direct involvement, or guilty knowledge..." relating to the incident under investigation. Furthermore, the test aims "...to eliminate those persons with no direct or indirect involvement..." (Matte 1980:169). Simply stated, the S-K-G Test is utilised to identify and categorise possible examinees' who may be linked to the matter for which future polygraph testing is required. The nature of the future test will be determined by the category into which the potential examinee is classified. An examinee classified as having guilty knowledge may be subject to a Known Solution Peak of Tension Test (see section 3.8.2.4) as example.

The principles applied in interpreting physiological reactions to the various types of questions also apply to this form of test and reflect in the following words of Matte (1996:487):

"The S-K-G test is a valid and reliable technique in the elimination of suspects by virtue of the fact that consistent responses to the control

(probable-lie) question and the absence of response to any of the relevant questions is most certainly an indication of truth regarding the offense (sic) upon which the relevant questions are based. Furthermore, an absence of response to the relevant questions, but the response to the question regarding suspicion of someone, in addition to a response to the control question, must remove that examinee from direct or indirect involvement in the crime in question.”

A similar such test is the Backster Suspicion-Knowledge-You Test (S-K-Y).

#### 3.8.2.8 POLYGRAPH TECHNIQUE FOR THE DEAF OR HEARING IMPAIRED

Matte devised a technique for the testing of the deaf (see section 2.5.18) in response to the following pitfalls associated with the use of an interpreter:

- The interpreter may show greater loyalty to the examinee.
- Should the interpreter work with the examinee, he/she may be an accomplice or be subject to blackmail.
- The interpreter may be subject to a bribe.
- Mistakes may be made “... in communicating the test.”
- Relevant questions may not be conveyed.
- Relevant questions may be reworded in sign language.
- Relevant questions may be replaced by irrelevant questions (Matte 1996:550).

In Matte’s technique, all the polygraph measuring attachments (see sections 3.5.1 - 3.5.3) are placed on one arm. This is normally the left one. A card is

then attached to the arm rest of the chair on the right side so that the examinee's right index finger may reach it without the arm having to be moved. On this card are presented "...three choices for an affirmative answer and three choices for a negative answer; in red, green and yellow" writes Matte (1996:551).

Each question is then typed on a similar card and is associated with one of the colours. A relevant question may thus read as follows:

"Did you murder John Smith? Red."

These question cards are presented to the examinee by a third person sitting in front of him/her. The examinee simply points to the affirmative or negative of the appropriate colour while the normal physiological reactions are measured by the polygraph.

Once the actual polygraph test has been completed by applying the chosen technique(s), the polygraphist must interpret the physiological reactions which have been measured by the polygraph.

### 3.9 SCORING AND EVALUATION

In stating the rationale underlying polygraph thinking, researcher pointed out the fact that no physiological reaction can be uniquely associated with the cognitive process of lying (see section 3.4.3). Instead, the physiological reactions to certain questions posed in the chosen questioning technique are to be scored against physiological parameters elicited by other questions. (Figure 3.5 illustrates the physiological recordings as made by the polygraph while Figure 3.6 illustrates an actual portion of a polygraph test as scored by a

polygraphist). The results of scoring are then to be evaluated or interpreted by the polygraphist so as to reach a decision on the truthfulness or not of the examinee. The basic interpretation of results, referred to as “decision rules” by Raskin (1989:259), are described as follows:

“If the reactions are generally stronger to the relevant questions, the outcome is considered deceptive (DI – deception indicated) on the relevant questions; if the reactions are stronger to the control questions, the outcome is considered truthful (NDI – no deception indicated) on the relevant questions; if there is no consistent difference in either direction, the outcome is considered inconclusive (I)” (brackets mine).

Three methods of evaluation exist; global evaluation, numerical scoring and computerized scoring.

### 3.9.1 GLOBAL EVALUATION

‘Global evaluation, the oldest method, involves an overall impression of the charts plus other factors. The most controversial of these other factors is the examiner’s “clinical impression” of the subject during the pre-test interview and the examination. In other words, the examiner considers the subject’s demeanor (sic) as well as the recorded reactions of the machine’ (Giannelli 1994:268).

Global evaluation is also referred to as the clinical approach and is the preferred method of Keeler, Reid and Arther (see sections 2.5.10, 2.5.12 and 2.5.14). This approach has been the subject of severe criticism because of the subjective nature of reaching conclusions (Matte 1996:110).

### 3.9.2 NUMERICAL SCORING

Developed by Backster (see section 2.5.14), this method is described by Raskin (1989:260) as "...a systematic approach to the evaluation of the outcome of a polygraph examination, and it attempts to rely solely on information obtained from the polygraph charts." Zone Comparison Techniques (see section 3.8.2.6) are specifically used in this approach. The decision on the examinee's truthfulness or not is made on the basis of numerical scores assigned to the electrodermal, respiration and cardiovascular components (see sections 3.5.1 - 3.5.3) of the polygraph test as reflected on each chart. In using the electrodermal reaction as example, Olsen, Harris, Capps and Ansley (1997:62) explain this approach as follows:

"Relevant question reactions are compared to nearby control question reactions, and a numerical score is given to each physiological measure for each relevant question. If the relevant response is significantly greater than the nearby control question response, a negative score is assigned to the relevant response; if the nearby control response is significantly greater than the relevant response, a positive score is assigned to that relevant question. Normally, in comparing an electrodermal control reaction, a minus one point is assigned if the relevant reaction is somewhat greater in amplitude than that of the control. If the relevant electrodermal reaction is two to three times greater in amplitude than the control reaction, the relevant reactions may be assigned minus three points. If the reactions are about the same, no points are assigned and positive scores are assigned when the control question responses are greater in amplitude...The scores from all relevant reactions are added together and compared with a threshold to determine whether the results are inconclusive, indicate deception, or indicate no deception."

While numerical scoring represents a far more objective approach than global evaluation, it is not completely foolproof in this regard. As Lykken (1985:96) warns, “Although this approach limits the examiner’s range of speculation, one should not imagine that it eliminates the subjectivity of polygraph testing altogether. It is still the examiner whose manner and actions set the emotional tone of the proceedings, thereby determining the subjects confidence (or lack of it) that the test will be fair and accurate.”

The real strength of numerical scoring lies in the fact that it allows for other polygraphists to blindly score a test and thus verify the evaluation of the original polygraphist. A numerically evaluated procedure may also be seen as a test in itself whereas a globally evaluated one is rather part of an interrogation technique.

### 3.9.3 COMPUTERIZED SCORING

The question of objectivity in interpreting polygraph test charts was central in the development of computerized scoring. This reflects in the following words of Raskin:

“In order to provide more powerful, objective, and totally reliable polygraph chart interpretation and decision making, computer methods have been developed at the University of Utah” (1989:261-262).

According to Matte (1996:425), all three major manufacturers of polygraph equipment, Stoelting, Axciton and Lafayette (see sections 2.7.1 - 2.7.3), today produce computerized polygraph recording and scoring systems. The algorithms for these systems were developed “...from confirmed polygraph

examinations of criminal suspects, and they are based on extensive analyses of features extracted from physiological recordings obtained from guilty and innocent subjects” according to Raskin (1989:262) who continues as follows:

“Discriminant functions were developed to yield optimal separation of the groups based on linear combinations of the physiological data. The discriminant scores for individual subjects are entered into Bayes’ Theorem to calculate the probability (ranging from 0 - 1.0) that the obtained physiological data indicate that the subject was truthful.”

As was mentioned in section 3.8.2.6, quantified comparison is facilitated in Zone Comparison Techniques by using numerical scoring. Thus, an aggregate score is determined by assigning a value (quantification) to each relevant question response in relation (comparison) to its control question response. While numerical scoring is in essence the basis of computer scoring, Matte (1996:587-588) points to the advantage of the latter in saying, “The value of the computerized polygraph system is in its objective and reliable analysis and quantification of the physiological data recorded on the polygraph charts which afford the forensic psychophysicologist with a built-in chart interpretation quality control.”

The American Polygraph Association requires all examiners to “...employ quantitative or numerical scoring for all evidentiary examinations and for all specific issue investigative examinations” (1999).

### 3.10 COUNTERMEASURES

Barland (Matte 1996:531) provides the following in defining countermeasures:



“Those deliberate techniques which a deceptive subject uses in an attempt to appear non-deceptive when his physiological responses are being monitored during a polygraph examination.”

The realisation that certain methods exist which may undermine the rationale underlying polygraph thinking has led individuals such as Douglas Gene Williams to see business opportunity therein. In *How to sting the polygraph* (1996), he provides potential examinees with the workings of polygraph tests as well as how to employ physical countermeasures thereto:

“You must show both a breathing and blood pressure reaction simultaneously when you answer a CONTROL QUESTION and you must appear calm, relaxed and breathing normally when you answer a RELEVANT QUESTION...The purpose of the Sting Technique is to allow you to control the amount of information you give, and to teach you to manipulate and control your reactions so the polygraph will verify your veracity” (1996:7).

Countermeasures are classified as mental, physical or pharmaceutical types.

### 3.10.1 MENTAL COUNTERMEASURES

Raskin (1990:7-10) reports on Mark Hofmann who had passed a polygraph test relating to the investigation of the bombings of Steven Christensen and Kathleen Sheets. When Hofmann later pleaded guilty and was convicted, Raskin was surprised. Together with Charles Honts, the psychologist who had conducted the test, Raskin visited Hofmann on 11 June 1987 in Utah State

Prison. Hofmann related how he beat the test by applying biofeedback and self-hypnosis in which he had become interested from an early age.

Matte (1996:533-536) reports on various studies concerning the effects of hypnosis on polygraph testing. Findings on hypnotically induced amnesia appear inconclusive, due to differences between individual's susceptibility.

While not a countermeasure in the strict sense of the word, the mental condition of the psychopath is of "recurrent concern" to polygraphy according to Beaber (1984:31). The reason put forward is that a lack of anxiety would prevent normal psychophysiological reactions. Raskin (1990:8) does not subscribe to this apprehension:

"Detection of deception by means of a polygraph test does not depend on normal socialization or feelings of guilt about one's criminal acts. Detection depends on a concern about the outcome of the test and the adverse consequences of failing, e.g. going to prison."

### 3.10.2 PHYSICAL COUNTERMEASURES

"Physical countermeasure require the deliberate manipulation or treatment of some part of the body for the purpose of affecting the physiological data recorded on the polygraph chart. The most common of these is the subject's attempted control of his or her breathing rate" (Matte 1996:537).

Deliberate movements, self-inflicted pain or the tensing of muscles may also distort readings. Movement sensing chairs have been specifically designed to detect the attempts at such countermeasures.

### 3.10.3 PHARMACEUTICAL COUNTERMEASURES

Drugs such as Valium and Ritalen have been shown to reduce response sensitivity thus affecting the results of polygraph tests. This is however mainly applicable to tests lacking in control questions. When control questions are introduced, the problem is largely overcome. No drug can distinguish between relevant and control questions. Lack of physiological response to either would indicate that some form of suppressant is present (Matte 1996:541, Raskin 1989:285).

Countermeasures may prove counterproductive to the examinee making an attempt to utilise such. The well-trained and experienced polygraphist is constantly on the look out therefor and the detection thereof raises obvious doubt as to the sincerity and innocence of the examinee. It is the opinion of Honts, Raskin, Kircher & Hodes (1988:92-93) that only examinees who are well-trained in countermeasures are effective in their use and "...that spontaneously attempted countermeasures are not effective in defeating control question polygraph examinations."

Besides for gentlemen like Mr. Douglas Williams, whose motives appear to be financially motivated, one doubts that training in countermeasures is readily available. Furthermore, the person wanting to be trained in countermeasures surely reveals a pre-determined path of illegitimate intent and as such makes himself more readily identifiable as a suspect.

### 3.11 SUMMARY

It appears that the psychophysiological principles related to polygraph thought are sound. Certain physical reactions have been identified as accompanying

certain emotions. While emotion may occur automatically, it is not to say that the required emotion of fear will always present itself automatically during the polygraph examination. The fear of detection for the deceptive examinee must be elicited by an awareness of the competence of the polygraphist. Only the well-trained and confident examiner will be able to create an atmosphere in which the deceptive examinee is fearful of the consequences of his deceit. Furthermore, the entire process of psychophysiological measurement is dependent on the proper formulation of questions to be used as basis for quantified comparison and ultimately the inference of the presence of deception or not. The polygraphist is thus truly the key element in the justification of polygraphy's rationale in the detection of deceit.

“Automatically and instinctively, we shun anything that is omnipotent enough to threaten our safety. The polygraph must be placed in this category...it vests totalitarian God-like power in a single man - the polygraph examiner.” - Marshall Houts (Lykken 1981:237).

## CHAPTER FOUR

### POLYGRAPH APPLICATION IN PRIVATE INDUSTRY

“While machine automation has made great strides in labor (sic) saving, it will never replace man in our modern social and economic atmosphere where, for his labors (sic), a man receives the medium of exchange necessary to obtain the basic needs of life, food, shelter and clothing” (Ferguson 1966:9).

## CHAPTER FOUR

### POLYGRAPH APPLICATION IN PRIVATE INDUSTRY

#### 4.1 INTRODUCTION

“About 90 percent of the work performed by private polygraphists consists of examinations for business and industry, the other 10 percent for the legal community” writes Matte (1980:225).

‘Pilferage, theft and embezzlement by employees has increased to a problem of major proportion for many employers...The polygraph, or “lie detector,” would seem to answer management’s need for resolving suspicions about dishonest and disloyal workers’ (Coghill 1973:1).

Consideration of these two statements led researcher to include this chapter in a dissertation which primarily looks at polygraph utilization from a criminal justice perspective. The reasons therefore are as follows:

- Firstly, the value of polygraph utilization becomes apparent when considering the type of businesses making use thereof.
- Secondly, the extent to which private industry utilizes the polygraph highlights the value thereof.
- Thirdly, while private industry may not be regarded as part of the criminal justice system per se, actions resulting from polygraph utilization may lead to involvement therein.

Section 2.6.6 made mention of the fact that the use of the polygraph was on the increase in South Africa. This fact is illustrated by the provision of various practical examples in section 4.2 of this chapter. The reasons and advantages for polygraph utilization in private industry are also presented while differences resulting from its application in private context as compared to that in the criminal justice system, are highlighted. Furthermore, this chapter provides insight into the important aspect of employment and the polygraph. Pre-employment testing, periodic vetting and specific incident examinations are the aspects central hereto. Objections to employee screening by polygraph are also included.

Finally, and importantly so, this chapter provides insight into the Employee Polygraph Protection Act (EPPA) of 1988. This Act legislates polygraph utilization in private industry in the United States. Researcher regards this an important consideration as there appears to be a growing desire in South Africa to legislate the polygraph industry (see section 4.6). This section may thus serve as a basis for comparing future legislation.

Researcher has throughout this chapter made a conscious effort to provide the reader with practical and contemporary illustration. In this regard, abundant use has been made of newspaper, magazine and journal articles.

#### 4.2 POLYGRAPH UTILIZATION IN PRIVATE INDUSTRY IN SOUTH AFRICA

There can be no doubt that private industry in South Africa is increasingly employing the polygraph as a business ally. This fact is aptly illustrated in the following:

- “Business was booming in South Africa’s infant polygraph sector as companies increasingly turned to lie detectors to investigate fraud, forensic auditors said this week” (Steinberg 1998:4).
- “The private and public sectors are increasingly using lie-detector tests in the fight against corruption and in selecting prospective employees” (Pretoria News 28/7/1998:5).
- “The upsurge in the use of lie detectors can be attributed to an increasing demand from private companies, who use the tests for pre-employment screening and internal investigations into theft, fraud and other crimes” (Blignaut 1998:7).

Polygraph business in South Africa is enjoying such popularity that two polygraphists in Durban have even resorted to using a mobile polygraph examination room so as to be able to reach prospective clients and conduct tests on their premises (Opperman 2000:116-117).

According to the Polygraph Institute of South Africa (PISA 1998:[6]), “Banks, Building Societies, Attorneys, Transport Companies, Mines, Security Companies, Motor Manufacturers, Jewellers, Investigative Agencies, Pharmaceutical Companies, Chain Stores, Retail Outlets, Food Industry and Insurance Companies” are typical of businesses which utilise the polygraph. First National Bank, Standard Bank, ABSA and Hollard Insurance are some well-known names embracing polygraph testing (Steinberg 1998:4).

#### 4.2.1 THE POLYGRAPH AND THE INSURANCE INDUSTRY

Insurance is an industry which provides adequate example of the growing realisation of the value of the polygraph as is evident in the following:



- In 1995, the “...outgoing Chairman of the Association of Marine Underwriters of South Africa (Amusa) Karel Kisteman,” noted that “...new conditions for issuing anti-hijack insurance cover could include polygraph tests as a condition of employment for drivers, crew and certain warehouse staff.” This was in response to suspected driver collusion “...in 70% of freight vehicle crimes” (Financial Mail 1995:42).
- Pillay (1997:16) reports on BMW refusing to pay an insurance claim in respect of a hijacking related claim submitted by a Dr. Uttam Govind. This was as a result of the said Dr. Govind refusing to submit to a polygraph test.

The problem of fraudulent insurance claims is not unique to South Africa as The Association of British Insurers last year reported such claims as costing insurers £650-million per annum (Sunday Times 19/9/99:15). In response to the problem of fraudulent claims, a South African company, Multifund Insurance Brokers (MFI), has implemented “...a policy binding all its new clients to the outcome of a lie-detector test” (Star 18/7/1997:16). Managing Director, Corrie van Heerden cites research which indicates that 30% of all insurance claims are either inflated or fraudulent. Premium increases result which impact on truthful clients. Companies such as Mutual & Federal and Guardian National have criticised the approach adopted by MFI while Price Forbes have not excluded such an option for the future (Beeld 30/8/1997:12, Cook 1997:2, Finance Week 1996:12-13). (The declaration relating to the polygraph policy of MFI is shown as addendum 1). Guardian National appears to have backtracked on earlier criticism (1997) as in 1999 a client, Mr. Robert Mauvis, was requested to submit to a polygraph test following a claim for fire-damage to “...his plush St. Geran Restaurant...” in Durban (Ismail 1999:1).

It thus appears that the polygraph may be set to vest itself in South Africa's insurance industry as a form of insurance for the insurer.

#### 4.2.2 THE POLYGRAPH AND OTHER ORGANISATIONS

In section 4.2, mention was made of the various types of businesses which are contributing to the growing polygraph industry in South Africa. Researcher now provides the following examples in order to illustrate that the need for truth verification via the polygraph may also have origins outside of capitalistic considerations:

- In 1998, the then President of South Africa, Mr. Nelson Mandela appointed three judges to investigate a Military Intelligence report which apparently warned of an impending coup. This report later transpired to be false. The decision to appoint the judges was made "...after a senior defence force general had failed a lie detector test by the National Intelligence Services" (Seepe 1998:1).
- In response to apparent irregularities during a senior officer's course at the Army College in Pretoria in 1999, the SANDF threatened to expose the guilty parties by enforcing polygraph tests. Gibson (1999:2) reports as follows:

"Die studente is selfs gedreig dat hulle aan leuenverklikkertoetse onderwerp kan word om vas te stel wie tydens die kursus take afgeskryf het."

- The Durban Metro Council raised a few eyebrows in 1997 when reacting to a breach of confidentiality by members of its executive committee.

“A public furore had broken out following the Durban Metro Exco councillors having to take a polygraph test to single out the person who leaked a council document related to the World Veteran’s Athletics (WAVA) Championships” (Kindra 1997:3).

“In one of the most dramatic episodes in the history of the Durban Metro Council, state-of-the-art lie detecting techniques were used to root out those responsible for leaking a confidential report to the media” (Clarke 1997:3).

“The central character in the simmering drama over the leaked Durban Metro Council document is in fact a chair. Not an ordinary chair but a black leather polygraph seat (Clarke 1997:15).

Whether the motive be the protection of profits and/or the desire to ensure honesty and integrity, it is clear that polygraphy is fast becoming an ally of private industry or organisations which do not form part of the criminal justice system. This trend reflects in the words of Johan Rossouw: “Poligraaf: Bestuur se vriend” (1992:56).

With numerous illustrations of increasing polygraph use in the private sector, it is necessary to formulate the reasons and advantages which have resulted herein.

#### 4.3 REASONS FOR AND ADVANTAGES OF POLYGRAPH USE IN THE PRIVATE SECTOR

Before looking at the specific reasons for polygraph utilization in the private sector, researcher presents the following comment of Coleman which reflects the dualistic overall motive for its use as stated in section 4.2.2:

“Industrial security has always been important from an economic perspective, and it becomes increasingly important in economically troubled times. Employers, particularly small ones, cannot afford the risks attendant with lax hiring practices and unreliable employees. Additionally, as a matter of public relations and business reputation, employers may not be able to afford the costs of dishonest or disloyal employees” (Nagle 1983:62).

When considering the reasons for the private sector increasingly using polygraph testing, it is clear that employment related matters are the central concern. This is hardly surprising as it is in researcher’s opinion, the people in an organisation who determine its profitability as well as project an image of sincerity and honesty. The following reasons have been identified as contributing to the escalating use of the polygraph as means of truth verification by the private sector:

- to verify information supplied by the prospective employee/applicant
- to identify applicants who may not in fact be seeking permanent employment
- to gain an understanding of the applicant’s attitudes in respect of salary, job, employer, etc.

- to uncover any criminal background
- to deter unqualified candidates from applying
- to determine culpability in matters of dishonesty (PISA 1998:[3], Swank & Haley 1972:73).

The polygraph offers the following advantages to the private sector:

- the company's image is enhanced as it is seen to be promoting honesty and integrity from within
- company profits enjoy protection as the polygraph acts as a deterrent to dishonest employees
- morale amongst honest employees is enhanced as they are spared from false accusations or suspicions
- money and time are saved as investigations become more directed
- potential risk areas may be identified (Ferguson 1971:147, 163, PISA 1998:[3]).

When considering above reasons and advantages, it becomes clear that the workplace stands central to the private sector utilizing the polygraph. Before looking at the polygraph in employment context, researcher first highlights the most important differences between its utilization therein and in criminal investigation. Awareness of these differences provides a background against which objections to the use of the polygraph in employment context (see section 4.5) can be viewed and against which the introduction of the Employee Polygraph Protection Act of 1988 (see section 4.6) is better understood.

#### 4.4 DIFFERENCES BETWEEN POLYGRAPH UTILIZATION IN EMPLOYMENT SCREENING AND IN CRIMINAL INVESTIGATION

Ben-Shakhar & Furedy (1990:15) are of the opinion that this differentiation between polygraph's use in employment context and in criminal investigation is not an easy one to make:

“...the distinction between criminal and industrial applications is not clear, because sometimes a criminal act is the basis of screening employees in the industrial setting, and because often in the industrial application the test focuses on deception and on the possibility that a job applicant has been involved in illegal acts in the past...”.

While this may be so in certain circumstances, certain differences do exist which should be noted. According to Hampson (1988:55), “...three important differences...” exist:

- Firstly, accuracies in results differ. Industrial usage shows a higher proportion of false positives (subjects incorrectly identified as deceptive) due to the vast amount of information covered. Criminal matters are more specific.
- Secondly, multiple judgements are made in assessing applicants for employment, e.g., “Does the applicant have a history of theft, and/or drug abuse, and/or absenteeism?” Not only may internal validity be threatened but again accuracy is lost when compared to specific issue testing.
- Lastly, in industrial usage the polygraph is used proactively whereas it is used reactively in criminal investigation. Referred to as the “identification-prediction distinction,” industrial usage

of the polygraph as predictor of an unspecified possible future occurrence is a task of unenviable complexity.

It thus appears that accuracy when dealing with a single specified issue is greater than when making a multiple assessment. (In section 3.8.2.6, researcher referred to the strength of Zone Comparison Tests in dealing with single-issues). At this stage it is necessary to point out that not all polygraph use in employment context is of unspecified nature. Section 4.5.3 deals with specific issue examinations. Besides the concern for accuracy when dealing with multiple issue assessment, it is researcher's opinion that the overall effect of deceptive results in employment context appear more damning as the law of evidence and due procedure may negate such effect in criminal matters. A prospective employee who may falsely be identified as deceptive, may not only suffer financial hardship as a result, but may also be stigmatized for failing the polygraph test which would consequently effect detrimentally on future employment opportunities. Furthermore, such an applicant has little or no recourse as employment is generally a matter of the employer's discretion.

Against a background of increasing polygraph use in private industry for reasons which have been highlighted, researcher now illustrates how the polygraph is used in employment context.

#### 4.5 THE POLYGRAPH IN EMPLOYMENT CONTEXT

'...internal business losses due to pilferage, theft and embezzlement, estimated in the billions of dollars annually, suggest that employers are entitled to all the information they can gather on prospective employees by the most expeditious means. They (proponents of polygraph use) argue that the applicant or employee is, in fact, seeking the employer's faith and trust, the applicant

should be willing to waive some small portion of his or her “right of privacy” by submitting to a polygraph examination when asked to do so’ (brackets mine) (Fagin 1986:51).

The above words of Dr. James A. Fagin were written before the introduction of the Employee Polygraph Protection Act of 1988 (see section 4.6) when debate as to the utilization of the polygraph in the workplace in the United States was rife. It is researcher’s experience that a similar situation today exists in South Africa. This section aims to provide the reader with an overview as to how the polygraph is used in private industry in South Africa at present. In this attempt, use has been made of literature applicable to the position in the United States prior to the enactment of this Act as this is indicative of South Africa’s present position. As was one of the reasons for presenting the differences between polygraph use in employment and in criminal matters (see section 4.4), consideration of how the polygraph is used in South Africa provides background to the understanding of the introduction of said Act in the United States. As Christianson (1998:7) says:

“Many of the issues debated prior to the passing of this Act, and addressed in the EPPA itself, help to give clarity to those issues currently being debated in South Africa.”

In employment context, the polygraph is used on three levels: pre-employment screening, periodic or routine vetting and specific incident testing.

#### 4.5.1 PRE-EMPLOYMENT SCREENING



“The preemployment (sic) test” according to Matte (1980:228), “is a type of examination that seeks to verify information contained in a job application and develop relevant information deliberately omitted from the application.” Ferguson (1966:6) supports Matte’s notion of information being developed by the pre-employment test when he speaks of the polygraph providing a method whereby “...relevant issues collateral...” to an employment opportunity can be verified. Thus, besides verifying facts presented by an applicant, polygraph use in pre-employment screening reveals a proactive element in its attempt to identify possible suitability and problematic traits of such applicant.

Ferguson identifies “...six basic factors contained in the makeup (sic) of every prospective employee...” which he says, every employer wants to know and which can be ascertained by using the polygraph:

- “1. Are you who you say you are?
2. Are you what you say you are?
3. Will you fit in?
4. Are you physically capable?
5. Can you work in harmony with other employees?
6. Can you treat customers (and/or equipment) the way they should be treated?” (1971:132).

Nagle (1983:61) reports “...that between fifteen and thirty percent of the applicants tested are disqualified on the basis of the polygraph examination.” He continues to provide a rather disturbing fact in the light of what researcher refers to as “pre-EPPA” workplaces:

“...several authorities have explained that more than ninety percent of those rejected are disqualified on the basis of admissions made to the

polygraph examiner, rather than on the examiner's analysis of test results. Many critics argue that misconduct in the past, detected through polygraph examinations, should not be used in an effort to predict future behavior (sic), and even advocates of polygraph screening of job applicants caution that the results should constitute only one factor in personnel evaluation."

Researcher doubts whether full disclosure made by way of admission should always be grounds for not employing someone who may have been guilty of some misdemeanour. Besides the fact that full disclosure may be indicative of rehabilitation of the applicant, further denial of an employment opportunity may only thwart future rehabilitative prospects. This penological concern of researcher echoes in the words of George Bernard Shaw:

"If you are going to punish a man retributively, you must injure him. If you are to reform him, you must improve him. And men are not improved by injuries" (Fox & Stinchcomb 1994:61).

#### 4.5.2 PERIODIC OR ROUTINE VETTING

Matte (1980:229) explains the existence of periodic or routine vetting using the polygraph as follows:

"During the course of a company's growth, the owner/operator's personal contact with employees diminishes as the number of employees increases, until all personal contact has ceased. Employees no longer feel a *personal* sense of loyalty and responsibility. They have become an employee statistic whose loyalty is owed to the *company*, which is to them an inanimate entity. Therefore, it becomes easier to

rationalize a theft from a large, apparently wealthy company than from a person, with less feelings of guilt. The end result is an increase in losses from internal thefts. The company is then compelled to adopt more sophisticated internal security measures to reduce losses to an acceptable level that will permit survival and continued growth.”

Periodic polygraph tests are preventative in nature and as such are proactive in their function. Nagle describes these tests as follows:

“Periodic polygraph examinations are those given to all employees or to randomly selected employees without any particular theft having occurred” (1983:61).

The preventative function of these examinations does not only relate to theft but also to matters such as “...industrial espionage concerning trade secrets, patent information, or company strategy.” Furthermore, “...the loyalty of government employees, particularly those in sensitive intelligence and law enforcement positions...” is also subject to routine vetting (Nagle 1983:61-62). Last mentioned “loyalty screening” is described by Ferguson (1966:296) as having “...become one of the most controversial topics of our time” with many employees flatly refusing to submit to such examinations.

The following relevant questions are typical of such an examination:

- “1. Have you deliberately withheld any pertinent information concerning employee dishonesty in your company?
2. Are you aware of any specific employee dissention in your company?

3. Do you actually feel plant (or store) employees are being fairly treated by management?
4. Do you actually know who has been stealing money or merchandise from this company?"

In providing these examples, Ferguson (1966:282-283) warns that these types of examinations should be used sparingly as they may "...become oppressive, and an invasion of normal employee privacy."

#### 4.5.3 SPECIFIC INCIDENT TESTING

Other than pre-employment screening (see section 4.5.1) and periodic vetting (see section 4.5.2), specific incident testing is reactive, rather than proactive, in nature. "A specific test is administered when a specific issue such as an arson, a robbery, a burglary, or a specific loss occurred" according to Matte (1980:227).

Researcher provides the following examples of recent incidents which gave rise to specific incident testing:

- Logan's Sportsmans Warehouse was informed by their bank that an unspecified amount of cash was missing from a deposit. Three parties were responsible for the handling of this deposit: the bank, the security company who transported the deposit and the Logan's staff who prepared it. On suggestion from the bank and security company, the Logan's branch manager, Gerry Groll, arranged for all responsible persons to be polygraphed. A Logan's staff member was identified as being deceptive and later confessed to stealing the cash (Groll 1999). (The specifics of this

incident have been withheld as requested by Gerry Groll. A copy of a fax received from Logan's Sportsmans Warehouse is included as addendum 2.

- The Pretoria High Court granted an interim interdict to Akani Egoli (Pty) Ltd. against a Ms. Shirley Dikedi Medupe who had been threatening other employees. Ms. Medupe had been suspended from the Gold Reef City casino on the strength of a polygraph test carried out on 3 February 1999 after a R10 000 chip had been reported missing from a shift on 23 January 1999. Five other employees who had worked on the same shift were also polygraphed. Subsequent to these events it also came to light that she had withheld information regarding theft at a previous casino, in her employment application (De Lange 1999:9).
- The Managing Director of Coin Security asset-in-transit, Chris Rogers was gunned down by two of his own guards who said that he was attempting to rob them. Schmidt (1999:5) reports as follows:

“Without any witnesses to the shooting other than the two guards, Brixton Murder and Robbery detectives and Roger's employers have been forced to finger him as their only suspect in the attempted robbery...The guards, whom Coin and police refuse to identify for fear they will be hunted for killing Rogers, will undergo lie-detector tests as soon as they are calm enough for their emotions not to affect the reliability of the tests.”

According to Matte (1980:227), Peak of Tension Techniques (see section 3.8.2.4) are popular for specific incident testing in employment context.

#### 4.5.4 OBJECTIONS TO POLYGRAPH UTILIZATION IN EMPLOYMENT CONTEXT

In section 4.5 it was stated that consideration of how the polygraph was used in employment context in the “pre-EPPA” period would cast light on the present South African situation as well as provide background to the Employee Polygraph Protection Act of 1988. Meaningful consideration of this Act is possible when one further takes note of the objections which were raised during this period. As was the case in explaining the rationale of the polygraph (see section 3.4.3), researcher has not sought to debate the merits of these objections but has merely noted such in the context of the felt need to legislate polygraph use in the workplace by means of EPPA.

##### 4.5.4.1 SCIENTIFIC OBJECTIONS

Coghill (1973:10-12) notes the following scientific objections raised by Burke M. Smith:

- The polygraph only measures “...physiological changes generated by emotional stress. This stress may be caused by lying or by fear that innocence will not be proven or by anger at being suspected or by other widely different stimuli.” Besides this doubt concerning the correlation between lying and physiological reaction, Smith points to the fact that lying results in different emotions with some people even experiencing “...satisfaction, boredom, or other unstressful states.” The

susceptibility of polygraphy to various forms of countermeasures is also raised as a scientific objection to the utilization of the polygraph in the workplace.

- The question of scientific input into the field of polygraphy is also offered as an objection by Smith. “There has been very little crossover, Smith points out, from the related scientific discipline, psychophysiology, to investigate polygraphy.” (In section 2.5.12 researcher pointed out the fact that scientific psychological and physiological research enthusiasm had waned by the time John Reid became involved in polygraphy). The lack of scientific input reflects in the fact that “Researchers have found that there are large individual differences in the reactions of people to various kinds of stress and even to identical stresses.” In this regard, Smith hints at the need for, or maybe lack of, research into autonomic responses as a result of unconscious attitudes when he says “...any word that happens to have strong emotional connotations for an individual and that is included in a critical question” may result in an incorrect interpretation of lying due to the response it generates.
- The question of validity of polygraph tests is doubted as Smith feels that confessions made before or during the test should be excluded from statistics relating thereto. Researcher agrees herewith as numerical and computerized scoring (see sections 3.9.2 and 3.9.3) have as aim to provide a valid test of the detection of deception rather than to provide a procedure which is part of an interrogation technique which may elicit a confession. In other words, confessions may simply be in response to the presence of the polygraph and as such should not form part of any measure of validity.

- The reliability of polygraph tests is also questioned when extraneous variables such as the examination room, the physical condition of the examinee and voice tone and manners of the examiner are considered. The matter of polygraphist training again comes to the fore in the following:

“...few investigative polygraphers have the training, skill, interest, or time required to recognize and rectify such sources of error...At the Moss Committee hearings, Fred Inbau, a polygraph authority, estimated that 80 percent of the 1500 practitioners could not be trusted to interpret a test accurately.”

#### 4.5.4.2 SELF-INCRIMINATION

Christianson (1988:5) reports on certain fundamental rights of individuals as follows:

“Both the American Constitution and the Constitution of the Republic of South Africa Act 108 of 1996 (the Constitution, 1996) protect the fundamental rights of individuals against unlawful search and seizure, self-incrimination and invasion of privacy. It is possible that the use of polygraph examinations may infringe one or all of these rights in some way.”

Researcher has made no mention of the aspect of search and seizure for the following reasons:



- Firstly, unreasonable search and seizure is equated with involuntary polygraph examinations. Polygraph examinations must be on a voluntary basis and be consented to during the pre-test interview (see section 3.7.2).
- Secondly, search and seizure is not offered as an objection to polygraph testing as related to the violation of individual rights by Smith (Coghill 1973:12-15). Instead, objections are made on the grounds of self-incrimination and invasion of privacy.

Having investigated federal agency use of polygraphs, the Moss Committee (Coghill 1973:9,13) concluded as follows:

“The polygraph technique forces an individual to incriminate himself and confess to past actions which are not pertinent to the current investigation. He must dredge up his past so he can approach the polygraph machine with an untroubled soul. The polygraph operator and his superiors then decide whether to refer derogatory information to other agencies of officials.”

In South Africa, section 35(3)(j) of the Constitution “...protects the fundamental right of every accused person not to be compelled to give self-incriminating evidence” writes Christianson (1998:5) who continues to ask the obvious questions as to whether “...a polygraph examination can lead to self-incrimination...”. It is researcher’s opinion that in matters relating to the question of the outside issue (see section 3.8.1.4) this may indeed be the case. The post-test interview (see section 3.7.4) presents another possible forum where the examinee may incriminate himself. Researcher feels that information which is forwarded to the polygraphist confidentially by the applicant so as to be a suitable examinee, is indeed passed on to the

prospective employer as it is he or she who is after all the paying client. Some may argue that this practice is acceptable as the examination is undertaken on a voluntary basis and any information forwarded is thus also done on such voluntary basis.

While not directly aimed at prospective employment, the following words of Judge Landman concerning the dilemma facing an employee's choice between giving up his right to silence (and thus possible incriminating himself) or losing his job, are also applicable when considering the applicant who seeks employment subject to a voluntary polygraph test:

“Various forms of choice can be...tantamount to no choice. The loss of one's livelihood, pension and other benefits must surely rank as a type of compulsion. To ignore it would mean that one gives precedence to the formal letter of the law at the expense of the substance. The threat of the loss of employment may be more powerful than a legal compulsion to give incriminating evidence” (Christianson 1998:6).

The apparently dichotomous situation faced by both applicant and employee in consenting to “voluntary” polygraph examinations, with the inherent danger of self-incrimination, under compulsion of employment considerations, appears a sound objection to polygraph utilization in the workplace.

#### 4.5.4.3 INVASION OF PRIVACY

The question of “voluntary” submission to polygraph examinations under the duress of employment considerations together with the objection that such examinations constitute an invasion of a person's privacy, are illustrated in the following report:

“Benguela Operations, the ocean diamond mining company, must explain to the labour court on Monday why it fired a ship-based diamond sorter who refused to submit to random lie detector tests. Ruth Cunningham told the court in papers that early last year she and three fellow employees were told the company had decided to introduce polygraph tests with immediate effect. Peter Schroeder, the human resources manager, told her that anyone who failed the test would be asked to leave. Cunningham said she refused to consent on the grounds that it was grossly unreasonable and an invasion of the privacy of employees not suspected of theft...He (Schroeder) further indicated that the questions which would be asked during the tests would include questions concerning the employee’s personal lives and whether they had stolen anything” (brackets mine) (Morris 1999:8).

While many object to the fact that some polygraphists “...make use of two-way mirror or hidden microphones to enable other interested persons to be party to the examination”, this does not represent the crux of the invasion of privacy objection to polygraph examination according to Christianson (1998:6). ‘The real issue of privacy in the context of polygraph testing’ she says, ‘has been identified as threefold:

- the attempt to penetrate the “inner domain” of individual belief in violation of the constitutional distinction between acts and beliefs (section 15(1) of the Constitution 1996 provides each person with “...the right to freedom of conscience, religion, thought, belief and opinion.”)

- the interference with the individual's sense of autonomy and reserve created by machine sensing his emotional responses to personal questions
- the increased psychological power that authorities acquire over individuals seeking employment or in employment' (brackets mine).

The reaction to the objection of the invasion of privacy is clear to see in section 4.6.10.1 when mention is made of questions which are prohibited by EPPA from being asked in a polygraph examination.

When looking at the scientific objections (see section 4.5.4.1) raised, researcher is of the opinion that certain of these may now be redundant. A great deal of research has now gone into validity and reliability studies by academics from various study fields (see section 7.2.2.1). Dr. James Matte, besides designing the Matte Quadri-Track Zone Comparison Test, has undertaken considerable research in compiling his highly respected work, *Forensic Psychophysiology using the Polygraph* (see section 2.5.18). The title of this work illustrates that academic or scientific "crossover" is indeed taking place. Dr. Stan Abrams and Dr. Cleve Backster are further examples of academic involvement in polygraphy. Well-trained and experienced polygraphists may be able to negate the effects of countermeasures while controlling the extraneous variables which may impact on test results. In short, it is researcher's opinion that the scientific objections can be overcome by involvement of appropriate academic energy coupled with adequately trained forensic psychophysiologicals (polygraphists) who are bound to a strict code of ethics and are controlled by an appropriately legislated body (see section 7.4.2).

The objections raised on the basis of violation of individual rights, self-incrimination (see section 4.5.4.2) and invasion of privacy (see section 4.5.4.3), are the subject of juridical considerations and may thus be regarded as the seeds from which the Employee Polygraph Protection Act of 1988 grew. As Christianson (1998:7) points out, "...at the time when these, and other issues were being debated in America, the response of the US Congress was to legislate to protect employees. The EPPA was debated and passed by Congress as a response to the serious reservations regarding the use and admissibility of polygraph testing in the employment situation."

Two years before the introduction of EPPA, Fagin wrote as follows:

"The polygraph's opponents contend that testing is too great an imposition on employees' individual rights and dignity and that the traditional methods of personnel selection are more than adequate to accomplish the task of selection" (1986:51).

As will be seen in the ensuing sections, the opponents of polygraph utilization in employment context did not succeed in having the polygraph totally outlawed.

#### 4.6 THE EMPLOYEE POLYGRAPH PROTECTION ACT OF 1988 (EPPA)

In section 4.1, researcher made mention of the fact that legislation concerning polygraph practice in South Africa appeared imminent. The reason for this opinion lies in the fact that researcher has had insight into correspondence addressed to Captain C. R. Fourie, a psychologist in the service of the South African National Defence Force, in which requests have been made concerning input as to standardisation of testing procedure, instrumentation

and training of polygraphists. These requests have been made by the Psychometrics Committee of the Professional Board for Psychology and are a result of complaints received from the public concerning certain polygraph matters. This has led to a growing realisation of a need to create a statutory regulated authority to regulate the polygraph industry in South Africa. Legislation in this regard would thus appear an automatic consequence as this would provide a framework within which all polygraph role-players would function in a controlled environment (Bester 1999, Fourie 1999).

It is against this background that researcher presents a summary of the Employee Polygraph Protection Act of 1988 so as to not only provide possible guidelines and stimulate thought as to pending legislation, but to also provide a basis for comparison if and when South African polygraph legislation is enacted.

#### 4.6.1 BACKGROUND

EPPA was not the first legislation passed in the United States concerning polygraph use in the workplace. Neely (1989:598) writes as follows:

“The private sector use and abuse of polygraphs has received congressional scrutiny since the mid-1960’s. From the 93<sup>rd</sup> Congress through the 100<sup>th</sup>, almost 50 bills have been introduced to ban, restrict, or regulate this employment practice.”

State regulation of polygraph utilization in the workplace existed since 1953. Two years before the enactment of EPPA, Barbara Call reported as follows:

“Twenty-three states and the District of Columbia now prohibit polygraph testing as a condition of employment. Several other have enacted rigorous licensing standards for persons who administer the tests. Delaware led the movement toward state regulations in 1953; Georgia and Vermont both enacted legislation that became effective in 1985. Since 1978, nine states have either introduced new polygraph laws or modified their old ones” (1986:587).

On 7<sup>th</sup> March 1985, House Bill 1524, the Employee Polygraph Protection Act of 1985 was introduced during the 99<sup>th</sup> Congress by Representative Pat Williams of Montana. Having apologised for being late, said Williams advised the House of Representatives Subcommittee on Employment Opportunities as follows:

“The problem of polygraph testing in the workplace has been treated as a constitutional issue, a privacy issue, a civil rights issue - and surely it is all of those. But it is first and foremost in my mind a jobs issue, an employment opportunities issue. Polygraphs have become vehicles for employee intimidation and for screening out employees of political or union beliefs different from those of a particular manager” (House of Representatives 1985:17).

The Bill aimed to ban private use of polygraphs except in industries dealing with national security, manufacturing and distributing drugs and private security agencies. However, before voting by the Senate could take place, the congressional session ended which resulted in the Bill not being enacted.

In 1987, on 4<sup>th</sup> November, the House of Representatives passed H.R. 121 banning private use of polygraphs. The Senate Labor and Human Resources

Committee introduced a different version (S 1904) of this Bill in that exemptions from the ban were made on the basis of use and method as opposed to type of industry. Representation from organisations in the private sector were made which favoured the Senate Bill which was more flexible. Some of the Senate Amendments were accepted in a report submitted to congress on the 26<sup>th</sup> May 1988. The Employee Polygraph Protection Act of 1988, having made its way through Congress, was signed on 27<sup>th</sup> June 1988 by President Ronald Reagan into law and became effective on 27<sup>th</sup> December 1988 (Bailey, Zuckerman & Pierce 1989:3, Chin 1990:1320-1321, Flanagan 1987:368).

The purpose of EPPA is "...to protect private individuals from unjust termination or denial of job opportunities resulting from unwarranted polygraph tests" according to Brown (1989:661).

#### 4.6.2 SCOPE OF EPPA

Bailey et al (1989:5) provide the following concerning the scope of EPPA:

‘All employers engaged in or affecting commerce or in the production of goods for commerce are subject to the provision of EPPA. The term “commerce” is defined very broadly and includes professionals, such as doctors and lawyers; institutions such as hospitals and schools; as well as all businesses located in the United States, or any territory or possession of the United States.’

Where individuals who are not employers or job applicants want to take a polygraph test, EPPA does not apply. Any referral by an employer to a



polygraph test or suggestion of an applicant taking one immediately brings EPPA into force.

#### 4.6.3 PROHIBITIONS UNDER EPPA

While researcher, as indeed do most sources, speaks primarily of EPPA in the light of polygraph testing, it is important to note that "...EPPA prohibits the use of all mechanical lie detector tests in the workplace, including polygraphs, psychological stress evaluators, deceptographs and voice stress analyzers" (Bailey et al 1989:1).

The following prohibitions apply to all employers unless they are regarded as exempted (see sections 4.6.7 - 4.6.8.4) by the Act:

- to "...directly or indirectly require or request that an employee or job applicant take a lie detector test"
- to "...use in any way the results of a lie detector test taken by an employee or a job applicant"
- to "...discharge or in any other way discriminate against an employee or job applicant who refuses to take a lie detector test, or because of the results of a lie detector test"
- to "...discharge or in any other way discriminate against an employee or job applicant who has filed a complaint or otherwise relied on the Act" (Tixier 1989:1060).

#### 4.6.4 ENFORCEMENT OF EPPA

There are three provisions for the enforcement of this Act.

- Firstly, "...the Department of Labor (sic) has the ability to impose civil penalties on any employer who violates EPPA. The maximum amount of such penalty is \$10 000."
- Secondly, "...the Department of Labor (sic) may bring an action to enjoin any violations of EPPA." This provision allows for witnesses to be subpoenaed to testify or any evidence produced which relates to any possible violation of EPPA. In this regard, assistance from a United States District Court may be enlisted.
- Finally, "...private individuals..." may "...file civil actions in either federal or state courts. Such lawsuits under EPPA may only be brought against employers. EPPA makes employers liable for any legal or equitable relief which the court deems to be appropriate, including employment, reinstatement, promotion, and the payment of lost wages and benefits. In addition, an award of compensatory damages, attorneys fees, and possibly punitive damages, may be imposed." Any action introduced by an individual must be done within three years of the date of the alleged violation (Bailey et al 1989:6).

#### 4.6.5 POSTING OF NOTICE

It is the duty of all employers who are subject to EPPA "...to post and keep posted in a prominent and conspicuous place on his premises a notice as prescribed by the Secretary of Labor (sic) explaining the Act" (Engle 1989:67).

#### 4.6.6 WAIVER OF EPPA

Under no circumstances may “The rights and procedures provided by EPPA...” be waived unless the “...waiver is part of a written settlement of a lawsuit or other legal action under EPPA” according to Bailey et al (1989:6).

#### 4.6.7 EXEMPTION FOR GOVERNMENT EMPLOYERS

A total exemption from EPPA is provided by Section 2006(A) of the Act to any employer who may be of the United States government, any government agency, any state or local government or political subdivision of such state or local government (Creason 1989:301, Ruegger 1991:556).

#### 4.6.8 FURTHER EXEMPTIONS

Besides the total exemption granted to government employers as mentioned in section 4.6.7, further exemptions of varying degree, are granted from EPPA.

##### 4.6.8.1 GOVERNMENT CONTRACTORS AND CONSULTANTS

According to Johnson (1989:167), “The reason for this exemption is the overriding concern of national security...”. Section 2006(B) of “...EPPA does not apply to certain experts, contractors, and consultants who work with government agencies involved in national defense (sic) and security such as the Department of Defense (sic), Department of Energy, Defense (sic) Intelligence Agency, Central Intelligence Agency, National Security Agency, the Federal Bureau of Investigation, and the Department of Justice” (Bailey et al 1989:6).

##### 4.6.8.2 ONGOING INVESTIGATIONS

Subject to certain requirements, "...the Act provides an exemption for the investigation of specific incidents of economic loss to the employer's business" according to Cullen (1990:275). It is interesting to note that this exemption only applies to "...polygraphs, and no other type of lie detector test..." (Bailey et al 1989:7).

Five requirements are to be met if polygraph testing is to take place under the ongoing investigations exemption.

- *ECONOMIC LOSS OR INJURY TO THE EMPLOYER'S BUSINESS*

Christopher (1989:175-176) reports as follows:

"The types of economic loss triggering the ongoing investigation exemption are generally the types caused by intentional misconduct by the employee. These include theft, embezzlement, misappropriation and acts of industrial espionage or sabotage. Further, check (sic) kiting, money laundering, and the misappropriation of inside or confidential information meet the injury standard."

It is important to note that the economic loss or injury must be to the employer and not to an employee. Furthermore, this exemption only applies to a specific incident of economic loss or injury and not "...to continuous investigations into chronic work place losses."

- *EMPLOYEE ACCESS*

Only those employees who had access to the subject of investigation may be requested to undergo a polygraph test under this exemption. The term “access” not only includes “...direct or physical contact during the course of employment” but also “...all employees who have the ability to divert possession or otherwise affect the disposition of the property that is the subject of the investigation...” (Bailey et al 1989:7).

- *REASONABLE SUSPICION*

“The employer’s suspicions” relating to the specific incident, “must not be based on whimsical or arbitrary factors...” according to Bailey et al (1989:7). Information from other employees, inconsistencies between facts and statements or suspicious behaviour are examples of grounds for reasonable suspicion. As Fitzpatrick (1988:370) reports:

‘The Senate Committee Report explicitly states that the standards of access and reasonable suspicion are not intended to be “as stringent as those afforded criminal suspects in our system of jurisprudence.” Arguably, the Acts “reasonable suspicion standard” is met where there is an articulable basis for additional suspicion beyond simple access to the matter under investigation...’.

- *SPECIAL 48-HOUR NOTICE*

A statement, duly signed by the authorized representative of the employer, must be provided to the employee who is to be subject to the polygraph examination at least 48 hours before such examination. The statement must contain details of the specific

incident, what access the employee had to the relevant matter and the grounds for reasonable suspicion. This statement must be kept by the employer for at least 36 months (Bailey et al 1989:8).

- *SECTION 8 PROCEDURES*

Besides above four requirements, all polygraph examinations which are to be conducted under the ongoing investigation exemption "...must comply with the restrictions, procedures, and examinee "rights"..." which are described in section 4.6.10 (Bailey et al 1989:8).

#### 4.6.8.3 PRE-EMPLOYMENT SCREENING BY SECURITY SERVICE COMPANIES

Similar to the limited exemption provided to ongoing investigations (see section 4.6.8.2), EPPA provides exemption to Security Service Companies subject to certain requirements being met. These requirements are as follows:

- *SECURITY AS PRIMARY BUSINESS PURPOSE*

At least 50% of the company's annual income must derive from activities involving the provision of "...armored (sic) car personnel, personnel engaged in the design, installation and maintenance of security alarm systems, or other uniformed or plainclothes security personnel" (Bailey et al 1989:8).

- *CUSTOMERS MUST INCLUDE SPECIFIED COMPANIES OR INSTITUTIONS*

Bailey et al (1989:9) report that "The customers or clients of the security service company must include facilities having a significant impact on the health or safety of the public, or facilities which store or house currency, negotiable securities,

precious commodities, negotiable instruments, or proprietary information.” Any doubt as to whether a customer meets this requirement should be referred to the Department of Labour.

- *PROSPECTIVE EMPLOYEE TO BE EMPLOYED TO PROTECT ONE OF THE SPECIFIED COMPANIES OR INSTITUTIONS*

The prospective employee who is to undergo the pre-employment polygraph examination must be employed to “...either directly or indirectly...” protect a customer meeting the requirements as stipulated above (Bailey et al 1989:9).

- *SECTION 8 PROCEDURES*

As with the ongoing investigation exemption, all section 8 (see section 4.6.10) stipulations must be met (Bailey et al 1989:9).

#### 4.6.8.4 PRE-EMPLOYMENT SCREENING BY COMPANIES INVOLVED IN THE MANUFACTURE OR STORAGE OF DRUGS

Ruegger (1991:558) refers to this limited exemption as “The Drug Manufacturer and Distributor Limited Exemption.” Pre-employment polygraph testing is permissible when a prospective employee is to have direct access to controlled substances. It is important to note that the access requirement in this instance is specifically direct and not as stipulated under the access requirements for the ongoing investigation exemption (see section 4.6.8.2). When however, a normal ongoing investigation is to be conducted in a drug related company on existing employees, the access requirement is to be understood in the context of the ongoing investigation exemption as applicable to any other company. Again, all section 8 procedures are to be met (Bailey et al 1989:9-10).

#### 4.6.9 ADVERSE EMPLOYMENT ACTION BASED ON POLYGRAPHS

Bailey et al (1989:11) define “Adverse Employment Action” as “...any action having the result of discharging, disciplining, deny employment or promotion, or otherwise discriminating against an employee in any manner.” Under the ongoing investigation exemption (see section 4.6.8.2), such action may be taken on the basis of a polygraph test, or refusal to take such a test, *only if there is additional evidence supporting the result*. Such supporting evidence may be admissions or confessions of the employee or simply the access and reasonable suspicion requirements.

Under the security service company (see section 4.6.8.3) and drug company (see section 4.6.8.4) exemptions, similar action may be taken on the basis of a polygraph test, or refusal to take such a test, ‘...if the employer has an additional “bona fide reason” for such action’ (Bailey et al 1989:11).

Thus, “In the limited exemption cases,” writes Ruegger (1991:558), “the right to request a polygraph does not give employers the right to deny employment to discharge, or otherwise discriminate against any employee based *solely* on the results of a polygraph test” (italics mine).

#### 4.6.10 SECTION 8 PROCEDURES, NOTICES AND RESTRICTIONS

According to Bailey et al (1989:11-13), a number of stipulations are to be adhered to during any polygraph test applied under the exemptions relevant to ongoing investigations, security and drug companies.

##### 4.6.10.1 THE POLYGRAPH TEST



During any phase of the test (pre-test, actual test and post test phases - see sections 3.7.1 - 3. 7.4), the examinee has the following “rights”:

- “...to terminate the test at any time.”
- No questions may be asked “...in a manner designed to degrade or needlessly intrude on the examinee.”
- No question may be asked “...concerning religious beliefs or affiliations; beliefs or opinions regarding racial matters; political beliefs or affiliations; any matter relating to sexual behavior (sic); and beliefs, affiliations, opinions, or lawful activities regarding unions or labor (sic) organisations.”
- No test may be administered if written notice is provided by a doctor that the examinee is suffering from a condition or undergoing treatment for such condition which may affect the test results.

#### 4.6.10.2 NOTICE REQUIREMENT

Firstly, the examinee is to be informed “...in writing at least 48 hours before the test...of the date, time and location of the test...” as well as his right to legal representation or employee representation.

Secondly, before the actual test, “...he must be informed in writing of the nature and characteristics of the test, the instruments involved, and the conditions under which the test is being given...”.

Thirdly, when appearing for the test, the examinee must be informed in writing of his rights under EPPA and such notice must be signed by him.

#### 4.6.10.3 REVIEW OF QUESTIONS TO BE ASKED

The examinee must be allowed to review all the questions which will be asked during the test. No relevant question may be asked during the test which was not reviewed with the examinee.

#### 4.6.10.4 OTHER TEST REQUIREMENTS

No examiner may "...conduct and complete more than five polygraph tests on a given calendar day...". No test may last less than 90 minutes.

#### 4.6.10.5 EXAMINER QUALIFICATIONS

All examiners are to "...have a valid and current license (sic) granted by the licensing or regulatory authorities in the state in which the test is to be conducted...". Furthermore, "...such examiners must maintain a minimum of a \$50 000 bond or an equivalent amount of professional liability coverage."

#### 4.6.10.6 EXAMINER REQUIREMENTS

The examiner is restricted to rendering an opinion or conclusion based solely on the result of the polygraph test. Admissions made by the examinee as well as case facts may also be forwarded but no opinion regarding employment recommendations may be given. The examiner is to keep all records relating to a test for a minimum of three years.

#### 4.6.11 DISCLOSURE REQUIREMENTS

The examinee is free to disclose any information relevant to the polygraph examination. The examiner and employer are restricted by the Act in their ability to disclose information. The examiner may only disclose information "...to the examinee, or any other person specifically designated in writing by the examinee, to the employer who requested the test, or to a court or other governmental agency pursuant to a court order" (Tixier 1989:1062). The employer is similarly bound.

#### 4.7 SUMMARY

Nine years before the enactment of EPPA, John A. Jenkins referred to polygraphs as "Bloodless Executioners" whose accuracy was "questionable" (1979:34). In referring to the ongoing investigation exemption (see section 4.6.8.2), Cullen (1990:266) refers to "...a 1983 Office of Technology Assessment Report..." which reveals favourable accuracy rates and consequently validity for polygraph tests relating to specific incident examinations. Is the question of polygraph utilization in private industry in South Africa and consequently legislation relating thereto, to be decided by validity and reliability studies?

If one looks at the essence of EPPA, this question may appear somewhat confusing. On the one hand specific incident testing with its reactive element is allowed because of studies indicating "...a fairly low rate of inaccuracy" according to Cullen (1990:266). On the other hand, pre-employment selection which reveals the proactive element of polygraph testing (see section 4.4) shows lower accuracy according to Ben-Shakhar & Furedy (1990:15) and yet in certain instances is also allowed.

It is researcher's opinion that EPPA, and any future legislation which may be enacted in South Africa, should not be seen in terms of statistical studies but rather in terms of a growing realisation that an ally has been discovered to enhance business profitability, honesty and integrity. The accompanying boom in the polygraph industry necessitates a legislative structure within which all role players are regulated. Not only is the examinee offered protection but so too is the position of the competent and suitably qualified examiner's position reinforced.

“Any decision concerning the application of technology never rests on the science alone, but rather on the human choices for a human society”  
Chin (1990:1358).

## CHAPTER FIVE

### UTILIZATION OF THE POLYGRAPH IN THE CRIMINAL JUSTICE SYSTEM

'Before the law stands a doorkeeper. To this doorkeeper there comes a man from the country who begs for admittance to the law. But the doorkeeper says that he cannot admit the man at the moment. The man, on reflection asks if he will be allowed, then, to enter later. "It is possible," answers the doorkeeper, "but not at this moment' Kofka (Sevilla 1984:5).

## CHAPTER FIVE

### UTILIZATION OF THE POLYGRAPH IN THE CRIMINAL JUSTICE SYSTEM

#### 5.1 INTRODUCTION

The increasing use of the polygraph in the South African criminal justice system (see section 2.6.6) is illustrated in an article by Lessing (1998:4) entitled “Poligrafie weens misdaad al meer gebruik.” The reasons cited for this increased utilization of the polygraph are rising crime statistics and delays in the judicial process which includes the investigative phase following the arrest of a suspect. Further proof of the increasing use of the polygraph in the criminal justice system is the establishment of a polygraph unit by the South African Police Service (see section 5.4) as a result of the realisation of the benefits which the polygraph has to offer the investigation process. This situation is not unique to South Africa. Driscoll (1994:78) reports that in the United States, polygraph “...use has continued to expand in government intelligence and law enforcement investigations...”. While government intelligence agencies are not covered in this chapter, it is interesting to note that the uncovering of the now famous CIA double agent, Harold Nicholson, was as the result of polygraph utilization. Salut (1998:41) reports as follows:

“He tried to fool the polygraph and flunked three lie-detector tests. This triggered a joint CIA/FBI investigation.”

Turning to the content of this chapter, it is important to note that not all aspects of the criminal justice system are covered herein. The reasons therefore as well as the definition of the criminal justice system are provided in section 5.2.

Secondly, police utilization of the polygraph, mostly in American context, is examined. Attention is given to pre-employment screening of police candidates with specific consideration of the extent of and reasons for such use as well as the benefits attained. Furthermore, police utilization of the polygraph in criminal investigation, police perjury and as ally in determining the truthfulness of informants is considered.

Researcher has provided a separate section which highlights the polygraph unit established by the South African Police Service. This has been done in an attempt to provide insight into the growing realisation that the polygraph has an important role to play in assisting the police in their functions. In this attempt, experiences shared with this unit are provided.

In section 4.1, it was stated that the legal fraternity was only a 10% utilizer of the polygraph. Legal aspects relating to polygraph utilization in the criminal justice system represents an attempt by researcher to provoke thought as to why this figure would be so low. It appears as though the question of admissibility in both civil as well as criminal trials stands central to this question. It must be noted that this section is not intended to be a legal treatise as this would fall outside the scope of this dissertation. In the effort to provoke thought as regards polygraph admissibility in the courtroom, researcher has presented selected trials which illustrate the development of polygraph admissibility in the United

States. While polygraph admissibility in countries such as Japan (see section 2.6.1), India (see section 2.6.3), Croatia (see section 2.6.4) and Romania (see section 2.6.7) was mentioned in historical context, all effort is now concentrated on the situation in the United States. Certain military court decisions are also included. With no reported cases in South Africa, the United Kingdom or Australasia, it was impossible to provide any form of comparison relating to polygraph admissibility (Cloete 2000, Ferreira 2000, Freckleton & Selby 1999:193, Grime 1998:137, Gudjonsson 1992:183, Hodgkinson 1999:244, May 1999:173). The admissibility of polygraph evidence in the various American States is also presented as are the legal hurdles regarded as preventing overall acceptability of polygraph evidence.

Lastly, and against the background of varying degrees of admissibility, polygraph evidence relative to other forensic techniques is presented.

## 5.2 THE CRIMINAL JUSTICE SYSTEM

According to Cole (1992:134), “Any criminal justice system is an apparatus society uses to enforce the standards of conduct necessary to protect individuals and the community. It operates by apprehending, prosecuting, convicting and sentencing those members of the community who violate the basic rules of group existence.”

This “apparatus” consists of various agencies or components which Fox & Stinchcomb (1994:14) describe as follows:

“The components of the criminal justice system are traditionally listed in the order of *police* (arrest) *courts* (adjudication), and



*corrections* (disposition), which reflects the general sequence through which offenders are processed.”

It is the opinion of Cilliers (2000), that social welfare should be added as a fourth component as this has become both an integral part of and ally to certain functions of the courts and corrections agencies. These functions relate to those of sentencing, where the possibility of probation exists, and the granting of parole respectively.

This chapter considers the role of the polygraph specifically as concerns the police and court components. It is the opinion of researcher, that having added a fourth component to the criminal justice system in the form of social welfare, its polygraph possibilities are best noted in conjunction with the corrections component so as to highlight penological considerations relating to polygraph utilization. For this reason, corrections and social welfare are dealt with in the ensuing chapter.

### 5.3 POLICE UTILIZATION OF THE POLYGRAPH

The polygraph is used by police agencies in the following ways:

- to screen candidates wishing to join the police force
- to assist in the interrogation of suspects in criminal investigations
- to combat possible police perjury in criminal investigations
- to test the veracity of police informants or witnesses.

#### 5.3.1 PRE-EMPLOYMENT SCREENING OF POLICE CANDIDATES

“Law enforcement is a highly visible and popular occupation. Most, if not all, jurisdictions routinely receive many more applications for officers than they have openings. Not all who apply for these positions should be considered for hire. Officer candidates must possess the highest ethical and moral standards because of the burden of trust placed upon them”, writes Baker (1994:35) who summarises by saying, “Not everyone who wants to be a police officer is qualified or capable of doing the job.”

From the above words of Stephen A. Baker it appears that careful selections of prospective police officers is required. Before looking at the reasons for utilizing the polygraph as an aid in the selection process, it is important to remember that the Employee Polygraph Protection Act of 1988 (see section 4.6) does not apply to government agencies (see section 4.6.7) and thus permits “...the use of polygraph screening for police applicants...” (Baker 1994:36).

#### 5.3.1.1 REASONS FOR POLYGRAPH UTILIZATION IN THE PRE-EMPLOYMENT SCREENING OF POLICE APPLICANTS

Some of the reasons forwarded for pre-employment police screening (PEPS), will be seen to be shared by private industry (see section 4.3). The following test issues reveal the reasons for polygraph utilization in PEPS:

- “Illegal drug use
- Felonies committed
- Dishonesty in prior employment
- Accept/pay bribes

- Use of excessive force
- Alcohol abuse
- Illegal sexual activity
- Employment history
- Misdemeanors (sic) committed
- Involvement in subversive organisations
- Mental problems
- Medical problems
- Physical disabilities
- Finance/credit problems
- Traffic violations
- Homosexual activity” (Meesig & Horvath 1995:87).

To this list, Romig (1971:55) adds:

- “Excessive gambling
- Other than honorable (sic) discharge from the military.”

By examining these issues via polygraph examination, certain benefits to police applicant selection are identified.

#### 5.3.1.2 BENEFITS OF POLYGRAPH UTILIZATION IN PEPS

Dickson (1986:7) provides the following rather subtle benefit which polygraphy offers those responsible for selecting applicant police officers:

“If properly administered, polygraph testing of police applicants as to their honesty and moral character is non-discriminatory with respect to race, sex, color (sic), religion, and national origin.”

The following more obvious benefits are provided by various sources:

- Background investigations are facilitated by pinpointing possible problem areas. The background investigation can be tailored so as to save time and manpower.
- Information can be revealed which may otherwise have remained hidden.
- Applicants who are not desirable are deterred from applying while up to 95% of those not suitable are eliminated.
- More honest applicants are encouraged to apply.
- Hiring of better quality candidates results in lower staff turnover, fewer misconduct cases and fewer complaints (Arther 1988:90, Dickson 1986:7, Leonard 1971:68, Meesig & Horvath 1995:98).

Baker (1995:37) summarises by saying that, “Society benefits when honest and law-abiding men and women are brought into the ranks of law-enforcement. The polygraph may be the last bastion of defense (sic) against individuals with apparently spotless backgrounds who have been groomed by organised crime or subversive groups and whose intent is to infiltrate police organizations for illegal purposes.”

### 5.3.1.3 EXTENT OF POLYGRAPH UTILIZATION IN PEPS

Meesig & Horvath (1995:66) report that ten surveys have been made from 1962 - 1991 on the "Extent of Police Agency Use of PEPS...". The results of these surveys, in summarised form, were as follows:

TABLE 1. SUMMARY OF SURVEYS CONDUCTED TO ESTABLISH POLICE USE OF PEPS

<b>SURVEY</b>	<b>YEAR</b>	<b>NO OF USERS</b>	<b>%</b>
GUGAS	1962	35	- *
YESCHKE	1962	19	16
GOOCH	1964	23	19
EISENBERG, KENT & WALL	1973	153	31
ROPER	1981	221	44
HORVATH & SHELTON	1982	105	44
KENDRICK	1983	39	43
LOPEZ	UNDATED (1980'S)	113	52
ASH, SLORA & BRITTON	1990	35	56
McCLOUD	1991	231	75

\* sample size and number of responses unspecified.

From the table above it is interesting to note that a stagnation period occurred for PEPS utilization by the police from 1981 - 1983 when an average figure of 44% was reported. The apparent reason for this was the pending and then introduction of the Uniform Peace Officers'

Disciplinary Act of 1983 (see section 5.3.3) which limited polygraph use in internal police investigations and thereby caused a degree of caution to be exercised in using the polygraph as an aid in selecting prospective police officers. However the post EPPA period, with its exemption of polygraph testing on government employees (see section 4.6.7), has brought about a substantial increase in PEPS as is reflected in McCloud's reported result of 75%. The growing trend for a greater percentage of police agencies to employ the polygraph in selecting candidates as shown in the ten surveys tabulated above was emphatically revealed in Meesig & Horvath's own survey which was conducted from 1989 - 1991 (1994:57-136). In this survey, police agencies were divided as follows:

- Large Agencies - "...all state agencies, sheriff agencies employing 100 or more sworn personnel and municipal agencies serving populations of 50 000 or more."
- "Small Agencies were then defined as all remaining agencies..." (1995:79).

In a major finding, Meesig & Horvath revealed that "...99% of the large and 90% of the small agencies required all applicants for sworn positions to take PEPS exams" (1995:58). It is important to note that PEPS exams were used as a supplement to, and not substitute for, other selection techniques such as medical examinations, psychological interviews, background investigations and oral board interviews.

It thus appears that the realisation of the value of PEPS is almost complete. PEPS examinations utilizing the polygraph are subject to certain stipulations as laid down by the International Association of Chiefs of Police.

5.3.1.4 STIPULATIONS GOVERNING PRE-EMPLOYMENT  
POLYGRAPH EXAMINATIONS OF APPLICANT POLICE  
OFFICERS

“With assistance from the American Polygraph Association, the National Policy Center (sic) of the International Association of Chiefs of Police has published its version of a Model Policy on the Polygraph” which lays down the following stipulations regarding pre-employment polygraph testing of candidate policemen:

- “1. The polygraph examiner shall review all relevant applicant screening reports, applicant personal history summaries and any polygraph examination reports prepared by this agency before conducting the examination.
2. Pre-employment polygraph examinations shall be scheduled by authorized members of this agency’s personnel authority according to established agency policy.
3. Polygraph examinations shall not be used as the sole determinant of suitability for employment.
4. Candidates shall be provided with a list of questions that may be used in the examination” (APA 1998).

The focus of attention on polygraph use by the police now moves to the sphere of criminal investigations.

### 5.3.2 THE POLYGRAPH AND CRIMINAL INVESTIGATION

In 1989, Raskin & Steller (1989:292) wrote as follows:

“Polygraph techniques are used extensively in criminal investigations in the United States, Canada, Israel and Japan, although they are unused in Europe.”

While this may have been the case in 1989, the situation appears to be changing in Europe. As will be seen in section 5.4.3, a South African police polygraphist was recently required to assist in a criminal investigation in Belgium.

“In criminal investigations the polygraph is best suited for cases where other investigative techniques have not resolved the crime and an impasse has been reached. The polygraph examiner in a police force thus receives cases through the referral of other detectives” (Desroche & Thomas 1985:43-44). (Practical illustration is provided in section 5.4). A number of reasons are forwarded as to why the polygraph is used so extensively in criminal investigations.

#### 5.3.2.1 REASONS FOR POLYGRAPH UTILIZATION IN CRIMINAL INVESTIGATIONS

Sources such as Lykken (1981:214) believe that the true value of the polygraph lies in its ability to elicit confessions from guilty subjects and consequently that this is the overwhelming reason for its use in criminal investigations. Researcher does however not share this view and rather



prefers to regard polygraph induced confessions as a by-product or benefit of polygraphic utilization in criminal investigations.

Desroche & Thomas (1985:50-56) provide the following reasons as to why the polygraph is "...an effective investigative tool ...":

- Innocent suspects may be eliminated from the investigation. Time and manpower are thus saved. In this way, Los Angeles Police were able to clear Sharon Tate's husband, Roman Polanski, and the caretaker of her apartment block, William Garretson, from any involvement in her murder. The investigation was then concentrated on Charles Manson who was ultimately arrested and convicted.
- It can determine whether in fact a crime has been committed and "...whether an investigation should proceed, and/or whether charges should be laid." The honesty and motives of victims may be determined by polygraph examinations.
- Identifying culprits and persons who may have knowledge of the crime. As was mentioned at the start of this section, confessions are often the result of a guilty person failing a polygraph test.
- Omissions and exaggerations in witnesses', complainants' and suspects' statements may be identified.
- Additional information may be obtained about the crime. "Occasionally the polygraph will serendipitously help provide additional information about a crime when subjects attempt to explain results that are inconclusive or indicate deception, they will sometimes revise their original version of events and reveal information previously unknown."

As with polygraph utilization in pre-employment police screening, use of the polygraph as an investigative tool is also subject to certain requirements being met.

#### 5.3.2.2 REQUIREMENTS FOR POLYGRAPH UTILIZATION IN CRIMINAL INVESTIGATIONS

Addendum 3, IACP Establishes A Model Policy on Polygraph, provides all the suggested requirements which are to be met as regards the use of the polygraph when investigating a criminal matter.

Researcher has felt it necessary to highlight the following aspects of this model policy:

- The policy recognises that not all police agencies operate in the same judicial environment. As will be seen in section 5.6, the admissibility of polygraph evidence varies throughout the States of America.
- Section A.5 emphasises that a suspect must voluntarily and in writing submit to any examination.
- Section C.5 deals with the examinee being made aware of his Miranda rights before the polygraph test and the necessity to waive such rights where appropriate. This is an important consideration in the United States and as such is dealt with separately in the ensuing section.

#### 5.3.2.2.1 MIRANDA REQUIREMENTS

Kolasa & Meyer (1987:207) report as follows concerning a decision relating to an accused being "...informed of his constitutional rights":

'This practice flows from the United States Supreme Court decision in *Miranda v. Arizona*, 384 U.S. 436 (1966). That decision sets forth specific instructions regarding treatment of an accused to assure protection of constitutional rights, especially those arising from provisions of the Fifth and Sixth Amendments. The five protective measures outlined by the Court are as follows:

1. If a person in custody is to be subjected to interrogation, he must first be informed in clear and unequivocal terms that he has the right to remain silent.
2. The warning of the right to remain silent must be accompanied by an explanation that anything said can and will be used against the individual in court.
3. An individual held for interrogation must be clearly informed that he has the right to consult with a lawyer and to have the lawyer with him during interrogation.
4. It is necessary to warn the individual not only that he has the right to consult with an attorney, but also that if he is indigent a lawyer will be appointed to represent him.
5. If the individual indicates in any manner at any time prior to or during questioning that he wishes to remain silent, the interrogation must cease.

These protective measures are required when an individual is interrogated "while in custody at the station or otherwise deprived of his freedom of action in any way".'

It is interesting to note the opinion of Buchan (1985:681-691) who agrees that an accused be re-advised of his Miranda rights before the post-test interview (see section 3.7.4). This is due to the fact that confessions normally occur during this phase of the polygraph test. Buchan's opinion stems from the fact that in *United States v. Gillyard*, F.201(9<sup>th</sup> Cir. 1984), "...the United States Court of Appeals for the Ninth Circuit held that once a suspect has received *Miranda* warnings prior to a polygraph examination, courts should examine the totality of the circumstances in determining whether he should have been re-advised of his rights before post-examination questioning. In so holding, the court rejected a *per se* rule that such warnings are never required before a suspect is subjected to post-examination questioning." Last mentioned *per se* rule had stemmed from *Wyrick v. Fields* 1035.CT. 394 (1982) (Lancaster 1983:442).

### 5.3.2.3 DIFFERENCES BETWEEN POLICE CANDIDATE EXAMINATION AND CRIMINAL INVESTIGATION PROCEDURES

In section 4.4, differences between polygraph use in employee screening and in criminal investigation were highlighted. Horvath (1972:33-34) considers it important to highlight the differences between criminal investigation procedures and police candidate examinations. While some of these differences may appear to be simple duplications of those provided in section 4.4, researcher has noted them.

- "First, the interview which precedes polygraph testing in the candidate examination is essentially an information

gathering process.” Candidates are more likely to be truthful during pre-employment tests.

- “A second difference in procedure between the criminal and the police candidate procedure is that in the former the purpose of the polygraph testing is to determine truth or deception regarding one specific area of inquiry.”
- Thirdly, “In a criminal examination all relevant test questions pertain to the same offense (sic); in a police candidate examination each relevant question by itself pertains to a specific area of inquiry.” In other words, relevant questions (see section 3.8.1.2) are not related to one another in pre-employment examinations.

Researcher has provided practical illustration of polygraph use in South African context in sections 5.4.1 and 5.4.2. For now, attention is given to the role the polygraph can play in combating the sensitive issue of police perjury.

### 5.3.3 THE POLYGRAPH AND POLICE PERJURY

The polygraph has been a long time ally of those involved in investigating police misconduct. Miller (1986:431) reports that, “Between 1979 and 1981, the Chicago Police Department resolved 237 cases of alleged police misconduct with the assistance of the polygraph.” The value of polygraph use in combating police misconduct further reflects in the fact that the Employee Polygraph Protection Act of 1988 (see section 4.6) specifically allows polygraph testing of police officers. This is in stark contrast to the Uniform Peace Officers’ Disciplinary Act of 1983 which had “...severely limited the use of polygraph examinations

in internal police investigations.” One of the most common forms of police misconduct is that of perjury.

#### 5.3.3.1 PERVASIVENESS OF POLICE PERJURY

‘If police perjury were rare,’ writes Dripps (1996:693), ‘academic discussion of it would lose little relevance. Unfortunately, criminal procedure scholars agree that police perjury is not exotic. Police perjury has been called “pervasive”, “an integral feature of urban police work” and, the “demon in the criminal process”.’

Three contributions are noted by Dripps (1996:698-701) which illustrate why police perjury is regarded as common.

- A New York City prosecutor, Richard Uviller, spent a sabbatical leave with New York City policemen. He had the following to say:

“I have no data to illustrate it, but my suspicion is that out of just such circumstances is born the most common form of police perjury: the *instrumental adjustment*. A slight alteration in the facts to accommodate unwieldy constitutional constraint and obtain a just result.”

- Myron Orfield conducted an “...interview study of prosecutors, defense (sic) lawyers, and trial judges involved in suppression motions in Chicago.” (Suppression motions refer to pre-trial hearings where an attempt is made by the

defence to have certain evidence declared inadmissible). Orfield reported as follows:

“Significantly, the respondents outlined a pattern of pervasive police perjury intended to avoid the requirements of the Fourth Amendment. Dishonesty occurs in both the investigative process and the courtroom.”

Orfield also reports on “...one judge caught in the swearing-contest trap.” (A swearing contest forms part of a suppression motion in which the judge decides on the credibility of the witnesses).

“Many times, I feel the police are lying, but I can’t make a finding on a hunch. I’ve got to have some facts. If the defense (sic) can’t show anything, that the police officer is telling a lie, then I have to find for the policeman ... you walk into a case and as a rule you believe the police officer -you’ve got to believe police more than the defendant.”

Orfield estimates that judges believe that police are lying in a fifth of the matters appearing before them yet never make a finding of police perjury.

- In investigating police brutality in the wake of the Rodney King beating, the National Association of American Chiefs of Police reported “...that the police frequently file

fabricated charges of assault or resisting arrest against victims of excessive force.”

From above, it appears that police perjury in the United States is common. Dripps suggests employing the polygraph in an attempt to eradicate this practice. Researcher likes to refer to his suggestion as The Dripps’ Solution.

#### 5.3.3.2 THE DRIPPS’ SOLUTION

In his essay, “Police, plus perjury, equals polygraphy”, Dripps “...suggests a new strategy for dealing with...” the problem of police perjury as related to suppression motions. He explains as follows:

“My thesis holds that courts deciding suppression motions should admit expert testimony based on polygraph examinations, and draw an adverse inference from the failure to introduce such evidence, whenever the outcome of the dispute depends on the credibility of conflicting testimony given by the defendant and the police. To avoid confusion, I would like to set out at the beginning the precise approach I defend.

At the close of the testimony at a hearing on a suppression motion; upon motion by either party or *sua sponte*, the court should determine whether the outcome depends on resolving the conflict in the testimony on the basis of credibility. If the court finds that the issue turns on credibility, the court should inquire whether either party is willing to supplement the record with a polygraph examination of the party’s witness or witnesses. Each party could elect to supplement the record in this way, but the decision to do so



would have to be made at that time. Neither side could wait for the outcome of the other's examination; and the results of any examination would be admissible regardless of the result" (1996:693-694). *Sua sponte* refers to a motion initiated by a court (De Vries 2000).

The Dripps' Solution represents further realisation of the role the polygraph can play in improving the functioning of the criminal justice system. Yet another identified use of the polygraph in the criminal justice system is that of determining the veracity of information conveyed by police informants.

#### 5.3.4 THE POLYGRAPH EXAMINATION AS A MEANS OF DETECTING TRUTH AND FALSEHOOD IN STORIES PRESENTED BY POLICE INFORMANTS

Before looking at the results of a study which examined the utility of the polygraph as a means of determining the accuracy of informant information, it is necessary to firstly provide some background relating to police informants.

##### 5.3.4.1 POLICE INFORMANTS

Also "...known as agents, operators, finks, rats, special employees, stoolies, snitches, or informers...", informers provide information relating to criminal offences or planned criminal activity. This information is useful when investigation is slow or requires entering an environment which is dangerous. Police informants vary in character traits and relationships with the police. "Some informants may be ordinary citizens

who having witnessed an event report it to the police. Others may be participant in criminal acts who betray their associates; others may be on the fringe of criminality and are in a position to make continuing observations of suspicious persons or activities” (Blum & Osterloh 1968:133). Often, the information provided to the police is a lie. A number of reasons are forwarded for this.

#### 5.3.4.2 THE REASONS POLICE INFORMANTS LIE

- The risk of providing the truth may be high in that associates would kill the informant.
- Information may simply be fabricated so as to earn the fee being offered by the police.
- The lie may be in response to the threat of non-delivery by a police officer.
- Misleading information may be provided so as to create an alibi for themselves.
- Lying may be the result of psychopathological tendencies or the wish to gain vengeance on someone (Blum & Osterloh 1968:133).

While there is no doubting the value of information provided by informants, a high risk is involved when false information is accepted. The following study was conducted in order to determine the value of the polygraph as a means of evaluating the veracity of informant information.

#### 5.3.4.3 THE BLUM AND OSTERLOH STUDY OF THE POLYGRAPH AS A MEANS OF DETERMINING FACTS IN NARRATIVES RELATING TO CRIMINAL EVENTS.

While somewhat dated (1968), the results of this study are worth noting.

Twenty informants who had given information to the police on more than one occasion in the past, formed the population of this study. These informants were provided by five law enforcement agencies and their participation in the project was subject to strict confidentiality. The information which these informants normally provided varied, "...but included bookmaking, robbery, vice, theft, political extremism, homicide, kidnapping, etc."

The informants were instructed as to the information they would provide the polygraphist. Some stories would be true while others would be false. Some would contain both true and false information. True stories were those whose content had indeed been verified by investigation. False stories were invented by the informant in conjunction with an investigating officer so as to appear credible. All informants were then subject to polygraph examinations by a police polygraphist. No provision was made for admissions by those whose stories were false so that the decision as to the truthfulness of the story was made by the polygraphist solely on the results of the test.

The gross results indicated that the polygraphist was correctly able to identify all stories which were true (9) and all those which were false (11). The twenty stories told consisted of 106 statements of which the polygraphist correctly identified 102 (96%) as being truthful or not.

“It is the conclusion of the study that the polygraph examination can be a useful tool in evaluating information brought in by police informants” (Blum & Osterloh 1968:133-137).

With police utilization of the polygraph having been shown to be on the increase in the United States, it is hardly surprising to find that the South African Police Service has established its own polygraph unit.

#### 5.4 THE SOUTH AFRICAN POLICE SERVICE’S POLYGRAPH UNIT

The South African Police Service employs polygraphists in criminal investigations and in providing security clearances and gradings for certain members. At present, no use is made of the polygraph in pre-employment police screening (Allers 2000).

##### 5.4.1 BACKGROUND TO THE ESTABLISHMENT OF THE SAPS POLYGRAPH UNIT

The following examples illustrate not only the increasing use of the polygraph by the police, and consequently in the criminal justice system (see section 2.6.6), but also serve to highlight the realisation by police authorities that the establishment of a polygraph unit was necessary:

- Nomboniso Gasa, wife of ANC-MP Raymond Suttner, was allegedly raped in a guesthouse on Robben Island on 20<sup>th</sup> January 1997. With the investigation making little headway, police spokesman John Sterrenberg announced that the police intended employing a private company to carry out

polygraph examinations on nine suspects to verify their alibis. Later, the nine suspects refused to undergo the test and instead requested that Mrs. Gasa undergo a test (Aranes 1997:1, Burger 28/1/1997:2, Citizen 1/2/1977:1, Swart 1997:4, Swart 1997:13).

- On the 27<sup>th</sup> March 1997, Police Commissioner George Fivaz announced that, “Members of the police’s National Protection Service who guard the homes of the president and cabinet members, will be subject to lie detector tests and psychological evaluation following a spate of thefts” (Sawyer & Smith 1997:3).
- “Poligraaf toetse kan polisie help om kind te vind” - “Leuenverklikkertoetse sal hopelik nog die week die polisie nader aan ‘n oplossing bring in hul soektog na Mighael Myburgh (2), wat ses weke gelede hier aan die Natalse Suidkus verdwyn het asof die aarde hom net ingesluk het” (De Kock 1997:12). The divorced parents were the suspects in this matter.
- On the 18<sup>th</sup> September 1997 Sifiso Nkabinde, the then National Consultative Forum Kwazulu-Natal Chairman, offered to take a polygraph test. This he stated in the Maritzburg Regional Court where he was appearing on 18 counts of murder (Chothia 1997:2, Dell 1997:1).
- Having failed a polygraph test arranged by the police as part of a robbery probe, security guard Steven Ackerburg committed suicide on the 23<sup>rd</sup> December 1997 (Joseph 1998:7).

The growing realisation of the value of the polygraph in criminal investigation together with the financial and security considerations involved in employing private companies to conduct the examinations, led the South African Police Service (SAPS) to establish its own polygraph unit (Watson 2000).

#### 5.4.2 THE ESTABLISHMENT OF THE SAPS POLYGRAPH UNIT

“Due to a need long overdue in the SA Police for polygraph services, and also the National Commissioner, George Fivaz’s decision that SAPS members should be sent, along with members from the National Defence Force, on a polygraph course, the polygraph unit opened on 13 March 1998” (Huisamen 1998:16).

The police polygraphists were trained by instructors from the Argenbright International Institute in Atlanta, Georgia (see section 3.6.2) at the new Detective Academy in Silverton, Pretoria. Training lasted from the 5<sup>th</sup> of January 1998 until the 13<sup>th</sup> of March 1998. The polygraph unit dealing with criminal investigations, is located at the Forensics Laboratory in Silverton, Pretoria and falls under the command of Director Johan Claasens (Huisamen 1998:16, Pieters 1998:4). Three polygraphists, Superintendents John Watson and Hester Meiring and Captain Jannie Heroldt are stationed here and are responsible for polygraph examinations throughout South Africa with the exception of the Western Cape which is the responsibility of Superintendent Elna Viljoen in Cape Town (Watson 2000).

Four members, Superintendent Hein Allers, Captains Gert Els and Estie Bessinger, and Inspector Josey Maponyane are polygraphists attached to

Crime Intelligence and are responsible for security clearances on members of the SAPS (Allers 2000). (Due to security considerations, it is not possible to provide any further information regarding this unit).

#### 5.4.3 THE FUNCTIONING OF THE SAPS POLYGRAPH UNIT - CRIMINAL INVESTIGATIONS

Researcher was fortunate to share some experiences with members of this unit. Before relating these to reader, it is interesting to note two newspaper reports.

- Reporting on the death of Mr. Roderick McPherson who was shot while having oral sex with a Mrs. Tracy Bellamy, Lieberum (1999:2) writes as follows:

“Yesterday inquest magistrate Mr. S. Maritz requested a distraught Mrs. Bellamy to undergo a lie detector test before the inquiry into the death of Mr. McPherson, of Suideroord, continues on July 1.”

Said test was subsequently conducted by Superintendent Hester Meiring (see section 5.4.2).

Lieberum (1999:8) reports on the events of 1 July:

‘Called to testify by Lindelani Sigogo, who was leading the evidence, superintendent (sic) Hester Meiring attached to the polygraph unit, forensic science lab in Pretoria, stated Mrs Bellamy signed a

declaration that she was voluntarily undergoing the lie-detector test. All the questions were discussed with her before the test so there would be no “surprise questions”. She failed by about minus eleven (see section 3.9.2). This meant significant physiological reactions indicating deception. It appeared that Mrs Bellamy knew more about the case that (sic) was revealed’ (brackets mine).

The matter has been referred to trial.

- Star (1/9/1999) in an article, “Polygraph test puts man in jail for murder of wife” reports the following:

“Volksrust – The first South African proved by a polygraph test to have lied to murder investigators was jailed for three years yesterday for killing his wife. Schalk Louw (60), of Perdekop, agreed to take the test after statements he made about the murder of his wife Petronella on November 3 1997.”

It is necessary to clarify this report. Louw underwent a polygraph test which he failed. Having been so advised, he confessed to the murder.

In enjoying wonderful co-operation from the criminal investigation polygraph unit, researcher was fortunate enough to share some experiences with these polygraphists.



- On the 13<sup>th</sup> July 2000, researcher conducted an interview with Superintendent Hester Meiring and Captain Jannie Heroldt at the Forensic Laboratory in Silverton, Pretoria. It was explained that the polygraph tests carried out by this unit were performed as a supplement to a criminal investigation. In other words, a docket already had to be in existence and the request for the test had to come from the investigating officer. The following information had to be provided:
  - A short summary of the facts of the matter together with the case number
  - The name of the examinee
  - Language preference
  - The examinee's voluntary consent to the test
  - The number of examinees
  - The location of the test
  - Name and contact numbers of the investigating officer.

It was the opinion of both polygraphists that more and more investigating officers were making use of the polygraph as an investigative aid. Researcher was provided with a copy of the S A Police Service polygraph examination file which is attached as addendum 4. It is important to note that this comprehensive document makes very clear provision, on page 2, for the examinee to be informed of his constitutional rights (in terms of Art 35 of the Constitution of the Republic of South Africa, Act no. 108 of 1996) as is the case in the United States with the Miranda requirements (see section 5.3.2.2.1). Researcher was invited to witness a polygraph test

which was to be administered by Superintendent Meiring the following day.

- On 14<sup>th</sup> July 2000, Sergeant Michael Dippenaar reported at the police polygraph suite in Wachthuis, Pretoria. He was accompanied by Inspector Deon van Vuuren of the Anti-Corruption unit who was the investigating officer in this matter. Dippenaar was suspected of being involved in the disappearance of Galdi, an explosives control dog. Said Dippenaar was the handler of this Belgian Shepherd. Researcher observed the proceedings from an adjoining room, separated by one way glass. The thoroughness of the data collection and pre-test phases (see sections 3.7.1 and 3.7.2), as determined by the SAPS polygraph examination file, was noteworthy. The examinee appeared extremely nervous to all present (Meiring 2000, Van Vuuren 2000). The test lasted approximately 3½ hours. The 4 charts were hand scored by both the examiner, Superintendent Meiring, and Captain Heroldt. In spite of the examinee's nervousness, he passed the test as an NDI result was scored (see section 3.9.2). Interestingly, with a substantial reward having been offered, Galdi was found by a Wonderboom resident after almost three weeks (Otto 2000:1).
- Superintendent John Watson was responsible for conducting a number of polygraph examinations in Belgium. Not only are the results of importance, but so too are the possible implications for the European criminal community. In 1989 (see section 5.3.2) it was stated that the polygraph was unused in criminal investigations in Europe. With South

African involvement, this position appears to be changing. Superintendent Watson was kind enough to share his experience with researcher.

With no trained polygraphists of their own, Belgium's National Police Service, the Rijkswacht, were forced to look elsewhere for polygraph assistance in some cases where no progress was being made. Realising the linguistic similarities between Afrikaans and Flemish, one of Belgium's official languages, they approached the SAPS for assistance. A similar approach was made to the Canadian police to assist when French, the other official language, was involved in a prospective polygraph test. Watson was duly assigned by the SAPS.

In Belgium, Watson was employed by the Rijkswacht in 7 cases (5 murder cases and 2 cases of sexual molestation). The results of his test indicated deception in 5 cases, no deception in 1 case while 1 result was inconclusive. Two confessions of murder resulted from these tests.

Watson indicated a high level of interest in polygraphy by an academic, Professor Paul Eelen, from the University of Leuven. Under Eelen's guidance, a polygraph research project is being conducted by the Department of Experimental Psychology. The Rijkswacht intends training its own polygraphists from 2001. John Watson again leaves for Belgium on the 22<sup>nd</sup> October 2000 to assist in criminal investigation (Hagen 2000:4, Watson 2000).

The polygraph appears to be truly embedded in the functioning of the police component of the criminal justice system. It is now time to turn to the second component of the criminal justice system applicable to this chapter, the courts.

## 5.5 LEGAL ASPECTS RELATING TO POLYGRAPH UTILIZATION IN THE CRIMINAL JUSTICE SYSTEM

~~Researcher has felt it necessary to reiterate that this section is not intended to be a legal treatise.~~ The presentation of selected cases is intended to illustrate the varying admissibility positions of the polygraph in the United States. In the regard, Justice John Paul Stevens is quoted as saying "...the government's position is inconsistent" (Washington Post 1/4/1998:10). The development of this "inconsistent" admissibility position will become apparent. Furthermore, in noting this position, thought may be provoked as to the modus operandi which should be adopted by all role players in the polygraph industry so as to ensure the future of the polygraph within the courtroom and not as a controversial onlooker. When considering the following, one may be encouraged to think of the future of polygraph admissibility in hopeful frame of mind:

'When Mr. Justice Holmes stated "the life of the law has not been logic; it has been experience," he was writing the first sentence of his treatise on the common law. This emphasis upon case-by-case decisions has been kept in order to maintain the flexibility that comes with continuing challenges to the validity of certain legal positions that can be made through the participation, of a great number of individuals' (Kolasa & Meyer 1987:4).

(Addendum 5 presents amendments 4-6 of the United States Constitution which are applicable in some of the ensuing cases).

#### 5.5.1 UNITED STATES V FRYE - 1923

“In November of 1920, Dr. R.W. Brown was shot to death in Washington, D.C. The following summer a young black man, James Alphonzo Frye, was arrested and grilled for several days by the D.C. police. Frye finally admitted to the Brown murder but repudiated this confession just before the trial, claiming that he had been promised half of the \$1,000 reward if he would falsely confess to the killing” (Lykken 1981:218).

Frye’s defence team arranged for Dr. William Moulton Marston (see section 2.5.7) to administer his systolic blood pressure lie detection test on Frye. Marston was of the opinion that Frye was indeed innocent of the murder. Every attempt was made by defence counsel to have this result admitted as evidence, arguing that Marston was qualified as an expert to give testimony. All attempts were unsuccessful and Frye was convicted of second degree murder (Abrams 1989:3).

The decision was appealed (Court of Appeals of District of Columbia. Submitted November 7, 1923. Decided December 8, 1923), “Before Smyth, Chief Justice, Van Orsdel, Associate Justice, and Martin, presiding Judge of the United States Court of Customs Appeals” (Matte 1996:680A). In affirming the decision, the Appeals Court ruled as follows:

“Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while the courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs. We think the systolic blood pressure deception test had not yet gained such standing and scientific recognition among physiological and psychological authorities as would justify the courts in admitting expert testimony deduced from the discovery, development and experiments thus far made” (Foster & Huber 1997:225).

From this judgement emanated the *Frye* rule which is described as follows by Feder (1991:241):

“A law of court which provides that in order for an expert witness to testify concerning scientific, technical, professional, or specialized matters, the opinion testimony must be based upon a reasonable degree of acceptance within the scientific, technical, professional, or specialized field of the processes utilized by the witness to reach the conclusions tendered.”

Sources such as Matson (1999:50) refer to, “The Frye General Acceptance test as a two-step process.” Firstly, the field to which the expert opinion refers must be clearly identified. Secondly, it should be ascertained whether scientists working in this field agree with the

principles which form the basis of the expert's opinion. Matson continues by highlighting a problem relating to "accepted science":

'The problem with the Frye Test is that "accepted science" is not that clear. Science is a dynamic field - what is generally accepted is constantly changing. New scientific theories and principles are continually emerging in every field. In many situations, the new science ultimately replaces or modifies the current science. For example, for just about every standard scientific technique of measurement, new techniques have been developed that are potentially more precise. Under Frye, the newer techniques could be excluded, despite potentially obvious advantages' (1999:50).

According to Matte (1996:554), the decision resulting from Frye's appeal case, "...became the *Frye* standard for the admissibility of scientific evidence in Federal courts which was emulated by most State courts."

#### 5.5.2 STATE V LONIELLO - 1935

This case in the Circuit Court of Columbia County, Wisconsin, represented the first deviation from the *Frye* standard. While the details of this matter are not given, it is noted as the first in which, "...the introduction of the results of PV (polygraph) examinations when agreed and stipulated by both the prosecution and defense (sic)" was allowed (brackets mine) (Matte 1996:554).

#### 5.5.3 STATE V VALDEZ - 1962

“During the first forty years after *Frye*, American courts, under the influence of that opinion, almost universally excluded polygraph evidence. Most courts applied a *per se* rule of exclusion” write Imwinkelreid & McCall (1997:1051).

This case represented the first consideration of polygraph evidence admissibility in the Arizona Supreme Court. This was as a result of the appreciation that the modern polygraph was no longer the simple systolic blood pressure test used in *Frye*.

Valdez was arrested and charged for possession of narcotics. The defendant agreed to take a polygraph test and stipulated, together with his defence counsel and the prosecution, that the results would be used at trial. When the results showed him as being untruthful, he changed his mind and moved for the results to be excluded. This was overruled, the results were admitted and Valdez was convicted. McCall (1996:371) writes as follows:

“The *Valdez* court established three requirements for stipulated polygraph results to be admitted over objection: that the polygraph examiner who performed the test be qualified, that the testing be conducted using proper procedures, and that the opposing party have an adequate opportunity to cross-examine the polygraph examiner. Finally, if the polygraph examiner testimony was admitted in evidence, the *Valdez* opinion required the trial court to give a specific instruction to the jury on the weight and effect of the polygraph examiner’s testimony.”

#### 5.5.4 UNITED STATES V RIDLING AND ZEIGER - 1972



In asking the question; “Polygraph Evidence: are the courts failing to keep abreast of modern technology?”, the Honourable Justice Morgan Lester writes as follows:

“*Ridling* and *Zeiger*, decided the same week, were hailed as landmark decisions triggering a change in the general rule of inadmissibility of polygraph testimony” (1981:36).

The Dripps’ solution (see section 5.3.3.2) appears to have been thought of 24 years before in *United States v Ridling*. The defendant was “...a police officer accused of perjury” who “attempted to gain admission of exculpatory polygraph evidence. The trial court wrote at length explaining why *such a case was the perfect vehicle for the introduction of polygraph evidence and admitted it*” (italics mine) (Sevilla 1984:8).

Lester (1981:36) reports that ‘...after an evidentiary hearing on the admissibility of the polygraph test, the judge decided that if the defendant would allow himself to be tested by a court-appointed examiner, the results of all the polygraph tests he had taken could be disclosed to the jury. The court here recognized that “judicial opinions pertaining to the admission of polygraph testimony seem all to point towards exclusion,” but nonetheless found that “these opinions...are not persuasive insofar as they are predicated on the unreliability of the polygraph...Techniques improve. The evidence in this case indicates that the techniques of the examination and the machines used are constantly improving and have improve markedly in the past ten years”.’

Armed assault with the intent to kill was the charge laid against Zeiger. He had signed a declaration in which he said he had been told that the results of a polygraph test he underwent would not be used as evidence at his trial.

‘Despite the stipulation, the court held an extensive evidentiary hearing on the matter and ruled the test admissible. The court cited the testimony of four experts, two of whom were psychologists, who each claimed that their separate studies showed the test were (sic) at least 82% reliable. The court also noted “[t]he failure of the government to demonstrate significant disagreement with this basic proposition of polygraph reliability, the absence of statistical data pointing to any other conclusions and the accepted and wide-spread absorption of the polygraph into the operations of many governmental agencies” ’ (Lester 1981:36-37). While this ruling was later reversed by the Appeal Court, it was notable for the admission of unstipulated polygraph evidence.

#### 5.5.5 UNITED STATES V FROGGE - 1973

A year after Ridling and Zeiger (see section 5.5.4), “The Fifth Circuit cited *Frye* in one of its earliest polygraph cases...”. The defendants in this case had been convicted of attempted escape from custody. In appealing their case they claimed the marshalls from whom they had tried to escape had accepted a bribe from them. Bander (1997:694) reports as follows:

‘The trial court instructed the jury to acquit the defendants if they believed the bribery evidence. The court refused, however, to grant the defendants’ motion for a court appointed polygraph

examination. The Fifth Circuit affirmed the convictions, relying on *Frye* and a United States Tenth Circuit case for the proposition that "...the rule is well established in federal criminal cases that the results of lie detector tests are inadmissible".'

#### 5.5.6 UNITED STATES V GIPSON - 1987

"In 1987, the United States Court of Military Appeals declared in *U.S. v Gipson* that the accused should have been allowed to attempt to lay foundation for polygraph evidence. In its decision the Court of Military Appeals concluded that the U.S. v *Frye* test should be abandoned in favor (sic) of a test using the Military Rules of Evidence and expressed the opinion that the state of polygraph evidence is such that it should be admitted in courts-martial" (Matte 1996:557). An executive order followed this decision which amended the Military Rules of Evidence to specifically exclude polygraph evidence at courts-martial. However, "...the judicial finding that advances in polygraph techniques have enhanced reliability remains uncontroverted."

#### 5.5.7 ROCK V ARKANSAS - 1987

While this matter deals with hypnosis results as evidence, it has been included by researcher as according to McCall (1996:392), it raises the point "...of the constitutional right of a defendant in a criminal prosecution to call witnesses to testify in (sic) his or her behalf requires a reconsideration of the denial position when a criminal defendant attempts to introduce exculpatory polygraph evidence."

Vickie Lorene Rock was convicted of shooting her husband to death in their home. Apparently, a physical confrontation had occurred just before the shooting about which Rock could remember little. She subjected herself to hypnosis so as to improve her recall of the events. According to her recall she remembered holding the gun but not pulling the trigger. She also remembered her husband grabbing her arm before the gun was fired. Tests proved that her version may be true.

Her request to testify on her behalf was rejected by the trial judge because of the ‘...established “Arkansas rule” that a witness who has been hypnotized to assist recall about an incident is incompetent to testify about it...’ (McCall 1996:392-393). This rule was based on likelihood of posthypnotic recall being inaccurate because of factors such as vulnerability to suggestion and confabulation.

On appeal, “The U.S. Supreme Court nonetheless reversed Rock’s conviction holding that the defendant’s Sixth Amendment right to call witnesses in (sic) her behalf in a criminal action included the right to testify about the incident regardless of whether her memory had been hypnotically refreshed...The Court noted that despite its potential for unreliability, hypnosis had been recognized as an important investigative tool” (McCall 1996:393).

#### 5.5.8 UNITED STATES V PICCINONNA - 1989

Julio Piccinonna was convicted on two counts of perjury relating to “...antitrust violations in the South Florida garbage industry” according to Brennan (1991:144). He had been indicted by a grand jury for statements he had made before it during the course of an investigation.

His conviction was appealed on the grounds that the trial court had made a mistake in not allowing polygraph evidence to be admitted, which showed that he had not lied to the grand jury.

In hearing his appeal, the 'U.S. Court of Appeals for the Eleventh Circuit in *U.S. v Piccinonna* declared in a precedent setting decision that "there is no question that in recent years polygraph testing has gained increasingly widespread acceptance as a useful and reliable scientific tool. The Science of polygraphy has progressed to a level of acceptance sufficient to allow the use of polygraph evidence in limited circumstances when the danger of unfair prejudice is minimized" ' Matte (1996:555).

Halbleib (1991:227) wrote that, 'This represents a substantial step toward judicial legitimacy for polygraph evidence and indicates the Eleventh Circuit's belief that polygraph evidence has nearly achieved *Frye's* "general acceptance" standard.'

Of importance to this case was the creation of standards allowing for polygraph evidence to be admitted in the Eleventh Circuit. Before looking at these standards, it is first necessary to note the content of Federal Rules of Evidence 401 and 403 as reference is made thereto.

*"Federal Rule of Evidence 401* provides: Relevant evidence means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.

*Federal Rule of Evidence 403* provides: Although relevant, evidence may be excluded if its probative value is substantially outweighed by the

danger of unfair prejudice, confusion of the issues, of misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence” (italics mine) (Brennan 1991:145).

Subject to these rules, “...the following standards for polygraph evidence admissibility...” were created by the Eleventh Circuit Appeals Court according to Brennan (1991:145-146):

- “(1) where the parties stipulate in advance as to the circumstances and scope of admissibility of polygraph evidence, then the judge shall admit such evidence;
- (2) even without stipulation, polygraph evidence may be used to impeach or corroborate a witness where
  - (a) a party gives notice that it intends to use polygraph evidence,
  - (b) the opposing party has an opportunity to administer its own polygraph examination, and
  - (c) the requirements for admissibility under the Federal Rules of Evidence are met for impeachment or corroboration testimony, then the judge shall admit such evidence at his or her discretion.”

#### 5.5.9 JOHNSON V STATE OF NEW YORK – 1992

Without fear of contradicting the exclusion of the penal role players in the criminal justice system in this chapter, as stated in section 5.2, researcher has included this case so as to add a slight penological flavour to the

attempt at illustrating the polygraph's varying admissibility situation in the United States.

Kenneth Johnson had his parole status revoked and was returned to custody for his alleged attack on a person recorded as J. S. He petitioned "...the Appellate Division of the New York Supreme Court," which "...overturned a judgement of the Supreme Court and the New York State Division of parole and ordered that the petitioner be discharged from custody and returned to parole status. In upholding the appeal, the court noted that, "Expert polygraph evidence was also received which demonstrated that petitioner was not lying when he stated that he did not attack J.S." (Matte 1996:558).

#### 5.5.10 DAUBERT V MERREL DOW PHARMACUETICALS - 1993

In this case, the long-time antagonist of polygraph evidence admissibility, the *Frye* standard (see section 5.5.1), was declared to no longer be the yardstick by which the admissibility of scientific evidence would be determined. Before looking at this important case, it is important to note some background as sketched by Matson (1999:51):

"As the 1990's approached, the judicial system became increasing (sic) sensitized to the complexities of scientific issues in the courtroom. Mass tort litigation was fought almost entirely with expert testimony. Claims of junk science invading courtrooms were made. Hired guns, experts who shaded their opinions to favor (sic) the sides who hired them, were prominently mentioned. Courtrooms were fitted with television cameras showing trials

involving pivotal scientific evidence for the world audience to witness.

In the mid-1980's, litigation over the exposure of Vietnam veterans to the chemical defoliant Agent Orange reached the courtroom. The case consolidated 15 000 people into one mass tort class action. At issue were animal and toxicological studies that showed a relationship between Agent Orange and medical symptoms, while epidemiological studies did not indicate causation. The judge took on the extraordinary role of screening and evaluating the scientific evidence presented by the experts prior to trial and disallowing the animal and toxicological studies. His basis for this decision was that the science did not meet minimum standards of reliability. *This deviation from Frye, with the judge taking on the roles of gatekeeper and arbitrator of science, was an early signal that significant changes were underway*" (italics mine).

According to Burnham (1995:401), "The law of torts concerns civil wrongs: wrongful acts which injure the body, property, or reputation of a person that can result in civil liability."

Merrel Dow Pharmaceuticals were sued by a child Daubert on the basis that a prescription drug Bendectin, which the mother had used as an anti-nausea medication, had caused birth defects. (The case was in fact a mass tort. The drug had been used by about 30 million women). The plaintiff produced as evidence science which "...included reworked epidemiological statistics, plus animal and toxicological studies that showed that the chemical structures of the drug were similar to those of other chemical known to cause birth defects." Defence counsel for Merrel Dow moved for the matter to be thrown out as science presented



by the relevant experts did not meet the *Frye* standard in that the reworked statistical data had as yet not been published nor subject to peer review. Consequently it argued, there could be no general acceptance by the scientific community. Judgement was handed down in favour of the defendant and was also affirmed by the Federal Appeals Court which found "...that unpublished statistical reanalysis of previously published studies were problematic because the reliability of a scientific technique does not vary according to the circumstances of each case" (Matson 1999:51).

Plaintiff, by way of Writ of Certiorari (a request to the high court to review a case), turned to the United States Supreme Court (Kolasa & Meyer 1987:194, Matte 1996:558). On 28<sup>th</sup> June 1993, the United States Supreme Court handed down its decision. According to Bjur & Richardson (1999:69), "The *Daubert* decision tossed out 70 years of law involving the admissibility of expert testimony, with its explicit statement that the famous 1923 decision in *Frye v the United States* had been superseded by the Federal Rules of Evidence, which had been approved in 1975."

Matte (1996:558) highlights the following from the court's ruling:

- 'Nothing in the Rule as a whole or in the text and drafting history of Rule 702, which specifically governs expert testimony, gives any indication that "general acceptance" is a necessary precondition to the admissibility of scientific evidence. Moreover, such a rigid standard would be at odds with the *Rules' liberal thrust* and their general approach of

relaxing the traditional barriers to “opinion testimony” ’  
(italics mine).

- The presiding judge “...must make a *preliminary assessment* of whether the testimony’s underlying reasoning or methodology is scientifically valid and properly can be applied to the facts at issue. Many considerations will bear on the inquiry, including whether the *theory or technique in question can be (and has been) tested*, whether it has been *subject to peer review and publication*, its known or *potential error rate*, and the existence and *maintenance of standards* controlling its operation, and whether it has attracted widespread acceptance within a relevant scientific community” (italics mine).
- ‘*Cross-examination*, presentation of contrary evidence, and careful instruction on the burden of proof, rather than wholesale exclusion under an uncompromising “general acceptance” standard, is the appropriate means by which evidence based on valid principles may be challenged’ (italics mine).

Before presenting the Federal Rules of Evidence relating to expert testimony, researcher has felt it necessary to emphasise certain aspects from above mentioned extracts from the Daubert ruling. Firstly, the “*Rule’s liberal thrust*” should not be interpreted as courts wishing to allow any opinion into evidence. Matson (1999:iii) points out that “...the real importance of the Daubert decision” lies in the opening of “...the doors for the federal judiciary to perform a gate-keeping function to keep unreliable scientific testimony from the jury.” Secondly, in making a “*preliminary assessment*” of the suitability of the testimony, a number of

issues are considered by the judge. Researcher pays attention to some of these in Chapter 7. The testing of the “*theory or technique*,” the question of “*publication and peer review*” and “*potential error rate*” are dealt with in the section devoted to validity and reliability studies (7.2.2.1). The “*maintenance of standards*” enjoys attention in section 7.4.2. which deals with enforcing membership of an association. Thirdly, the question of “*cross-examination*” carries with it a concern related to the suitability of the typical polygrapher as an expert witness. This concern stems from the training afforded (see section 3.6.2) and is dealt with in section 7.2.2.2.

The Federal Rules of Evidence which relate to expert testimony are 701 - 706. It is necessary to note the comment of Feder (1991:209) regarding these Rules. He is of the opinion that “...they tend to exemplify the current mainstream of legal thought on the subject. However, evidence rules in the various states vary considerably, and these rules have themselves been interpreted by many court decisions and opinions.”

Feder (1991:17-18) provides a synopsis of Federal Rules of Evidence 701 - 706:

- *Rule 701.* General reference for the use of scientific, technical, or specialized knowledge.
- *Rule 702.* A liberal approach to the admission of expert testimony if that testimony will “assist the trier of fact” to understand the evidence or determine an issue. This rule also sets forth a liberal standard to the question of who is an expert.

- *Rule 703.* Experts may base their opinion or inference on facts or data which are not necessarily admissible or admitted into evidence at the trial.
- *Rule 704.* You (the expert) may give testimony on any ultimate issue to be decided by the trier of fact.
- *Rule 705.* You (the expert) may state your opinions and conclusions without disclosing the underlying facts or data of your opinion unless the court requires you to do so.
- *Rule 706.* A court may appoint its own expert witnesses to assist the dispute-resolution process' (brackets mine).

(Addendum 6 contains the complete Federal Rules of Evidence 701 through 706).

#### 5.5.11 UNITED STATES V BLACK - 1993

The words of Justice Stevens relating to an inconsistent Governmental position relating to polygraph evidence admissibility (see section 5.5), ring loud and clear in this case. In the very same year of the *Daubert* decision (see section 5.5.10), the Second Circuit Court in ruling on allowing polygraph results to be admitted in this case, "...stated that nothing in *Daubert v Merrel Dow Pharmaceuticals, Inc.*, would disturb the settled precedent that polygraph evidence is neither reliable or admissible" (Matte 1996:559).

#### 5.5.12 UNITED STATES V WILLIAMS - 1994

In *United States v Gipson* (see section 5.5.6), it was mentioned that the Military Rules of Evidence had been changed to specifically exclude

polygraph evidence. The specific rule dealing with this, MRE 707, was challenged in this case in much the same way as *Rock* (see section 5.5.7) had done. Consequently, "...an intermediate appellate court in the military justice system held that the denial position in MRE 707 was unconstitutional" (McCall 1996:407). The accused's rights contained in the Fifth Amendment, assuring him of a fair court martial, and those in the Sixth Amendment, entitling him to produce exculpatory witnesses, were violated (Matte 1996:561).

#### 5.5.13 UNITED STATES V CRUMBY - 1995

Thomas Riley admitted to robbing a bank in Arizona on 30 April 1993. He pointed out David Crumby, an employee of the bank, as being the inside man in planning the robbery. Crumby denied this and in attempting to prove his innocence submitted himself to a polygraph test. The former police polygraphist who conducted the test, Tom Ezell, concluded that Crumby was being truthful. Defence counsel for Crumby moved for an evidentiary hearing as he wanted to introduce the exculpatory polygraph results at trial.

"It was with this motion for an evidentiary hearing that David Crumby began to change the face of the Ninth Circuit, if not the face of the American legal system, as he stirred the court from its traditional self-imposed stance against the polygraph test to a stance of the test as an evidentiary tool" writes Moursund (1996:480). Four important reasons were forwarded by the court for allowing the evidence to be admitted.

The first reason was the facts of the case. Previous cases in the Ninth Circuit had the effects of polygraph evidence in branding an innocent (or

not suspected) person guilty. Here was a defendant claiming his innocence. Researcher assumes that the reasoning applied was that the onus of proof as to the defendant's guilt lay with the state. In the previous cases, the onus would have rested with the polygraph.

Secondly, "Two factors convinced the court as to this increase in polygraph test reliability. First, the court concluded the science of polygraphy had matured. Second, each party presented evidence attesting to the polygraph's reliability."

Thirdly, the court noted the decision in *United States v Piccinonna* of the Eleventh Circuit (see section 5.5.8), which "...noted that polygraph testing has gained increasingly widespread acceptance as a useful and reliable scientific tool."

"The fourth and most important reason for the Districts Court review of its polygraph policy was the Supreme Court decision in *Daubert*...The court determined the polygraph to be sufficiently reliable under *Daubert* to be admitted as scientific evidence under Federal Rule Evidence of 702" Moursund (1996:481-484).

#### 5.5.14 UNITED STATES V POSADO - 1995

This case makes for interesting reading in the light of the Fifth Circuit's application of the *per se* exclusion of polygraph evidence in *Frogge* (see section 5.5.5). The case is also interesting for its Dripps' solution possibilities.

“The three defendants in *United States v Posado* were arrested at Houston International Airport while waiting to board their flight and were charged with conspiracy to possess and possession with intent to distribute in excess of five kilograms of cocaine. The defendants later claimed the law enforcement officers who arrested them searched their bags before obtaining their consent. They moved to suppress the evidence based on the Fourth Amendment. The officers, however, claimed they obtained consent both orally and in writing before searching the bags and finding cocaine” (Bander 1997:691).

The defendants then requested polygraph examinations to support their version of events. Before taking the tests, prosecution was informed and invited to be part of the tests. Furthermore, they offered to stipulate the admissibility of the results. When prosecution declined all these offers, the defendants proceeded to each undergo two polygraph tests with different polygraph examiners. All the results indicated that the defendants were being truthful.

Defence now requested that the examiners testify at the suppression hearing (see section 5.3.3.1) or alternatively “...that a hearing be held to determine the admissibility of the polygraph evidence under the Federal Rules of Evidence and the guidelines established by the United States Supreme Court in *Daubert v Merrel Dow Pharmaceuticals, Inc.*” Both the admission of the polygraph evidence and evidentiary hearing were denied by the District Court. The defendants had even offered to provide another polygraphist as expert to testify on polygraphy’s reliability. At the suppression hearing, the motion to suppress was denied by the District Court as it was of the opinion that the defendants had voluntarily allowed

the search. At trial, the defendants were found guilty and convicted. On appeal, the United States Court of Appeals ruled as follows:

‘The district court erred in applying a per se rule against the admissibility of polygraph evidence. Therefore, “the district court’s ruling on the motion to suppress is [reversed], the defendant’s convictions are [vacated] and the case is [remanded] to the district court for consideration of the evidentiary reliability and relevance of the polygraph evidence proffered by the defendants under the principles embodied in the Federal Rules of Evidence and the Supreme Court decision in *Daubert*’ (Bander 1997:691-692).

The words of Justice Holmes (see section 5.5) echo in those of Bander who sees the decision in Posado “...as mandating trial courts to consider scientific or technical evidence on a case-by-case basis instead of simply applying an a priori rule, per se or otherwise” (1997:700).

#### 5.5.15 UNITED STATES V SCHEFFER - 1998

Just when the admissibility door had appeared to open for polygraph evidence, along came the 31<sup>st</sup> March 1998. While not quite the Ides of March nor quite as serious a blow for polygraph proponents as that which Julius Caesar experienced that day, this day heralded an important judgement of the United States Supreme Court.

Vaughan (1998:21) writes as follows:



“On March 31, 1998, the United States Supreme Court announced its opinion in *United States v Scheffer*...In this much anticipated opinion the Court reversed the United States Court of Appeals for the Armed Services determination that *per se* evidentiary rules excluding polygraph evidence in criminal proceedings violated a defendant’s U.S. Constitutional Sixth Amendment right to present a defense (sic).”

Military Rule of Evidence 707, which had arisen from *Gipson* (see section 5.5.6) and been declared unconstitutional in *Williams* (see section 5.5.12), was again entrenched.

Scheffer had worked for the Air Force Office of Special Investigations as an informant since March 1992. He was advised that as part of his work, he would have to submit to routine drug testing and polygraph examinations. In April 1992 he had been asked to submit to such tests. The urine test showed traces of methamphetamine, yet Scheffer passed the polygraph examination relating to drug use. Scheffer’s defence was one of unintentional ingestion. When his credibility was called into question by prosecution, he sought to have the results of his polygraph test admitted as evidence. This was denied and he was convicted (Hughes 1998:653-655).

*Rock* (see section 5.5.7) enjoyed attention in the Supreme Court’s principal opinion which was written by Justice Thomas:

‘In *Scheffer* Justice Thomas citing *Rock* and other similar authority, found that: “State and federal rule makers therefore have broad latitude under the Constitution to establish rules excluding

evidence. Such rules do not abridge an accused's rights to present a defense (sic) so long as they are not arbitrary or disproportionate to the purposes they are designed to serve" ' reports Vaughan (1998:22-23), who continues to add, 'Justice Thomas declined to apply in *Scheffer* the more rigorous (sic) requirement of *Rock* that required that the government, to survive a constitutional challenge of a rule of per se inadmissibility of hypnotically-refreshed testimony, to repudiate the validity of all hypnotically-refreshed testimony. Justice Thomas observed that in *Rock*, the effect of excluding a defendant's hypnotically-refreshed testimony was to prevent the defendant from testifying on his own behalf as to relevant facts about the case. He further observed that excluding Airman Scheffer's exculpatory polygraph did not prevent Scheffer from testifying on his own behalf but prevented only the introduction of "expert opinion testimony to bolster his won credibility." Justice Thomas found that, unlike *Rock*, such restriction was not a significant impairment to a defendant's case. Based on this test then, the government was required only to provide a legitimate governmental interest in promulgating a per se rule excluding all polygraph evidence.'

It is researcher's opinion that the debate about the exact nature and extent of the defence which a defendant is entitled to present in terms of his Sixth Amendment rights, is best left in the hands of the law-makers. What is of importance from this judgement for the polygraphist is the emphasis on purpose for which polygraph evidence is to be used. After all, "Rule 403," (see section 5.5.8) "permits the exclusion of otherwise relevant evidence if its probative value is substantially outweighed by

dangers of prejudice, confusion, misleading the jury, or wasting time” (Foster & Huber 1997:11).

Finally, it should be remembered that the decision in *Scheffer* relates to a military matter and as such may not be as serious a blow to proponents of polygraph evidence admissibility. As Vaughan (1998:21) says:

“While this decision is a setback for proponents of the admission of polygraph evidence in criminal cases, the opinion of the Court does not foreclose the admission of polygraph evidence in those jurisdictions where rule-making authorities have not imposed a *per se* rule of exclusion of polygraph evidence.”

From the cases presented, it is obvious that polygraph evidence admissibility has enjoyed a bumpy ride in American courts while appearing to have made some progress subject to certain stipulations. The admissibility situation varies throughout the States of America.

## 5.6 POLYGRAPH EVIDENCE ADMISSIBILITY IN THE VARIOUS STATES OF AMERICA

“Over time, three dominant approaches regarding the admissibility of polygraph testimony emerged” according to Henseler (1997:1247-1248).

### 5.6.1 ADMISSION BY STIPULATION

According to Iacona & Patrick (1999:461), “Polygraph tests often find their way into criminal court through one of two routes. One involves the stipulated test in which polygraph examinations are administered with the

prior agreement of prosecuting and defense (sic) attorneys.” This had happened as early as 1935 in Loniello (see section 5.5.2).

The following States prescribe to this:

- Arizona
- Arkansas
- California
- Delaware
- Florida
- Georgia
- Idaho
- Indiana
- Iowa
- Kansas
- Nevada
- New Jersey
- North Dakota
- Ohio
- Oregon
- Utah
- Washington
- Wyoming (Best 1997:409-410, Henseler 1997:1248, McCall 1996:372).

#### 5.6.2 ADMISSION OVER OBJECTION

‘Another way that polygraph results may enter a courtroom is over the objection of the prosecution in cases where it can “advance the cause of the defense (sic)” ’ (Iacono & Patrick 1999:462). The admissibility of the polygraph evidence is subject to the discretion of the court.

The following States adopt this discretionary policy:

- New Mexico
- Virginia (Best 1997:410-411, Henseler 1997:1248).

### 5.6.3 PER SE INADMISSIBILITY

Best (1997:407) writes that, “A shrinking majority of State Courts...” apply a *per se* rule of inadmissibility of polygraph evidence. Those doing so are found in the following States:

- Alabama
- Alaska
- Colorado
- Connecticut
- Hawaii
- Illinois
- Kentucky
- Louisiana
- Miami
- Maryland
- Massachusetts
- Michigan

- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- New Hampshire
- New York
- North Carolina
- Oklahoma
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas
- Vermont
- West Virginia
- Wisconsin (Best 1997:407-509, Henseler 1997:1248).

It is researcher's opinion that the triformed evidentiary appearance of polygraphy in American courts is both confusing and inconsistent. Does the psychophysiological make-up of a Californian differ so drastically from that of a Texan that a polygraph would prove more, or less, reliable from the one to the other? As attorney Lee M. Burkey said:

“It is difficult to understand how the polygraph method is improved merely because the parties stipulate to be bound by it.”

It is necessary to examine some of the reasons which prevent a *per se* rule of admissibility for polygraph evidence.

## 5.7 LEGAL HURDLES TO THE ADMISSIBILITY OF POLYGRAPH EVIDENCE

A number of objections have been raised concerning the admissibility of polygraph evidence.

### 5.7.1 IMPACT ON JURY

Vaughan (1998:23-24) quotes Justice Thomas:

“A fundamental premise of our criminal trial system is that the jury is the lie detector. Determining the weight and credibility of witness testimony, therefore, has long been held to be the part of every case that belongs to the jury, who are presumed to be fitted for it by their natural intelligence and their practical knowledge of men and the ways of men. By its very nature, polygraph evidence may diminish the jury’s role in making credibility determinations.”

Iacono & Patrick (1999:463) provide two reasons as to why polygraph evidence may result in juries assigning “...excessive probative weight to this evidence”:

- Polygraph testing is surrounded by a ‘...scientific and technical aura...an aura enhanced by alternative names such as “psychophysiological detection of deception” and “forensic psychophysiology”...’.

- Polygraph evidence "...appears to strike to the heart of the issue at hand (i.e., Is the defendant telling the truth?)...".

A number of studies have been conducted in an attempt to determine just how influential the polygraph is on jury deliberations.

Carlson, Pasano & Jannuzzo (1977:148-154) used the juries who sat "...during the spring 1976 calendar of the moot trials conducted by the Yale Law School's Thomas W. Swan Barristers' Union" for their study. Having delivered their verdict after each trial, each juror was provided with information relating to evidence which a polygraph expert would have provided at trial. Half were informed that the polygraph was 70% accurate and the other half were given a figure of 95%. Taking into account the limitations of a study involving moot trials, Carlson et al reported that 19,3% of the jurors would have changed their vote on the basis of polygraph testimony. 66% of these were from the half that had been informed of 95% accuracy. They concluded "...that jurors will *not* be unduly swayed by polygraph testimony."

Markwart & Lynch (1979:324-332) conducted a study to find out if juries would "...accept the findings of the polygraph or, more properly, view it in relation to all other evidence and accept it only as a guide...The aim of this experiment was to present to different juries a case without polygraph testimony, the same case with added polygraph evidence favorable (sic) to the accused, and again the same case, with polygraph evidence unfavorable (sic) to the accused." Using the facts of an already heard trial, four juries were run "...in each condition." The juries were instructed that the polygraph was 90% accurate. The results were as follows:



“Clearly the controlled introduction of polygraph results unfavorable (sic) to the accused had a significant...impact on the juror’s decision-making, compared to no polygraph information. Guilty findings were increased from 12 percent in the control condition to 66 percent with this added evidence...When favorable (sic) polygraph evidence was introduced, some mixed and unanticipated results occurred. It would be expected that with a preponderance of not guilty findings in the control condition, the addition of evidence favorable (sic) to the accused should at least reinforce such findings, if not strengthen them ... However, the introduction of favorable (sic) polygraph evidence actually resulted in a significantly greater number of guilty decisions at the final decision level.”

With no polygraph evidence, 12% of the jurors found the accused guilty. This figure increased to 41% when favourable evidence was added. Two juries were responsible for this increase. The other two remained consistent with their original decision. On closer inspection, it was found that the average age of the jurors in the groups responsible for the increase fell below the group mean of 22.7. There was a significant relationship between the concurrence of juror findings and that of the polygraph when age was considered. Jurors over the age of 23 concurred with the polygraph 86% of the time. It thus appeared that those under 23 had developed an antagonistic attitude to the polygraph. Markwart and Lynch warn that any conclusion in this regard “...be drawn very guardedly...” and that further study was required. In summary they concluded that unfavourable polygraph evidence had a significant impact on jury decisions.

In 1980, Cavoukian & Heslegrave found a significant relationship between favourable polygraph evidence and the number of not guilty findings (Iacono & Patrick 1999:463). Spanos, Myers, Dubreuil & Pawlak, in a 1992 study, found that eyewitness testimony had significantly more impact on jury decisions than polygraph evidence. In 1997, Myers & Arbuthnot studied the effect of CQT (see section 3.8.2.2) and GKT (see section 3.8.2.4) polygraph testimony on jurors. Neither type of evidence appeared to have much of an impact (Iacono & Patrick 1999:464).

It appears that the contrasting findings of the various studies may be due to varying experimental conditions. It is thus difficult to comment on the objection that the polygraph will usurp the role of the jury. Researcher agrees with Sevilla (1984:18) who is of the opinion that:

“The issue of jury impact should be irrelevant to the decision to admit evidence. Barring strong countervailing policy reasons, if evidence is relevant, it should be admitted irrespective of its supposed impact on a jury. If the admission of relevant evidence is prejudicial to the other side, so be it. The best evidence often is.”

#### 5.7.2 LACK OF TECHNIQUE OR EXAMINER STANDARDS

In section 3.6.2 researcher expressed concerns relating to the admission requirements to undergo polygraph training. Consideration of the following heightens concern for the actual training and makes this objection a valid one as the polygraphist is the most important factor in the polygraph effort (see section 3.6.1):

- “Only about 20 percent of the individuals who hold themselves out as examiners possess, in our opinion, the training and skill required for competency in the field” comment Reid and Inbau (Abbell 1977:45).
- “In his law review, Raskin (1986) noted that one of the major problems with polygraph evidence and testimony was the sorry state of training for polygraph examiners” write Honts & Perry (1992:369).
- In 1986, the American Psychological Association commented that, “Those giving polygraph tests often have limited training and expertise in psychology and in the interpretation of psychophysiological measures” (Honts & Perry 1992:369-270).

The question of the polygraphist as an expert witness is commented on section 7.2.2.3 when the adequacy of training is questioned.

### 5.7.3 VALIDITY AND RELIABILITY

Sevilla (1984:20) is of the opinion that, “The issue of validity and reliability should be the determinative factor with respect to polygraph admissibility.” For now, validity and reliability considerations are merely noted in the context of being regarded as hurdles to the legal admissibility of polygraph evidence. Section 7.2.2.1 considers these aspects in greater detail when attention is given to a number of validity and reliability studies.

### 5.7.4 WASTE OF TIME AND CONFUSION OF ISSUES

Abbell (1977:50-51) explains how polygraph evidence can become time consuming as follows:

“The testimony of government and defense (sic) experts as to the general validity and reliability of the polygraph can be expected to consume one full day at a minimum. Testimony as to the validity and reliability of the particular test or tests involved in a case will entail at least several additional hours. Testimony as to the polygraph examiner’s training and qualifications, where they become an issue, will take still more court time. In the past few years pretrial hearings on motions to admit polygraph results have generally taken at least two to three days.”

Researcher finds it difficult to understand an objection founded on time wasting. Why should this only apply to polygraph evidence and is time expenditure a cardinal sin in the pursuit of justice?

Concerning the confusion of issues, “The thrust of this argument states that, instead of focussing on the guilt or innocence of the defendant, the trial will become entangled in a battle of experts over the proper weight to afford polygraph testimony” (Halbleib 1991:238).

Again, it is unclear to researcher why this apparent confusion of issues should be unique to polygraph evidence. Under the guidance of a competent judge, the applicability of polygraph testimony can surely be determined within due legal process so as to become an ally of the determination of guilt or innocence rather than an antagonist thereof.

### 5.7.5 LEGAL AND LOGICAL RELEVANCE

The Federal Rules of Evidence only allow evidence which is relevant to be admitted as evidence. According to Honts & Perry (1992:363-365), two forms of relevance are defined:

- “Legal relevance is defined as any evidence having any tendency to make more probable or less probable any fact or consequence, provided that the evidence is not admissible under any of the other rules of evidence.”

Two objections find their origin in this legal relevance of evidence. Firstly the probative value of polygraph evidence is questioned. Objectors to polygraph evidence say that all it offers the court is the opinion of an expert as to whether an individual has been truthful or not during an examination. Secondly, regarding the admissibility over objection. Honts & Perry provide “...a basic understanding of the rules regarding character and impeachment evidence. The general rule regarding character evidence is that character evidence is inadmissible to prove that a person acted in conformity with that trait of character...There are several exceptions to this general rule, one of which allows the use of character evidence to impeach the truthfulness of a witness, including a criminal accused who takes the witness stand...This rule allowing character evidence to impeach a witness limits the form of evidence: Character for truthfulness may only be presented in the form of reputation or opinion evidence...In addition, FRE 608 prohibits the admission of specific

instances of conduct, whether or not character is put in issue...The arguments that polygraph evidence is inadmissible under FRE 608 either asserts that the polygraph examiner's opinion lacks the foundation upon which to conclude that an examinee has good character for truthfulness or the argument goes that the polygraph evidence is an inadmissible form of impeachment evidence because the substance of the polygrapher's testimony relates to a specific instance of conduct, namely, the polygraph examination."

Honts & Perry refute both these objections on the grounds that polygraph evidence is not produced "...for the purpose of providing character." Instead they say, it is evidence allowing for an inference to be made regarding "...the credibility of the witness, based not on an experiential opinion, but on a scientific conclusion based on collected data."

- "Logical relevance is defined as the extent to which evidence tends to prove what it purports to prove." In this regard, the objections to polygraph evidence on the grounds of lacking logical relevance are similar to those raised concerning validity and reliability (see section 5.7.3) and as such enjoy attention in section 7.2.2.1.

#### 5.7.6 THE FRIENDLY POLYGRAPHER

This objection to polygraph evidence stems from exculpatory results of tests, conducted for defence attorneys. Lykken (Simon 1994:1063-1064) described this hypothesis in the following manner:

“Fear of discovery is the basis for polygraphic detection of deception. Such fear is relatively minimal in the protected condition of a non adversarial test where the only cost of failure is the fee paid and the nuisance of having to seek out another examiner.”

Not only is the motivation to lie to the “friendly polygrapher” less say the critics, but should the results be negative they are protected by attorney-client privilege. In short, the assertion made is that with motivation lacking and no fear of consequences present, results will be “...substantially different than results which would arise from examinations conducted by neutral examiners or the police” (Moses 1983:1122-1123).

Researcher had insight into one such case. Tracy Bellamy (see section 5.4.3) failed a police polygraph examination on the 10/8/1998 yet passed a test arranged by her defence counsel with polygraphist Gert Strydom on 15/9/1998 (Slupski 2000). Strydom had in fact, after conducting his test, suggested that Bellamy be excluded from any further investigations (Meiring 2000).

This however appears to be the exception rather than the rule as, “Scientific literature, however, provides no support for these assumptions and generally contradicts them” (Simon 1994:1064).

It should be clear that polygraph evidence faces a number of legal hurdles which have to be cleared before it can enjoy the same welcome as other forms of evidence in all of the United States. Many of the objections noted in this section also apply in other countries. Researcher now presents some of the other more readily accepted evidence in relation to that of the polygraph.

#### 5.8 POLYGRAPH EVIDENCE IN RELATION TO OTHER FORMS OF FORENSIC EVIDENCE *added*

This section is not presented in an attempt to further the cause of the polygraph in the court but is merely an attempt to place its evidentiary possibilities in perspective when considering some other forms of forensic evidence. Before looking at two comparative studies, certain comments relating to other forms of evidence are noted.

- “Justice would less often miscarry if all who are to weigh evidence were more conscious of the treachery of human memory. Yes, it can be said that, while the court makes the fullest use of all the modern scientific methods when, for instance, a drop of dried blood is to be examined in a murder case, the same court is completely satisfied with the most unscientific and haphazard methods of common prejudice and ignorance when a mental product, especially the memory report of a witness, is to be examined” writes Munsterberg (Wells 1985:256).
- “Eyewitness testimony is widely used and is given great weight by juries in making credibility determinations in criminal cases. Yet, eyewitness testimony is notoriously



unreliable. The Second Circuit has stated that it is the least reliable form of evidence” (Rapp 1985:162).

- “For a long time, legal scholars and psychologists have pointed out the problems inherent in the accounts of witnesses. The particular issue addressed is often the attempted identification of a suspect by a victim or bystander-witness. As witness identifications have repeatedly been shown to be in error, some legal observers have designated mistaken identifications as the single most important cause for miscarriage of justice” (Sporer, Malpass & Koehnken 1996:vii).
- “In *United States v Ridling* (see section 5.5.4), a leading case favoring (sic) admission of polygraph evidence, the court found that expert polygraph testimony was as reliable or more reliable than that of fingerprint or ballistics experts” (Rapp 1985:164).
- “In a Los Angeles murder trial, the jury forewoman said that the “jurors reached the guilty verdict by relying heavily on the ballistics evidence.” In a New York murder case, however, the jury acquitted, and one juror later told the press: “[A] number of [my] colleagues were skeptical (sic) of the ballistics evidence” (Giannelli 1991:195).

Against this background, two studies examining polygraph in relation to other methods of criminal identification were conducted.

#### 5.8.1 THE WIDACKI AND HORVATH STUDY - 1978

This study set out to measure the validity of the polygraph as identifier of the perpetrator when compared to handwriting analysis, eye witness identification and fingerprinting. Twenty groups of four volunteers each participated in the study. Each group contained one perpetrator who was promised a reward if proved innocent by the polygraph. Each perpetrator was asked to collect a parcel from a doorkeeper for which he had to sign a fictitious name. The perpetrator was advised to try and deform his handwriting. He was also handed an envelope and instruction sheet to read.

Fingerprints were later taken from the envelope and instruction sheet. The fingerprint expert knew which group was responsible for each perpetrated crime. He had to identify the perpetrator in each group.

The handwriting expert was also aware of which group was responsible for which occurrence. The handwriting of the perpetrator had to be identified.

The two doorkeepers who had handed over the parcels and obtained the signatures, a process which took about two minutes, were shown photographs of each member of each group and asked to identify the perpetrator.

Without discussing the merits of the study, researcher presents the following table of summarised results:

TABLE 2. SUMMARISED RESULTS OF THE WIDACKI & HORVATH STUDY (1978) COMPARING POLYGRAPH EVIDENCE TO VARIOUS OTHER FORMS OF EVIDENCE

<b>METHOD</b>	<b>CORRECT</b>	<b>INCORRECT</b>	<b>INCONCLUSIVE</b>
Polygraph	18	1	1
Handwriting	17	1	2
Eyewitness	7	4	9
Fingerprinting	4	0	16

The polygraph technique employed was the CQT (see section 3.8.2.2) (Elaad 1999:216-217, Matte 1996:556-557).

#### 5.8.2 THE ELAAD STUDY - 1999

This study aimed "...to assess the accuracy of the CQT and GKT polygraph tests (see sections 3.8.2.2 and 3.8.2.4) in comparison to other common conditions for identification" (Elaad 1999:217). In conjunction with the Israeli Police, Elaad aimed to create more fieldlike conditions than in the study of Widacki and Horvath (see section 5.8.1). Each case had between 2 and 6 suspects with the number of perpetrators being 0, 1 or 2 so as to prevent experts from estimating probabilities of guilt or innocence. Eighty one male participants took part in the study.

Twenty five perpetrators were chosen for twenty perpetrated events. The mock crime enacted involved entering a room, opening a box and stealing money from an envelope in the box. They were watched by one or two eyewitnesses. Furthermore, they also had to avoid disclosure by

falsifying a receipt which indicated that some other person had received the money in exchange for providing equipment to the Israeli Police. Fourteen of the perpetrators were asked to change their handwriting. One perpetrator was asked to leave a note with his natural handwriting and one with deformed writing. Having taken the money, they were instructed to phone an accomplice and provide a location where they would meet and hand over the money. These phone calls were recorded with 13 perpetrators being asked to try and disguise their voice.

The 56 innocent participants were instructed to enter the room and take the envelope and bring it to the experimenter. Incentives were offered for guilty subjects who were found innocent while monetary punishment resulted if found deceptive. The opposite applied to the innocent subjects. Fingerprints, handwriting and voice samples were taken at the various Israeli Police forensic laboratories.

The summarised results of this study concerning correct identification of the 25 perpetrators are as follows (Elaad 1999:217-222):

*POLYGRAPH*

CQT	10 (40%)
GKT	19 (76%)

*FINGERPRINTS*                      19 (76%)

*VOICE*

Natural	11	(92%)
Deformed	10	(77%)

### *HANDWRITING*

Natural	13	(100%)
Deformed	9	(69%)

### *EYEWITNESS*

Lineup	17	(68%)
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While this information is only presented in summarised form by researcher, it is interesting to note that when attempts were made at deception as in voice deformed and handwriting deformed, the GKT polygraph test proved comparable as an evidentiary tool.

## 5.9 SUMMARY

The extensive use of the polygraph by police agencies is surely proof of the role it has to play in the criminal justice system. However, this increasing realisation of the value of the polygraph by police authorities appears to fall on barren ground when one further enters the criminal justice system. Doubt and reserved acceptance stand opposed to total rejection in the American legal system. Not a single reported case exists concerning polygraph evidence in South African law reports. It is researcher's opinion that in order for this situation to change that polygraphists, especially in South Africa, present a *united* and *formally educated* front to the various role players in the criminal justice system. (This aspect is dealt with in section 7.4.3). From this will come the confidence necessary for defence counsel and prosecution alike, to argue the merits of polygraph evidence and so begin its journey into our courts of law. After all, 'As Silverberg notes, "many other forms of evidence

that have traditionally been accorded uncritical judicial approbation are far less reliable [than the polygraph]" ' (Cavoukian & Heslegrave 1980:118).

'It is high time that lawyers and judges accept the fact that the rest of society is entitled to the respect and consideration of equals. The mere possession of an LL.B or a J.D does not anoint the holder with powers of discernment not vested in our ordinary mortals. Today it takes a certain affrontery, a certain intellectual arrogance, a certain snobbery to say to a juror, "You cannot hear this evidence because you are not capable of effectively evaluating it" ' J.P. Gardner - (Honts & Perry 1992:367).

## CHAPTER SIX

### POLYGRAPH UTILIZATION IN PENOLOGICAL CONTEXT

“The extent to which future misconduct can be predicted is contingent upon what is available in the way of predictive constructs, how well these constructs submit to reliable measurement, and the realistic restrictions on assessment procedures in an overtaxed criminal justice system” Heilbrun (Hess & Weiner 1999:306).

## CHAPTER SIX

### POLYGRAPH UTILIZATION IN PENOLOGICAL CONTEXT

#### 6.1 INTRODUCTION

The final two components of the criminal justice system, corrections and social welfare (see section 5.2), represent two areas of minor polygraph utilization. It is however important to note penological application of the polygraph for two reasons. Firstly, Penology as an academic science aimed at improving the functioning of the criminal justice system, stands central to this dissertation. Secondly, with little or no utilization of the polygraph in the South African penal community, thought may be generated as to possible research aimed at discovering whether the polygraph has a role to play in penological context.

Knoesen (1998) and Swart (1998) both report an absence of polygraph considerations in parole selection and probation monitoring in South Africa. It should be noted that while probation and parole represent two different penological concepts, they are not dealt with as such in this chapter. Far too little literature concerning these concepts in polygraph context exists for any meaningful segregated consideration to be made. Instead, researcher has used the terms interchangeably on the basis of them sharing common ground in the avoidance of problems associated with incarceration and those associated with predicting future behaviour. In this regard, Heilbrun (1999:305) has the following to say:



“The value of recommendations by mental health professionals regarding probation or parole following criminal conviction hinges primarily upon the ability to make valid predictions regarding future antisocial conduct of the offender.”

As in Chapter 5, this chapter reflects mostly the situation in the United States due to the limited literature available. Besides the Khulisa Project mentioned in section 6.6.1, researcher was only able to locate one instance of polygraph utilization in penological context in South Africa. Even then, the utilization cannot be regarded as “penological” in the strict sense of the word and may rather be seen in the context of criminal investigation. The incarcerated son of South Africa’s notorious paedophile, Gert van Rooyen, alleged that 3 former National Party Ministers had been involved in a child smuggling network with his father. Flippie van Rooyen underwent polygraph testing in order to check the veracity of these claims. The 38 year-old convicted murderer failed the test (Gifford 1997:6, Pretorius 1997:1-2).

The first section of this chapter looks at polygraph surveillance of probationers and parolees. As most polygraph surveillance concerns sexual offenders, the characteristics of such offenders, problems associated with sexual abuse cases and guidelines for applicable polygraph use are also presented. The Jackson County Sex Offender Treatment Programme provides illustration of a programme designed to monitor sexual offenders in the community.

Researcher has included a section devoted to polygraph use and victims of sexual abuse. It may appear from the content of this section that it should rather have been included in section 5.3.2, which dealt with

polygraph utilization in criminal investigations. However, due to the offender-victim relationship in sexual offences, researcher has felt it wise to view this possible polygraph contribution in penological context. Victimology, as part of the criminology study field, may be regarded as related to the science of Penology.

Lastly, and thankfully with practical illustration of South African contribution, polygraph use in Social Welfare context is presented.

## 6.2 POLYGRAPH SURVEILLANCE

In considering polygraph surveillance of parolees and probationers, attention is focused on the origin and nature thereof, the extent of such use, the various types of tests used, studies concerning the effectiveness thereof and the benefits on offer.

### 6.2.1 ORIGIN AND NATURE OF POLYGRAPH SURVEILLANCE

Three main reasons are identified for the origin of polygraph surveillance. While the reasons relating to incarceration may appear to relate to the origin of probation/parole in general, they are noted.

Firstly, prison overcrowding has necessitated community sentences (probation) and the early release (parole) of non-violent prisoners and those "...who have committed lesser crimes..." (Abrams 1989:176). In South Africa, growing prison populations are negatively impacting on the ratio of personnel to offenders (Department of Correctional Services 1997:3).

Secondly, the very nature of the prison environment is not conducive to rehabilitation. Schmidt, Soloman & Johnson (1977:93) quote a convict who wrote, "The correctional system could be compared to a patient entering a hospital for an appendectomy and coming out with a terminal case of cancer." Again, there is a need for certain offenders to be kept out of prison and rather be subject to probation/parole.

Thirdly, prison overcrowding and prison environment considerations have resulted in probation/parole supervisors' workload increasing. This has resulted in supervision being minimal according to Abrams (1989:176). Slate & Anderson (1998:2) report as follows:

"According to Abrams and Ogard, the use of polygraph surveillance of probationers originated as a result of inadequate resources for sufficient supervision. If only more time could be allocated to individual treatment of probationers, trained officers could detect untruthful clients."

Besides their ever-increasing workload, "Probation caseworkers will agree that probationers do not always tell the truth" write Slate & Anderson (1998:1). The avoidance of punishment or blame as forwarded by Shibles (see section 2.2.3.3), is surely the reason therefore.

Four years after *Valdez*, (see section 5.5.3), polygraph testing as a condition of probation was introduced. Judge Clarence Partee began using "...the polygraph as a probe to determine what other offenses (sic) persons before the court had perpetrated. Those who refused to comply with the condition were denied probation" according to Slate & Anderson (1998:2). In 1969, Judge John Tuttle of Walla Walla, Washington,

stipulated polygraph testing of probationers as indicator of violation of probation conditions.

Regarding the nature of polygraph surveillance, Marsh & Walsh (1995:83) have the following to say:

“The polygraph is used as a therapeutic tool only to encourage honest self-disclosure. When offenders are ordered into treatment *as a condition of probation or parole* they have (by their choice) been granted conditional liberty in the community. This is a privilege for which the loss of certain civil liberties (such as the right to refuse testing of this type) is a small price to pay.”

Cross & Saxe (1992:21-22) report that self-disclosure is an important consideration regarding the prediction element involved in probation/parole considerations, especially for child sexual abusers.

“Some probation and treatment programs (sic) use polygraph tests to evaluate the veracity of offenders’ self-reports to aid in sentencing or treatment planning, including whether community treatment or prison is recommended...For treatment programs (sic), the aim is not only to uncover or verify information about the crime on which the perpetrator is convicted, but also to learn about previous abuse...Probationers may be offered a choice between incarceration or probation with periodic polygraph screening.”

From above, researcher offers an operational definition of polygraph surveillance so as to illustrate the nature thereof:

Polygraph surveillance is a voluntarily accepted condition of probation/parole which aims to foster the rehabilitative effort by encouraging full self-disclosure while deterring behaviour which could be recidivistic in nature, thereby enabling the supervisory function to be more effectively fulfilled.

The results from the polygraph tests which are carried out at pre-determined intervals assist the supervisor in determining which of his parolees require greater attention. Two decisions relating to polygraph surveillance are worth noting.

In *Cassamassima v State* (1995), "...the defendant was convicted of lewd assault on a child and was required to submit to a polygraph at six-month intervals as a condition of his probation." The defendant appealed this condition but the Fifth District Court of Appeal upheld the decision as it regarded the polygraph condition "...justified by the circumstances of the particular offense (sic)...". It was however stated that the polygraph results on their own could not be submitted as evidence (see section 6.3.3) (Feld 1996:1378-1379).

In *Varnson v Satran* (1985), polygraph results were used to reject a parole application. Varnson had been found wearing a jacket containing marijuana but claimed the jacket belonged to another inmate. At his ensuing Parole Board hearing he was informed that he would only qualify for parole if he passed a polygraph test relating to the matter. Varnson failed and was denied parole. He applied to the North Dakota Supreme Court for post-conviction relief. The decision to deny parole was upheld as the court decided that the authorities had not acted only on polygraph

evidence (Honts & Quick 1995:1010-1011). Polygraph surveillance had revealed its selection and prediction capabilities.

#### 6.2.2 EXTENT OF POLYGRAPH SURVEILLANCE IN THE UNITED STATES

11% of probation/parole officers were using polygraph surveillance according to a 1994 national survey (Slate & Anderson 1998:2). Of the states allowing polygraph evidence to be admitted by stipulation (see section 5.6.1), six use polygraph surveillance of probationers/parolees:

- Arizona
- California
- Florida
- Indiana
- Oregon
- Washington (Matte 1996:597, Slate & Anderson 1998:2).

Interestingly enough, four of the states applying a *per se* rule of inadmissibility (see section 5.6.3), actually utilize polygraph surveillance:

- Colorado
- Massachusetts
- Tennessee
- Texas (Matte 1996:597, Slate & Anderson 1998:2).

Polygraph surveillance has been used in South Africa in the Khulisa Project (see section 6.6.1).

Polygraph surveillance consists of various types of tests.

### 6.2.3 TYPES OF POLYGRAPH TESTS APPLIED IN POLYGRAPH SURVEILLANCE

“While the emphasis in the use of Probationary PV (Polygraph) examinations has been on sex offenders (see section 6.1), its broader use in other types of offenses (sic) amenable to such a program (sic) should also be contemplated” (brackets mine) (Matte 1996:597). Researcher has named the various tests according to the classification used by Matte.

#### 6.2.3.1 THE CONVICTION VERIFICATION EXAMINATION

This form of examination is intended for use by a therapist on the convicted offender when denial of the crime is present. The aim of the test is thus to overcome the denial of the offence. As the test deals only with a single-issue (the crime), a Zone Comparison Test (see section 3.8.2.6) is recommended (Matte 1996:597-598). This is the first step in dealing with an offender who has agreed to polygraph surveillance as a condition of his probation yet still denies the offence. Often this is the situation with sexual offenders.

#### 6.2.3.2 THE COMPLETE DISCLOSURE EXAMINATION

“In many cases, the offender is placed in treatment following perpetrations against one victim. In reality, there is often a large number of undisclosed victims, many in need of immediate help for their own victimization issues” (Hagler 1995:104). Denial and repetitive offending are characteristic of sexual offenders (see section 6.3.1).

In section 6.2.1, mention was made of polygraph surveillance encouraging full self-disclosure. This is the aim of this test. Cumming & Buell (1997:77) describe as follows:

“Prior to the disclosure test, sex offenders would work on completing their sexual autobiography in the initial stages of treatment. A polygraph would be administered after the completion of the sexual autobiography to verify the offender’s level of honesty with their sexual autobiography. From the beginning, offenders are told that they will be having a polygraph and knowing this in advance helps them develop a more complete sexual autobiography. Using this technique, offenders are asked questions about further disclosures before the polygraph, and if deception is detected during the polygraph, offenders are given the opportunity to discuss or clarify those issues. The purpose of the disclosure test is to obtain as complete a sexual history as possible so that treatment will address all needed areas of sexual deviance.”

The question of possible self-incrimination is covered in section 6.3.3 when the guidelines for polygraph surveillance are presented. It appears to researcher as if searching Peak of Tension Tests and Guilty Knowledge Techniques (see section 3.8.2.4) may be best suited. There is however debate among polygraphists as to the appropriate technique in this instance (Matte 1996:617-620).

#### 6.2.3.3 THE MAINTENANCE (MONITORING) EXAMINATION



This examination, which is normally applied every 6 months, aims to monitor the offender's compliance with his probation/parole conditions so as to decide if more intense supervision is required. Furthermore, his interests, especially sexual, can be monitored to see if any adjustment is required in the treatment programme (Cumming & Buell 1997:77, Matte 1996:599).

In the light of only 11% of probation/parole officers in 10 states of America using polygraph surveillance, one asks oneself as to the effectiveness of this method.

#### 6.2.4 EFFECTIVENESS OF POLYGRAPH SURVEILLANCE

There have been 3 studies aimed at determining the effectiveness of polygraph surveillance.

Matte (1996:596) reports that, "In 1986, Dr. Stan Abrams and Dr. Ernest Ogard reported that 68 percent of individuals on probation for burglary, substance abuse and sex offenses (sic) who had PV examination supervision did not reoffend and successfully completed their probation, whereas only 28 percent of those individuals on probation supervision without the use of PV testing abstained from reoffending and successfully completed their probation." Of the sexual abusers in this study 71% were successful in probation with polygraph surveillance as compared to 43% in the control group.

In 1991, a Parole and Probation Officer specialising in sexual offences, Charles Edson, conducted a study on recidivism for 173 sex offenders

who had been under polygraph surveillance at some stage from 1982 to 1991. His significant findings were as follows:

- 95% were free of conviction relating to new sex crimes
- 96% were free of any new felony convictions
- 89% were free of any new criminal conviction
- 65% were free of any probation or parole revocations (Matte 1996:596-597).

Marsh & Walsh (1995:83-84) report on an "...unpublished study conducted by the staff of SANE (Sexual abuse now ended) in Boise, Idaho...". While a small study (29 offenders), the results are worth noting:

- the mean figure of 1,5 for self-reported sexual offences climbed to 9 after polygraph testing
- the figure of 67% self-reported victim of sexual abuse as a child fell to 29% after polygraph testing.

These studies raise the question as to why polygraph surveillance is so limited in probation/parole supervision especially in the light of the benefits offered.

#### 6.2.5 BENEFITS OF POLYGRAPH SURVEILLANCE

Various sources have identified certain benefits which polygraph surveillance has to offer both the penal system as well as the probation/parole effort.

- Time is more effectively spent on the supervisory function. Probation officers can concentrate on those whose polygraph results indicate reoffending or the possibility thereof (Matte 1996:597).
- An improved supervisory function leads to a more favourable view of probation/parole opportunities. Greater use of probation as a sentencing option or parole as a release option leads to a decrease in the prison population. Costs are saved and fewer are exposed to the prison environment (Matte 1996:597).
- Because of the great workload placed on probation officers, "...the threat of detection by the polygraph has deterrent value that exceeds probation departments' current ability to prevent recidivism" (Cross & Saxe 1992:22). According to Matte (1996:597), this increased deterrence offers "...additional protection for society."
- The encouragement of full self-disclosure aids the rehabilitation effort. Furthermore, the offender's accountability in the community is also increased which in turn promotes rehabilitation (Blasingame 1998:38, Hagler 1995:104).
- In making his disclosure, the offender made reveal previously unknown victims who may be in need of help (Hagler 1995:104).
- Schmidt et al (1977:96) report on the possibility that polygraph surveillance offers in the supervision of psychopathic offenders.

'His (psychopath) reality testing is sufficiently impaired to make him tend to disregard the possibilities of apprehension and punishment. Routine probation or parole supervision with high caseloads and consequent inability for the development of much of a relationship between probationer or parolee and his responsible officer has been relatively ineffective. New approaches are needed. One such approach may be the utilization of the polygraph, the so-called "lie-detector," as an "external superego" or an "artificial conscience"...In view of the relative absence of internalized societal values, precepts and moral codes... regular, and relatively infallible external control would seem to offer promise for maintenance of socially acceptable behaviors (sic) during the fixed periods between examinations...' (bracket mine).

A study by Raskin (see section 2.5.16 and 3.10.1) found the polygraph to be as effective in detecting deception in psychopaths as in non-psychopaths. Thus the notion proposed by Schmidt et al that polygraph surveillance provides an "Artificial conscience" for the psychopath to aid the rehabilitative effort, appears as a benefit to the penal system.

It was mentioned in section 6.1 that the majority of polygraph surveillance applied to sexual offenders. It is thus necessary to note certain aspects relating to this category of offender.

### 6.3 SEXUAL OFFENDERS

It is necessary to pay attention to the nature of sexual offenders so as to gain a better understanding of the problems associated with sexual abuse cases and the recommended guidelines for polygraph surveillance of such offenders.

#### 6.3.1 CHARACTERISTICS OF SEXUAL OFFENDERS

Researcher has not differentiated between the various types of sexual offenders as most of the characteristics mentioned appear common.

- The need for power and control is central to the character of the sexual offender (Matte 1996:600).
- Denial or rationalization of the offence is common (Matte 1996:600).
- The sexual misconduct is addictive, ritualistic and compulsive in nature which results in high recidivism (Davis, McShane & Williams 1995:43, Hagler 1995:98, Marsh & Walsh 1995:79).
- “Characteristics of preferential child molesters include frequent changes in employment or residence, prior arrests, and multiple victims” according to Davis et al (1995:43).
- Most sexual offenders are free of convictions for non-sexual crime and “... do not share the characteristics commonly associated with the generality of prison inmates” (West 1994:199).

Figure 3.7 represents the “Cycle of Abuse” of a typical sex offender.

### 6.3.2 PROBLEMS ASSOCIATED WITH SEXUAL ABUSE CASES

In noting the problems related to sexual abuse cases, researcher has attempted to provide a background to not only the guidelines for polygraph surveillance but also to the role the polygraph can play in dealing with victims of sexual abuse (see section 6.5).

The overriding problem in making proper adjudication of sexual abuse cases is that of assessing the credibility of the report. Not only does this affect the criminal investigation but so too may the judgement of the sentencing official be affected. Importantly, the treatment prescribed in the rehabilitative effort may also be negatively impacted. The following factors contribute to the problem of credibility assessment:

- physical evidence is mostly lacking
- offender and victim are generally the only witnesses
- childrens' cognitive immaturity
- the effect of suggestion from authority figures
- motivation to make false reports under duress from a parent
- the relationship between offender and victim (Haugaard, Reppucci, Laird & Nauful 1991:2530-254, Raskin & Steller 1989:291).

Concerning the problem of relationship between victim and offender, Faller (1997:1000) reported from her study that “...about a third of alleged offenders were fathers of children in their households. The next

most common relationship was stepfather, followed by mother and non-custodial parent.”

Cross & Saxe (1992:25-28) highlight two important problems in dealing with such cases. These are of special concern to the polygraphist employed in polygraph surveillance. Firstly, the offender’s memory and perception may differ from that of the accuser. In section 6.3.1 it was mentioned that denial and rationalization were characteristic of sexual offenders. These may lead to reduced feelings of guilt with an accompanying lack of anxiety when asked relevant questions (see section 3.8.1.2). Secondly, a high level of emotional arousal exists in such cases. “The allegations are offensive to many subjects, and the investigation may damage an innocent person’s reputation and family relationships.” The danger of a high number of false positives (see section 3.8.1.3) exists. These two problems as highlighted by Cross & Saxe also serve as reminder of the need for competent polygraphists (see section 3.6.1).

A last problem researcher has felt is of importance to note is the unpopularity of sexual offenders, especially child abusers, among other prison inmates (Warnick 2000, West 1994:199). Not only does this bring about sentencing and incarceration considerations, but so too does it highlight the need for effective probation/parole programmes which may be assisted by polygraph surveillance.

### 6.3.3 GUIDELINES FOR POLYGRAPH USE WITH SEXUAL OFFENDERS

Blasingame (1998:41-43) has suggested, "The following proposed guidelines...for therapist and treatment program (sic) use in community-based programs (sic) and for polygrapher and procedural development":

- "A non prosecution agreement must be in place through the district attorney or corrections department. Judges, probation officers, and child protection services personnel must also support this arrangement." This is, so as to encourage full self-disclosure (see section 6.2.1) and remove the possibility of self-incrimination.
- The polygraph should not be the only form of monitoring. House calls, electronic surveillance, drug testing etc. should all be considered by the treatment team.
- Polygraph results alone should not be used to determine facts or end treatment.
- Supervisors should be aware of the risk of false positives and false negatives (see section 3.8.1.3).
- Polygraph findings should not be the sole basis for "...case management or legal decisions."
- No threats or legal sanctions may be made by treatment team members which are based on polygraph results.
- "Therapists and treatment programs (sic) using the polygraph must note that some clients are unlikely to test accurately." Mental retards and people with panic disorders are cited as examples.
- Polygraphists should work with treatment personnel concerning pre-test interviews (see section 3.7.2), the



formulation of questions (see section 3.8.1), result interpretation (see section 3.9) and utilization of the results.

- Control question techniques (see section 3.8.2.2) should be used with numerical scoring (see section 3.9.2).
- All questions must be reviewed before the examination and should focus on behaviour and not intent.
- Probationers/parolees who fail a test should be retested using the Guilt Complex Technique (see section 3.8.2.5).
- Post-test questioning (see section 3.7.4) should be thoroughly conducted so as to overcome the risk of false positives or false negatives.
- Polygraphists should "...develop a systematic confidence rating which can be communicated to treatment providers to assist in defining the authority that should be ascribed to a given test result."
- Polygraphists should "...develop interschool and intertheory techniques that are appropriate for a sexual offender population. This would increase interrater reliability, validity and standardization."
- Polygraphists should become involved in appropriate research projects and "...in developing empirically based guidelines for the use of psychophysiological measurement as a treatment tool."

Researcher now provides practical example of a treatment programme involving polygraph surveillance.

## 6.4 THE JACKSON COUNTY SEX OFFENDER TREATMENT PROGRAMME (JCSOTP)

This programme was developed by the Oregon Department of Corrections Division responsible for Community Programmes. The programme "...combines specialized supervision, qualified treatment..." and polygraph surveillance to "...manage sex offenders on community supervision" according to Matte (1996:599).

### 6.4.1 THE AIMS OF JCSOTP

The following are the stated aims of JCSOTP:

- to protect the community
- to support victims
- to bring about a reduction in recidivism
- to prevent the offender from manipulating the probation/parole officer or treatment provider (Matte 1996:600).

### 6.4.2 THE COMPONENTS OF JCSOTP

Matte (1996:600) describes as follows:

"The key components of the program (sic) are court-ordered treatment, long term intensive supervision, psychological evaluation, behavioral (sic) treatment with a strong confrontational approach, immediate sanctions for failure/non-compliance, and monitoring of behavior (sic) and treatment using Probationary PV examinations (polygraph). The parole/probation officer, the

treatment provider, and the forensic psychophysiological (polygraphist) work cooperatively, sharing information and providing a consistent response to sex offender behaviors (sic).”

#### 6.4.2.1 SUPERVISION - JCSOTP

The following elements comprise the supervision component of JCSOTP:

- offenders classified according to risk (high/medium)
- 50 offenders allocated to each parole/probation officer
- frequent contacts made with each offender
- parole/probation officers are specialists in sex offender supervision
- offender seen on weekly basis by therapist
- offender pays for costs relating to own treatment, victims treatment and polygraph tests
- supervision for duration of probation or parole (Matte 1996:600).

#### 6.4.2.2 TREATMENT - JCSOTP

The probationer/parolee is provided with a list of court approved treatment providers who “...are members of the Association for the Behavioral (sic) Treatment of Sex Abusers...”. These providers hold a minimum of a Master’s Degree. From this list the offender chooses a therapist to guide him/her through the treatment programme which normally lasts for about 2 years. Offenders lacking financial means may qualify for a subsidy to cover their costs.

Behavioural techniques are emphasised in a multi-modal approach to treatment. Group treatment is followed with groups being divided as follows:

- low functioning
- aged
- new to treatment
- regular
- post treatment monitoring.

Should treatment fail, the therapist together with the probation/parole officer will decide on future action. Arrest, revocation and incarceration normally follow any failure to participate in treatment (Matte 1996:601).

#### 6.4.2.3 POLYGRAPH SURVEILLANCE - JCSOTP

Matte (1996:602) is of the opinion that, “The JCSOTP model hinges on the information verified by the forensic psychophysicologists.” The information gathered during the polygraph examinations by the two polygraphists who specialise in sex offender issues, is relayed to the therapist and probation/parole officer. This leads to a quick response to any behaviour which may reveal signs of recidivism.

The Complete Disclosure Examination (see section 6.2.3.2) and Maintenance Examination (see section 6.2.3.3) are used by JCSOTP. The former is administered during group treatment while the latter is normally applied every 6 months. Interestingly, failures of these polygraph exams “...are not reported to the releasing authority” while “...information

about new crimes, supervision violation and treatment failures are reported” (Matte 1996:602).

#### 6.4.2.4 TEAM APPROACH - JCSOTP

“The team approach and the support of the wider criminal justice community are key to the success of the JCSOTP. Cooperation and coordination enable the consistent response to sex offender behaviors (sic) which is essential to effectiveness with this particular population” writes Matte (1996:602). The following are identified as role-players in this team approach:

- probation/parole officer
- therapist
- polygraphist
- district attorneys focussing on sexual offences
- children’s services
- advocates for victims
- juvenile sex offender therapists
- correctional personnel from neighbouring jurisdictions.

#### 6.4.3 EVALUATION – JCSOTP

The effectiveness of this programme reflects in the study conducted by Charles Edson (see section 6.2.4). The population of this study was drawn from probationers/parolees who had participated in JCSOTP.

It is difficult to evaluate the exact contribution of polygraph surveillance to the success of this programme in the face of a threatening punitive approach (see section 6.4.2) coupled with a talented interdisciplinary workforce (see section 6.4.2.4). Researcher regards it as suffice to say that the polygraph has been shown to be a capable ally in the rehabilitative effort of a successful programme by providing information on a timeous basis so as to initiate corrective procedures while acting as a deterrent for the potential recidivist.

## 6.5 THE POLYGRAPH AND VICTIMS OF SEXUAL ABUSE

“Professionals involved in cases of alleged sexual abuse are desperate for certainty. Error in either substantiating or not substantiating sexual abuse can have devastating consequences” (Faller 1997:993).

“Referrals to the University of Utah for polygraph examination of persons accused of sexual abuse increased approximately 400% in the period from 1983 to 1985. However, during the same period the proportion of accused persons who were diagnosed as truthful in their denials of the accusations increased by 56% ...The most common factors associated with false allegations include domestic relations disputes, contested or acrimonious divorces, and battles over child custody or visitation rights. Often they are accompanied by evidence of psychiatric diagnosis of one or more parties” (Raskin & Steller 1989:290-291).

The problem of the authenticity of sexual abuse claims has brought the polygraph into focus when dealing with the alleged victim of the sexual abuse. In similar vein to the Dripps’ solution (see section 5.3.3.2), Abrams & Abrams (1995) suggest the polygraph as means of detecting

the truth in sexual abuse cases involving the possibility of repressed memory syndrome and false memory syndrome.

#### 6.5.1 REPRESSED MEMORY SYNDROME

According to Loftus (1993:518), “Repression is one of the most haunting concepts in psychology. Something shocking happens, and the mind pushes it into some inaccessible corner of the unconscious.”

To better understand the concept of repressed memory, one needs to define abuse. In this regard, Fredrickson (1992:23) writes as follows:

“Abuse is a particular form of trauma done by one human being to another. Abuse, simply defined, is a trauma inflicted deliberately, wrongly, and unjustly to harm another human being.”

Fredrickson continues to add that repressed memories are “...more likely to be about sexual abuse than physical or emotional abuse” (1992:23). According to this concept of repressed memory, amnesia in varying degrees follows the abuse and trauma inflicted on the victim.

“The repressed memory syndrome was developed to describe those who have no memory of the abuse, as well as those who remember but have a significant amount of amnesia” (Fredrickson 1992:40).

In order to extract these memories from the unconscious, mental health professionals have begun “...putting patients under hypnosis and subtly prodding them into recalling childhood sexual traumas which presumably

have been obliterated for decades” writes Gardner (1993:370) who also refers to these recalled memories as Decades Delayed Disclosure (DDD).

The net result of this uncovering of repressed memories is an ever-increasing number of child molestation or sexual abuse allegations with the accompanying criminal and litigious lawsuits. Proponents of Repressed Memory Syndrome such as Fredrickson (1992:166) admit that in a few cases the memories recalled may not be true. However, there are a number of critics who are not as gentle in commenting on this concept:

“Warning. The concept of repression has not been validated with experimental research and its use may be hazardous to the accurate interpretation of clinical behavior (sic)” Holmes (Loftus 1993:519).

“That traumas experienced as a child can be totally forgotten for decades is the great mental-health myth of our time - a myth that is not only devastating innocent families but doing enormous damage to psychiatry” (Gardner 1993:371).

#### 6.5.2 FALSE MEMORY SYNDROME

The increasing popularity of repressed memory syndrome among some mental health professionals has had a profound effect in the United States as revealed in the following:

“Nearly half the state legislatures in the U.S. have responded to the widespread public acceptance of recovered memories by applying a strange twist to venerable state-of-limitations laws. In general, the new legislation allows alleged victims of child abuse to sue the



accused perpetrators within three to six years after the repressed memories emerge. This means that with little more than the recollection of the accuser, a parent or other relative can be hauled into court decades after the supposed crime” Jaroff (1993:57).

In response to this invasion of repressed memory syndrome, a group of leading psychologists founded the False Memory Syndrome (FMS) Foundation in March 1992 in Philadelphia (Gardner 1993:370). Loftus & Ketcham (1994:208) describe the aim of this organisation:

‘The False Memory Syndrome Foundation is a support group for families involved in accusations of abuse based on “repressed” memories. The purpose and function of the foundation, according to its mission statement, is “to seek the reasons for the spread of False Memory Syndrome, to work for the prevention of new cases of False Memory Syndrome, and to aid the victims, both primary and secondary, of False Memory Syndrome”.’

Proponents of the False Memory Syndrome refer to 20 years of research in which “...there are hundreds of studies to support a high degree of memory distortion...This growing body of research shows that new, post event information often becomes incorporated into memory, supplementing and altering a person’s recollection” (Loftus 1993:530). In short, these proponents are of the opinion that repressed memories are most often fraught with inaccuracies which become exaggerated under therapy. As Professor Margaret Singer said after interviewing 50 people who ‘...once believed they had recovered repressed memories of incest or ritual abuse...“These people are reporting to me that their therapists were

far more sure than they were that their parents had molested them” ’  
(Jaroff 1993:57).

The concept of robust repression, according to Psychologist Ofshe, “...can be found only on the lunatic fringes of science and the mental-health professions.” Robust repression refers to the immediate repression of any sexual abuse experience in totality and for an indefinite period of time (Jaroff 1993:57).

While the potentially fascinating debate between these two schools of thought is not the concern of this dissertation, the polygraph is by no means simply an onlooker.

### 6.5.3 THE POLYGRAPH AND REPRESSION

In their article, “False Memory Syndrome vs. Total Repression: Only polygraphy can know” Abrams & Abrams (1995:297) state the following:

“Polygraphists are going to receive more requests for testing of this nature from both alleged abusers and victims as civil litigation increases.”

While this article represents a plea for research into the role polygraphy can play in this psychological debate and as such does not make any statements relating to how the polygraph can act as adjudicator, two points are worth noting.

Firstly, it is warned that where alleged repression has occurred, victims under therapy may be unsuitable for polygraph testing as “...they were

still involved in reliving their experiences...” (1993:299). Researcher is of the opinion that this caution stems from the fact that it is difficult to verify any facts relating to the abuse and that therapeutic suggestion, a concern raised by Professor Singer (see section 6.5.2), may be present.

Secondly, it is suggested that the polygraph can play a major role in assisting a Blue Ribbon Committee formed by the American Psychological Association to investigate the matter of repression and sexual abuse. With no direct method of determining the existence and/or accuracy of repressed memories in victims, Abrams & Abrams (1995:300) suggest using the polygraph as direct means of measurement on the alleged perpetrators. This suggestion is motivated by a number of studies reviewed by Ansley (see section 2.5.13) in 1990 which reported 97% validity. Data can thus be collected and used in future research when the corroboration of sexual abuse “facts” may be possible.

The final component of the criminal justice system is social welfare (see section 5.2).

## 6.6 UTILIZATION OF THE POLYGRAPH IN SOCIAL WELFARE SERVICES

Polygraph utilization, as surveillance mechanism, in the Social Welfare component of the criminal justice system appears extremely limited. In 1977, Stollery reported on a juvenile delinquency programme run by a non-profit organisation called Community Commitment Inc. (1977:28-33) which applied the polygraph as follows:

‘In fulfilling its role as “responsible guardian” the agency administers polygraph (lie detector) examinations on an as-needed basis to insure that those committed to its care...are not continuing in their wayward ways even as they are supposedly being rehabilitated.’

Little more is said of the success or failure of the polygraph in this programme. A programme for youth offenders which employs polygraph surveillance is run in South Africa.

#### 6.6.1 THE KHULISA PROJECT

“Khulisa is a cultural personal transformation programme for juvenile offenders” which “...was first piloted in Soweto at the Walter Sisulu Place of Secure Care and Safety amongst awaiting trial juveniles...” in July 1997 (Tintinger 1998:1). This programme enjoys sanctioning from the Department of Welfare. Fourie (1998:2) describes this programme as follows:

“The Khulisa process assists disadvantaged young people in conflict with the law to find a meaningful place in their community through the implementation of personal transformation programmes. Khulisa’s rehabilitation process focuses on a creative use of the imagination resulting in cultural appreciation, environmental awareness, concern for the quality of life, a holistic approach and the mind body relationship. The prime motivation of Khulisa is self-knowledge. Khulisa focuses on the individual. Every person can find his or her own path to self-discovery through inner awareness.”

In conjunction with the Polygraph Institute of South Africa (Gauteng), Disclosure Examinations (see section 6.2.3.2) and Maintenance Examinations (see section 6.2.3.3) are conducted on the youths in the programme. The polygraph tests appear to be fulfilling their function. Nine youths who had been in the programme were sent to Australia in 1999 to share their experiences with youths of similar stature. Before embarking on their journey, all were polygraphed. Six passed while the other three "...admitted to a number of crimes they had not been apprehended for, including murder, rape and hijackings" (Mofokeng 1998:8).

## 6.7 SUMMARY

Absconders from South African probation and parole populations are alarmingly high (see section 7.3.3). Are stricter conditions the answer? If so what do we do with an ever-increasing prison population? This catch-22 situation highlights the need for more effective selection of probationers/parolees as well as a more effective supervisory function. It is researcher's opinion that polygraph testing has a role to play in improving the probation/parole effort. The JCSOTP is proof of a successful monitoring programme. While the programme appears costly, it should be remembered that funding is partially from the offenders themselves.

Lastly the lying probationer/parolee reveals a certain predictive glimpse into the possibility of future law abiding behaviour. Lying about the past, when already having been convicted, surely casts doubt on the

rehabilitation potential and/or process and acts as indicator of future recidivism.

“Considering the wide range of tools that technological advances have made available to probation officers today, the polygraph seems to be a relatively minor intrusion into the privacy probationers may expect” (Slate et al 1998:7).

## CHAPTER SEVEN

### CONCLUSION

“What am I doing here on the witness stand? I’m a very successful clothier and here I am testifying as an expert against a tailor. Imagine me, an expert witness” (Matson 1999:3).

## CHAPTER SEVEN

### CONCLUSION

#### 7.1 INTRODUCTION

At the onset of this research, a number of objectives were stated (see section 1.4). Most of these have by now been dealt with. Hopefully, researcher has been successful in providing the reader with an understanding of polygraph rationale and method against a background of development which finds its origin in society's rejection of the lying phenomenon. Most importantly, it is hoped that greater criminal justice and academic awareness has been generated.

Of the stated objectives, two have as yet not been dealt with fully. In this chapter, researcher attempts to *identify problems in the South African polygraph industry and further provoke polygraph thought on the part of criminal justice functionaries and academics*. In this attempt, researcher presents his findings and recommendations. With all four components of the criminal justice system (see section 5.2) having been dealt with separately, said findings and recommendations are similarly presented. The recommendations applicable to each component of the system are presented after all findings relevant to the various components are dealt with.

No findings and recommendations are specifically made as concerns polygraph utilization in private industry. As was mentioned in section 2.2.4, Chapter Four was merely included in this dissertation so as to



provide illustration of polygraph use outside of the criminal justice system. Recommendations are made to the polygraph industry based on findings relevant to the criminal justice system. Some recommendations may appear mere duplications of others but this is as a result of researcher wishing to deal with each component of the criminal justice system separately and by so doing maintain a structured unity within the dissertation. As will be seen, the question of legal admissibility of polygraph evidence in American courts, generated findings and recommendations which researcher considers most applicable to the South African polygraph situation.

## 7.2 FINDINGS

It is researcher's opinion that all findings of a study, whether they be of a positive or negative nature be noted. However, it is from those findings which appear negative that the most important recommendations are made. These recommendations should then serve to contribute to the field of study by providing practical solutions and/or theoretical input by generating further thought on the part of those readers whose interest lies in the study field. As noted in section 7.1, all findings relating to the four components of the criminal justice system are now noted.

### 7.2.1 POLICE UTILIZATION OF THE POLYGRAPH

Findings which relate to police utilization of the polygraph argue well for proponents for the polygraph. A number of surveys (see section 5.3.1.3) indicate that a growing number of police agencies are employing the polygraph in the selection of suitable police officers due to the number of benefits it offers (see section 5.3.1.2). This practice has however not

found its way into the South African Police Service and is at present only applied in providing security clearances (see section 5.4.2).

The South African police have however realised the value of the polygraph in criminal investigations by establishing its own unit to meet the increasing demand for such use (see section 5.4.2). This polygraph use, which has been extensive in countries such as America and Israel (see section 5.3.2), now also appears to have gained a foothold in previously uncharted Europe (see section 5.4.3).

With further use in establishing the veracity of police informants and policemen themselves (see sections 5.3.4 and 5.3.3), one finds that the polygraph is truly an ally of this criminal justice functionary.

#### 7.2.2 POLYGRAPH'S POSITION OF LEGAL ADMISSIBILITY

As was seen in Chapter 5, the admissibility position of polygraph evidence in United States courts is a varying one and has been referred to as "inconsistent" (see section 5.5). While no cases are reported in South Africa (see section 5.1), researcher makes certain findings from those American cases chosen (see sections 5.5.1 - 5.5.15), to illustrate the varying position in the United States, which are applicable to polygraphy in this country.

Researcher highlights the following from certain of these cases:

- In *Frye* (see section 5.5.1), the Appeals Court rejected "polygraph" evidence. (The evidence was in fact based only on a systolic blood pressure test). "Scientific recognition" or lack of it, was the basis,

of the rejection. It is researcher's opinion that "scientific recognition" relates directly to the question of *validity and reliability* of any scientific technique.

- In accepting polygraph evidence, the *Valdez* court made mention of the *training* of polygraphists and hinted at his/her role as an expert witness by allowing for an "...adequate opportunity to cross-examine..." (see section 5.5.3). It also noted the improvement of polygraph technique which again, according to researcher, brings the question of *reliability and validity* into question.
- Both *Ridling* and *Zeigler* courts, in accepting polygraph evidence, made direct mention of the *reliability and validity* aspect in the consideration of such evidence (see section 5.5.4)
- *Reliability* is again mentioned in *Gipson* (see section 5.5.6) and *Piccinonna* (see section 5.5.8).
- *Daubert* (see section 5.5.10), in mentioning the testing of a theory brings polygraph *validity and reliability* into focus again. Furthermore the question of cross-examination is again brought to the fore which brings with it considerations of *training and expert witness* capabilities.
- In *Crumby*, polygraph *reliability* is mentioned no less than 3 times in accepting the evidence (see section 5.5.13).
- The *reliability* consideration as relevant to polygraph evidence is again offered by the United States Court of Appeals in *Posado* (see section 5.5.14).

From above, it appears that reliability and validity of polygraph theory as well as the training of the polygraphist are the common denominators in

considering the acceptability of polygraph evidence. It is thus necessary to make findings regarding these two aspects.

#### 7.2.2.1 RELIABILITY AND VALIDITY STUDIES

In presenting a summary of reliability and validity studies, researcher has not concerned himself with discussing the merits or flaws contained in any individual study. By presenting these studies in this manner, researcher wishes to provide a basis for the reader to form an opinion as to the validity and or reliability of the polygraph.

Before looking at these studies, it is necessary to note the following words of Furedy & Heslegrave (1988:221) regarding the distinction and relationship between validity and reliability:

“The term *validity* requires a little elaboration. In the psychological testing literature (the polygraph being, essentially, a psychological test - see Lykken, 1981), reliability is regarded as necessary, though not sufficient, for validity. A test is reliable when repeated administrations of the test to the same individual (assumed to be unchanged) from one occasion to another yield comparable results. For the test to be valid, it must also measure what it purports to measure. So, to take a simple example from physics, a faulty thermometer that has constant measurement error (say, 10 degrees) due to a manufacturing flaw, may be perfectly reliable, but quite invalid or *inaccurate*; it will reliably show temperatures 10 degrees different from the actual temperature.”

Norman Ansley (see section 2.5.13) reports on 2042 real life cases from 1980 - 1990 yielding accuracy of 98% for DI cases and 97% for NDI cases (see section 3.9) (Matte 1996:7).

Forensic Research, Inc of Maryland (Polygraph 1997:215-239) compiled "...a compendium of research studies on the validity and reliability of polygraph testing." All the studies were post - 1980 efforts. The results of 12 field *validity* studies involving 2174 cases were as follows:

<i>NDI</i>	<i>DI</i>	<i>TOTAL</i>
96%	98%	98%

11 independent chart analyses studies have been conducted since 1980 using 1609 sets of charts in 1980 using 1609 sets of charts in order to measure polygraph *reliability*. These results are as follows:

<i>NDI</i>	<i>DI</i>	<i>TOTAL</i>
90%	95%	92%

From these figures it appears that there is a high degree of polygraph reliability and validity. It should be noted that a number of polygraph sceptics challenge and question certain approaches and methods adopted in certain studies.

It is the opinion of researcher that the questions of "theory or technique", "publication and peer review" and "potential error rate", as raised in *Daubert* (see section 5.5.10), are addressed when consideration is made of validity and reliability studies. This is so because scientific studies are invariably published and thus open to review and criticism while

indicating the soundness of theory by way of findings which also reveal the probability of error.

#### 7.2.2.2 POLYGRAPHIST TRAINING

The second factor affecting the status of polygraph evidence in courts is the most important one. In section 3.6 it was reported that the polygraphist has a direct bearing on the validity of the test. As the most important factor in the polygraph process, one would expect polygraphist training to be of the highest quality. It is thus important to make a finding in this regard. As was explained in section 1.8.5, the aspect of polygraphist training was of constant concern to researcher from an early stage in this research project. The following reasons were responsible for this:

- Very little literature exists which deals with polygraphist training in detail (see section 3.6).
- Different polygraphists emphasised different techniques depending on the school at which they had been trained. The technique chosen thus appeared to be selected on the basis of familiarity rather than appropriateness.
- Researcher met polygraphists whose occupational backgrounds and educational qualifications differed markedly.
- Despite this diversity, all polygraphists entering a course are subject to the same instruction and duration of tuition. This in spite of a typical course content containing subjects of varying complexity (see section 3.6.2).
- The fact that APA now allows polygraphists to be trained who have no tertiary education appears to lower admission

requirements. Furthermore, the admission requirements presented in section 3.6.2 are vague.

- Researcher has had insight into correspondence in which a Mrs. Elsabe Bezuidenhout, who had been trained in Johannesburg from May 17 - July 2, 1999, complains of not being able to properly administer a polygraph test (Slupski 1999).
- While not directly related to polygraphist training, the lack of compulsory membership to an association (see sections 2.8.1 and 3.6.2) allows the incompetent polygraphist to practice without having a regulatory body to report to. Standards cannot thus be maintained (see section 5.5.10).
- Researcher spoke to a number of polygraphists who had no knowledge of certain techniques.

In short, it is researcher's finding that polygraph training appears inadequate. According to the admission requirements and successful completion of the course illustrated in section 3.6.2, it is possible for an 18 year-old to practice as a polygraphist. Besides this fact, researcher finds it difficult to understand how a person totally ignorant of psychophysiological training can be so equipped within  $\pm 10$  weeks as to become competent in the field of psychophysiological detection of deception.

Researcher is not alone in this view. Besides the comments noted in section 5.7.2, the following also express concerns relating to polygraphist training:

“Widespread under qualification of polygraph examiners, who play a significant role in administering the test and evaluating the

results, also has contributed to the judiciary's unwillingness to admit such tests" (Katz 1984:285).

"The American Polygraph Association (APA) recognizes the need for education, experience, and integrity in examiners. Unfortunately, examiner competence lags far behind APA standards and ethical guidelines. Federal training in polygraph procedures is inadequate in light of current psychological and physiological literature" (Driscoll 1990:548).

In consideration of the following from Romig (1971:40), researcher feels it necessary to make a comment on the role of the polygraphist as a possible expert witness against a background of the training afforded:

"The expert witness is granted a very high regard by the American system of criminal justice. His proven abilities in such areas as fingerprinting, firearms identification, questioned documents, and comparison of other physical evidence have been widely acclaimed. Juries are prone to accept the testimony of these experts at face value, giving these experts a very powerful position in the courtroom. There is no doubt that this has resulted in a better system of justice, as it was so intended. *The polygraph examiner has been prevented by the courts from taking his place along with other scientific investigators as an expert witness.*" (italics mine).

#### 7.2.2.3 POLYGRAPHIST AS EXPERT WITNESS

The issue of whether a polygraphist qualifies as an expert witness is a contentious one and may be the subject of a separate study. However



researcher has felt it necessary to comment hereon so as to generate thought in this regard. It is difficult to imagine that the majority of polygraphists would qualify as an expert in the field of polygraphy due to the training afforded. Researcher doubts whether a polygraphist who has only a  $\pm$  10 week training course as qualification, would withstand vigorous cross-examination by competent counsel on matters such as psychophysiological principles, psychopathological conditions or research methodology. In this regard, Freckleton & Selby (1999:194-195) cite the following:

- “It purports to be expert evidence but the witness is not qualified as an expert, he is merely an operator and assessor of a polygraph” (Sinclair 1982).
- A polygraphist “had neither the qualifications nor the opportunity to form a mature opinion of the propensity of the man he was subjecting to the test either as to truthfulness or otherwise” (Ritchie 1977).

It is researcher’s opinion that the lack of suitably qualified polygraphists, who may be accepted as experts, is the reason for its varying admissibility position in United States courts and almost complete absence from South African courts.

#### 7.2.2.4 POLYGRAPH EVIDENCE IN RELATION TO OTHER FORMS OF EVIDENCE

From the two studies presented in sections 5.8.1 and 5.8.2, it appears that polygraph evidence compared favourably with other forms of evidence such as handwriting and fingerprinting analysis and eyewitness

identification. One logically asks oneself as to polygraph's evidentiary position in the light thereof. Researcher suggests that prosecutors and defence counsel alike may lack the confidence needed to place the polygraphist on the witness stand to present his evidence as an expert.

### 7.2.3 CORRECTIONAL UTILIZATION OF THE POLYGRAPH

It was with a great deal of pity that researcher was unable to locate any form of polygraph utilization in the correctional environment in South Africa. Not only was the polygraph not employed but correctional functionaries had very little knowledge of its functioning or correctional possibilities. From American utilization in the correctional environment, it does appear as if the polygraph offers promise in the monitoring of probationers and parolees.

### 7.2.4 SOCIAL WELFARE UTILIZATION OF THE POLYGRAPH

The fourth component of the criminal justice system is almost totally void of polygraph involvement and this makes a meaningful finding difficult to make.

## 7.3 RECOMMENDATIONS

Having been a long-time producer of mainly American polygraph information, researcher now happily turns to making recommendations aimed at improving the polygraph situation in South Africa. It is sincerely hoped that by learning from mistakes made here and elsewhere, that South Africa may become an important role-player on the world polygraph stage.

While recommendations are made to each component of our criminal justice system, researcher regards those made to the South African polygraph industry as most important. The reason therefore is the fact that by following certain recommendations, the polygraph industry in South Africa can become a greater role player in the criminal justice system. Researcher realises that all recommendations, if implemented, are subject to time and financial constraints.

### 7.3.1 POLICE COMPONENT OF THE CRIMINAL JUSTICE SYSTEM

There is little to recommend as concerns police utilization of the polygraph in criminal investigations as not only did the SAPS unit handling this aspect appear well-organised but also extremely busy and successful. As stated in section 5.4, no use is made of PEPS (see section 5.3.1) by the South African police. Researcher recommends that this practice be initiated as the benefits are numerous (see section 5.3.1.2).

An important recommendation is the enforced membership of all SAPS polygraphists to the Polygraph Association of South Africa. This was not the case as at 1 July 1999.

### 7.3.2 COURT COMPONENT OF THE CRIMINAL JUSTICE SYSTEM

It would be easy for South African courts to adopt a reactive stance to polygraph evidence by merely allowing for such evidence to be duly presented and then be subject to the rigours of trial and cross-

examination. This is probably the correct stance from a point of view of due legal process.

Researcher however recommends a proactive stance on the part of the Department of Justice. It is suggested that said department investigate the possibility of appointing a working committee to conduct research into the question of polygraph evidence. More specifically this research would involve the following:

- A finding on the reliability and validity of polygraph results.
- The determination of whether a need exists or not, for court appointed polygraphists to assist in matters pertaining to the credibility of witnesses. In this way the legal hurdle of the friendly polygrapher (see section 5.7.6) may be overcome while presiding officers may be assisted in deciding on inquest matters such as the Bellamy matter illustrated in section 5.4.3.
- The determination of the profile of the polygraphist who may be regarded as an expert in the field. This would have the added benefit of identifying polygraphists capable of acting as assessors when polygraph evidence is presented.

By adopting a proactive stance, the Department of Justice may discover an ally for more effective decision-making by our already overburdened courts.

### 7.3.3 CORRECTIONAL COMPONENT OF THE CRIMINAL JUSTICE SYSTEM

Polygraph surveillance has been shown to be effective in the monitoring of probationers and parolees (see section 6.2.4). As was found, the polygraph is merely an onlooker as concerns the South African correctional environment. With stringent conditions laid down for probation and parole in this country, it is somewhat disconcerting to find that 61606 probationers and parolees are reported as absconders for the period 1 January 1992 - 31 December 1999 (Department of Correctional Services 1999).

Again, researcher recommends the appointment of a working committee to investigate the possibilities which the polygraph may offer corrections especially as concerns the selection and monitoring of probationers and parolees. Besides the obvious benefits on offer (see section 6.2.5) for monitoring, researcher feels that a pilot study may be conducted into possible selection assistance which the polygraph may offer those deciding on eligibility for parole or probation. Misconduct or dishonesty which may be unknown to those making such decisions may be revealed by means of the polygraph and thus offer a predictive glimpse into rehabilitation possibilities.

Periodic or routine vetting (see section 4.5.2) is also recommended for correctional personnel. Corruption in the correctional environment may thus be curbed.

#### 7.3.4 SOCIAL WELFARE COMPONENT OF THE CRIMINAL JUSTICE SYSTEM

With little by way of finding for polygraph utilization in the social welfare effort, researcher merely recommends that any effort on the part

of corrections regarding monitoring possibilities as stated in 7.3.3, include those laboured with such task in this component.

#### 7.4 RECOMMENDATIONS TO POLYGRAPH INDUSTRY

Researcher reported encountering a great deal of professional jealousy within the polygraph industry in South Africa (see section 1.8.6). As an outsider, this left a poor impression on researcher as not only was one continually suspicious of the motives therefor but one also became aware of South African polygraphists being divided. It is researcher's sincere desire to see all polygraph role-players united in this country. The recommendations which follow will come to nothing in a divided polygraph society.

##### 7.4.1 ACADEMIC INVOLVEMENT AND RESEARCH

One of the reasons stated for this research project was a need for research as well as future academic involvement in the polygraph industry (see section 1.3). This realisation of the need for academic involvement reflects in Romania (see section 2.6.7) as well. Besides the training aspect dealt with in section 7.4.3, researcher concurs with the notion of academic involvement and recommends it for the following reasons:

- Universities offer a wide range of specialised skills applicable to polygraphy. Examples of such skills would be psychological and physiological expertise in matters relating to both theory and practice, research methodology, research facilitation, criminal and legal matters.

- University research may be without bias and would be subject to scientific review. Adherence to the ethical considerations applicable to research may also be ensured.
- The polygraph industry would be seen to be transparent in its efforts to continually improve the validity and reliability of its theory. In thus effort new and more improved techniques may emerge.
- Universities offer what researcher likes to refer to as “academic cross-pollination.” By this is meant that psychological, physiological, penological, criminological and legal minds may continually be stimulating thought as to the improvement of the research matter, polygraphy.
- Research on the part of polygraphists, under academic guidance, may be encouraged.

Scientific input and cross-over would then become part of the polygraph industry in South Africa (see section 4.5.4.1).

#### 7.4.2 MEMBERSHIP

Membership, of the American Polygraph Association (APA) as well as the Polygraph Association of South African (PASA) is not compulsory (see section 2.8.1). In section 7.4 researcher mentioned the division which existed in the South African polygraph industry. This division is further evidence when one considers the fact that not all South African polygraphists are members of PASA. Not only does this result in South African polygraphy not being able to speak or be represented as one body but so too is it impossible to know how many polygraphists actually

practice in South Africa or where they were trained. It is researcher's opinion that this situation is unacceptable.

It is researcher's recommendation that all polygraphists in South Africa be forced to belong to an association which carries the necessary authority to prevent members who do not adhere to stringently laid down procedures and ethics, from practising. This recommendation is made for the following reasons:

- A code of ethics may be enforced.
- Proper standards may be maintained. This concern was voiced in *Daubert* (see section 5.5.10).
- Qualification standards can be set and maintained.
- A united body can represent members in dispute resolution.
- Polygraphists may be graded so as to enable differentiated fee structuring to take place.
- Newly trained polygraphists may be required to undergo an internship under the guidance of a more senior polygraphist.
- Members may be required to contribute to a fund so as to initiate academic input as envisaged in section 7.4.1.
- Complaints from the public and or judicial system can be properly dealt with.

Researcher further suggests that such an association should not be administered by practising polygraphists. Not only will a neutrally appointed body eliminate any potential for self-serving possibilities but so too will it facilitate members whose personal prejudices would make them reluctant members.



### 7.4.3 TRAINING OF POLYGRAPHISTS

It will probably not surprise the reader that researcher has left this recommendation until last. Research found the training of polygraphists to be inadequate in section 7.2.2.2. Researcher is not in a position to make a specific recommendation in this instance and rather suggests academic involvement again. Researcher gained insight into a draft copy of a curriculum for polygraph training in the South African Defence Force (Fourie 1999). (This document is restricted and as thus has not been included). It is suffice to say that the suggested content of this course exceeds that of the Argenbright course presented in section 3.6.2. The recommendation is that the “Association” representing the South African polygraph industry approaches a university with a view to the compilation of degree which can be taught within the bounds of those faculties appropriate to the field of polygraphy. Researcher concludes by presenting two outlines of what is envisaged by other sources as constituting a competent polygraphist. These are suggestions in American context but are easily applicable to South Africa and again highlight the inadequacy of present training.

The National Conference on Sentencing Advocacy (1991) suggested the following qualifications for the competent polygraphist:

- “A graduate of an American Polygraph Association (APA) accredited course of instruction.
- A member of at least one of the national polygraph professional organizations.

- Preferably a member of the examiner's state polygraph association.
- Hold appropriate state licenses.
- Has a minimum of an undergraduate degree.
- Has participated in continuing education programs.
- Has provided instruction and consultation in polygraph and other investigative techniques.
- Is experienced in courtroom testimony and has previously qualified as an expert.
- Possesses investigative or polygraph experience in the specific issue under consideration.
- Has in place an effective quality control process or allows for independent review of technical reports and polygraph charts.
- Is experienced in more than one standardized polygraph method.
- Renders a diagnostic opinion of test results based on an appropriate and recognized analysis of polygraph charts.
- Has demonstrated excellent interview and interrogation skills.
- Maintains an up-to-date library of current literature related to polygraph and criminal investigations and demonstrates a familiarity with recently published research and methodology.
- Has written or contributed to articles submitted for publication dealing with polygraph related matters.”

The United States Department of Defense (sic) (1997) suggests the following training and qualification standards for polygraphists:

- “Be a United States citizen.

- Be at least 25 years of age.
- Be a graduate of an accredited four-year college or have equivalent experience that demonstrates the ability to master graduate-level academic courses.
- Have two years of experience as an investigator with a Federal or other law enforcement agency. Two years of comparable experience may be substituted for the requirement of investigative experience with a Federal or other law enforcement agency.
- Be of high moral character and sound emotional temperament, as confirmed by a background investigation.
- Complete a DOD-approved course of polygraph instruction.
- Be judged suitable for the position after being administered a polygraph examination designed to ensure that the candidate realizes, and is sensitive to, the personal impact of such examinations.” (Polygraph 1988:177-178).

#### 7.4 SUMMARY

In today’s modern society, people still believe in the physical manifestation of lying as was shown in section 3.1. The polygraph industry is living proof thereof as polygraph utilization in private industry and in criminal investigation continues to grow. In a funnel-effect, polygraph utilization becomes less as one further enters the criminal justice system. The days of abundant polygraph use in the South African workplace may be numbered. As was mentioned in section 4.6, legislation similar to EPPA may be in the offering.

This dissertation has looked at polygraph use from a criminal justice perspective. The expanding use by police of the polygraph reveals that it must be of value to the criminal justice system. However, questions of reliability and validity and the polygraphist as expert witness hinder its further penetrations into our justice system. These issues need to be addressed by the polygraph industry if its survival in this country on the scale it presently enjoys, is to be ensured. It is researcher's opinion that having addressed these legal hurdles, polygraph use will further enter the criminal justice system.

Lastly, researcher repeats his sentiments as stated in section 5.9 that it is time for the South African polygraph industry to present a *united and formally educated front which will provide the expert opinion necessary for the polygraph to continue its journey through the criminal justice system.*

“...if this polygraph were so unreliable, why are millions of tax dollars being spent on it?” – Lt. Col. K. Sheffield (Denniston 1998:6).

Brain	Prosencephalon (Forebrain)	Telencephalon (Endbrain)	Neocortex (higher processes)	Frontal lobes (motor control, abstract thought)	Cerebral area (integration)
				Parietal lobes (skin and muscle sense)	
				Temporal lobes (hearing)	
				Occipital lobes (vision)	
				Basal ganglia (motor behaviour)	Reticular formation (arousal system)
				Limbic system (emotions, memory)	
	Diencephalon (Interbrain)	Thalamus (low level interpretation and sensory relay)			
		Hypothalamus (regulation of water balance, body temperature, hormone level, sleep and wakefulness, cardiovascular adjustments, eating and drinking, sexual activity and emotion)			
	Mesencephalon (Midbrain)	Tectum: superior colliculi – reflexive move- ments concerned with vision inferior colliculi – reflexive move- ments concerned with hearing			
	Rhombence- phalon (Hindbrain)	Meten- cephalon	Pons (bridge between cerebral motor areas and cerebellum)		
Cerebellum (motor co-ordination)					
Medulla oblongata (controls blood pressure and respiration)					

FIGURE 3.1 DIVISIONS OF THE BRAIN AS ADAPTED FROM JORDAAN & JORDAAN (1996:149)

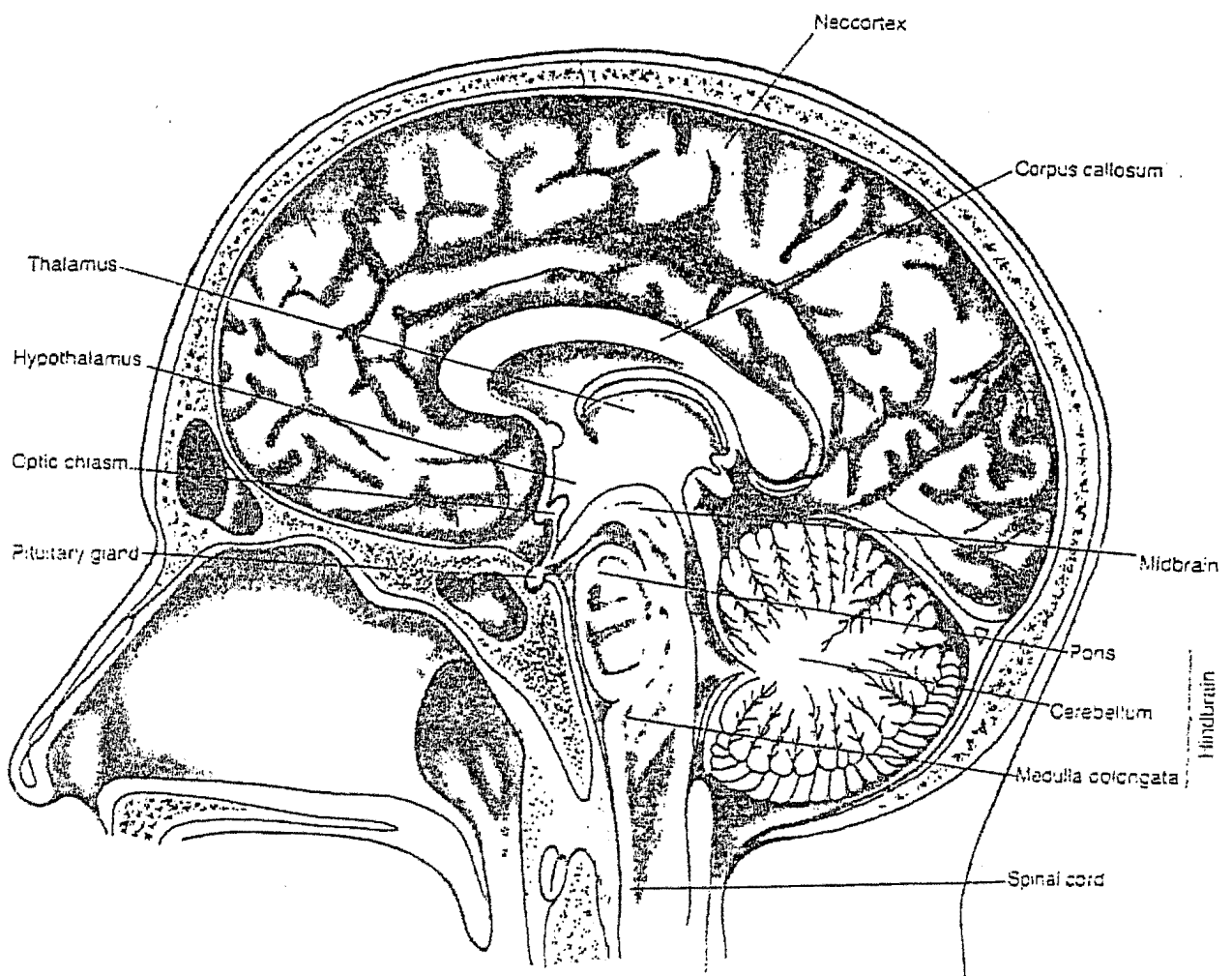


FIGURE 3.2 MIDSAGGITAL SECITON OF THE HUMAN BRAIN  
AS PRESENTED BY JORDAAN & JORDAAN (1996:169)

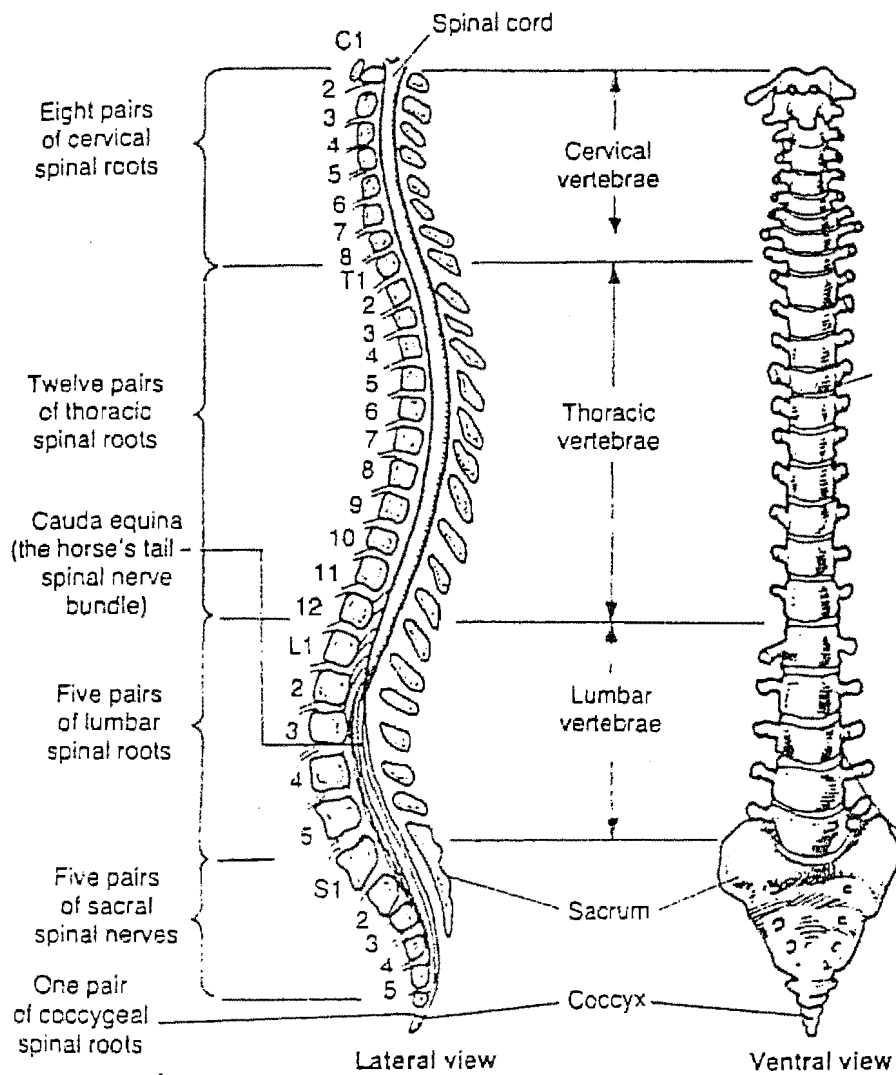


FIGURE 3.3 THE SPINAL CORD AND VERTEBRAE COLUMN AS PRESENTED BY JORDAAN & JORDAAN (1996:155)

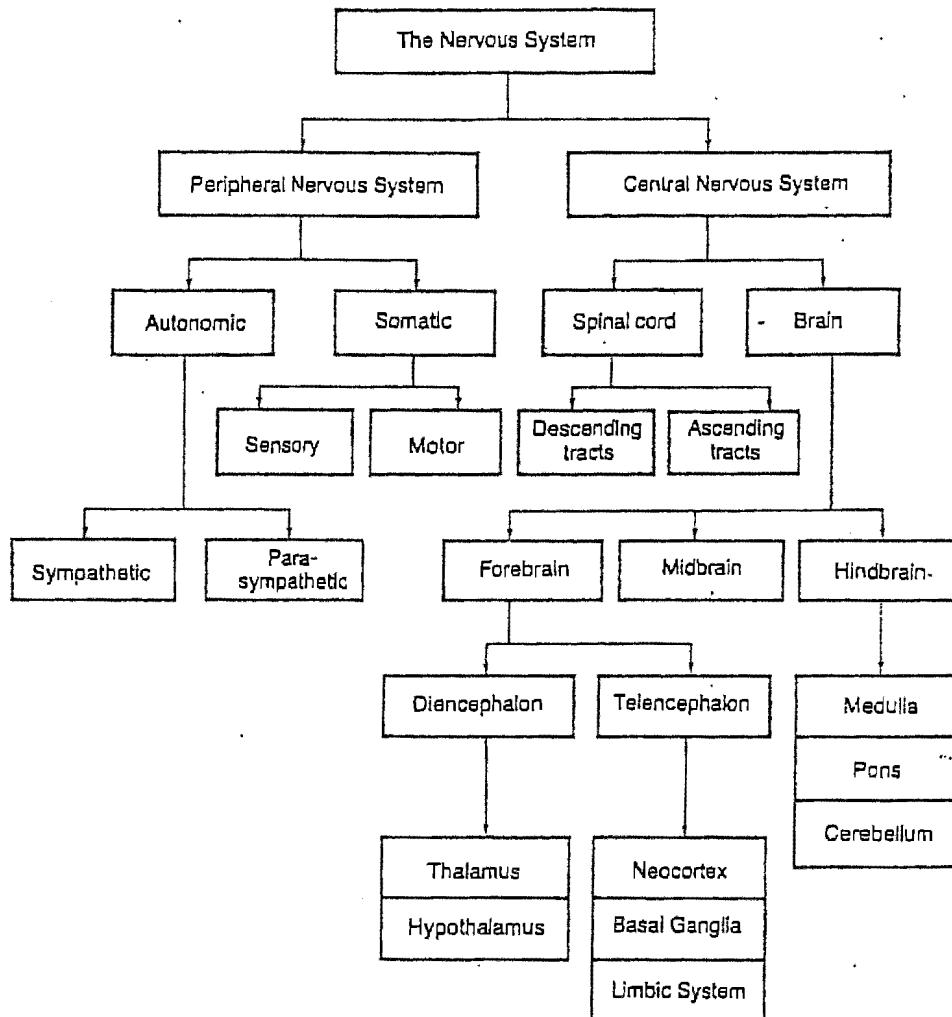
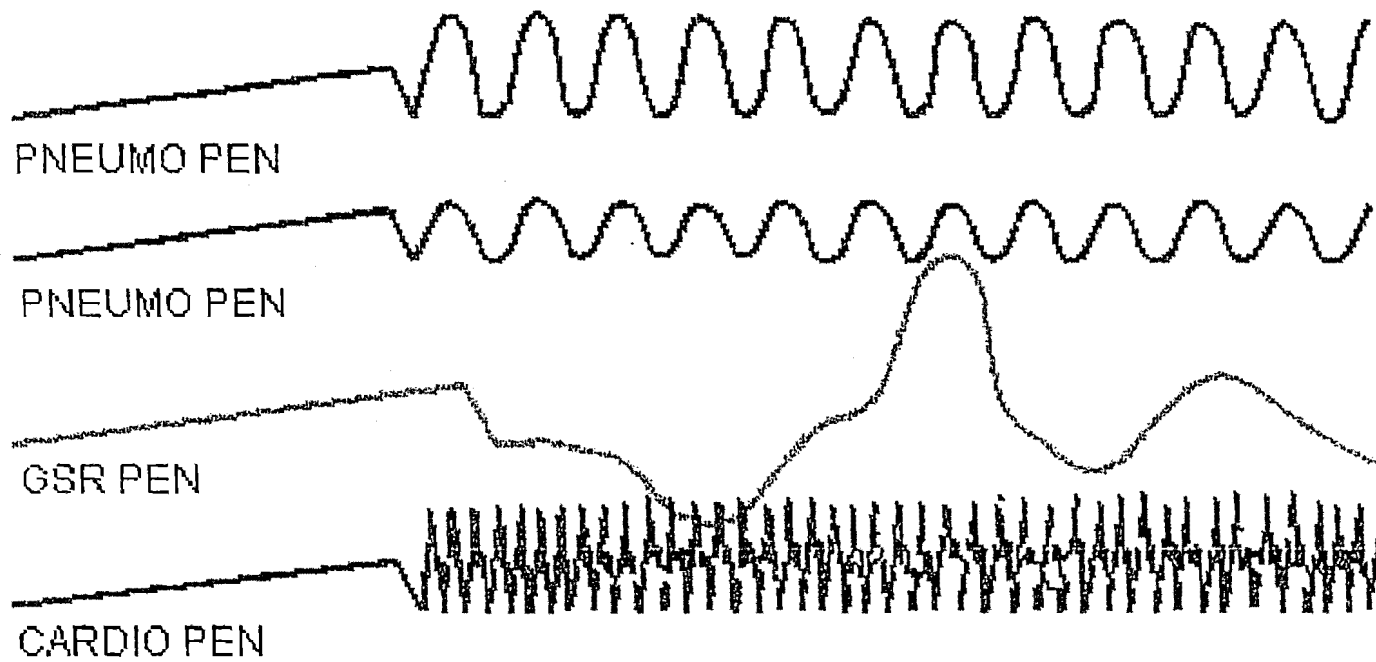


FIGURE 3.4 DIVISIONS OF THE NERVOUS SYSTEM AS PRESENTED BY JORDAAN & JORDAAN (1996;150)





Pneumo Pens - record your breathing or respiration. When you inhale, the pens go up. When you exhale, the pens go down.

GSR Pen - records increase or decrease in your sweat activity or perspiration.

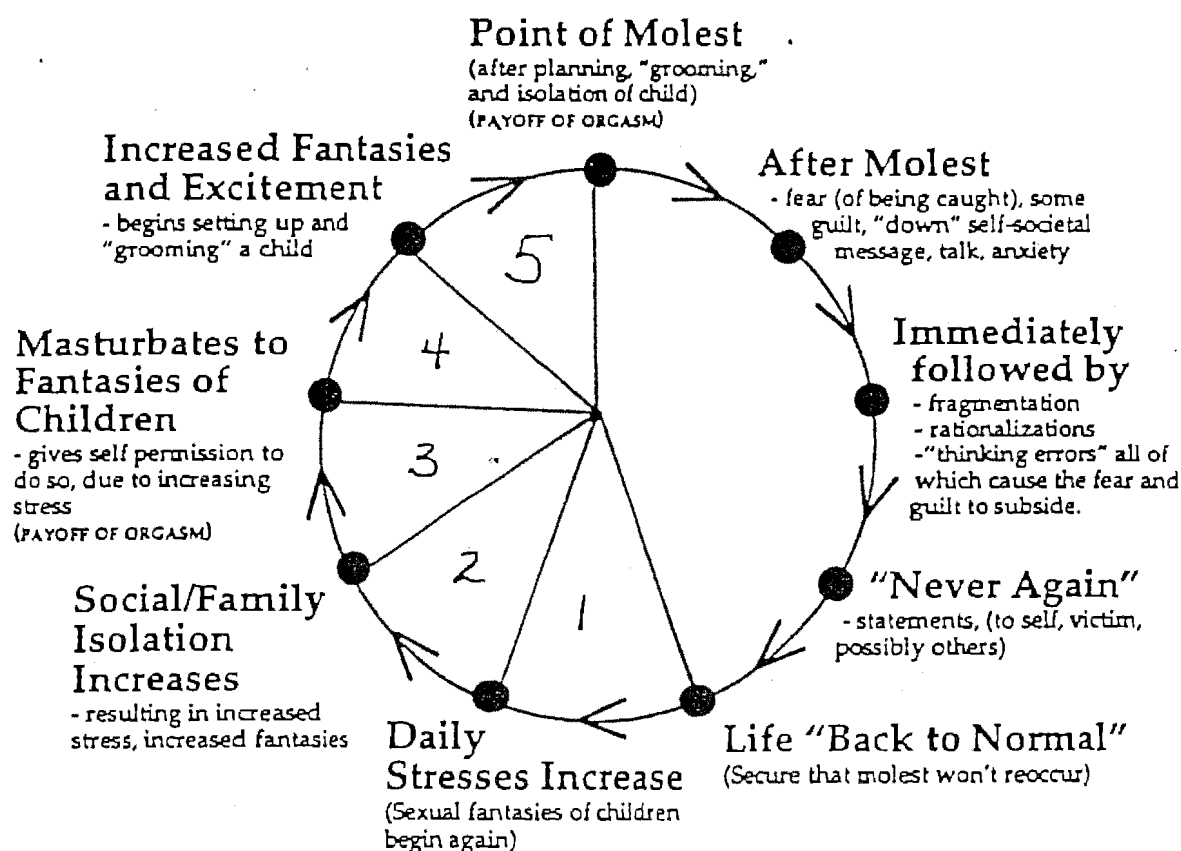
Cardio Pen - traces heart beat and records changes in your blood pressure and pulse rate.

FIGURE 3.5 POLYGRAPH RECORDINGS AS PRESENTED BY  
D. WILLIAMS (1996:11)



FIGURE 3.6 SECTION OF NUMERICALLY HANDSCORED POLYGRAPH TEST (SMIT 1999)

# Sex Offender's Typical "Cycle of Abuse"



Specific details will vary from person to person, but the general pattern applies in virtually all cases. It must be assumed that the offender does not act without planning (i.e., "on impulse"), as he would otherwise be caught sooner.

FIGURE 3.7 SEX OFFENDER'S TYPICAL CYCLE OF ABUSE –  
BAYS & FREEMAN – LONGO (MATTE 1996:601)

## DECLARATION - THE POLYGRAPH POLICY

### Background:

Short-term insurance in South Africa has become very expensive, and in more and more instances premiums have risen even beyond the budgets of the ordinary man in the street. High crime rates and the short-term insurance industry's vulnerability towards spurious or puffed up claims have impacted greatly on high premiums, as have the colossal number of motor thefts / hi-jacks which are reported daily.

### What is the POLYGRAPH POLICY - The concept

The **Polygraph policy** is a unique attempt to bring short-term insurance premiums back within the bounds of affordability. By virtue of the concept you the insured will agree that in the event that the underwriters of this policy require it you will undergo truth verification procedures, commonly known as a **Polygraph Test**, and that you agree to be bound by the results of those procedures, which will be conducted by an authorised **POLYGRAPH ADMINISTRATOR** appointed by the underwriters.

### Declaration:

To the best of my knowledge and belief the information provided in connection with this proposal, whether in my own handwriting or not, is true and I have not withheld any material facts. I understand that non-disclosure or misrepresentation of a material fact may entitle the underwriters to void the insurance. (NB: A material fact is one likely to influence acceptance or assessment of this proposal by the underwriters. If you are in any doubt as to whether a fact is material or not you must disclose it in the space below.)

**I hereby agree and undertake that should the underwriters at any time require me in writing to do so, I will undergo truth verification procedures conducted by an authorised POLYGRAPH administrator and agree and undertake further that I will be lawfully bound by the results of such truth verification procedures. This declaration will also bind all people who enjoy cover under this policy (e.g. spouse, children, servants etc.)**

This proposal and the information provided in connection therewith contain statements upon which the underwriters will rely in deciding to accept this insurance.

I understand that the signing of this proposal does not bind the underwriters to accept this application for insurance.

I understand and accept that this declaration of my willingness to undergo a polygraph test should the underwriters require me to do so, is a condition of this policy.

\_\_\_\_\_  
SIGNATURE OF PROPOSER

\_\_\_\_\_  
DATE

\_\_\_\_\_  
NAME OF CLIENT (Initials & Surname)

\_\_\_\_\_  
POLICY NO:

\_\_\_\_\_  
I.D. NUMBER

**ADDENDUM 1: DECLARATION FOR POLYGRAPH POLICY OF MULTIFUND INSURANCE BROKERS (PTY) LTD (VAN HEERDEN 2000).**

**Sportsmans**  
**LOGANS ORIGINAL Warehouse**  
 DISCOUNTED SPORTS GOODS DIRECT TO THE PUBLIC

FAX

DATE: 9/4/99

Number of pages including cover sheet: 3

TO MRS. R. MARTIN

FROM GERRY GROLL

FOR ATTENTION MR. RAYMOND MARTIN

ADDENDUM 2: CORRESPONDENCE RECEIVED RE: SPECIFIC INCIDENT EXAMINATION (GROLL 1999).

Our Company deposited a large sum of money (cash & cheques) at the bank.

We make use of a security company to collect our money from our store and deliver to our bank for deposit.

The bank manager phoned us one morning to inform us that an amount in cash had been short-deposited. i.e. amount in cash did not reconcile with figure shown on deposit slip.

The situation was that three companies were involved in the dispute

- ① THE BANK.
- ② THE SECURITY COMPANY.
- ③ OUR STAFF INVOLVED IN PREPARING THE MONEY AND HANDING IT OVER FOR COLLECTION.

Negotiations proceeded with our company and the other two parties.

The bank and the security company suggested the LIE DETECTOR TEST with a company they had already used in the past.

At first I was apprehensive because of the humiliation that may be caused to our staff.

A degree of trust had in fact been left to a "machine" to determine the integrity of people.

All parties readily agreed to being tested except one member of our staff.

This led me to venture into a gamble whereby "science and technology" would discover the Terror or expose the thief.

The experience was that of witnessing people as if they were sitting in a dentist's chair.

Nervousness, fear and discomfort prevailed.

The test was very professionally conducted and the machine ~~was~~ sufficiently accurate to expose the individual not giving accurate facts.

The person admitted later to the crime of theft.

My thoughts on the matter is that the innocent parties were subjected to humiliation. However the matter if discreetly conducted can avoid sensitive issues.

## IACP ESTABLISHES A MODEL POLICY ON POLYGRAPH

With assistance from the American Polygraph Association, the National Policy Center of the International Association of Chiefs of Police has published its version of a Model Policy on the Polygraph. This project was supported by Grant No. 93-DD-CX-K009 awarded by the Bureau of Justice Assistance, Office of Justice Programs, U.S. Department of Justice. The Assistant Attorney General, Office of Justice Programs, coordinates the activities of the following program offices and bureaus: the Bureau of Justice Assistance, the Bureau of Justice Statistics, National Institute of Justice, Office of Juvenile Justice and Delinquency Prevention, and the Office of Victims of Crime. Points of view or opinions in this document are those of the author and do not represent the official position or policies of the United States Department of Justice or the International Association of Chiefs of Police.

Every effort has been made by the IACP National Law Enforcement Policy Center staff and advisory board to ensure that this model policy incorporates the most current information and contemporary professional judgment on this issue. However, law enforcement administrators should be cautioned that no "model" policy can meet all the needs of any given law enforcement agency. Each law enforcement agency operates in a unique environment of federal court rulings, state laws, local ordinances, regulations, judicial and administrative decisions and collective bargaining agreements that must be considered. In addition, the formulation of specific agency policies must take into account local political and community perspectives and customs, prerogatives and demands; often divergent law enforcement strategies and philosophies; and the impact of varied agency resource capabilities, among other factors.

### POLYGRAPH EXAMINATIONS - MODEL POLICY

I. Purpose. It is the purpose of this policy to provide investigative officers and others with general knowledge of, guidance and procedures for the use of polygraph examinations.

II. Policy. The polygraph examination is a valuable investigative aid as used in conjunction with, but not as a substitute for, a thorough investigation. The polygraph may be employed, consistent with this policy, to verify, corroborate or refute statements; obtain additional investigative leads; narrow or focus criminal investigations; serve to screen candidates for positions with this or other criminal justice agencies; and assist in the conduct of internal police investigations, among other authorized purposes.

III. Definitions. Polygraph: The polygraph is an instrument that records certain physiological changes in a person undergoing questioning in an effort to obtain truth or deception. A polygraph simultaneously records a minimum of respiratory activity, galvanic skin resistance or conductivity, and cardiovascular activity.

IV. Procedures.

#### A. Requesting Polygraph Examinations.

1. Following approval by their immediate supervisor, employees of this agency may request a polygraph examination from this agency's authorized polygraphist.
2. Polygraph examinations may be authorized when consistent with state law and agency policy. Situations in which authorization may be requested and approved include, but may not be limited to:
  - a. requests from the office of the prosecutor as part of an agreement with the defense

<http://www.polygraph.org/policy.htm>

2000-10-16

**ADDENDUM 3: IACP ESTABLISHES A MODEL POLICY ON POLYGRAPH (APA 1998).**



- attorney or for other investigative purposes;
  - b. an element of a background investigation of a candidate for a sworn or civilian position in this agency;
  - c. requests from other authorized criminal justice agencies;
  - d. attempts to Verify or reconcile statements of parents or guardians (e.g., in suspicious cases of missing or abused children) as well as witnesses or other individuals when alternative investigative means have been exhausted;
  - e. efforts to confirm or refute an allegation(s) that cannot be verified or disproved by other evidence;
  - f. efforts to establish probable cause to seek a search warrant; or g. as part of an administrative or criminal internal investigation of an officer of this agency or another criminal justice agency consistent with this policy (see item A.4.).
3. The polygraph should not be used to verify a victim's allegation without sufficient grounds for suspecting that the victim has given false or misleading statements.
  4. Requests for polygraph examinations from another law enforcement agency pursuant to an internal investigation must be in writing and be approved by this agency's chief executive or his designate.
  5. Submission to a polygraph examination must be a voluntary action with the exception of employees of this agency formally directed to take an examination as part of an internal investigation. In all other cases, polygraph examinations shall not be administered without the subject's written approval, waiver or other instrument as required by law.

## **B. Preparing for Polygraph Administration**

1. The requesting officer is responsible for providing the examiner with all pertinent information concerning the case and for reviewing, clarifying or elaborating on that information as the examiner may deem necessary. This includes, but may not be limited to:
  - a. information obtained in the investigation that supports and justifies the use of the polygraph;
  - b. copies of crime/offense reports and investigative reports;
  - c. evidence available and withheld from the subject;
  - d. background information on the subject to be examined, to include criminal record and possible motivation;
  - e. any statements made by the subject, complainants and witnesses to include alibis; and
  - f. newspaper articles or other general information concerning the case.
2. If the subject is hearing impaired or does not speak English, the officer will help make arrangements for a sign language interpreter or translator as determined by the polygraph examiner.

In some jurisdictions, such as California, verification of victim statements is not permissible under state law.

3. Officers shall not interrogate a subject just before he/she is to take a polygraph.
4. In any Interrogation of a suspect who has agreed or who may reasonably be asked to agree to a polygraph, officers shall not pursue questions that may reveal information only the perpetrator could know. This includes, but is not limited to:
  - a. method of entry;
  - b. property taken;
  - c. weapons or type of force used to commit the crime;

- d. evidence left at the scene;
  - e. clothing worn by the subject during the crime;
  - f. unusual acts of the suspect during the crime; or
  - g. location from which property was taken.
5. Officers shall not attempt to explain procedures that will be used in the examination but shall advise subjects that these will be explained fully by the examiner. Subjects may be advised of the following:
- a. The examination is voluntary, unless otherwise provided by this policy in cases of internal affairs;
  - b. Results of the examination are not acceptable in a court of law unless all parties agree in advance,<sup>2</sup> and
  - c. Results of the polygraph examination, taken alone, do not provide substantiation for a criminal charge.
6. Should the subject be late for or cancel the appointment, the requesting officer shall immediately notify the polygraph examiner.
7. If possible, the requesting officer shall report with the subject and any other authorized persons--such as attorneys, parents or legal guardians--to the examination location of the test. The polygraph examiner shall be solely responsible for authorizing any persons inside the examination or observation rooms.

### **C. Conducting Polygraph Examinations**

1. Only fully trained polygraphists or intern polygraphists under their direction are authorized to administer polygraph examinations.
- 2 This is the case in nearly all states. New Mexico is one exception. Agencies should consult legal counsel for clarification on this point.
3. The polygraph examiner shall make such inquiries of the subject's health, medical history and/or use of medications as necessary to determine his/her ability to take the examination. Polygraph examinations shall not be conducted on any person whom the examiner reasonably believes to be physically or emotionally unsuitable for testing. This may include but is not limited to persons with heart conditions, women who are pregnant and individuals taking certain types of medication that may interfere with test results. When in doubt, the examiner may seek guidance from medical or psychological professionals as authorized by this agency and/or request the examinee to obtain a medical certificate from an appropriate health care provider.
4. An examiner shall not conduct a polygraph examination upon a subject if it is felt for any reason that an unbiased examination cannot be given.
5. Where appropriate, the examiner shall read Miranda rights to the subject and explain the voluntary nature of the test. Where required, the examiner shall obtain a signed consent prior to administering the examination as well as a signed waiver of Miranda rights.
6. An examination shall cease immediately if requested by the subject.
7. Prior to the test, the examiner shall explain the polygraph procedure to the subject and prepare him/her for the examination.
8. The examiner shall be responsible for preparing all questions used in the examination. Prior to the examination, each test question shall be reviewed with the person being tested.

9. The examiner shall independently interpret the chart tracings and render an opinion on findings that includes, but is not limited to, one of the following conclusions:
  - a. No Deception Indicated
  - b. Deception Indicated
  - c. Inconclusive
10. The polygraph examiner shall determine if a second polygraph examination is necessary and appropriate.

#### **D. Pre-Employment Examinations**

1. The polygraph examiner shall review all relevant applicant screening reports, applicant personal history summaries and any prior polygraph examination reports prepared by this agency before conducting the examination.
2. Pre-employment polygraph examinations shall be scheduled by authorized members of this agency's personnel authority according to established agency policy.
3. Polygraph examinations shall not be used as the sole determinant of suitability for employment.
4. Candidates shall be provided with a list of questions that may be used in the examination.

#### **E. Equipment and Record Keeping**

1. The polygraph examiner is responsible for the maintenance, safe-keeping and integrity of the polygraph equipment.
2. The polygraph examiner shall provide such summary activity or statistical reports as may be directed by the agency chief executive.
3. Unless otherwise provided in this policy or by state law, the polygraph examiner shall maintain copies of each polygraph report, together with polygraph charts and all allied papers, for a period of five years and indefinitely in capital offenses.
4. The results of all pre-employment examinations--including chart tracings, polygraph reports and related examination results--shall be maintained in a secure storage location, separately from criminal polygraph files. Duration of storage and stipulations for release of this information shall be governed by state law or the policy of this agency.

#### **F. Examination Rooms**

1. Tests and interviews shall be conducted in a clean, neat environment free of audible and visual distractions.
2. Certificates, diplomas and the like shall be displayed so as not to be in the sight of subjects during testing.
3. Examiners will be neat and well-groomed, and will dress in a manner consistent with standards of the professional business community.
  - a. Duty uniforms, badges and other emblems of authority shall not be worn. This does not include departmental identification cards, where required
  - b. Service weapons may be worn if required but should not be openly displayed.

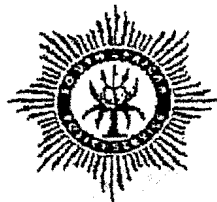
## **G. Equipment**

1. Polygraph instruments used shall be of commercial manufactures and shall have no fewer than three functioning recording channels.
2. Calibration
  - a. Calibration charts and/or maintenance logs shall be maintained at the instruments location or with case files.
  - b. Calibration checks of instruments should be conducted at least twice per month and whenever the instrument is moved to a different location.

## **H. Professional Development**

- 1. Polygraphists are encouraged to participate in career development opportunities and are required to participate in professionally recognized annual in-service training.**

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FOR OFFICE USE ONLY

Lab No				
Examiner				
NDI	DI	INC	NSR	SR

**SA Police Service**  
Polygraph Examination File

**INVESTIGATING OFFICER**

Investigating Officer		Station	
Address	.....	Case no.	Cas...../...../.....
	.....		Crime .....
Unit		Tel	Fax

Pre-Test	Date: ...../...../.....	Time: .....
----------	-------------------------	-------------

Persons Present During Test Name:	Role
	Examiner
	Examinee

**EXAMINEE**

Name		Male	Female
I.D. No			
Address	..... .....		
Employer	..... .....	Position	
Tel		Language	
Interpreter			

.....  
Examinee

.....  
Interpreter

.....  
Examiner

**ADDENDUM 4: SAPS POLYGRAPH EXAMINATION FILE (MEIRING 2000).**

**PURPOSE OF TEST.**

.....  
.....

**CONSTITUTIONAL RIGHTS**

(In terms of Art 35 of the Constitution of the Republic of South Africa, Act no. 108 of 1996)

I, ..... have been informed that I have the right to remain silent throughout this test and that I am not compelled to make any statement or to answer any questions. I have been informed that anything I say will be written down and may be used as evidence in a court of law. That I have the right to consult with a legal practitioner of my choice, or if I prefer, to apply to the Legal Aid Board to be provided with the services of a legal practitioner at state expense. The legal practitioner of my choice or the one provided to me by the Legal Aid Board may also be present during this test. I acknowledge that I understand these rights and the purpose of the test.

Signed:.....

Date:.....

Place:.....

Time:.....

I enquired from the examinee whether he/she wished to consult with a legal practitioner before he/she decides to do the Polygraph Test. The examinee indicated that he/she -

- 1. Did not wish to consult with a legal practitioner, before the test is conducted.
  - 2. Wishes to consult with a legal practitioner of his/her choice;
  - 3. Preferred to apply to be provided with the services of a legal practitioner at state expense; or
- If 2 or 3 - I took the following steps to provide him/her with the opportunity to do so :

.....

**CONSENT**

I, ..... declare that

I submit myself voluntarily to a polygraph examination. No threats, force, coercion or promise (about immunity or reward) were used to get me to agree to take this test. I understand that certain sensors must be put on my body during this test and I agree thereto. I understand that I have the right not to undergo this Polygraph test. I understand that I have the right to terminate the test at any time. I am aware and hereby give permission that the oral and written results of this examination may be made available to the Investigation Officer, and the court.

I've been informed that the testing room:  
- (Does) or (Does not) contain a video camera;  
- (Does) or (Does not) contain a one-way glass;

I understand and agree thereto.

Signed .....

Date.....

Place.....

.....  
Examinee

.....  
Interpreter

.....  
Examiner









# ANALYSIS

MGQT										
Chart 1	3		5		8		9			
	E	KB	E	KB	E	KB	E	KB		
PNEUMO										
GSR										
CARDIO										
Chart 2	3		5		8		9			
	E	KB	E	KB	E	KB	E	KB		
PNEUMO										
GSR										
CARDIO										
Chart 3	3		5		8		9			
	E	KB	E	KB	E	KB	E	KB		
PNEUMO										
GSR										
CARDIO										
SPOT TOTAL:										
RESULTS										
EKAMINATOR					KWALITEITSBEHEER					
DI	NDI	INC	DI	NDI	INC	DI	NDI	INC		
DI= -3 IN ANY SPOT TOTAL										
NDI= +3 IN EACH SPOT TOTAL										

ZONE									
Chart 1	5		7		10				
	E	KB	E	KB	E	KB			
PNEUMO									
GSR									
CARDIO									
Chart 2	5		7		10				
	E	KB	E	KB	E	KB			
PNEUMO									
GSR									
CARDIO									
Chart 3	5		7		10				
	E	KB	E	KB	E	KB			
PNEUMO									
GSR									
CARDIO									
SPOT TOTAL:									
GRAND TOTAL:									
RESULTS									
EXAMINER				QUALITY CONTROL					
DI	NDI	INC	DI	NDI	INC	DI	NDI	INC	
DI= -3 IN ANY SPOT TOTAL									
NDI= A PLUS IN EVERY SPOT TOTAL AND +6 GRAND TOTAL									

CSP			
RESULTS			
EXAMINATOR		KWALITEITSBEHEER	
NSR	SR	NSR	SR

REMARKS

Examiner.....

Datum .....

Place .....

Quality Control .....

#### AMENDMENT IV

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath of affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

#### AMENDMENT V

No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the militia, when in actual service in time of war or public danger; nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.

ADDENDUM 5: AMENDMENTS 4-6 OF THE CONSTITUTION  
OF THE UNITED STATES OF AMERICA (DAVIDSON &  
JESPERSON (1987:505).

## AMENDMENT VI

In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed, which district shall have been previously ascertained by law, and to be informed of the nature and cause of the accusation; to be confronted with the witnesses against him; to have compulsory process for obtaining witnesses in his favor, and to have the assistance of counsel for his defence.

## RULE 701: OPINION TESTIMONY BY LAY WITNESSES

If the witness is not testifying as an expert, the witness' testimony in the form of opinions or inferences is limited to those opinions or inferences which are (a) rationally based on the perception of the witness and (b) helpful to a clear understanding of the witness' testimony or the determination of a fact in issue.

## RULE 702: TESTIMONY BY EXPERTS

If scientific, technical, or other specialized knowledge will assist the trier-of-fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

## RULE 703: BASES OF OPINION TESTIMONY BY EXPERTS

The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by expert in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

## RULE 704: OPINION ON ULTIMATE ISSUE

- (a) Testimony in the form of an opinion or inference otherwise admissible is not objectionable because it embraces an ultimate issue to be decided by the trier-of-fact.
- (b) No expert witness testifying with respect to the mental state or condition of defendant in a criminal case may state an opinion or inference as to whether the defendant did or did not have the mental state or condition constituting an element of the crime charge or of a defense thereto. Such ultimate issues are matters for the trier-of-fact alone.

ADDENDUM 6: FEDERAL RULES OF EVIDENCE 701 THROUGH 706 (FEDER 1991:209-210).

## RULE 705: DISCLOSURE OF FACTS OR DATA UNDERLYING EXPERT OPINION

The expert may testify in terms of opinions or inference and give reasons therefore without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination.

## RULE 706: COURT APPOINTED EXPERTS

- (a) Appointment. The court may on its own motion or on the motion of any party enter an order to show cause why expert witnesses should not be appointed, and may request the parties to submit nominations. The court may appoint any expert witnesses agreed upon by the parties, and may appoint witnesses of its own selection. An expert witness shall not be appointed by the court unless the witness consents to act. A witness so appointed shall advise the parties of the witness' findings, if any; the witness' deposition may be taken by any party; and the witness may be called to testify by the court or any party. The witness shall be subject to cross-examination by each party, including a party calling the witness.
- (b) Compensation. Expert witnesses so appointed are entitled to reasonable compensation whatever sum the court may allow. The compensation thus fixed is payable from funds which may be provided by law in criminal cases and civil actions and proceedings involving just compensation under the Fifth Amendment. In other civil actions and proceedings the compensation shall be paid by the parties in such proportion and at such time as the court directs, and thereafter charged in like manner as other costs.
- (c) Disclosure of Appointment. In the exercise of its discretion, the court may authorize disclosure to the jury of the fact that the court appointed the expert witness.
- (d) Parties' Experts of Own Selection. Nothing in this rule limits the parties in calling expert witnesses of their own selection.

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