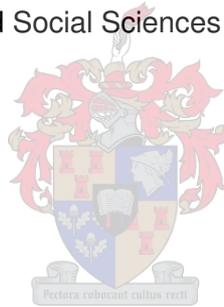


# **A Study of Research in the Faculty of Military Science, Stellenbosch University 1990-2009**

**Noëlle Milto van der Waag-Cowling**

Thesis presented in partial fulfilment  
of the requirements for the degree of  
Master of Philosophy (Science and Technology Studies)  
in the Faculty of Arts and Social Sciences at Stellenbosch University



**Supervisor: Prof J. Mouton**

March 2013

## **Declaration**

By submitting this thesis electronically, I Noelle Milto van der Waag-Cowling, declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that the reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: 26 February 2013

**N.M. van der Waag-Cowling**

Copyright © 2013 Stellenbosch University  
All Rights reserved

## **ABSTRACT**

The changing higher education environment in South Africa has led to a greater emphasis being placed on research production at universities. Currently Stellenbosch University is one of only a handful of strongly research intensive universities in South Africa. The Faculty of Military Science at the South African Military Academy functions (operates) within a partnership agreement between the Department of Defence and Stellenbosch University. The aim of officer education at SAMA is to imbue young officers with a knowledge framework and the attributes of a broad liberal education.

As a full Faculty of the University it is incumbent upon personnel in the Faculty to engage in knowledge production and associated scholarly pursuits. This is critical for several reasons: Firstly, for the required intellectual development of each scholar, secondly so as to ensure high quality teaching, and thirdly for funding purposes which are essential for the effective functioning of all faculties. Research is furthermore absolutely indispensable with regards to its contribution to the international and national scientific reach and reputation of the Faculty.

To date the Faculty of Military Science has been the lowest performing faculty of Stellenbosch University every year by some considerable margin. The main research question of this study seeks to identify and interpret the reasons for this. In so doing both a bibliometric study and a more qualitative study of the environmental factors between 1990 and 2009 have been conducted. In closing the predominant factors which either drive or inhibit research are identified and possible interventions are suggested.

## OPSOMMING

Die veranderende hoër onderwys omgewing in Suid-Afrika het tot 'n groter klem op navorsing produksie by universiteite gelei. Die Universiteit van Stellenbosch is tans een van slegs 'n handvol sterk navorsingsgeoriënteerde universiteite in Suid-Afrika. Die Fakulteit van Krygskunde by die Suid-Afrikaanse Militêre Akademie funksioneer binne die raamwerk van 'n vennootskapsooreenkoms tussen die Departement van Verdediging en die Universiteit van Stellenbosch. Die doel van offisiersopvoeding by die SAMA is om jong offisiere met 'n kennis raamwerk en die eienskappe van 'n breë liberale opvoeding toe te rus.

As 'n volle Fakulteit van die Universiteit is dit die plig van die fakulteitspersoneel om betrokke te raak in kennisproduksie en verwante wetenskaplike aktiwiteite. Dit is vir 'n paar redes van kritieke belang. Eerstens, is dit nodig vir die intellektuele ontwikkeling van elke akademikus, tweedens verseker dit hoë gehalte-onderrig, en derdens word dit vereis vir befondsingsdoeleindes vir die effektiewe funksionering van alle fakulteite. Navorsing is ook absoluut onontbeerlik vir die nasionale en internasionale wetenskaplike omvang en reputasie van die Fakulteit.

Die Fakulteit Krygskunde was tot op hede die laagspresterende fakulteit van die Universiteit Stellenbosch en die agterstand vergroot elke jaar met 'n aansienlike marge. Die sleutel navorsingsvraag van hierdie studie poog om te redes hiervoor vas te stel en te verduidelik. Gevolglik is beide 'n bibliometriese en 'n kwalitatiewe studie van die faktore wat kennisproduksie in die Fakulteit tussen 1990 en 2009 beïnvloed het, gedoen.

Ter afsluiting is die oorheersende faktore wat navorsingsbestuur inhibeer geïdentifiseer en moontlike intervensies is voorgestel.

## Acknowledgements

This thesis has been some years in the making and, as I have at times arduously wound my way along this path, there are many people who have given me their support and encouragement and although they may be too many to mention by name, their efforts have always been appreciated. My initial thanks must go to my employer, the Department of Defence and to Stellenbosch University who have provided resources in terms of time and funding to support this study. I must specifically mention Deans Edna Van Harte and Samuel Tshehla for affording me sabbatical leave as well as time spent at Stellenbosch University. Gratitude is also extended to Mr Andries Fokkens for his assistance and administrative arrangements. The Faculty Clerk, Mrs Jean-Marie MacLachlan spent hours searching for old Faculty records and going through the University student databases. I don't think I can ever thank her enough.

My supervisor Prof Johann Mouton has been instrumental in broadening my academic ideals and understanding. He has reminded me of the value and meaning of true scholarship through his incredible knowledge and work in his field. I am grateful for both his decisive insights and humour. My thanks must also go to Nelius Boshoff and Marthie van Niekerk at CREST for their assistance during my studies. My colleagues past and present from the Military Academy have been exceptional in sharing their time, effort and intellectual insights with me. My co-worker Mhakamuni Khoza and Professors Francois Vrey, Koos Kotze and Johan Malan were generous with their assistance. Prof Deon Visser in particular provided indispensable help through his meticulously archived records. Professors Lindy Heinecken and Abel Esterhuyse are both good friends and throughout the production of this thesis were always on hand to listen to my ideas or provide me with tips and most importantly urge me forward, thank you.

My family deserve a special mention and in particular my parents and sisters who appear to have an unshakeable belief in me despite my best efforts to prove them wrong over the years. More than anyone else my mother has enabled me to reach this point in my education. She spent years working with me as a child and not once did she default or waiver and I know that without her I would not have overcome my early learning challenges. I must also thank my friends who have always been on hand to offer practical help and assistance without which, I would not have managed. My greatest gratitude goes to my two children who have endured my hours behind the laptop with patience and soothing reassurance. They are wise beyond their years and an absolute joy in my life. I honour and praise the Lord God Almighty for His grace and mercy and for the fortitude and means He has provided me. This study is dedicated to my children Adam and Michaela.

## Table of contents

<b>Declaration</b>	II
<b>Abstract</b>	III
<b>Opsomming</b>	IV
<b>Acknowledgements</b>	V
<b>Table of Contents</b>	VI
<b>List of Figures and Tables</b>	X
<b>List of Acronyms and Abbreviations</b>	XII
<b>CHAPTER 1 ORIENTATION</b>	1
1.1. INTRODUCTION	1
1.2 RATIONALE	1
1.3 PROBLEM STATEMENT	2
1.4 RESEARCH DESIGN AND METHODOLOGY	2
1.4.1 Articles, Books and Theses	3
1.4.2 Reports	3
1.4.3 Official Documentation	3
1.4.4 Interviews	4
1.4.5 Websites	4
1.4.6 Data Sources	4
1.5 CHAPTER OUTLINE	7
1.6 CONCLUSION	8
<b>CHAPTER 2 THE LANDSCAPE OF DEFENCE RELATED RESEARCH IN SOUTHERN AFRICA</b>	9
2.1 INTRODUCTION	9
2.2 THE NATIONAL SYSTEM OF INNOVATION	10
2.3 DEFENCE INDUSTRY RESEARCH & DEVELOPMENT IN SOUTH AFRICA	13
2.4 THE APPLIED SCIENCES RESEARCH ENVIRONMENT	16
2.4.1 ARMSCOR and the CSIR	17
2.4.1.1 The ARMSOR Defence, Science and Technology Institute	18
2.4.1.2 CSIR – Cluster for Research and Development DPSS	19
2.5 THE SOCIAL SCIENCES RESEARCH ENVIRONMENT	22
2.5.1 The connection between the Social Sciences and the DoD	22
2.5.2 Brief Overview of the Social Science Research Environment	24
2.6 HIGHER EDUCATION AND PUBLIC RESEARCH INSTITUTIONS	24
2.6.1 University of the Witwatersrand	25

2.6.1.1	Centre for Defence and Security Management	25
2.6.2	The University of Pretoria	26
2.6.2.1	The Institute for Strategic and Political Affairs	26
2.6.2.2	The Centre for Mediation in Africa	27
2.6.3.	The University of Cape Town	27
2.6.3.1	The Centre for Conflict Resolution	27
2.6.4	The University of the Free State	28
2.6.5	Stellenbosch University	29
2.6.5.1	SIGLA@Stellenbosch University	29
2.6.5.2	Faculty of Military Science, Stellenbosch University	30
2.7	NON GOVERNMENTAL ORGANISATIONS	30
2.7.1	Institute for Security Studies (ISS)	31
2.7.2	ACCORD – The African Centre for Constructive Resolution of Disputes	32
2.7.3	Centre for the Study of Violence and Reconciliation	32
2.7.4	South African Institute of International Affairs	33
2.7.5	The Brenthurst Foundation	33
2.8	DEPARTMENT OF DEFENCE	34
2.8.1	SANDF Documentation Centre	35
2.8.2	The Centre for Effect Analysis	35
2.8.3	South African Military Health Services	36
2.8.3.1	Military Psychological Institute	36
2.8.3.2	1 Military Hospital	36
2.9	MUSEUMS	36
2.9.1	The SAAF Museums and SA Navy Museum	36
2.9.2	The Ditsong National Museum of Military History	37
2.10	PUBLICATIONS WITHIN THE SECURITY FOCUS AREA	37
2.10.1	Accredited Peer Review Journals	38
2.10.1.1	The African Security Review	38
2.10.1.2	Scientia Militaria – South African Journal of Military Studies	38
2.10.1.3	African Journal of Conflict Resolution	38
2.10.1.4	Strategic Review for Southern Africa	39
2.10.1.5	The Journal for Contemporary History	39
2.10.2	Scientific or Industry Periodicals	39
2.10.2.1	Conflict Trends	39
2.10.2.2	SA Army Journal	39
2.10.2.3	Milmed	40
2.10.2.4	SALVO	40
2.10.2.5	African Armed Forces Journal	40

2.20.2.6	Defence Web	40
2.20.2.7	Martin Creamer's Mining & Engineering News	40
2.10.2.8	Jane's Defence	40
2.10.3	Periodicals (Magazines)	41
2.10.3.1	Servamus	41
2.10.3.2	SA Soldier (Previously SALUT and Paratus)	41
2.10.3.3	Ad Astra	41
2.10.3.4	SA Navy News	41
2.10.3.5	COLET Bulletin for Educational Technology	41
2.11	POSTSCRIPT	41
<b>CHAPTER 3 AN HISTORICAL OVERVIEW OF THE MILITARY ACADEMY</b>		<b>43</b>
3.1	1951-1960	43
3.2	1960-1970	46
3.3	1970-1980	48
3.4	1980-1990	49
3.5	1990-2000	51
3.6	2000-2010	54
3.7	POSTSCRIPT	56
<b>CHAPTER 4 THE DYNAMICS OF KNOWLEDGE PRODUCTION WITHIN THE FACULTY OF MILITARY SCIENCE</b>		<b>59</b>
4.1	INTRODUCTION	59
4.2	RESEARCH MANAGEMENT IN THE FMS 1990-2009	62
4.3	2007 FMS Research Plan	66
4.4	HUMAN RESOURCES MANAGEMENT IN THE FMS	69
4.5	RESEARCH FUNDING AND RESOURCES	71
4.6	THE 2006 ASMAL REPORT AND THE FMS	72
4.7	THE TOBIAS REPORT	74
4.8	CONSULTANTS' REPORTS & RESEARCH CAPACITY BUILDING	77
4.9	ACADEMIC FREEDOM	81
4.10	CONCLUSION	83
<b>CHAPTER 5 A BIBLIOMETRIC ANALYSIS OF THE RESEARCH OUTPUT OF THE FACULTY OF MILITARY SCIENCE 1990-2009</b>		<b>85</b>
5.1	INTRODUCTION	85
5.2	THE FMS IN THE STELLENBOSCH UNIVERSITY RESEARCH PRODUCTION LANDSCAPE	85

5.3	THE FMS RESEARCH PRODUCTION: OUTPUT TRENDS 1990-2009	90
5.3.1	Conference Proceedings	90
5.3.2	Accredited Research Outputs	92
5.4	THE SHAPE OF FMS RESEARCH INCLUDING TRENDS IN COLLABORATION AND VISIBILITY	94
5.4.1	Output per School and Department	95
5.4.2	Range of Scientific Journals	97
5.4.3	Patterns of collaboration in international visibility	98
5.4.4	Publications in WOS Indexed Journals	100
5.5	THE DEMOGRAPHICS OF RESEARCH OUTPUT IN THE FMS	101
5.5.1	Qualifications of FMS Staff Members	101
5.5.2	Racial and Gender Demographics of the FMS	104
5.5.3	Age Demographics	108
5.6	RESEARCH PRODUCTIVITY MEASURES	109
5.6.1	Productivity Profile of the FMS	110
5.6.2	Individual Productivity	111
5.7	POSTGRADUATE DEGREE PRODUCTION	112
5.7.1	The FMS PhD Programme	112
5.7.2	Master of Military Science Programmes	113
5.7.3	Throughput Rate of Postgraduate Students	114
5.8	CONCLUSION	117
	<b>CHAPTER 6 EPILOGUE</b>	119
6.1	RESEARCH INPUTS VERSUS RESEARCH OUTPUTS	119
6.1.1	Time Allocation for Research	119
6.1.2	Research Resources	120
6.1.3	Human Resources	120
6.1.4	The Research Environment	121
6.2	MAIN FINDINGS OF THE STUDY	121
6.2.1	The Positive Factors	121
6.2.2	The Negative Factors	122
	CONCLUSION	123
	<b>Bibliography</b>	125

## List of Tables and Figures

### Tables

Table 1	Relative Weights of Research Output for Performance Assessment in the FMS
Table 2	SU Faculty Publication Units over FTE Staff members 2007-2010
Table 3	Average annual growth rate in article and article equivalent output by Faculty at SU (2000 – 2011)
Table 4	Journal article equivalents by 5-year period by Faculty
Table 5	FMS Papers in National Conference Proceedings by 5 Year Period
Table 6	FMS Papers in International Conference Proceedings by 5 Year Period
Table 7	Annual Output 1990-1999. Value per year as contribution to total percentage of output for period
Table 8	Annual Output 2000-2009. Value per year as contribution to total percentage of output for period
Table 9	Research Publication Output Categories by School as a percentage as contribution to the Faculty of Military Science total research output
Table 10	Article Output by Department with percentage as contribution to total Faculty Output
Table 11	Journals carrying publications by FMS researchers 1990-2009
Table 12	Number of Articles BY FMS members in WOS Journals
Table 13	Patterns of Collaboration (1990-2009)
Table 14	Collaborative Publications as percentage of total FMS outputs
Table 15	FMS WOS Publications by collaborative category with Journal Impact Factors.
Table 16	Table 16: Qualifications of FTE Staff members - Faculty of Military Science
Table 17	FMS Employment Statistics by Race and Gender per decade
Table 18	Journal Articles by Decade and Gender and Race
Table 19	Percentage of total output per decade as per Gender
Table 20	Journal article output by decade relative to Gender/Race
Table 21	Article production: Analysis of producing researchers by Age Group and Gender
Table 22	Distribution of relative research productivity in the FMS (1990-2009)
Table 23	Most Prolific Researchers in the FMS : Output as Percentage of Total FMS Output for the period 1990-2009
Table 24	FMS Masters graduates as percentage of total SU Masters graduates per year
Table 25	M Mil Degree Enrolments and Conferment per year
Table 26	M Mil Students based at the Military Academy versus Distance Students
Table 27	Enrolment and Throughput Rates per Race
Table 28	M Mil Enrolment and Pass Rate Statistics per Gender

**Figures**

- Fig 1 Total Research Output per Academic Staff
- Fig 2 FMS Accredited Research Output 1990-2009
- Fig 3 Percentage of Staff with Doctorates at South African Universities

**List of Acronyms and Abbreviations**

ACCORD	African Centre for the Constructive Resolution of Disputes
ADI	ARMSCOR Defence Institutes
ANC	African National Congress
APLA	Azanian Peoples Liberations Army
ARMSCOR	Armaments Corporations of South Africa
AU	African Union
BMIL	Bachelor of Military Science
BRIG GEN	Brigadier General
CCR	Centre for Conflict Resolution
CEMIS	Centre for Military Studies
CHET	Centre for Higher Education Transformation
CMA	Centre for Mediation in Africa
CMDT	Commandant
COL	Colonel
CREST	Centre for Research on Evaluation, Science and Technology
CSIR	Council for Scientific and Industrial Research
CSVR	Centre for Study of Violence and Reconciliation
DERI	Defence Evaluation and Research Institute
DHET	Department of Higher Education and Training
DMIL	Doctor of Military Science
DOD	Department of Defence
DOE	Department of Education
DORM	School for Defence Organization and Research Management
DST	Department of Science and Technology
FMS	Faculty of Military Science
GDP	Gross Domestic Product
GEOSYS	School for GeoSpatial studies and Information Systems
GERD	Government Expenditure on Research and Development
GOC	General Officer Commanding
HEI	Higher Education Institutions
HOD	School for Human and Organizational Development
IBSS	International Bibliography of the Social Sciences
IDP	Institute for Defence Policy
ISPA	Institute for Strategic and Political Affairs
ISS	Institute of Security Studies

ISSUP	Institute for Strategic Studies at University of Pretoria
KIC	Knowledge, Interchange and Collaboration (NRF Travel Grants)
LT COL	Lieutenant Colonel
MIL	Military
MILACAD	Military Academy
MK	Umkhonto We Sizwe
MMIL	Master of Military Science
MPI	Military Psychological Institute
MRG	Military Research Group
MUE	Military University Educator
NCACC	National Arms Control Committee
NGO	Non Governmental organization
NRF	National Research Foundation
NSI	National System of Innovation
OC	Officer Commanding
OR	Operations Research
PMC	Personal Management Code
PRI	Public Research Institutions
PROF	Professor
R&D	Research and Development
RMC Kingston	The Royal Military College (Canadian Defence Academy) in Kingston, Ontario.
SAAF	South African Air Force
SADC	Southern African Development Community
SADF	South African Defence Force
SAIIA	South African Institute of International Affairs
SAKB	South African Knowledge Base
SAMA	South African Military Academy
SAMHS	South African Military Health Services
SANDF	South Africa National Defence Force
SAS	School for Security and Africa Studies
SCI TECH	School for Science and Technology
SCOPUS	SciVerse Scopus (bibliographic database)
SENRO	Centre for the Study of Revolutionary war
SIGLA	Security Institute for Governance and Leadership in Africa
SOS	Special Support Scheme for Research
SU	Stellenbosch University
TBVC	Transkei Bophuthatswana Venda Ciskei

TDC	Transkei Defence Forces
TUKS	Pretoria University
UDF	Union Defence Force
UN	United Nations
UNSW@ADFA	University of New South Wales at the Australian Defence Force Academy
UP	University of Pretoria
USAFA	United States Air Force Academy
USB	University of Stellenbosch Business School
USMA	United States Military Academy at West Point
USNA	United States Naval Academy at Annapolis
WITS	University of Witwatersrand
WOS	Web of Science

## CHAPTER ONE

### ORIENTATION

*“It was the best of times; it was the worst of times.”*

*Charles Dickens – A Tale of Two Cities.*

#### 1.1 INTRODUCTION

This study is both a quantitative and qualitative analysis of knowledge production in the Faculty of Military Science (FMS) at Stellenbosch University. The Faculty, which is interdisciplinary in nature, comprises five schools. It is the only one of its kind in South Africa as it exists for the sole purpose of educating personnel for the South African Department of Defence (DoD).

The time period of the enquiry covers the twenty year period from 1990 to 2009. This period was chosen for a number of reasons; firstly it is sufficiently long enough to provide one with the opportunity of measuring trends. Secondly, there was insufficient research production prior to 1990 to justify including previous decades. Finally the period also mirrors dramatic changes in South Africa's political and constitutional order against which major policy shifts and considerable transformation occurred in both the science and technology landscape and well as the defence landscape.

#### 1.2 RATIONALE

The main rationale for undertaking this study is due to the significant gap which exists with regard to information and knowledge on research production in the Faculty of Military Science. After a thorough literature review it was confirmed that not a single integrated study, article or even a report has ever been produced which focused on research output in the Faculty. This is the principal reason for undertaking this study.

A secondary motivation was that, as a member of this Faculty, it was relatively simple to anticipate the discussion which would flow from such a study and raise important questions on the quality of research endeavour, the organisational climate and finally the relationship between the DoD, Stellenbosch University and the Faculty. All of these factors impact on the establishment or hindrance of a research culture. Additional motivations were based on the relative paucity of research production in the Faculty given that it is situated in a predominantly research orientated University. This is particularly pertinent when considered against the backdrop of the national higher education funding framework.

The potential value and significance of this thesis are that it provides a scientific analysis of research output in the Faculty of Military Science and therefore points directly to problem areas, strengths and trends. It furthermore offers qualitative insights into the constraints on research productivity in the Faculty. Together this information should provide sufficient knowledge to review and address research productivity in the Faculty with a view towards improving output through enhanced strategies and frameworks.

### **1.3 PROBLEM STATEMENT**

The primary question under investigation in this study is why the Faculty of Military Science has consistently struggled to establish a vibrant research culture and viable research production output?

Whereas the average output for Stellenbosch University as a whole in 2011 was 2.59 subsidy bearing publication units was 1.02 for the period 2007 to 2010, the corresponding figure for the Faculty of Military Science was a relatively paltry 0.23.<sup>1</sup>

The Faculty faces unique challenges and demands as it straddles two worlds, namely the military and the academic and therefore to a large extent seeks to satisfy two masters with vastly different priorities and expectations. The problem is firstly conceptual in that there is a definite lack of scientific research in this area. The second problem area is more of an applied nature given the debate at Faculty level regarding problems on the ground regarding the building of a research culture, knowledge production and capacity building.

### **1.4 RESEARCH DESIGN AND METHODOLOGY**

The study has been structured to examine both statistical data which can be quantified and interpreted as well as qualitative questions and explanations which will enable the reader to understand the context within which knowledge production in the FMS takes place. The research design is a combination of the narrative approach and secondary data analysis.

In constructing the historical narrative three principle sets of information were used: i) scholarly/academic documentation such as articles, books and thesis; ii) stakeholder documentation for eg policy documents, reports, memoranda and the like; iii) and finally personal interviews with stakeholders. A wide range of different sources were utilised in order to

---

<sup>1</sup> See Table 2.

ensure a representative and accurate reflection of the issues under discussion. These are discussed separately under the headings below.

#### **1.4.1 Articles, Books and Theses**

A large number of books and articles were consulted as part of the literature review. These were particularly pertinent in the discussions on the science system and the defence research landscape in South Africa. There was a limited amount of literature available on the Military Academy and the Faculty of Military Science with the work of Visser and Esterhuysen who have published a number of papers on this topic, being the most important in this area. A few other scholars have also published or researched in the field of South African military education and these works were all consulted.

#### **1.4.2 Reports**

The reports utilised differ widely in both their scope and purpose. In many cases these comprised the annual reports of organisations such as the DoD, ARMSCOR and the CSIR. In other cases they were high level official reports for example, the 2005 report on the Military Academy by the Parliamentary Portfolio Committee on Defence.

The Research Reports and Yearbooks of Stellenbosch University for the year 1990 to 2010 were a cardinal source of information for this study. In addition research reports for military academies abroad for example the Australian Defence Force Academy were also scrutinized. Lastly there were a number of reports commissioned from within the Faculty itself, which were also consulted.

#### **1.4.3 Official Documentation**

The term “official documentation” encompasses a rather disparate collection of documents. At the higher reaches of government for example this includes a number of the so-called “White Papers” which were used. These are important policy documents which shape and direct departmental policies over five to ten year periods. The 2012 Defence Review which is an interim review was also utilised extensively in this study.

On a lower level a documentary analysis of relevant material emanating from within both the University as well as the Faculty itself was conducted. Such documentation includes policy and strategy documents, minutes, memoranda and letters. Primary sources such as these shed valuable light on the situation within given entities. Lastly a small number of official documentation from other institutions such as the United States Military and Naval Academies were also used.

#### **1.4.4 Interviews**

Eight persons were interviewed between 2010 and 2012 for the purposes of this study. These included researchers and representatives from the CSIR and ARMSCOR who were interviewed at their respective facilities in Pretoria with a view to gaining a first hand understanding of research within these organisations. The Director of the South African National Defence Force's archives (SANDF Documentation Services) was interviewed. These four interviews were unstructured and approximately an hour each. They were held with the purpose of providing the writer with a better insight and understanding into the type and operation of research at these various facilities. The interviews were not transcribed.

The four former Deans of Military Science for the period under review were also requested to participate in an interview process. Of these, only one declined. The Deans were provided with a similar list of questions regarding research management in the Faculty. A serving professor in the Faculty, who chaired its first research committee and produced a comprehensive study on the history of the Military Academy, was also interviewed. All of these interviews were approximately 90 minutes in length and were recorded and transcribed. A copy of the transcript was sent to each interviewee. At times these interviews have been quoted in the text. It was not possible to anonymise the interviewees given that the context of their comments would have in any case revealed their identities.

#### **1.4.5 Websites**

Increasingly many organisations make use of their web portals to convey information or lodge their annual reports and other relevant documentation. It has therefore become common to utilise websites as source material. In this study this was particularly the case with regards to non-governmental organisations, primarily because the web is an affordable alternative to publishing and disseminating expensive paper reports and newsletters. Websites are also increasingly used as online repositories and therefore acted as a platform for sourcing many documents and reports. Certain items of information on various South African universities, the CSIR and ARMSCOR in particular were also obtained from their respective websites.

#### **1.4.6 Data Sources**

In the main, the quantitative element of this study comprised a secondary bibliometric analysis of statistical quantitative data. The integrity and completeness of the data posed a significant challenge given the extended time frame of the study and the paucity of records. Many of the Faculty records, in particular Annual Faculty Reports were incomplete or had already been submitted to the Stellenbosch University Archives. The SU Archives have been closed for some

time due to the fire in the Wilcocks Building and staff indicated that it would be many months before such records could be located.

The main sources utilized in the building of the research output datasets were:

- The SA Knowledgebase located at the Centre for Research on Evaluation, Science and Technology (CREST), Stellenbosch University, which is a unique in South Africa.
- The Stellenbosch University Calendars,
- Official Annual Research Reports published by Stellenbosch University,
- The Faculty of Military Science student data records were utilized for information on post graduate enrolments, degree conferment and to verify staff tables.
- The Thompson Reuters Web of Science databases.

A number of critical questions were employed to inform data analysis. These were:

- To determine the nature and extent of peer reviewed or accredited research production in the Faculty of Military Science between 1990 and 2009.
- To map the publication practices of the Faculty of Military Science in international and national journals.
- To examine the broad demographic distribution of research production in the FMS with regards to race, gender and age.
- To establish research productivity trends by school and department throughout the period.
- To map post-graduate throughput and collaboration in research productivity.

In assessing the research output of the FMS both full paper as well as fractional counts have been used depending on what is appropriate for a specific task. By way of explanation, the difference between full and fractional counts is as follows:

- Full paper counts: The FMS received a count of 1 for every paper that listed a (co-) author with an FMS affiliation, irrespective of how many authors from either the FMS and/or other institutions, including Stellenbosch University, contributed to that paper.
- Fractional paper counts: For any paper the FMS received a count corresponding to the proportion of authors with an FMS affiliation in that paper – e.g. if two out of three authors have an FMS affiliation the paper was given a fractional count of 0.67 (i.e. 2/3).

It is important to note that fractional counting is of particular importance within the South African science system mainly because of the link between outputs and funding and as such can be over emphasised both in terms of its importance and as a method of measurement. Unfortunately it was not possible to establish the birth year of all the authors in this study. As

such it was decided to establish age cohorts and link each author to the relevant cohort. It is submitted that this process was completed with a high degree of accuracy.

The parameters of this survey which were used to compile and measure the data consisted of the four following areas: Output Categories, Input Measures, Productivity Measures and Demographic analysis. The scope of each of these is briefly explained below:

## **1. Output Categories**

### **1.1. Publications**

- a. Articles in scientific journals
- b. Articles in technical journals
- c. Articles in popular journals
- d. Chapters in books
- e. Books or monographs

### **1.2. Presentations**

- a. Predominantly academic conferences

The data was compiled primarily from articles in scientific journals, chapter in books and books or monographs. From time to time FMS members publish in technical and popular journals but these articles do not constitute accredited scientific output as such and therefore are not discussed in any length. As far as presentations are concerned, the FMS members take part in academic conferences both nationally and internationally on a regular basis. However, such activities are no longer reported in the annual research reports and therefore only published conference proceedings are reported. FMS members do not as a rule take part in public hearings, public talks or serve on expert committees and panels with the exception of within the Department of Defence itself. Such activities are also not reported in annual reports and constitute a relatively low level of activity and were therefore not considered.

## **2 Impact Measures**

The number of articles published in WOS indexed journals by FMS staff is extremely low. This study provides a simple citation impact assessment of the WOS (Web of Science) indexed journals in which these articles appeared. The bulk of the FMS research output takes place in accredited journals which are not included in any of the Web of Science citation indexes and as a result it is not possible to provide citation assessments for article output as a whole.

### **2.1. Citations**

- a. Citation impacts from the WOS database were utilised.
- b. Chapters in books were not measured for citation impacts.

### **3 Productivity Measures**

The productivity measures are indicated in a number of tables in this study and include comparisons between individuals, schools, department, gender, age groups and race.

#### **3.1. The measurement of output over input.**

- a. Individuals.
- b. By department and school.
- c. By Faculty.

### **4 Demographic analysis**

The demographic analysis of the FMS in this study is relatively comprehensive and includes all four indicators below.

- a. Gender
- b. Age
- c. Race
- d. Qualification level

## **1.5 CHAPTER OUTLINE**

Chapter One is an introduction to the thesis. It discusses the rationale for the study, the problem question and on the methodology. It includes a discussion on sources and datasets.

Chapter Two provides an overview and discussion of the military orientated research landscape in South Africa. This is divided into three parts. It includes a discussion on the applied research environment, the social sciences research environment and lastly publications with a military focus.

Chapter Three is a brief history of the South African Military Academy from its inception in 1950 with a specific focus on the historical development of the Faculty of Military Science.

Chapter Four provides a qualitative discussion on knowledge production in the Faculty of Military Science between 1990 and 2009. The Chapter examines a number of critical environmental questions within this context such as research management, human resource development, resources and the like. It further serves to provide the reader with an understanding and context of the Faculty's operational realities as a prelude to the bibliometric analysis in Chapter Five.

Chapter Five is a bibliometric study of the research production in the Faculty of Military Science from 1990 to 2009. It includes a discussion of the data through the lens of various bibliometric indicators.

Chapter Six presents a brief summary, interpretation and discussion of the findings in the study.

## **1.6 CONCLUSION**

The foremost purpose of this study is to accurately identify and understand the principal constraints and drivers of knowledge production in the Faculty of Military Science. The chapters which follow were therefore intended to create a framework against which the nature and operation of knowledge production within the Faculty of Military Science can be contextualised both nationally and institutionally within Stellenbosch University. The bibliometric study seeks to provide an objective and empirical analysis of research production and trends with a view to creating a platform for enhanced knowledge productivity in the future.

---

## CHAPTER TWO

### THE LANDSCAPE OF DEFENCE RELATED RESEARCH IN SOUTHERN AFRICA

*“Education is an open knowledge-driven process. A broad-liberal education is the foundation for the future professional military officer.” (2012 Defence Review)*

#### 2.1 INTRODUCTION

As a starting point towards positioning the Faculty of Military Science’s contribution to security or military related research in South Africa, this Chapter seeks to present a basic mapping of the military research landscape in South Africa. Furthermore a brief discussion of the current national science and technology framework is included in order to provide a context within which such research has taken place.

Research within the security environment in South Africa can broadly be divided into two distinct areas of activity which are extremely diverse and will therefore be discussed separately. The first is the so called hard sciences research area which is dominated by applied research and development on military technologies and product development for the domestic armaments industry. The second area of activity is the social sciences research environment which tends to be active within the framework of the human security paradigm. Security related research in South Africa is important as the country has been described as one of three emerging hubs of innovation and diffusion in Africa alongside Nigeria and Kenya. Last and others point out that “these hubs are connected to both regional and international networks of influence that shape the prospects for the emergence of human security communities.” (Last et al, 2012: 3)

As far as the applied research activities in the natural and engineering sciences are concerned this research is largely funded by government via the Department of Defence and is primarily conducted by ARMSCOR’s Defence Institutes and the Defence and Security Cluster of the Council for Scientific and Industrial Research (CSIR). It would appear as if basic research in the hard sciences is almost non existent and neither does there appear to be much engagement with role players outside of the immediate CSIR/ARMSCOR nucleus. Notably absent from this arena are obvious partnerships with Higher Education Institutions in terms of projects or funding for research. Although the CSIR do make information regarding their publications within this domain available, by and the large the exact extent and nature of the projects undertaken by both ARMSCOR and the CSIR remains relatively unpublicised. To a degree this is as a result of

security concerns and for reasons of industrial competitiveness. What is clear to the observer however is that defence related research and development has declined over the past two decades and is primarily focused on so called “niche areas” where South Africa enjoys an advantage or has identified specific strategic requirements.

The social sciences research environment manifests an even more diverse landscape with researchers active in a number of fields but primarily the political sciences, strategy, sociology, law and historical studies. There is very little, indeed if any, funding from the Department of Defence for social science research and the landscape is largely dominated by individual researchers at Higher Education Institutions and non-governmental organisations. It is beyond dispute that with the introduction of the notion of the National System of Innovation in 1996, that the national research agenda has been dominated by the hard sciences. This is very much the case within defence research and development as well.

All research activity within the defence and security arena is steered to a greater or larger extent by the South African Science System which is therefore discussed below.

## **2.2 THE NATIONAL SYSTEM OF INNOVATION**

In 1994 the new government of South Africa inherited a science system which had been designed to serve an isolated and besieged state. Public Science expenditure was overwhelmingly directed towards the military-industrial-complex and strategic industries reaching a high of 54.2% of total R&D expenditure in 1987. (Boshoff & Mouton, 2003: 224) Outside of the defence research arena many gifted scientists had left South Africa to escape the malignant effect of isolationism on their careers or to seek a home in a more politically stable environment. (Auf Der Heyde & Mouton, 2007: 13)

Prior to assuming power in 1994, the African National Congress had commissioned a study on science and technology in South Africa which indicated that a reform of the science and higher education sectors would be necessary. (Marais & Pienaar, 2010: 88) The report introduced the idea of moving towards a National System of Innovation (NSI). A key outcome of the report by the ANC Interim Science and Technology Group was the restructuring of the science and technology system in order to harness and promote innovation and entrepreneurship. These findings were later fed through into both the Green and the White Paper on Science and Technology. (Kahn, 2008: 136) South Africa was the first developing country in the world to adopt the notion of an NSI which is aimed at building interaction between government, universities and industry instead of developing each sector separately. The ANC government

was quick to acknowledge newer trends in science and technology management and embraced the concept of the NSI.

The White Paper on Science and Technology defines the concept of the NSI to mean a 'set of functioning institutions, organisations and policies which interact constructively in the pursuit of a common set of social and economic goals and objectives.' (White Paper Science & Technology, 1996: 19) The government instituted a number of measures to transform the science system into an NSI, including new funding initiatives, restructuring the tertiary landscape, and the formulation of new policy and governance frameworks. (Walwyn, 2006: i) Kahn divides the South African NSI into five components: private and public firms, higher education institutions, science councils, government department research institutes, museums, statutory bodies and non-governmental organisations. This system is supported by state policy intervention, relevant infrastructure and a legal framework. (Kahn, 2006, 129)

The 1996 White Paper on Science and Technology was a policy document that was imbued with the promise of a new era in South African science, an era in which the new National System of Innovation would hopefully align research and development with economic objectives and position South Africa as a knowledge economy. It's probably too soon to tell whether these 1996 objectives have been reached, but at the very least, right now they are hanging in the balance. (Kahn, 2008: 153) Initially, Government spending on R&D began to climb under the new ANC led government post 1994. The succeeding Mbeki government ambitiously targeted 1% of GDP for R&D expenditure by 2008. However this target was not attained and still remains a challenge as technocrats have discovered that research lacks a strong advocate within the innermost circles of Government. (SA Defence Review, 2012: 423)

Currently within the State the fiscal emphasis falls on more immediate and applied forms of social spending namely, poverty alleviation and infrastructure projects. Furthermore current spending within the science system appears to be misaligned in so far as much of it is being directed at a handful of huge and capital intensive prestige projects such as the Square Kilometre Array Telescope Project and the Pebblebed Modular Reactor (now scrapped). During the *Apartheid Era* the emphasis from government was on large strategic research projects of mainly an applied nature. Massive amounts of funds were spent on initiatives like SASOL's oil from coal project, the development of nuclear capabilities and the like. The current government has recently been criticised for persisting with so-called prestige 'big science' like SKA project which has gobbled up some 14% of the DST's annual budget. The Minister of Science and Technology, Naledi Pandor acknowledges that insufficient funding is being channelled by the State to the National Research Foundation and Science Councils in particular. (Nature, 2010:

727-728) A further problem area is the that while South Africa has considerably increased investment in knowledge generation since the advent of the post-*apartheid* government, this has been offset somewhat by the slow growth in the numbers of R&D personnel which increased by only by 33 percent for the same period. (Badsha & Cloete, 2011: 6)

One of the research areas which has been most severely affected by cutbacks and changes to national research funding has been R&D in the defence cluster. Compared to social spending and combating crime, defence is simply not a priority in terms of the national budget. In 1990, the National Party Government was only spending 0.61% of GDP on Research and Development. but at least 50% of this was in the defence or military sector. (King, 2010: 727) By 1997 only 12,5% of R&D expenditure was on Defence. (Boshoff & Mouton, 2003: 224) Critically the 1996 White Paper called for the new strategy of the SANDF to be examined in the context of the NSI. (White Paper Science and Technology, 1996) At the same time the Defence Review also included a chapter on the defence industry in its report, which subsequently evolved into the White Paper on the Defence Related Industries under the auspices of the National Conventional Arms Control Committee (NCACC). The NCACC is a ministerial committee responsible for establishing policy in the industry, as well as controlling the sale of arms, and the issuing of export permits. The NCACC White Paper was approved by Cabinet in early 2000. (Botha, 2003: 3)

The current 2012 Defence Review continues to refer to the importance of R&D as both an economic as well as a skills driver. It states: "The Defence Force's requirements can also stimulate research and development in a range of technical fields, which will spin off into other sectors of Industry, thereby broadening the country's industrial base; and attract young people to engineering and science thereby deepening the country's skills base." (SA Defence Review; 2012: 57) The Review implicitly affirms the responsibility of the Department of Defence to initiate, fund and support the necessary research to allow effective and efficient acquisition or development and the necessary equipment, clothing and medicines. (SA Defence Review, 2012: 416) The defence industry turned over \$2,6-billion in 2010 and contributed 7% of total manufacturing output and could be a key area for South Africa's future industrial growth. (Gerardy, 2010) The Review postulates that the industry will play a essential role in developing the country's intellectual and skills capital. (SADefence Review, 2012: 391)

The role of the NSI receives prominent attention as does the role of the Defence Industry in supporting the NSI via defence R&D. (SA Defence Review, 2012: 393) Notably, it reaffirms government's intention to support R&D projects in niche areas through funding but importantly

also refers to “background” research and development by the CSIR and universities as well as “selected “blue sky” research. (SA Defence Review, 2012: 399)

The 2012 Defence Review maintains that it is the “intention of government to maintain and further develop South Africa’s defence industry as a key national asset.” (Engelbrecht, *SA Army explores future technology*, 2012) It goes further in promoting government support for “niche capability areas in which the South African defence and security industry has a demonstrable edge or potential to gain such edge.” (Engelbrecht, *Defence Review re-orders SANDF technology priorities*, 2012)

However, notwithstanding the positive intentions and expressions of support from within the policy environment, the reality is that the DoD spends the bulk of its budget on its ageing workforce and frequently faces challenges such as *ad hoc* disaster relief missions for which it receives no additional funding. Defence spending in South Africa is currently 1.2 percent of GDP, whereas, in 1989/90 it was 4% of GDP. (Batchelor et al, 1999) The Defence budget in real terms is now effectively 24% under funded with the bulk of expenditure going towards personnel costs. (SA Defence Review; 2012: 92) The bottom line is that a minimal amount of funding is channelled into R&D. Of the funds that are allocated, almost the entire amount is spent on applied research via the CSIR and the ARMSCOR Defence Institutes. This means that there is no meaningful amount of the Defence Budget allocated or earmarked for social science research issues.

Historically, information on South African expenditure in military R&D has not been publicly accessible and access to such information still remains difficult to obtain. In 1996, Cilliers postulated that defence R&D should be established as a primary strategic requirement for defence expenditure within the budget of the Department of Defence. He pointed out that available evidence pointed to the fact that the Department was under spending on R&D to an extent that would undermine the capacity of the Department significantly to evaluate defence equipment acquisitions, to upgrade and improve existing systems, to invest in strategic technology projects and to support defence exports. (Cilliers: 1996) The same holds true today and the prediction that R&D would be negatively affected by under spending remains an ever present challenge.

### **2.3 DEFENCE INDUSTRY RESEARCH AND DEVELOPMENT IN SOUTH AFRICA**

For the purpose of completeness a brief overview of defence industrial research and development is necessary. It is however important to note that the purpose of this study is to

examine the context in which research in the Faculty of Military Science at Stellenbosch University takes place. The Faculty does not play a role in applied defence industry research and therefore only an overview of this type of research has been included.

It is first necessary to sketch the history of the armaments industry in the country as this has created the base on which the current system is predicated. The industry has typically expanded and then downscaled again as conflicts and the national security environments have evolved, with the past two decades of relative peace having exercised extreme pressure on both the armaments industry and defence R&D.

The armaments industry in South Africa originated in World War Two, with the manufacture of various types of weaponry in considerable quantities. This industry was dismantled after the war, but then re-established in the 1960s as South Africa's security situation deteriorated. This led to rapid expansion in the subsequent three decades. The United Nations (UN) imposed an arms embargoes in 1964 (voluntary) and 1977 (mandatory) and the government consequently initiated the development of an independent arms industry. (Dunne, 2006: 40) "This coincided with a surge in the country's general industrial capacity, much of it motivated by strategic considerations, such as substituting goods that could no longer be imported." (Botha, 2003: 1)

The *Apartheid* government channelled high levels of funding into research and development in order to protect strategic interests and secure self-sufficiency in key strategic industries. (Schlenter, 2009: 89) The Armaments Production Board was established in 1964 with the purpose of overseeing the manufacture and procurement of all weaponry for the SADF. When, in 1967 the UN Security Council strengthened the arms embargo against South Africa, it not only prohibited the sale of armaments, but also weapons technology. The Armaments Development and Production Corporation (ARMSCOR) was created in 1968 in response to this. By 1977, ARMSCOR had grown into an enormous parastatal which controlled all arms production within South Africa, both private and state-owned. (Schlenter, 2009: 90) The quest for independence and security led to the development of an immense conventional arms industry as well as a nuclear and space programme. (Henk, 2004: 13)

By the time South Africa entered the 1980s it had become a highly militarised state with a formidable armaments industry which enjoyed significant 'industrial, political and economic power' and had become a key sector of the economy and a source of highly skilled labour. (Schlenter, 2009: 91) Despite sanctions and the Arms Embargo, ARMSCOR was extremely adept at procuring the imports of military technology and machinery needed for the production of complicated armaments. ARMSCOR specialised in utilising existing military technology to

develop new technology and systems, and built a reputation, perhaps somewhat unfairly, for *redesigning* armaments rather than developing new technology. (Schlenther, 2009: 92-93) Over the years the armaments industry developed into a complex and intertwined system of public and private sector producers. The public element was represented by ARMSCOR, which managed over a dozen production and testing enterprises and the Council for Scientific and Industrial Research (CSIR). (Henk, 2004: 14)

By the end of the 1980s, the number of jobs in the armaments industry had reached an estimated 131,750, approximately 8.3% of the total employment in the manufacturing sector. (Botha, 2003: 1) However, as South Africa entered the 1990s, the Defence Budget experienced huge cutbacks as a result of the ending of the so-called Border War and South Africa's withdrawal from Namibia. This constituted a substantial blow to the domestic arms industry, forcing cutbacks of programmes and the retrenchment of skilled workers. (Schlenther, 2009: 94) By 1994, the armaments industry had shrunk significantly and lost considerable capacity and capability. Employment in the Defence Industry fell from 150,000 in 1989 to just over 70,000 in 1993, "while the share of defence R&D as a proportion of the country's total R&D fell from 48% to 18%". The State also discontinued its nuclear, biological warfare and strategic missile programmes. (Henk, 2004: 14)

The privatisation process of ARMSCOR began in 1991. ARMSCOR lost its manufacturing divisions and was transformed into a state board responsible for supplying arms to the new South African National Defence Force (SANDF). The former weapons manufacturing companies were privatised in 1992 and merged into a private company named Denel, in which the state retained a majority share. (Dunne, 2006: 41) The newly formed Denel was immediately confronted with the realities of restructuring aimed at being competitive in the private sector, accompanied by a dramatic shrinkage of its primary, domestic market. The realities of the changed strategic environment forced Denel to focus on developing cross cutting initiatives whereby military technology could be converted for civilian commercial purposes as well as diversifying its research and development and production in order to produce technology which could gain a foothold in the international market. (Schlenther, 2009: 97)

Despite this restructuring the armaments industry in South Africa went into a deep slide in the early 1990s. Whereas ARMSCOR had been the 10th largest arms producer in the world in 1987, by 2005, Denel was not even ranked amongst the top 100 arms manufacturers. (Schlenther, 2009: 97-98) The local armaments industry had to enter into international and joint partnerships in order to survive. External partnerships developed to the point that products offered by major international firms increasingly featured state-of-the art technology developed

and built in South Africa. These partnerships have ensured that indigenous industries will be able to maintain 'strategically essential technologies' over the long term. (Henk, 2004: 14)

#### **2.4 THE APPLIED SCIENCES RESEARCH ENVIRONMENT**

After 1994, the defence industry, initially found itself offside with the new government which questioned both the requirement and expense of domestic arms manufacturing given that sanctions were being rolled back. The Industry argued that it was a leader and a catalyst in the growth of the high-technology manufacturing industry in South Africa. (Cilliers: 1996) After much consideration it was decided to retain the competitive components of the defence industry and partner with international partners where possible. (Dunne, 2006: 42) The public sector of the armaments industry now consists of three major actors: ARMSCOR (a division of the Department of Defence); Denel (a division of the Department of Public Enterprises); and DERI (Defence Evaluation and Research Institute), a quasi-public sector subsidiary of the CSIR. (Henk, 2004: 19)

The Department of Defence remains one of the largest end-users of science and technology in South Africa. Core defence capabilities are not limited to the retention and operation of combat systems, but also the preservation of key technologies. The DoD has the unenviable task of deciding how to spend its meagre defence research and development funds wisely in order to promote informed acquisition decisions and retain core technology capabilities. (Cilliers: 1996)

ARMSCOR's core function remains defence acquisition for the DoD. Its responsibilities include management and execution of DoD Research and Development, execution of defence acquisition programmes, disposition of defence materiel, management of strategic facilities, co-supervision of the South African defence industry as a whole, marketing defence technology and management of the defence 'industrial participation' programmes. ARMSCOR is currently mainly engaged with research, development, testing, evaluation and technical consulting. It maintains world-class facilities and technical staff for these roles. (Henk, 2004: 20)

The other important role player in the public sector is DERI (CSIR), which has a long relationship with the Defence Force. DERI has a variety of security-related research interests, and acts as a consultative body on issues of sophisticated technology. The CSIR also uses its expertise and facilities to provide 'smart buyer' and 'smart seller' advice to clients, particularly within the South African public sector including the military and police. (Henk, 2004: 20)

According to Henk, South Africa maintains “world-class ranges and test facilities on a scale astonishing for the developing world. Their quantity, breadth and depth contribute to a continuing South African capacity for rapid development and testing of prototypes. In addition to the excellent R&D facilities, South Africa has a surprisingly large number of organisations (and individuals) that might be described as ‘technology enablers’.” (Henk, 2004: 22)

However, notwithstanding these positives there are challenges as well. The armaments industry is unable to commit sufficient of its own resources towards the required R&D that would guarantee its capacity to maintain expertise across a range of capabilities. (Henk, 2004: 18) Furthermore, there is the pressure of human capital development and retention. During the Cold War Era South Africa enjoyed a noticeable advantage over its opponents with regard to the sophistication of its human resources as highly skilled young scientists and engineers populated the arms industries. Their talents were given substantial creative latitude and, as a group, were capable of quickly designing materiel specifically suited to local military requirements. Only a handful of these scientists and engineers remain. The Defence Industry has suffered a critical loss of skills attributable in part to what is referred to nationally as the ‘brain drain’ and partly due to employment equity pressures. (Botha, 2003:11)

#### **2.4.1 ARMSCOR and the CSIR**

The Defence Research and Development Council (DRDC) controls policy and funding for the technology activities of the industry. It is chaired by the Chief of Acquisition of the DoD and works closely with ARMSCOR. Its policies are intended to sustain research and development (R&D), which is only conducted on a very limited scale outside of the public sector, due to costs and low profitability. (Botha, 2003: 7)

Although the South African Defence Industry has shrunk quite significantly since the end of the so called Border War in 1990, there are still niche areas where locally developed technologies and equipment are competitive on the world market. In addition newly acquired weaponry from abroad for the SANDF usually requires additional technology and ongoing hardware updates and software refinements and further development. Whilst the CSIR appears to be mainly technology driven, the ARMSCOR Defence Institute is more of a product driven research unit. The existence of both entities implies that the State must retain certain public research facilities to this end, including specialised defence research and development facilities, test ranges and test laboratories. (Cilliers, 1996: 2) If South Africa is to retain a strategic armaments capability then such facilities are essential because, as Cilliers points out, the commitment to defence

research requires “minimum levels of funding to maintain the required levels of competence”. (Cilliers: 1996)

Defence spending on R&D in South Africa is extremely limited and is thus more of an applied nature strongly driven by user requirements. To a certain extent this limitation on R&D funding has also led to a situation in which the CSIR and the ARMSCOR Defence Institutes now find themselves in direct competition with one another for this limited funding. The CSIR is in the enviable position of being able to leverage additional funding from the Department of Science and Technology and also has viable third stream income ability driven by contracts with the private sector as well as foreign partners. As a result, the CSIR has managed to adapt to the realities of the post Apartheid South Africa rather better than ARMSCOR and has ensured a viable and strategic role for itself within the national strategic framework. The ADI on the other hand has been severely impacted by ARMSCOR’s shrinking export market and the SANDF’s increasing reliance on imported defence hardware. This has also impacted negatively on their ability to retain experienced researchers as remuneration, affirmative action pressures and a lack of novel research projects have resulted in many of their top personnel seeking new opportunities elsewhere.

#### *2.4.1.1 The ARMSCOR Defence, Science & Technology Institute*

ARMSCOR is the designated acquisition agency of the DoD and its primary function is to control the acquisition process for the DoD. ARMSCOR also operates as fund manager for a number of testing or research facilities that are strategically important but cannot operate on a purely commercial basis: for example the Gerotek vehicle test track, Alkantpan artillery range and the Institute for Maritime Technology. (Botha, 2003: 5) “The company’s strategic facilities are structured into two groups; namely the Defence Science and Technology Institutes (which house the research and development facilities) and the Test and Evaluation Centre (which is responsible for rendering comprehensive testing and evaluation services in both the military and civilian environments).” (Arm Scor Annual Report, 2010-11: 7)

ARMSCOR defines defence related research and development as follows: “R&D, in the broadest sense, may be interpreted as all scientific and engineering effort that precedes the production phase of any new item - i.e., operations research, basic research, applied research, experimental development, full-scale development, industrialisation and prototype manufacture. In the armaments industry, the full-scale development, industrialisation and prototyping phases are often referred to generically as product development (or engineering development) and are normally regarded as part of the acquisition process of which the result is the production and delivery of operationally deployable products to the SANDF. Basic and applied research (and

often also experimental development), on the other hand, is generally not aimed directly at the delivery of hardware products, but rather at establishing knowledge and skills (technology) that may be required for some future acquisition programmes - they are commonly referred to as technology development phases. Although knowledge and skills are also established during the product development phases (indeed, the level of engineering effort and cost is much greater than in the earlier phases), it is important to understand the difference in the two driving forces of the various phases - i.e. technology driven or product driven - as this largely determines the management processes appropriate to the different phases." (Cilliers, 1996: 4)

Through its various dedicated divisions the Armscor Defence Institutes provide customised operations research and solutions for the South African Department of Defence. The ADI is composed of various entities briefly enumerated below:<sup>2</sup> (Armscor Annual Report 2010-11: 23-30)

- The Institute for Maritime Technology
- Protechnik Laboratories
- Military Decision Support
- Ergonomics Technologies
- Fluid and Mechanical Engineering Group
- The Armour Development Group

#### *2.4.1.2 CSIR - Cluster for Research And Development In Defence, Peace, Safety And Security*

The Council for Scientific and Industrial Research (CSIR) has a long history of research in the defence field. It was established in 1945 at the request of the Prime Minister Jan Smuts under the leadership of Dr (Brigadier) Basil Schonland, the developer of radar. At the outbreak of World War Two, Schonland was professor of geophysics and director of the Bernard Price Institute at the University of the Witwatersrand. However he left academia to assist the Allied cause and became superintendent of the British Army Operational Research Group and later scientific advisor to Field Marshal Bernard Montgomery. When the War ended, Smuts recalled Schonland to South Africa to establish the CSIR. (Ittman et al, 73) The CSIR was South Africa's first and largest science council, and from the outset was intended to be a national research organisation comparable to similar institutions in the rest of the Commonwealth. (Kaplan, 1997: 387)

The CSIR rapidly grew into a formidable research complex, incorporating all the national research laboratories for the basic sciences and forty years later, by the mid-1980s, it was

---

<sup>2</sup> Additional information obtained from ARMSCOR website.

responsible for 13% of all the measured research undertaken on the continent of Africa. From 1987, the CSIR underwent a restructuring process. The focus shifted to the applied research domain with a greater market orientation. By the mid 1990s the CSIR obtained less than 50% of its funding from government – “giving it one of the highest ratios of contract income to government funding, by comparison with similar institutions internationally.” (Kaplan, 1997: 387)

Since the 1960s the CSIR has been contracted to undertake a variety of research and development functions in support of the Defence Force and ARMSCOR, namely, the development and maintenance of a core technology base in line with the existing military technology strategy. The technology base served to provide strategically significant technical support services to the SANDF; and support the domestic armaments industry with leading edge technology required to produce weaponry that is competitive on the international market. (Cilliers: 1996) Operations type research of the type introduced by Schonland has also remained at the CSIR despite changes over the years. In its early years, the work of the Operations Research Group focused on problems of a military nature. “This was due to the fact that OR was already an accepted discipline within the military domain while funding was also available from the Defence Force for OR-related work.” (Ittman et al, 73-74) The OR group undertook many projects for the Defence Force, over the years and these projects covered a wide spectrum of diverse problem areas. (Ittman et al, 73-74)

In the most recent CSIR Annual Report, the Defence and Security Cluster highlights the fact that changing security environment poses significant challenges to R&D. It states that “these changes relate to asymmetric warfare, where opponents have completely different capabilities, and to systems warfare, where nodal points in national infrastructure are destroyed.” (CSIR Annual Report, 2010-11: 19) Currently the CSIR has identified the following focus areas:

- Tactical and strategic situation awareness
- Information security
- Interoperability and standardisation across government departments
- Command, control and coordination (CSIR Annual Report, 2010-11: 19)

In its own words, the CSIR states that its Defence Cluster has developed strong S&T capabilities through its associations with key players in defence, safety and security-related fields. The Cluster supplies knowledge, advice and solutions in defence and matters of national security. Specifically, it aims to provide a defence evaluation and research institute capability for the Department of Defence. It also:

- “Partners with the local defence and aerospace industries to improve strategic capabilities and international competitiveness

- Collaborates and undertakes joint projects with selected international and local organisations and laboratories
- Develops and maintains national research facilities and infrastructure
- Contributes to national science, engineering and technology themes, industry development initiatives and to a new generation of scientists and engineers in the defence, aerospace and security fields
- Contributes to an improved understanding of crime, violence and conflict through the application of innovative S&T solutions.” (defsec.csir.co.za)

The CSIR's expertise in the defence, peace, safety and security domain covers numerous areas, with focused research groupings contributing to these areas. These groupings are:

- Aeronautic systems
- Landwards sciences
- Optronic sensor systems
- Radar and electronic warfare systems
- Safety and security
- Command, control and information warfare
- Technology for special operations (defsec.csir.co.za)

The contemporary global security environment which is constantly evolving poses significant challenges to research and development. “Internationally, new programmes are being formulated with a stronger focus on national security. At the same time, traditional military capabilities are being revolutionised with major technological advances in areas such as communications, computing and miniaturisation.” (CSIR Annual Report, 2010: 17) The Director of the CSIR's Safety and Security Cluster, Andre Nepgen emphasises that science, engineering and technology are essential for agile, effective and robust defence capability. The CSIR no longer provides a more basic product development type of research service to the DoD. It has matured into “smart” defence solutions provider across the range of defence activities, from policy to force planning or the optimal use of available resources, thereby pushing R&D beyond its traditional roles. (CSIR, 2005: 2)

Undoubtedly the Defence and Security Cluster of the CSIR is unique in its ability to deliver scientific solutions to the SANDF. Within military speak it is widely understood that technology is a force multiplier and it is through this capability that the CSIR holds a unique value to the South African National Defence Force. (CSIR Sciencscope, 2010: 1)

## **2.5 THE SOCIAL SCIENCES RESEARCH ENVIRONMENT**

Unlike the so called 'hard sciences' research environment within the security realm which is basically limited to two entities and largely funded by the Department of Defence, social science security related research is more difficult to track. The Department of Defence does not habitually commission or fund social science research projects and most researchers rely on grants from the National Research Foundation. Again some background to the Department's current relationship with higher education institutions and non-governmental organisations will provide some insight into their roles and research orientation.

### **2.5.1 The connection between the Social Sciences and the DoD**

After the unbanning of the ANC in 1990 there was one very noteworthy area where the social sciences suddenly began to assume a major significance for the DoD and that is in the policy making environment. In the heady days of political transition pre and post 1994, politicians increasingly began to approach consultants and NGOs for assistance in drafting policy. Sometimes this was due to the complexity of certain issues but it was also due to lack of capacity or politically legitimate policy expertise in government departments. (Seegers, 2010: 269)

There were three important actors who played a major role in establishing this relationship. Firstly a network of scholars, mainly sociologists formed the Military Research Group (MRG) (Seegers, 2010: 269) with the principal intention of filling the new policy vacuum. The MRG held its first meeting at ANC Headquarters in November 1991 and met repeatedly over the next four years. The MRGs stated aim was to "provide a forum whereby researchers, academics and policy analysts could network with one another, discuss issues of common relevance and prioritise future areas of cooperation." (Kenkel, 2006: 10) The work of the MRGs two most prominent members, Laurie Nathan and Rocklyn (Rocky) Williams would feature prominently in the first White Paper on Defence. (Kenkel, 2006: 3-4)

Kenkel attributes the MRGs success to the fact that it "brought academics and activists together with policy makers and representatives of the ANC and MK, allowing ANC preferences to be clearly communicated to the academic members who then tailored their inputs to these leanings." (Kenkel, 2006: 12) The MRG is important to this discussion primarily because so many of its members now head the various NGOs or research institutes which are discussed in this chapter. In many cases their various entities are still interlinked with the DoD and the

MRG's legacy is therefore something of a golden thread running through the security intelligentsia circles.

The second actor was the Institute for Defence Policy (later the Institute for Security Studies) established in 1991. The mission of the IDP was to assist with the transition to a "democratically accountable and legitimate national defence force." (Seegers, 2010: 269) This was done primarily through research, seminars and workshops.

The third was the Centre for Conflict Resolution, which developed what Seegers describes as "a striking interest in military issues", particularly under its Peace and Security Project which started in 1991. (Seegers, 2010: 269) Seegers makes the point that even though this community of actors and academics was small they did not speak with one voice. Despite this all of these scholars would exert an influence on defence policy formulation which was greatly disproportionate to their numbers. (Seegers, 2010: 269)

The growth of influence of these scholars was also linked to the rapid rise of security studies as an independent field of scholarship. Central to the new paradigm of security studies was the notion of human or development security and this was quickly adopted by the ANC and encapsulated in the movement's 1992 conference document "Ready to Govern." (Vreÿ, 2004: 96-97)) This development-as-security thesis was promoted particularly by the Scandinavian conflict resolution and peace scholars. (Seegers, 2010: 273) The same countries also soon established themselves as major donors of South African NGOs working in this field. Some twenty years later some scholars are making the case that new security thinking in South Africa has not transplanted well from its northern European contexts and in fact has been misused to extend the role of the state's security (intelligence) operations into all spheres of developmental government. "The story here is a cautionary tale about policy makers' use of scholarship. Concepts borrowed from a democratic context acquire new meanings and roles in authoritarian, transitional and democratizing contexts. No matter how appealing their appearance, some concepts do not travel well." (Seegers, 2010: 280)

In essence then, whereas for many years under the National Party government, scholars tended to view the defence and security sector as politically tainted and gave it a wide berth, that situation has changed quite dramatically. This is not only the case with policy formulation but with military education as well. As the Department of Defence has looked to outsource portions of its education programmes in order to meet SAQA criteria, Higher Education Institutions have actively rekindled an interest in establishing a base of academics and programmes which can compete for a slice of this potentially lucrative market.

### **2.5.2 Brief Overview of the Social Science Research Environment**

Within the social science research environment there are four higher education institutions which are currently actively involved in military and security research. There are of course many individual researchers at various other Public and Higher Education Institutions who conduct military research both for publication purposes as well as for post-graduate study. In many cases this is because a certain aspect of the security sector may be of interest to them and not security matters per se. These types of researchers often tend to move into other fields which are not defence related with the result that the established commentators in the field constitute a relatively small group. There are also a number of NGO's which are major players in producing original research due to their field network of researchers in trouble spots and their access to international funding. The Scandinavian countries and the European Union, in particular, have responded to the push towards human security in Africa and have provided a large portion of the funding for many of these NGOs. Most NGOs operate with a large number of researchers and field workers on the grounds and the knowledge which they produce is often aimed at contributing to changing government policy in the region. The remaining discourse on defence matters lies in the domain of the media and there are a few entities which are dedicated to reporting on defence matters. Additionally, there is the Department of Defence itself which conducts limited social science research through some of its structures. There is also a limited output of research via the initiative of individual employees of the DoD. Finally there are a number of Museums which enjoy a close relationship with the Department of Defence. Although they house a substantial collection of weapons, artefacts and artworks and one produces a journal, they cannot really be considered to be part of the academic mainstream.

### **2.6. HIGHER EDUCATION AND PUBLIC RESEARCH INSTITUTIONS**

It is not a simple task to define and map the social science research environment with regard to military and security issues at Higher Education Institutions in South Africa. The entire HEI landscape is home to individuals who conduct research in these areas. In many cases researchers may be interested in a certain aspect of defence related research as a sub-field of a more mainstream focus area. In other cases researchers publish on defence matters consistently but are not recognised as mainstream researchers in the defence arena. An example in this regard would be some of the members of the history departments at the University of Pretoria and the University of the North West who, aside from conducting research on other topics, will publish articles on the Anglo-Boer War or the Second World War etc from time to time. This does not however serve to indicate that these Departments fall within the

defence research realm per se. Rather it serves as an indication that conflict is a recurring human activity and as such it will inevitably occur as an ongoing research theme throughout the social sciences and humanities.

While the subject disciplines in which military related research tends to feature consistently in South Africa are sociology, history and the political sciences these are by no means exclusive. The National Research Foundation's database of Masters and Doctoral dissertation reveals that thesis topics with a military theme occur throughout the social sciences, humanities and other disciplines and throughout our Higher Education Institutions. Such theses have been completed in, amongst others, the fields of law, industrial psychology, psychology, journalism, social work, public administration, art and design and theology and more at a diverse range of universities.<sup>3</sup>

For the purpose of this study it is important to distinguish between "occasional" research and researchers on defence related topics and recognised researchers and institutions who are deemed to be established thought leaders and producers in the field of security and military related research. The following discussion of such institutions is therefore not intended to downplay the importance or relevance of the work being conducted by individual scholars within the HEIs and PRIs but rather to identify the major academic entities in the field of military research. For the sake of simplicity the term social sciences in this study includes the humanities.

## **2.6.1 University of the Witwatersrand**

### *2.6.1.1 Centre for Defence and Security Management*

Professor Gavin Cawthra holds the Chair in Defence and Security Management at the Graduate School of Public and Development Management (P&DM) at the University of the Witwatersrand, South Africa. He is also the Director of the Centre for Defence and Security Management which in the past has co-ordinated a Southern African network of institutions carrying out education and research on security management and transformation, peacekeeping and peace-building known as SADSEM - The Southern African Defence & Security Management Network. (SASDEM Annual Report 2005/6) The Defence Management Programme was initially established at Wits in the early 1990s under Gavin Cawthra through the efforts of the MRG. At that time Cawthra was the MRG Coordinator. (Kenkel, 2006: 11)

---

<sup>3</sup> National Research Foundation, Current & Completed Research Projects Database, [nrf.ac.za/nexus](http://nrf.ac.za/nexus), 2012)

The Centre for Defence and Security Management, outlines its mission as the transformation of security governance and promotion of peace and justice in Africa. The Centre has no regular in-house research publication but releases an annual report. However, staff members of the Centre publish in various academic journals. It would appear that the main thrust of the Centre is to provide education through various tailor made short courses to various military forces throughout Southern Africa. ([www.sasdem.org](http://www.sasdem.org))

The Centre for Defence and Security Management is aggressively increasing its relevance and cooperation with the Department of Defence and is currently positioning itself to become the private partner in senior military education to the DoD. Current planning in the DoD indicates that the education of General and Senior Staff Officers at the planned Defence Institute will no longer be presented by instructing staff of the DoD but will be provided and curriculated exclusively by Wits Business School and that the year long staff courses will equate to post-graduate qualifications. Through this Centre, Wits University has been somewhat more successful than Stellenbosch University in identifying gaps in the defence market for education and creating valuable government leverage and has taken the initiative in establishing partners and offices within the SADC military region. The new SIGLA initiative at Stellenbosch University has the potential to rival this entity but will need adequate funding and vision to overtake this established Wits initiative.

## **2.6.2 The University of Pretoria**

With the recent establishment of the Centre for Mediation in Africa, the University of Pretoria now boasts two security research institutes. Given its location in the nation's capital this provides a strong platform for interaction with leaders, government policy makers and members of the Department of Defence. The recent revival of the Institute for Strategic and Political Affairs (ISPA) and the newly formed Centre for Mediation in Africa (CMA) have created powerful academic and research potential and like Wits, UP is actively exploring potential links and opportunities with the Department of Defence.

### *2.6.2.1 The Institute for Strategic and Political Affairs*

The Institute for Strategic Studies (ISSUP) was established at the University of Pretoria in 1974 with the aim of conducting research on strategic matters. Since its founding, the Institute has been closely related to the Department of Political Sciences, and falls under the Faculty of Humanities at the University of Pretoria. After the retirement of its long time head, Prof Mike Hough at the end of 2009, the ISSUP and the Centre for International Politics merged to become the Institute for Strategic and Political Affairs (ISPA). Prof Sandy Africa is the Director of ISPA.

Strategic Studies is presented as part of International Politics at under-graduate level and as part of the Honours course at post-graduate level. There is also a Masters Degree in Security Studies (MSS). The approach of the Institute is determined by two basic factors. Firstly, that strategy does not only have a military, but also an important non-military dimension (for example economic, social, psychological and political); and secondly, that a specific contribution can be made if emphasis is placed on South Africa, Southern Africa, Africa and the surrounding ocean areas.

ISPA's publications comprise three categories. Firstly, there are the more extensive *ad hoc* publications such as situation reports and occasional papers. Secondly, there is an accredited journal, the *Strategic Review for Southern Africa* which focuses on strategic matters; and lastly, an ISPA Bulletin which carries commentary on newsworthy matters. Apart from its research programme ISPA holds workshops and public lectures during which specialists in certain fields speak on particular topics of strategic interest. In addition, the Institute also undertakes research under contract. ([www.web.up.ac.za](http://www.web.up.ac.za))

#### *2.6.2.2 The Centre for Mediation in Africa*

In September 2011 the Centre for Mediation in Africa was established in the Department of Political Sciences, University of Pretoria with the assistance of a grant from the Government of Belgium. The Director is Prof Laurie Nathan, who previously headed the Centre for Conflict Resolution at the University of Cape Town. (CMA Activity Report 1, 2012) The mission of the CMA is to contribute to enhancing the effectiveness of mediation in major conflicts in Africa through teaching, training, research and supporting the United Nations, the African Union, sub-regional organisations and African governments. The Centre publishes empirical research and policy briefings on aspects of mediation and peace and security issues. It also has a working paper series entitled Mediation Arguments. ([web.up.ac.za](http://web.up.ac.za))

### **2.6.3 University of Cape Town**

#### *2.6.3.1 The Centre for Conflict Resolution*

The Centre for Conflict Resolution (CCR) was established by the University of Cape Town (UCT) in 1968. In its own words, the CCR aims to contribute towards sustainable peace in Africa by promoting constructive, creative and co-operative approaches to the resolution of conflict through training, policy development, research, and capacity-building. It is a pan-African organisation contributing towards the resolution of conflict and the reduction of violence in Africa.

The Centre has expertise in training, mediation, and policy research and development. The organisation's places particular emphasis on capacity-building in conflict prevention, management and resolution. Whilst not particularly militarily orientated before 1991, the CCR played a major role in determining defence policy in South Africa through the work of Dr Laurie Nathan who became its executive Director in 1992 and remained there until 2003 whilst holding a number of government advisory posts through the 1990s. (Kenkel, 2006: 16) The CCR publishes books, seminar reports, policy briefs and training manuals. ([www.ccr.org.za](http://www.ccr.org.za))

#### **2.6.4 The University of the Free State**

The University of the Free State has two notable pockets of researchers who are actively working in the security and military fields. These are the Department of Historical Studies and the Department of Political Studies.

Historically, the Historical Studies Department at the University of the Free State has had a strong relationship with the former SADF through the Institute for Contemporary History and continues to conduct military history as one of its primary focus areas. It is led by Prof Andre Wessels who has written extensively on military history. In its own words the History Department describes its research fields as "the post-1948 political history of South Africa; oral history; South African military history (with special reference to the Anglo-Boer War and the South African National Defence Force, including, in particular, the South African Navy); women and their stories in the context of conflict and violence; South African film history; and other aspects of South Africa's cultural history and heritage. (<http://humanities.ufs.ac.za>)

The Department of Political Studies and Governance at the University also has an International Relations programme which has a notable security studies component. The programme includes theory; globalisation and world politics; foreign policy and diplomacy; international organisations; international law; international political economy; African politics; and international conflict, security and strategic studies. Of particular note is the presence of Professors Theo Neethling and Hussein Solomon in the Department who are both leading and authoritative researchers in security and strategic studies. (<http://humanities.ufs.ac.za>)

### **2.6.5 Stellenbosch University**

Stellenbosch University has a long relationship with the Department of Defence through its partnership in the Military Academy. Notwithstanding this it has to a large degree failed to capitalize on this and develop a clear vision for expanding this relationship further. The establishment of SIGLA was initially intended to expand the University's offering in the security domain. However SIGLA's future and exact role remain somewhat uncertain and it is now located within the University's Business School and is not attached to the Faculty of Military Science as was initially envisioned. Much could be done by the University to enhance the role and reach of both SIGLA and the Faculty of Military Science which at this point do not have the same academic or political clout as some of the competing institutions at other local universities.

#### *2.6.5.1 SIGLA@Stellenbosch University*

The Security Institute for Governance and Leadership in Africa was launched in 2010, and has been set up to promote the principles of democratic leadership and governance in Africa. It aims to build leadership capacity and generate knowledge resources for the continent in the areas of security for sustainable development. SIGLA forms part of Stellenbosch University's HOPE Project, which seeks to create sustainable solutions to some of South Africa's and Africa's most pressing challenges. SIGLA is attached to the University of Stellenbosch's Business School (USB) in Bellville within the School for Public Leadership. It also has some links with the University's Faculty of Military Sciences at Saldanha, primarily as a result of the role played by a former Dean, in the establishment of SIGLA.

This newly established entity is intended to offer advanced training through postgraduate leadership programmes. The target market is Africa's leaders, both in the public and private sectors. The Institute also aims to conduct research, commissions special studies and papers, and engages in policy advocacy in support of human security and a vibrant civil society. The achievement of human security is a crucial part of the continent's developmental goals and SIGLA is currently developing relationships with continental and international partners in the public and private sectors as well with civil society. SIGLA intends strengthening ties with such Africa structures as the AU, the Economic Commission for Africa, the African Development Bank, Africa's regional economic communities and various national defence forces, as well as the Southern African Defence and Security Management Network. (Lamprecht, 2011)

SIGLA aims to develop and manage the roll-out of the Programme for Emerging African Leaders which will be launched early in 2012 and will run on a regional basis across Africa. SIGLA also intends to support a process of stimulating debate both at academic and policy levels and

generating and leading dialogue on specific African and global issues in which SIGLA will engage young emerging leaders. (SU News, 30 Nov 2011)

#### *2.6.5.2 Faculty of Military Science, Stellenbosch University*

The Faculty of Military Science at Stellenbosch University forms part of the South African Military Academy. It is also a unit of the Department of Defence due to the fact that it is primarily funded by the Department and because Faculty members are employees of the DoD. The Faculty is home to some 60 full time members and awards BMil, BMil Honours, and MMil degrees. In addition it produces the vast majority of scholarly research within the DoD. The FMS is also home to a dedicated research centre, namely, The Centre for Military Studies (CEMIS). In addition the FMS is host to an accredited academic journal, *Scientia Militaria – the Southern African Journal of Military Studies*, which is edited and produced by members of the Faculty and publishes articles from a global range of academics. The FMS has increased in importance as a research entity during the past 15 years. It is discussed in detail in a separate chapter of this study.

## **2.7 NON GOVERNMENTAL ORGANISATIONS**

Since 1990 there has been a growth in civil society institutions in South Africa and those which operate in the security sector are no exception. While civil society was unable to add much to military debates during the *apartheid* era, research orientated NGOs became significant contributors towards policy debates during the 1990s. Whilst some of these NGOs played a further role during the development of the White Paper on Defence in the mid 1990s, other like the research orientated ISS were generating important policy directed research. (Cawthra, 2003: 41)

NGOs can be classified in different ways: depending on their activities, size, funding sources and their sectoral focus. The most commonly accepted understanding of NGOs is that of “as independent development actors existing apart from governments and corporations, operating on a non-profit or not-for-profit basis with an emphasis on voluntarism, and pursuing a mandate of providing development services, undertaking communal development work or advocating on development issues.” (Michael, 2002: 3) Within the South African security sector there are a number of research NGOs as well as some NGOs who are active in the field. Some NGOs, for example ACCORD, work actively at grassroots level as well as also promoting a research function. For the purposes of this study, the focus is on the research NGOs in the security sector.

### **2.7.1 Institute for Security of Studies (ISS)**

ISS is a pan-African applied policy research institute and NGO headquartered in Pretoria, South Africa with offices in Cape Town, South Africa, Nairobi, Kenya and Addis Ababa, Ethiopia. The ISS is a leading think tank in the area of African human security. It seeks to mainstream human security perspectives into public policy processes and to influence decision makers. The ISS' research is produced with the aim of providing balance and objectivity by providing empirical research and contextual analysis of human security issues to policy makers, area specialists, advocacy groups, and the media. ([www.issafrica.org](http://www.issafrica.org))

The ISS was founded in 1991 by the current Executive Director, Dr. Jakkie Cilliers, a graduate of the Military Academy, and P. B. Mertz as the Institute for Defence Policy, which was renamed in the Institute for Security Studies in 1996. Cilliers played a high profile role in the drafting of the first Green Paper on Defence. The Green Paper was viewed as too militaristic by Kasrils and Nathan and they reworked it substantially before releasing the White Paper in 1996. (Kenkel, 2006: 14) As a research orientated NGO, the ISS has been hugely influential in generating important policy directed research. (Cawthra, 2003: 41) The ISS views itself as a leading African human security research institution and outlines its core values which form the basis of its research focus as:

- Sustainable Development
- Democracy
- Human Rights
- Rule of Law
- Collaborative Security
- Gender Mainstreaming ([www.issafrica.org](http://www.issafrica.org))

The ISS, which is funded primarily by the Netherlands and the Scandinavian countries, has successfully managed to expand both its operations and relevance. By the late 1990s the ISS began to focus increasingly on continental issues such as terrorism, crime and policing and moved away from being a primarily defence minded research institute. This enabled the ISS to build a comprehensive human security research profile which has led to the growth and sustainability of the organization. (Cilliers, 2009) The Institute has a wealth of research output. Its flagship publication, the African Security Review, which is the accredited journal published in conjunction with UNISA. In addition there is the SA Crime Quarterly, a periodical titled African.org and various policy briefs and situation reports, occasional papers and conference

reports. The ISS also releases various daily commentaries via its website and electronic newsletters. (ISS Annual Review, 42-45)

### **2.7.2 ACCORD – The African Centre for the Constructive Resolution of Disputes**

ACCORD is a South African-based civil society organisation working throughout Africa to find solutions to the challenges posed by conflict on the continent. Like the ISS, it is financed by various entities, including the Scandinavian countries. ACCORD's primary aim is to influence political developments by bringing conflict resolution, dialogue and institutional development to the forefront as an alternative to armed violence and protracted conflict. ACCORD specialises in conflict management, analysis and prevention and intervenes in conflicts through mediation, negotiation, training, research and conflict analysis. (Accord.org.za)

ACCORD works from SADC in the south, through the Great Lakes region to the Horn of Africa and in West Africa. It is based in South Africa and has a number of different research publication modes – it publishes a number of reports as well as its periodical “Conflict Trends”. As of mid-2008, 38 issues of Conflict Trends had been produced, some of them in partnership with UN agencies and other organisations. ([www.accord.org.za/publications](http://www.accord.org.za/publications))

ACCORD's accredited journal is the *African Journal on Conflict Resolution* which focuses on conflict transformation in Africa was launched in 1999 with the aim of contributing to the intellectual development of thinking, writing and dialogue in the field of conflict management on the continent of Africa. Articles are longer and more in depth than those found in Conflict Trends, and of an overtly academic nature. The *African Journal on Conflict Resolution* (AJCR) places an emphasis on African writers and the thinking emerging from African universities, colleges and organizations. In addition, ACCORD publishes numerous reports and occasional papers. ([www.accord.org.za/publications](http://www.accord.org.za/publications))

### **2.7.3 Centre for the Study of Violence and Reconciliation**

CSVR is a multi-disciplinary institute involved in research, policy formation, community interventions, service delivery, education and training, as well as providing consultancy services. The primary goal of the CSVR is to use its expertise in building reconciliation, democracy and a human rights culture and in preventing violence in South Africa and in other countries in Africa. It describes its vision as “An innovator in preventing violence and building peaceful societies and its mission as “CSVR adopts a multi-disciplinary approach to understand and prevent violence, heal its effects and build sustainable peace locally, continentally and globally.”

In reality the CSVR is far more focused on research relating to the criminal justice system, however there are areas of its research focus which have a military thrust for example peacekeeping and ex-combatant Reintegration Demilitarisation. The CSVR is a fully fledged NGO and receives no State funding aside from that allocated for specific projects undertaken in conjunction with certain government department. It is dependent on donations from foreign governments, NGOs, church groups, foundations and the South African Corporate Sector. The CSVR also generates income through consultancy and contract fees. The CSVR releases reports and articles undertaken by its researchers under its own banner and these are primarily available through its website. (<http://www.csvr.org.za>)

#### **2.7.4 South African Institute of International Affairs**

SAIIA is South Africa's foremost research institute on international issues. It is an independent, non-government think-tank whose purpose is to encourage wider and more informed awareness of the importance of international affairs. It is both a centre for research and a home for public debate. The Institute was founded in 1934 and has been located at Jan Smuts House since 1960 on the campus of the University of the Witwatersrand. It also has offices in Cape Town and Pretoria. Its project funding derives from grants from international governments, multilateral organisations, corporates and private foundations. Under its former Director, Dr Greg Mills, SAIIA developed an additional focus on military issues. (SAIIA Annual Report, 2010: 6-7)

In the early 1990's the Institute's strategy began to shift to a more focused research agenda. Currently peace, security and conflict research takes place within the framework of the South African Foreign Policy and African Drivers Programme. (SAIIA Annual Report, 2010:8) SAIIA's major research projects are in the form of publications, policy briefs, workshops and conferences catering for a cross-constituency audience. SAIIA publishes the South African Journal of International Affairs which is an accredited scholarly journal. It also publishes the South African Yearbook of International Affairs as well as a range of occasional papers and policy briefs. ([www. http://www.saiia.org.za/publications-overview](http://www.saiia.org.za/publications-overview))

#### **2.7.5 The Brenthurst Foundation**

The Brenthurst Foundation describes itself as being on the frontier of new ideas and innovative actions for strengthening Africa's economic performance. Activities are focused in three areas: encouraging key decision-makers and experts to share experiences and insights at meetings and seminars; delivering relevant, practical policy advice to governments; and generating new

thinking and thought-leadership to address Africa's development challenges. The Foundation works in countries throughout Africa and from those emerging from conflict to those diversifying their economic activities. has developed a global network of analysts drawn from Central and South America, Central Asia, the US, Southeast Asia, the Middle East and North Africa, and Europe. ([www.thebrenthurstfoundation.org](http://www.thebrenthurstfoundation.org))

Although the Brenthurst Foundation would appear to be primarily an economically minded institution, it has recently appointed Dr Greg Mills as its new Director. Dr Mills is a well known and respected commentator on the security sector in South Africa. Also recently appointed was the Deputy Director, Dr Terence McNamee, who previously served as Director of Publications at The Royal United Services Institute for Defence and Security Studies (RUSI) in London. ([www.thebrenthurstfoundation.org](http://www.thebrenthurstfoundation.org)) The Brenthurst Foundation releases its research via book publications, papers and reports.

## 2.8 THE DEPARTMENT OF DEFENCE

Research within the SANDF takes place at a number of different centres and formations within the organisation. There are a number of challenges regarding research production in the SANDF, as there is no coordinating body or budget for research. There are also security restrictions in place which hinder research into areas that the organisation itself desperately requires. (Esterhuysen, 2007: 170) These challenges are compounded by the lack of an intellectual ethos in the officer corps in comparison for example to that of the United States. (Williams, 1995) Very little, in service professional research and writing takes place let alone academic research. In 1980, the well known journalist, Helmoed Romer-Heitman published an article in *Militaria* entitled "Is the Army Literate?". He identified three main reasons for the lack of research and publication endeavour in the SADF officer corps:

- The bureaucratic process to obtain a security clearance for any piece of intellectual output;
- The absence of suitable local military journalists; and
- The absence of any professional, financial or other form of incentive. (Esterhuysen, 2007: 134)

The *SA Army Journal*, which is now defunct, was introduced in 2007 by the Chief of the Army as a mechanism to encourage service writing and scholarship. It was published annually by the SA Army and articles which debated issues such as leadership and weaponry by serving officers were encouraged.

The Defence Review of 2012 places a heavy emphasis on the development of the Officer Corps. It states: "The Officer Corps is the collective commissioned leadership of the military without which the armed forces cannot function to any effect, and without which a military force will certainly not develop to meet new and evolving challenges. The Officer Corps must therefore, have a comprehensive and sound education, comprehensive and up-to-date training, and the experience to enable it to meet new challenges effectively as they arise and evolve. (SA Defence Review, 2012: 324) The Review then goes further and states that "Officers will be required to read for post-graduate qualification and contribute to professional journals. Officer must possess a post graduate qualification for appointment as general and flag officers." (SA Defence Review, 2012: 326) It is the vision of the Defence Review Committee that whilst Joint Training Command may be responsible for the coordination and administration of tertiary education, that this will be provided by external tertiary educational institutions contracted to the Department of Defence. (SA Defence Review, 2012: 337)

### **2.8.1 SANDF Documentation Centre**

The SANDF's Documentation Centre houses an extensive collection of archives. These archives are comprised firstly of the personnel archives (service records) of all members who have served in the UDF, SADF and SANDF since 1912. Secondly the archives contain all unit, staff division and headquarters records dating from 1912 including photographs. The archives are contained in groups and a project to digitise the archives is currently underway. The Documentation Centre used to have an in house research section which produced mainly military history research which were published in a series of SADF monographs as well as *Militaria*. However this section no longer exists. The historical enquiries section continues to exist and supplies information to the public on request often with regard to the service records of former servicemen and women or queries relating to a certain unit or battle etc. The Centre also operates a 'reading room' for researchers who need to consult the archives. The necessary clearance to visit the archives must first be obtained by such researchers. (Interview Director Documentation Services, 2010)

### **2.8.2 The Centre for Effect Analysis**

This Centre is located within the Defence Intelligence Division. The Centre is active in conducting extensive statistical surveys throughout the SANDF on behalf of the Chief of the Defence Force. The subject matter of the Centre's studies is wide-ranging and is used to inform the SANDF's leadership as to issues and attitudes regarding various matters and across all rank groups. These range from attitudes regarding military unions through to views on gender

mainstreaming etc. The findings are circulated to all units within the Defence Force. The Centre has made some of its studies available to researchers for use in academic research on request once the necessary security clearances have been obtained. It could not be confirmed whether the Centre is still operational.

### **2.8.3 South African Military Health Services (SAMHS)**

The South African Military Health Services is the Arm of Service responsible for the medical operations in the SANDF in addition to providing a full medical health service to SANDF members and their dependants. As such it has a high number of professionals serving within its ranks from medical specialist through to occupational therapists and psychologists. The SAMHS has two entities which conducted research namely the Military Psychological Institute (MPI) and 1 Military Hospital in Pretoria.

#### *2.8.3.1 Military Psychological Institute*

MPI in Thaba Tshwane. Is responsible for the conduct of all military psychological research and development within the Department of Defence and is also responsible for conducting assessments on members wishing to join the Department of Defence, as well as those who wish to leave due to medical reasons or any other exit mechanisms in place. The services supplied include: Psycho-strategy, Trauma psychology, Aviation psychology, Specialist selection, Organisational psychology research, Training and Community psychology. Due to restrictions on the publication of defence related research much of MPIs reports remain unpublished and not accessible to the public. The research produced by MPI is utilised for organisation purposes.

#### *2.8.3.2 1 Military Hospital*

There is some teaching and research taking place at 1 Mil, sometimes in conjunction with the Pretoria University which educates doctors and dentists for the SAMHS under the 'Mildente' scheme, however the role players and exact extent of the work being done is extremely difficult to ascertain. Some findings and projects are reported in the SAMHS periodical Milmed. There is also a relatively extensive HIV/AIDS research programme currently underway in the SAMHS under the auspices of Project Phidisa. (DoD Annual Report, 2011, 134)

## **2.9 MUSEUMS**

### **2.9.1 The South African Air Force Museum and the South African Naval Museum**

The SAAF Museum is located at Zwartkops Air Force Base in Pretoria and Ysterplaat Air Force Base in Cape Town. It houses aircraft and SAAF memorabilia and employs an historian who

researchers mainly unit and squadron histories. The Naval Museum is located in Simonstown and is staffed by Naval Personnel and civilian volunteers. Both Museums are active in preserving the histories of their arms of service however, the significance of both museums as research entities are limited.

### **2.9.2 The Ditsong National Museum of Military History**

The Museum which is located in Johannesburg, is a repository for armaments, memorabilia and military history art collections. It is also home to a number of veterans' organisations as well as military societies. It publishes a journal bi-annually in conjunction with the South African Military History Society. The *South African Military History Journal* carries articles on military history (especially South African Military History), as well as book reviews, letters, personal reminiscences and news of the activities of the SA Military History Society. The Journal is not accredited and is of little academic value, its role is rather confined to catering for the layman and military history enthusiast.

Thus far this chapter has sought to provide a synopsis and overview of the defence or security research map and the relevant institutions and role players. The final section of this Chapter will examine the publication landscape of this research area.

## **2.10 PUBLICATIONS WITHIN THE SECURITY FOCUS AREA**

The discussion on publications has been divided into journals, industry or scientific periodicals and magazines. Journals can be defined as scholarly or scientific, peer reviewed journals which are recognized by the academic community for purposes of publishing academic output. Journals usually have an editorial board comprised of eminent scholars in the field of studies in which the journal is centred. Where they have been defined as accredited journals this is a reference to official recognition by the South African Department of Education as an accredited journal for purposes of research subsidies. Industry or scientific periodicals are not accredited or peer reviewed but nevertheless carry relatively in-depth articles written for consumption by specialist communities and conveying a relatively in-depth level of subject knowledge. Trade Journals are seldom refereed and do not always have an editorial board with few or no references are given. These are serial publications covering and intended to reach a specific industry, trade or type of business.<sup>4</sup> The final category which is periodicals or magazines is

---

<sup>4</sup> <http://www.info.sciverse.com/scopus/scopus-in-detail/content-coverage-guide/sourcetypes>

limited to specialist periodicals in the field which carry short, popular type articles for consumption by a more generalized audience and are not academic or scientific in nature.

### **2.10.1 Accredited Peer Reviewed Journals**

#### *2.10.1.1 The African Security Review*

This is the accredited journal of the Institute for Security Studies and is published by Taylor and Francis in association with the University of South Africa. The *African Security Review* is a quarterly journal. The aim of the Journal is to create an essential forum for African perspectives and practitioner insights, as well as the best of international scholarship, to inform and influence security policy and practice. The ASR publishes relevant articles across the spectrum of human security issues, including security sector transformation, civil-military relations, crime, justice and corruption, small arms control, peace support initiatives and conflict management, as well as papers dealing with the interplay between economics, politics, society and culture with human security and stability. The Review was previously published as the *African Defence Review* (1994) and the *Southern African Defence Review* (1992-1993).

#### *2.10.1.2 Scientia Militaria - South African Journal of Military Studies*

The journal is published bi-annually by the Faculty of Military Science of Stellenbosch University, South Africa. It is an accredited, peer reviewed scholarly journal, which investigates a broad spectrum of matters and issues relating to military affairs, and publishes both discipline-based and inter-disciplinary research. *Scientia Militaria* has a long history. It began life as *Militaria* and the first issue appeared in 1969. and was billed as the scientifically oriented military history journal of the SADF. *Militaria* was published quarterly by the public relations directorate of the SADF. (*Militaria*, 1991: 3) In 1997, it was transferred to the Military Academy and subsequently renamed *Scientia Militaria*. The journal, which was now released under the auspices of the Faculty of Military Science, Stellenbosch University, was revamped into a peer reviewed academic journal publishing articles in all fields of military studies with a focus on Southern Africa. In 2004 it received accreditation from the Department of Education which was backdated to 2000. Currently *Scientia Militaria* receives no funding from the Department of Defence and forms part of Stellenbosch University's SUN Journals stable.

#### *2.10.1.3 African Journal on Conflict Resolution*

In launching a new academic journal focusing on conflict transformation in Africa in 1999, ACCORD aimed to contribute to the intellectual development of thinking, writing and dialogue in the field of conflict management on the continent of Africa. Articles are longer and more in depth than those found in *Conflict Trends*, and of an overtly academic nature. However, readership is

not limited to academic institutions. The *African Journal on Conflict Resolution* (AJCR) is an accredited journal and publishes the writings of a wide range of African and international authors in the field, but emphasis has deliberately been kept on African writers and the thinking emerging from African universities, colleges and organisations. The Journal appears three times per year.

#### *2.10.1.4 Strategic Review for Southern Africa*

The Strategic Review for Southern Africa is a long standing publication on military affairs in South Africa. The Journal contains articles on current strategic and military matters in the region and is published by ISPA at Pretoria University. It is an accredited journal.

#### *2.10.1.5 The Journal for Contemporary History*

The *Journal for Contemporary History* is published by the Department of History, University of the Free State. The Journal started life together with the now defunct Institute for Contemporary History within the same department. It is an accredited, national and academic journal which comprises academic articles of a contemporary historical or political nature. At least two issues of the Journal for Contemporary History are published annually during June and December. It is not to be confused with the journal of the same name which is published in the United States under the Sage Group. While the Journal for Contemporary History is not a military focused publication it usually carries at least two or three military type articles per issues. In the main this is due to the research interests of members of the Department itself who tend to publish a fair amount of content in the journal.

### **2.10.2 Scientific or Industry Periodicals**

#### *2.10.2.1 Conflict Trends*

In October 1998, ACCORD launched the *Conflict Trends* periodical. As its name suggests the publication focuses on reporting on and analysing trends in current and emerging conflicts and their resolution on the African continent. As of mid-2008, 38 issues of Conflict Trends had been produced, some of them in partnership with UN agencies and other organisations.

#### *2.10.2.2 SA Army Journal*

The *SA Army Journal* was introduced by the Chief of the Army as a mechanism to encourage service writing and scholarship in 2007. It is published annually by the SA Army and articles which debate issues such as leadership and weaponry by serving officers were encouraged. The Journal is not well distributed outside of the SA Army and issues seem to be published

when and if there are enough contributions to construct an issue. It would appear that the *SA Army Journal* is currently either defunct or dormant.

#### 2.10.2.3 *Milmed*

*Milmed* is the periodical of the South African Military Health Services. It carries some articles written by health professionals but in the main it is the news magazine for serving members of the SAMHS.

#### 2.10.2.4 *SALVO*

*SALVO* is ARMSCOR's corporate journal. It is mainly a marketing tool for ARMSCOR products and the Defence Industry.

#### 2.10.2.5 *African Armed Forces Journal*

This journal is not peer reviewed and is very much the vehicle of its owner/publisher, Peter Macintosh. The majority of the content is in fact on developments in militaries outside of Africa. AAFJ is not really a Journal but more of a periodical. Its niche, purpose and target market is uncertain and it has negligible academic value.

#### 2.10.2.6 *Defence Web*

This is a substantial web portal which is growing in significance in terms of serving as a one stop repository for all published news on the SANDF. DefenceWeb also publishes some official DoD reports and news releases and other global military developments but also contains its own articles. Material previously published on the site is archived online making retrieval simple. Headed by Leon Englebrecht, *Defence Web* has seen sustained growth over the past five years.

#### 2.10.2.7 *Martin Creamer's Mining and Engineering News*

This excellent industry publication carries articles on products and developments within the military-industrial complex.

#### 2.10.2.8 *Jane's Defence*

Jane's Defence is a world authority as a quick and up to date reference guide on armed forces and the armaments industry. Jane's publishes weekly periodicals as well as in depth reviews and annual book publications. The South African correspondent is Helmoed Romer-Heitman. Heitman is well known in South African Defence circles and he has published widely on armaments and the defence industry. He is widely used as a commentator on developments with the SANDF. He is recognised as a defence journalist rather than as an academic commentator.

### **2.10.3 Periodicals (Magazines)**

#### *2.10.3.1 Servamus*

*Servamus* is the in house news periodical of the South African Police Service.

#### *2.10.3.2 SA Soldier (Also SALUT & Paratus)*

*SA Soldier* began life as the SADF periodical *Paratus* which later became *SALUT* in 1994 and was subsequently renamed the *SA Soldier* in the late 1990s. This is the news periodical for serving members of the SANDF.

#### *2.10.3.3 Ad Astra*

*Ad Astra* is the in house news periodical for serving members of the SA Air Force and usually appears three times per year.

#### *2.10.3.4 SA Navy News*

*Navy News* is published for serving members of the SA Navy, six times per year and is the primary communications tool for the Navy.

#### *2.10.3.5 COLET Bulletin for Education Technology*

This is neither a journal nor a periodical but rather an in house bulletin which is periodically produced by a unit within the SANDF, namely, the SANDF College for Educational Technology. It has an extremely limited readership and is of negligible value. The publication of this Bulletin is sporadic.

## **2.11 POSTSCRIPT**

The spectrum of military or security research in South Africa is wide but relatively shallow. As already discussed it is clearly divided into two separate research spaces, namely the applied mainly product driven research environment and then secondly the social science environment. There is little interaction between the two and whilst in the case of the latter, research output is available in the public space in the case of the former it is mainly state sponsored and subject to certain security restrictions.

The growth of the human security paradigm and civil society institutions in post apartheid South Africa has witnessed the entry of a number of researchers and NGOs into this landscape. At the Higher Education Institution level there has also been growth with some of the formerly “English” universities now engaging with the main actors such the Department of Defence on a much

closer scale than prior to 1994. However much of the work and research conducted in this domain occurs in conjunction with international entities and finds its way into publications abroad, neither of which have not been considered for the purposes of this study.

As alluded to earlier in this chapter, list of the entities covered herein is by no means exhaustive as there are numerous individual researchers who actively produce output on military themes. Likewise there are a number of journals such as *Politikon* and *Historia* which publish articles with these themes relatively often. However the yardstick used to determine whether to include an entity or journal in the landscape discussion was whether a journal or entity had a dedicated and recognised military focus. There is also the question of book publishers which contribute quite a number of popular type military book publications by journalists and former soldiers produced for consumption by the general public and due to the study's focus on scientific research output these have also not been taken into account.

The remainder of this study will focus entirely on the research contribution of the Faculty of Military Science at Stellenbosch University.

---

## CHAPTER THREE

### AN HISTORICAL OVERVIEW OF THE MILITARY ACADEMY

*“After considering all these factors, and following a site visit and reviewing additional documentation, the Committee strongly believes that the approach taken at the Military Academy does not meet the needs of South Africa’s officer training corps, and as a result that neither the military nor the academic side of this duality is being adequately served in the interests of the nation.” (Asmal Report, 2006: 1)*

The South African Military Academy was established on the 1<sup>st</sup> of April 1950 in order to elevate officer training in the then Union Defence Force (UDF) to a level on a par with officer training abroad. At the time, the UDF wished to raise the standard of education at the Academy to that of a university. (Visser, 2000: v) The Academy, which was formed in conjunction with Pretoria University, was based on the model of the Indian National Defence Academy with the education and training systems loosely based on those of the Royal Military Academy (Sandhurst) in the United Kingdom and the United States Military Academy at West Point. (Visser, 2000: v)

#### 3.1 1951-1960: THE ESTABLISHMENT OF THE MILITARY ACADEMY

With the formation of the Military Academy, Pretoria University and the Department of Defence (DoD) entered into an agreement in 1950, whereby the University would offer a B.Sc. (Mil) and a B.A. (Mil) to Army and Air Force students at the Military Academy. While the University would have the final say over course content and curriculum it would have to consult with the UDF in order to ensure that the requirements and needs of the UDF were met. A handful of military subjects were offered including Military Geography, Military History, Military Law and Military Science and these were to be grouped under the title “Military Studies” or *Krygskunde* and presented by permanent force officers at the Military College in Voortrekkerhoogte<sup>5</sup>. These officers were recruited in agreement with the University and accredited as part time lecturers with the proviso that a Masters degree was the minimum qualification. The courses were presented in Afrikaans while examination papers were provided in both English and Afrikaans. Although the Academy was sometimes referred to as a Military Faculty it was officially not a Faculty of the University. In fact there was not even a Department of Military Studies at the University. The lecturers were instead grouped under the Department of Mathematics at the University of Pretoria. (Visser, 2000: 70-71)

---

<sup>5</sup> Formerly Roberts’ Heights, now Thaba Tshwane.

No formal constitution or contract between the Department of Defence and the University of Pretoria ever existed and the arrangement was loosely managed by a "Study Committee" consisting of members of the University and the UDF. Attempts by the University to introduce some type of formal agreement in 1952 failed. Furthermore, the shortage of lecturers and facilities at the Military College from the outset posed a problem which was aggravated by the students having to commute the 18 kilometres to Pretoria University in order to attend the additional degree courses not presented in Voortrekkerhoogte. It is obvious that this early attempt to institute a Military Academy was a half baked affair and as a result, the failure rate of students was unacceptably high. Only 6 of the original 30 candidates graduated on 18 April 1953. (Visser, 2000: 106)

This situation resulted in the Minister of Defence, F.C. Erasmus, ordering that the UDF go back to the drawing board in order to place the Military Academy on the correct footing. A committee, known as the Kriegler Committee, was appointed to review the situation. Critically, one of the factors which was raised was that the Academy was too far from the ocean to enable naval officers to receive an education there. (Visser, 2000: 131). It was at this point that Saldanha was identified as an ideal location for the Academy, due to the existence of the Naval Gymnasium in the town and Langebaan Road Air Force Base, which was a training base, in close proximity. It was also postulated, oddly enough, that the isolation of Saldanha would provide an ideal academic environment for students with none of the diversions and attractions of city life to interfere with their academic endeavour! It was probably not a coincidence that the town formed a part of the constituency of the Minister, F.C. Erasmus who was Member of Parliament for Mooresburg. It would also seem apparent that a further incentive for moving the Academy from Pretoria was so that the UDF could then break ties with the University of Pretoria and establish a so called 'independent' military university. However, the enormity of such an endeavour later led to these plans being placed on the backburner. (Neethling, 2006: 124)

On 27 August 1953, the approval in principal for the establishment of a joint services academy in Saldanha was granted. The Military Academy would form an independent military unit and operate in conjunction with "one or more universities." (Visser, 2000: 136) However, this situation evolved rather quickly and on 26 October 1953 a meeting was held between Dr R.W. Wilcocks, the Rector of Stellenbosch University and members of the UDF in Pretoria during which, the UDF Chief of Staff, Lt Gen Matie Du Toit, explained that the UDF was looking to establish a Faculty at one university, preferably Stellenbosch. Wilcocks' response was favourable as long as the lecturers and curricula met the normal University requirements. The UDF, which under Minister Erasmus was on a strong drive to Afrikanerize the ranks and ethos of

the military, appears to have preferred Stellenbosch's acknowledged ideology, encapsulated in the words of H.B. Thom as "*n volksuniversiteit*". (Visser, 2009: 89)

There was significant opposition to Erasmus and Du Toit's plan to build an Academy in Saldanha from within the ranks of the UDF. Its isolation was one thing, the expense was another. The Quartermaster General, Col H.J. Martin noted in a strongly worded minute; "If it is decided to proceed with the erection of an academy at Saldanha adequate, I repeat adequate, funds must be made available to erect an imposing institution that will be a credit to the UDF and command the admiration and respect of other institutions of higher learning. For the amount at present available a miserable second rate structure only can be built, and it will be a reproach and an object of derision wherever higher learning is mentioned. An institution as visualised must be liberally staffed to produce results and any suggestion to cut the staff to suit the meagre pittance available will be a most retrograde step and will further emphasise an impression of niggardliness and poverty. I consider your proposed staff totally inadequate to do the required task."<sup>6</sup> (Visser, 2000: 145) There was much wisdom in these observations and it is probably fair to postulate that Martin's observations proved to be rather prophetic.

In spite of the widespread opposition to the establishment and location of the Academy, Minister Erasmus ordered Du Toit to push ahead with the plans. The UDF's vision for the curriculum of this new joint Academy then brought about the first serious disagreement with Stellenbosch University. The UDF had decided that in depth study for military degrees was undesirable and that officers should instead receive a broad general education with the emphasis on knowledge of practical military values. They wished to expose students to a broad variety of military subjects over the three years instead of the specialised knowledge of two major subjects. However, the rector of the University, Prof H.B. Thom made it clear that the usual University requirement of three years of study in two major subjects was non-negotiable.

Prof Thom appointed a committee at the University which included two deans and a number of senior professors, which was tasked with investigating the feasibility of a partnership with the UDF and proposed curricula. The committee's proposals were to institute the BMil (Social Science) and BMil (Natural Science) with effect from 1955 with the proviso that first years should attend class on campus in Stellenbosch and thereafter relocate to the Academy in Saldanha for the remainder of their degrees. Furthermore, the appointment of academic staff and curricula would have to be approved by the responsible committees at the University. A Senate

---

<sup>6</sup> Lt Gen du Toit's concept plan for staff provided for "at most" twelve lecturers, two officers, on adjutant and nine non-commissioned officers and three typists to staff the entire Academy, presumably including the Officers' Mess. (Visser, 2000: 143)

Committee for Military Training was established and included representatives from the UDF. The initial agreement between the two parties made provision for an intake of 30 students per year, with the UDF bearing responsibility for all registration, lodging and class fees for students. Once they relocated to Saldanha the University agreed to levy only the registration fee and a small administrative fee. (Visser, 2000: 155-159)

The first officers scheduled to begin their studies at Stellenbosch University were enrolled in 1955 and the UDF's relationship with the University of Pretoria therefore officially ended at the end of 1957. The Military Academy was established as an independent military unit and the post of Dean was advertised. Prof JPG de Vos, a professor in physics at Stellenbosch and the Officer Commanding of the Citizen Force unit, Regiment Tobie Muller was appointed with effect from 1 January 1956. The Military Academy opened its doors in Saldanha Bay early in 1958.

### **3.2 1960-1970: THE CREATION OF THE FACULTY OF MILITARY SCIENCE**

The Faculty of Military Science at Stellenbosch University was officially established three years later on 1 January 1961 under the leadership of the first Dean, Colonel (Prof) JPG de Vos. (Neethling, 2006: 2) The Faculty was formally constituted via Parliament and the Government Gazette of August 1961, which made provision for the awarding of B Mil, M Mil and D Mil degrees in Military Science.<sup>7</sup> At the same time, the district of Vredenburg in the Western Cape was also promulgated as a seat of Stellenbosch University. As a result of the formation of a fully fledged Faculty of the University it became possible to move the first year students to the Academy as well. During that same year it was decided to introduce a B Mil degree in Commerce for officers in the support services. As a result the number of officers eligible for study at the Military Academy was increased. (Visser, 2000: 236-245)

During 1965 the first recorded discussions regarding the utilization of Academy graduates as potential future lecturers began to surface. Col de Vos wrote to the Ministry that once a student had obtained an M Mil degree that such a candidate would be in a position to be appointed as a permanent lecturer at the Academy and thereby be in a unique position to bring a military contextualisation to his subject. He pointed out that the custom of appointing former students to the Faculty at the United States Military Academy at West Point was a long established practice. (Visser, 2000: 262) With time the practice of appointing past students as lecturers in the Faculty of Military Science would become all too common to the extent that critics have long bemoaned

---

<sup>7</sup> There were no plans at this stage to introduce post graduate courses at the Military Academy.

the lack of diversity of thought in the Faculty as a result of too many staff having graduated from the Academy and then remaining on as lecturers.

To his credit, Col de Vos, as the Dean, during the period 1961-67 tried very hard to ensure that the lecturers in the Faculty would be exposed to international standards and develop as researchers. He made continuous efforts to convince the mandarins at Defence Headquarters that after a certain number of years, lecturers should be sent to Academies abroad for a year to study further and lecture in order to enhance their professional development. In addition he made various attempts to encourage the Defence Staff to utilise his Faculty for research tasks and requirements, particularly those which could lead to staff obtaining higher degrees through the research. However, there appeared to be little interest in these efforts and nothing came of them. As a result, lecturers at the Academy, unlike other officers in the UDF, were given no financial support to improve their qualifications and no incentive either as obtaining higher degrees was not linked to a promotion in either rank or pay. (Visser, 2000: 162-3) This state of affairs would come back to haunt the Military Academy. A review of the Faculty staff's qualifications in the University's yearbooks over the decades reveals that for the most part they were significantly lower than the other faculties.

During this post war period, the leadership of the Academy took its lead from the United States Military Academy at West Point and the academic emphasis was on the natural sciences. Mathematics was regarded as being more suitable than the social sciences in cultivating critical thought. (Heinecken & Visser: 2008, 150) An important step forward was realised in 1963 when the Council of the University approved a motion to allow B Mil graduates admittance to post-graduate programmes at the University in the direction of one of their major subjects. Later, in 1966 the SADF announced that full time postgraduate study for officers would be approved but only at one of the four Afrikaans universities. No reason was given for the exclusion of the English universities. (Visser, 2000: 263-4) However the uptake for further study was exceedingly low due to the expansion of conflict in Southern Africa which meant that most officers were actively engaged in supporting the growing war effort. During the decade of the 1970s only three B Mil Honours degrees were awarded and no Masters or Doctoral military degrees. (Visser, 2000: 381)

In 1968, Brigadier General Magnus Malan was appointed as the first Officer Commanding of the Military Academy. This meant that for the first time, the role of Dean and OC was split. (Visser, 2000: 313) The Office of the Dean, to which the rank of Colonel was attached, would therefore be subordinate to the Officer Commanding. This move heralded a disruption in the balance of

power and the beginning of a long, often acrimonious and unresolved struggle between the interests of the military and those of academia at the Academy.

Malan was immediately tasked by the Chief of the SADF, General Heimstra, with investigating the viability of the Military Academy. Heimstra had been opposed to the establishment of the Academy in Saldanha from the outset, and he had already managed to convince the Minister of Defence, Mr P.W. Botha, of its lack of suitability due to its isolation and the supposed paucity of sophistication present in the local population which undermined the concept of 'an officer and a gentleman'. (Visser, 2000: 315) Malan's report which was submitted in 1969 supported this view and plans were made to relocate the Academy to Voortrekkerhoogte with a proposed partnership with the University of South Africa. Due to budgetary constraints these were never realised. The SADF's disquiet over the issue of Saldanha remained and proved to be an ongoing problem for the Academy as the facilities were never properly expanded due to the prevailing belief that the institution would be relocated at some point in the future. (Kotze, 2012)

### **3.3 1970-1980: AN UNCERTAIN FUTURE**

In the early 1970s, the number of personnel posts at the Academy was expanded which led to the appointment of a number of new lecturers and a librarian. (Visser, 2000: 332) A new contract between the Department of Defence and Stellenbosch University was also introduced and signed and this would remain in operation for decades to come. Aside from reaffirming the University's role as the guardian of the B Mil degree and academic standards, the new contract also reaffirmed the separation of the posts of Officer Commanding and Dean. (Visser, 2000: 341)

In 1974 the second Dean of Military Science, Captain H.F. Nel a serving naval officer with an MA degree in history was appointed. Nel had begun his career as a teacher and then joined the Navy as an instructor, and yet, despite a lack of academic experience, the SADF apparently preferred him to other candidates on the basis of his military experience. (Visser, 2000: 392)

Yet another commission, the Biermann Commission, was appointed in 1975 by the Chief of the SADF to report on the persistently problematic questions posed by the Academy. It was perceived in Pretoria, perhaps rightly so, that too few SADF officers were passing through the institution for it to make a substantial or meaningful contribution to the SADF. Again the issue of its location was raised. The Commission advised that a minimum of 25% of all Permanent Force officers should pass through the Academy. Stellenbosch University offered its Durbanville property to the SADF as a site for the Academy. (Kotze, 2012) The Biermann commission

recommended that this would be a far more suitable location and the Minister accepted the committee's recommendation. However, the report went one step further and recommended the dissolution of the Faculty of Military Science. It was suggested that officers could attend classes on the main campus at Stellenbosch and that only certain subjects such as Navigation which were not offered at Stellenbosch would be offered by military lecturers. It is clear then that this vision actually represented a return to the exact model first used when the Academy opened its doors and the students had attended the bulk of their classes at Pretoria University. However, bureaucratic inertia ensured that nothing came of the Commission's plans. This constant Sword of Damocles hanging over the Academy's head was seen in a serious light by the University which appeared keen to maintain its ties with the Military Academy. (Visser, 2000: 400-2)

### **3.4 1980-1990: THE MILITARIZATION OF THE ACADEMY**

The Military Academy continued to operate under a cloud of uncertainty until 1984 when it was decided by the Department that it would remain in Saldanha and that plans for the expansion and upgrade of its facilities needed to be conceived and executed. Despite this, the required funding and increased student numbers were not forthcoming and so the usual questions regarding the purpose and usefulness of the Institution remained. There were further commissions and projects, designed to overhaul and fix the problems at the Academy, notably the Military Psychological Institute Report (1986), Project Kingsrow (1987) and Project Wimpole (1989). In 1983, Colonel JC Kotze was appointed as the third Dean of Military Science. A staff qualified Air Force officer and serving lecturer in the Department of Military Geography, Col Kotze completed his doctoral studies in that same year and was promoted to the rank of professor by the University.

The Military Academy of the 1980s was an institution which was extremely military in nature serving a relatively low number of students. It would appear that the "Total Onslaught Ideology" was the main driver of decisions, research and curricula at the Academy and even the employment of civilian lecturers was frowned upon. According to an article published by two members of the Faculty, the then Dean stated that "the tendency at the 'traditional' military institutions tips the balance in favour of the officer lecturers complemented by civilian academics. It looks as if the Military Academy at Saldanha should follow suit..." (Kotze & Steel, 1995) Unfortunately due to the fact that military officers serving as lecturers were often transferred back to their corps and were paid according to their rank and not their academic profile this type of thinking did not promote academic freedom or excellence within the Faculty. The effects of such a policy were to provide further stumbling blocks to the formation of a professional, well qualified and independent Faculty. Kotze and Steel argue that the high

percentage of Faculty members who were serving career officers resulted in them having to meet the demands of two professions and was the primary reason for the research and publication record of the Faculty becoming a “source of embarrassment” for the Faculty and the University of Stellenbosch. (Kotze & Steele, 1995)

Despite these shortcomings, the Military Academy achieved a long nurtured dream in 1984 with the establishment of a full time research section tasked with the research of military orientated questions. The new Research and Development Section was intended to concentrate on International Politics, Industrial Economics and Operational research. (Visser, 2000: 446) Soon, the escalation of the so-called Border War led to the formation of a further research body named the Centre for the Study of Revolutionary War (SENRO) in December 1986. SENRO was renamed the Centre for Military Studies (CEMIS) in 1990 and its research focus areas were expanded considerably. The establishment of these two research entities was a step in the right direction towards realising the goal of the Academy becoming the cradle of intellectual knowledge in the Defence Force. (Visser, 2000: 447) Likewise there was a noticeable growth in the offering of social science subjects such as political science and industrial psychology during this period and a shift away from the heavy emphasis on the natural sciences. (Heinecken & Visser, 2008: 152)

During the 1980s, Stellenbosch University made an effort to decrease the effect of the Academy’s geographic isolation by increasing the contact between related departments on the two campuses and encouraging Faculty staff to attend the developmental courses offered by the Bureau for University and Continuing Education. (Visser, 2000: 445) At the same time honours degree enrolments increased as did the amount of research undertaken by serving Faculty members in contribution to SADF projects. (Visser, 2000; 406) Between 1982 and 1990, 26 B Mil Honours degrees were awarded in comparison to the 4 which were awarded prior to 1982. However, between 1976 and 1990 only 2 Masters degrees were awarded and only one DMil was awarded in Computer Information Systems to one of the lecturers in the Faculty. (Visser, 2000: 443-4)

The MPI Report of 1986 which was commissioned to investigate and evaluate the selection of candidates for service at the Military Academy, identified persistent “recurring problem areas” namely; “the recruitment and selection of student officers, the training of student officers and finally the role and functioning of the Military Academy.” Whilst none of these findings really brought anything previously unknown to light, it is worth noting for the purposes of this study that the MPI Report also importantly (and questionably) stated that training was the primary functioning of Military Academies worldwide and that research and development were

subordinate and secondary functions. (Visser, 2000: 474-475) This was typical of an age old problem in the DoD namely the inability of the military hierarchy to understand the fundamental difference between training and education and the requirements of each. (Fokkens, 2011: 11)

By 1987, SADF statistics revealed that the Military Academy was only educating a total number of around 140 officers per year compared to the approximately 450 officers who were enrolled for tertiary studies at other universities. Worse still was the fact that the majority of B Mil graduates, who went on to enrol for post graduate study, did so at “civilian” universities. (Visser, 2000: 480) Once again, the small pool of eligible candidates for study at the Academy, combined with an inconsistency in applying policies requiring that all officers should be in possession of a degree was eroding the relevance of the Academy to the SADF. As a result of the shortage of available candidates, the SADF decided to open the Academy’s doors to candidates of both genders and all races in 1991 in an effort to optimise the use of its facilities. (Esterhuysen, 2007: 133)

The ambit of Project Kingsrow was to “investigate the entire spectrum of officer development in the SADF and make recommendations aimed at creating an officer development programme which will meet the requirements of the future.” (Visser, 2000: 477) Included in the Kingsrow Report was the finding that the only research which was being undertaken at the Military Academy was within the area of revolutionary warfare. It was as a result of this that SENROs named was changed to the Centre for Military Studies with Colonel (Doctor) Louis du Plessis being appointed as the Director and posts for another two full time researchers. CEMIS was tasked with a much wider research focus including topics of a military sociological and labour law nature. (Visser; 2000: 500-501) It would be some years however, before CEMIS’ research would take the shape of formal academic publications.

### **3.5 1990-2000: A DECADE OF CHANGE**

Since the late 1980s there has been a deliberate and focused change in the DoD’s recruitment policies and strategies. The SADF was searching for a new role as the sudden absence of an external threat to South Africa lead to a necessary and sudden rethink of security policy which resulted in a shift towards facilitating peace and stability in the region with an emphasis on human security. (Heineken & Visser, 2008: 153) For the Military Academy this meant that people who were previously disadvantaged were now being given an opportunity to receive a university education through the Military Academy and the role of education as a developmental tool became increasingly important. (Esterhuysen, 2007: 178) Unfortunately the ongoing ambivalence towards the Military Academy in Defence circles and government continued with

many questioning whether such an expensive education provider was merited. Time and again the question has been asked whether it would not be more affordable and beneficial for the SANDF to send young officers on scholarships to civilian universities. A further, factor which no doubt contributed to the widespread lack of enthusiasm in the Defence Force towards the Academy, was its location on the isolated West Coast, far from the epicentre of Defence activities in Pretoria. As Esterhuysen points out, education in the SADF Officer Corps was traditionally seen as a “nice to have”. It was never part of the integral career path of officers in a military which emphasised operational and tactical matters. (Esterhuysen, 2007: 133) Furthermore, there has always been a tendency in military circles to confuse training with education which has led to rather dire consequences in terms of overall human resource development policies and programmes.

Post 1994, the growing debate on the future of the Military Academy continued unabated. This was no doubt in response to the changing order in the Country at the time but also as a response to different SADF human resource and education and training review initiatives namely Project Kingsrow (1987) and Project Wimpole (1989) which again highlighted the lack of clarity on the role and nature of the Military Academy within the DoD. (Esterhuysen, 2007: 179) Despite being proclaimed “a jewel in the crown of the new South African National Defence Force” in 1995 by the Deputy Minister of Defence, Mr Ronnie Kasrils, the Academy again faced the real prospect of closure.” (Heineken & Visser, 2008: 153)

Notwithstanding the comparatively low percentage of Military Academy graduates within the officer corps, these graduates dominated the top posts within the SADF from the 1970s through to the mid 1990s. (Visser, 2000: vi) However, following the post 1994 integration of the non-statutory forces, the former TBVC forces and the SADF, this domination waned as increasingly the command echelons of the new South African National Defence Force were dominated by former MK, APLA and TDF soldiers. This phenomenon once again placed the future of the Military Academy in a somewhat precarious position and evidently continues to do so. The leadership of the Institution at the time was well aware of these impending realities and in 1995 the Academy launched something of a “pre-emptive strike”. A conference on “The Future of Military Education in a Democratic South Africa.” was held at the Academy in 1995 with the aim of garnering support within political, academic and military circles. (Esterhuysen, 2007: 194) Whilst the official representatives of the SANDF advocated the militarization of officer education other voices called for the democratisation and civilianisation of officer education. The Vice Rector of Stellenbosch University, Prof Walter Claassen observed that these divergent views would “result in intensive debate in the Faculty and within the broader University.” (Kotze & Steele, 1995: 22)

In response to the outcomes of the conference, the Academy formulated a new academic offering that was both purportedly more cost effective and task orientated. It was clear that future officers would require a liberal, interdisciplinary education to meet the complex challenges of the military profession. (Heinecken & Visser, 2008: 153) Claassen's observation would prove to be rather apt and insightful as the Faculty of Military Science would continue to operate within an environment contaminated by the tensions created by this unresolved debate through the following decade right up until the present.

Within the Faculty of Military Science itself, the 1990s proved to be an interesting and watershed period on a number of fronts. The retirement of the long standing Dean, Prof Kotze at the end of 1995 witnessed the end of an era. The new Dean, who was a long serving member of the Faculty, was elected under something of a cloud as neither the University nor the Defence Force advertised the Dean's post and the Faculty Council was not asked to form an electoral college. This prompted a walk out of the Faculty Council Board meeting by around half of the members and set the tone for an era in which a host of relatively new young academics, many of them civilian would push for certain reforms with regards to operating procedures and human resources and for greater transparency and more involvement and oversight by the University in the affairs of the Faculty. The members of the Faculty adopted a motion requesting the University to begin the entire process of electing a Dean from the beginning. This prompted a stalemate in the Faculty for some six months after which it was decided by the University Senate that in future the appointment of the Dean of Military Science would be made in accordance with the norms and practices of the University. The Faculty accepted this and Prof Chris Nelson was subsequently appointed the new Dean. (Visser et al, 1999: 321)

With this new breed of staff members came a greater interest in research, in engaging with the international community as the isolation of the *apartheid* era began to slowly dissipate. The Faculty became the new home of the SANDF's Journal of Military Studies, *Militaria* in 1997 and in 1998 the Military Academy hosted its first large international research conference with a focus on African security. The long awaited infrastructure expansion of the Academy also took place under the name of 'Project Klank' with new accommodation blocks, messing facilities and hall being added as well as a new wing comprising offices, an expanded library and a computer laboratory. The research output of the Faculty began to increase and in general there was an air of optimism within the staff body which reflected the general national mood at the time as the economy experienced growth and "New South Africa" basked in the sunshine of post-apartheid international approval.

### **3.6 2000-2010: THE MILITARY ACADEMY UNDER THE SPOTLIGHT**

The onset of the new millennium proved to be an equally positive time in the Military Academy's history. A new leadership team took the helm with the appointment of the first Black Commandant, Brigadier General Solly Mollo and the new Dean, Professor Johan Malan, the first civilian to occupy the post. A restructuring of the Faculty into Schools and a curriculum redesign took place. Brig Gen Mollo had an appreciation of academia and worked hard with the new Rector of the University, Prof Chris Brink to successfully leverage contacts and influence to win the Academy much needed support within the senior ranks of the Defence Force and the Parliamentary Portfolio Committee on Defence and for a time the future of the Academy seemed secure.

The scientific reach of the Faculty continued to grow as research output increased along with staff qualifications. The new post graduate programmes of the Faculty were, for the first time, producing a small but steady stream of honours and masters degrees and in addition, a distance education programme was also introduced in order to cater for members of the Department of Defence who did not qualify for full time study at the Academy. These new offerings enabled the Faculty to increase its annual student numbers to around 400 students per year for the first time - a stark contrast to the days when the total number of students stood at under 150 enrolments per year. (Visser, 2004: 86)

It was rather unfortunate then that much of this progress would be undone by the turmoil which followed the appointment of a new Commandant in 2004. Following this, the Commandant set a rigorous agenda in terms of transformation and soon he and the Dean were at odds over the academic management and direction of the Academy. (Ekron, News24: 2004) (Gibson, Beeld: 2005) Quite a large number of staff members opted for voluntary service packages or resigned and the morale of the Faculty and student body sunk to an all time low. The resulting fall out divided the Faculty into factions and the consequences were dire, resulting in numerous unsavoury and harmful incidents and a great deal of very unflattering press coverage. (Gibson, 2004: Beeld)

As a result of these events, the Parliamentary Portfolio Committee on Defence under the leadership of the late Professor Kader Asmal made an unheard of visit to the Academy on 19 January 2005. The Committee billed the visit 'part of its oversight and monitoring of the Department of Defence, (Asmal Report, 2006: 2) in order to investigate the issues raised in the press and released a report which has come to be known as the "Asmal Report". (Gibson, 2004)

The Report noted rather sarcastically that “apart from physical conditions, the Commandant stated everything at the Academy was “hunky dory”.” (Asmal Report, 2006: 5)

The Portfolio Committee's key points of departure included the following:

- That the Military Academy constituted a pivotal institution. (Asmal Report, 2006: 1)
- That the Academy had reached a critical turning point;
- There was confusion over the core business of the Academy, and the appropriate academic balance had not been adequately struck;
- A rehabilitative process was required involving the Academy's management, the Department of Defence and the University of Stellenbosch in order to examine the required leadership qualifications for the Academy, appropriate funding levels and the need to upgrade curriculum development;
- The Academy should not be run on a strictly militaristic basis. (Asmal Report, 2006: 1)

The findings of the Asmal Report were extensive but the most pertinent were that there was confusion between the military and academic functions of the Academy which would lead to damaging consequences. The Report went further and noted that it appeared that the Academy was being “run on a strict authoritarian approach, not like a higher education institution with a special mission; the appropriate balance between academic and military education has not been struck. (Asmal Report, 2006: 9) The Asmal Report’s findings were insightful and highlighted the long standing problems with regard to academic quality and independence at the Academy. It was most unfortunate then that the DoD failed to act on the recommendations in the report, or indeed that the Portfolio Committee did not take steps to ensure such action and the situation at the Academy continued to deteriorate.

Initially, Stellenbosch University opted for a “hands off” approach, at least publicly, but by 1996 the situation had become so untenable that in an unprecedented move, the SANDF and University opted for drastic action and transferred both the Commandant and the Dean. Suffice to say that the whole affair left a bad taste in everyone’s mouths. The Commandant and Dean were replaced by Rear Admiral (JG) Derek Christian and Prof Edna van Harte respectively. Prof Van Harte was the serving Dean of Students at Stellenbosch University and she became the first woman to lead the Faculty of Military Science.

The Academy’s new leaders faced a difficult and tricky task of steering the Faculty through a highly charged political environment and restoring the credibility of the institution. On a more positive note, the contract between the Department of Defence and Stellenbosch University also

received a long overdue redesign and was implemented. This document entrenches the University's authority for academic quality and management. (Fokkens, 2011: 1)

The Portfolio Committee on Defence made a follow up visit to the Academy in May 2007. The Committee, whose personnel had changed quite substantially, appeared to lack the necessary academic insight of Kader Asmal's Committee and unfortunately failed to follow up on the critical problems which were still impeding progress at the Academy. This was the last such visit by a Parliamentary Delegation. (Tobias Report, 2007)

Notwithstanding this, sentiment towards the Academy within the Department of Defence had turned and the Faculty has since battled to shake the perception within the SANDF that it is a bastion of resistance to transformation. Another massive obstacle to progress was the increasing bureaucracy in the SANDF and shrinking budget of the Academy which resulted in numerous operational challenges. One of these was the inability to fill vacant posts within the Faculty for up to two years at a time. This impacted severely on research output and morale. Nevertheless by the close of the decade the staff profile of the Faculty had improved considerably with a number of staff members being promoted to professor and associate professor. A further pleasing aspect was the increasing number of young Black staff members who were produced after completing post graduate studies at the Academy. Despite these advances plans were already afoot at Defence Headquarters to restructure officer education in the SANDF and once again, the spectre of the Academy closing was on the agenda as the decade drew to a close.

### **3.7 POSTSCRIPT**

Over the past 50 years, the history of the Faculty of Military Science has been characterised by two major challenges. First and foremost is a lack of clarity within the Department of Defence regarding the nature and role of the Military Academy in the development of officers for the South African military. Secondly, the organisational tension between the academic and military environments at the Academy. There were many other constraints, principally a chronic lack of resources, infrastructure and adequate funding over the years. The Faculty has also experienced a somewhat ambivalent relationship with Stellenbosch University and as a result it has struggled to find its niche within the University and does not enjoy the same recognition or prestige as other Faculties. Although the Academy has progressed through a cycle of various stages in terms of its role as a military training institution as well as an educational one it has become a *de facto* military university. Unlike its foreign counter parts it has graduated only a very small percentage of officers, estimated at approximately 10 percent of the officer corps.

(Heinecken & Visser, 2008: 149) This has negatively affected perceptions on the usefulness and indeed, the cost of operating the Academy within the SANDF.

The leadership cadre of the Military Academy has over the decades developed a responsive, indeed almost reactionary *modus operandi* in terms of constantly attempting to reposition itself and increase its 'relevance' to the Defence Force. This has included various facets such as curriculum redesign, introducing post graduate programmes, creating a research entity dedicated to serving the Defence Force and addressing equity issues within both the staff and student body. (Visser, 2000: v)

Today, many of the members of the SANDF who are enrolled for tertiary study either at the Military Academy or at another Higher Education Institution are pursuing qualifications which fall outside the realm of security, strategic and military affairs. One observer cited the predominant "MBA" culture within the SANDF and commented that many of the military's generals seemed to have an unhealthy obsession with the management sciences. (Esterhuyse; 2007: 139) The absence of a core curriculum for officer education and the low student numbers at the Military Academy are to the Department of Defence's own detriment. It is most unfortunate that the DoD has, during the 60 years of the Military Academy's existence, failed to resolve the challenges regarding the size, purpose and location of the Academy. As a result the Academy has never been properly resourced or utilised and it has become the under developed institution that Colonel Martin predicted it would be. The primary obstacle in the development of the Academy has been what Heinecken and Visser refer to as "the lack of intellectualism within the South African Armed Forces themselves." (Heinecken & Visser, 2008: 145)

In spite of this, the Faculty of Military Science has on a certain level somehow managed to develop into something of an intellectual hub and produce a number of important alumni. Within elements of the social sciences at least, the Faculty produces research in a niche area which if it were to be properly harnessed and resourced would be a valuable tool for the DoD. Since the late 1990s the research output, staff profile and international outreach of the Faculty has improved noticeably in relation to its activities during previous years. Notwithstanding this fact, during the past decade the Military Academy's future has been in the balance again and the Department of Defence seeks to restructure its education offering and organisational structure. The unfortunate breakdown in leadership at the Military Academy during the mid 2000s damaged the relationship between the DoD and Stellenbosch University deeply and led to a number of parliamentary inquests and a great deal of negative press coverage. To a large extent the Faculty is only now beginning to recover from these tribulations, however, a lack of

resources and future uncertainties continue to play a role in hindering essential and overdue development of the Faculty and the Military Academy as a whole.

---

## CHAPTER FOUR

### THE DYNAMICS OF KNOWLEDGE PRODUCTION WITHIN THE FACULTY OF MILITARY SCIENCE

*“There is no sense of intellectual vitality in the corridors, a heavy schedule of research seminars, a vibrant postgraduate community (in fact, there is none), an openness to challenge and new ideas, and the establishment of active initiatives that bring in international scholars to participate in local research programs.” (Jansen, 2008: 13)*

#### 4.1 INTRODUCTION

The research mission at Stellenbosch is the responsibility of the Division for Research Development (DRD). The University’s research processes take their lead from the 2000 Strategic Framework which defines the institution as a “strongly research orientated university sought after for the training of quality researchers, who are acknowledged as world leaders of research in selected niche areas.” (SU Research Policy, 2008: 1) The Research Policy of Stellenbosch University which was revised in 2008 states that in 1999 a decision was taken to prioritize research under the new Strategic Framework and that Stellenbosch University has chosen to be a research driven university. (SU Research Policy, 2008: 1)

The Policy refers to a number of basic tenets expected of its faculties such as:

- The importance of focusing research activities around chosen themes within faculties,
- The need to set goals for all academic staff,
- The necessary interaction between research and tuition,
- Participation in research networks both nationally and internationally,
- Participation in mentoring programmes to strengthen the capacity of other researchers,
- To publicise research results,
- To take the necessary organisational measure to simplify the planning, execution and management of research activities,
- To pay special attention to multi- inter and transdisciplinary research. (SU Research Policy, 2008: 1-2)

The Policy further states that in order to promote research the University undertakes to (amongst other things):

- To place a high premium on research initiative, status and capability when appointments are made,

- To give academic staff the opportunity of improving their research capabilities and increasing the impact of their research by granting research leave and providing financial support,
- To enable eminent researchers from elsewhere to pay the University visits with the purpose of promoting research at the University,
- To make available sufficient funds as feasible to agreed upon research fields,
- To encourage and nurture a research culture in which the academic freedom of all researchers is respected and protected. (SU Research Policy, 2008: 2-3)

These various aspects of the Research Policy are important to this study because they speak to the importance of adequate research management within an enabling environment. This Chapter will attempt to examine both of these themes in an effort to better understand the climate underlying research production within the Faculty of Military Science. However, a discussion of research within the Faculty would not be complete without first considering the unique position which the Faculty occupies as it forms not only part of the University but also resides within the South African Military Academy. As such it stands apart from other faculties at Stellenbosch University.

Military academies worldwide differ vastly with some conforming to the military university model whilst others are military academies which focus only on the production of officer cadets with bachelors degrees. The SA Military Academy resembles a military university more closely than a traditional military academy. Briefly some of the main separating characteristics between the institutions are listed below:

#### **Military Academy Model**

- Undergraduate Institution
- Not in partnership with HE Institution
- Awards own qualification
- Focus on producing young, newly commissioned military officers
- Teaching staff mainly military personnel

#### **Military University Model**

- Under and Postgraduate Institution
- In partnership with HE institution
- Partnering University awards qualification
- Focus on educating military officers throughout various career levels
- Teaching staff mainly civilian personnel

Regardless of the particular model, most military academies worldwide pride themselves on the quality of both their degree programmes and their research profiles. The three service academies<sup>8</sup> in the United States which are based on the traditional undergraduate cadet model are generally regarded as being amongst the top universities in the US as well as being highly regarded globally as leaders in military education. The Defence Academy of the United Kingdom (Cranfield University), the Australian Defence Academy (University of New South Wales) and the Kenyan Military Academy (Kenyatta University) are three examples of military educational institutions that have chosen to partner with higher education institutions in the same manner as the SA Military Academy and Stellenbosch University. All of these institutions place a high emphasis on research as well as teaching. Two aspects become clear from an analysis of their research policies and prospectus. Firstly, that they support the notion of academic freedom. Secondly that their research activities are tailored to support military focus areas and that a substantial portion of their research output takes place in conjunction with their respective defence departments.<sup>9</sup>

Internationally, tertiary military education institutions place a high value on academic research activities. The notion that operating in a military environment could be a possible constraint to academic research activities is therefore false provided that these support and underscore the needs of the related military organisation. It also points to the requirement for clear policy formulation on the part of such organisations to create clear guidelines for research activities as such institutions. Finally it speaks to the existence of constructive and robust partnerships between top universities and military educational institutions which produce both quality graduates and research.

From the above discussion it appears that the Faculty of Military Science (and the SA Military Academy) is not uniquely placed within the context of international military education norms. However, it is also evident that the partnership between the South African Department of Defence and Stellenbosch University has not functioned adequately or productively up to this point in terms of creating a world class academic or research institution. This Chapter will therefore examine and discuss the policies and factors which relate specifically to the production of research within the Faculty of Military Science.

---

<sup>8</sup> The United States Military Academy (Westpoint), the United States Air Force Academy (Colorado) and the United States Naval Academy (Annapolis)

<sup>9</sup> See Research at USAFA, 2011; Naval Academy Research Guidelines, 2011; UNSW@ADFA Research and Research Training Management Plan, 2005 – 2009; UNSW@ADFA Research and Research Training Report; Analysis of the Research and Studies Programme at the United States Military Academy, 2004.

#### **4.2 RESEARCH MANAGEMENT IN THE FACULTY OF MILITARY SCIENCE 1990-2010**

The Faculty of Military Science occupies the unenviable position of being the worst performing faculty at Stellenbosch University in terms of research and this has been the case throughout its history. There a number of possible explanations for this malaise and this will be discussed in detail in this Chapter. First and foremost is the issue of the management of research in the Faculty.

Before 2000 there was limited obvious discernable research management in the FMS other than the forwarding of the annual Faculty research report to Stellenbosch University. Research was being undertaken by only a few staff members. The exception was the dedicated research unit CEMIS, which was lead by a director and reported to the CEMIS Board. (Kotze Interview, 2012) However by the late 1990s onwards there is evidence of a growing core of Faculty members who were actively starting to engage in research and build fledgling academic networks both nationally and internationally. For CEMIS this was something of a golden period as well which lasted until the mid-2000s after which a distressing and progressive decline set in.

During the 1990s Faculty members were not expected to achieve specific research targets with the institution's emphasis falling largely on undergraduate teaching work. The University also appears to have adopted a 'hands off' approach with regards to the Faculty in this regard. A former Dean of the Faculty notes that Stellenbosch University was rather hesitant to be seen as being too prescriptive to the FMS as it does not control its budget. (Esterhuysen, 2007: 249) Until at least 2006 the University leadership did not express any form of dissatisfaction directly to any of the Deans of Military Science regarding the FMS research profile. (Kotze, 2012; Malan: 2012) However, the problem with this approach is that the FMS has not been pushed to attain the same goals and standards as other Faculties within the institution.

Another former Dean underlined the fact that research was not a priority in the FMS during his tenure due to the fact that staff members were resistant to spending time on research as most were trying to either improve their academic or military qualifications. The University appeared unconcerned by this and aside from making occasional statements to the Faculty that research was required of all scholars in the main appeared to accept the status quo. According to Kotze this was probably so because the DoD funded the Faculty and therefore SU was not dependant on the financial aspect of research production. A further problem for Kotze was that research performance was not recognized for performance assessment purposes. (Kotze, 2012) There was however one very notable innovation during Prof Kotze's tenure which proved to be a massive watershed in the history of research in the FMS. This was the introduction of internet

and email at the Academy in 1995. The Computer Information Systems department successfully lobbied for each staff member to receive a desktop computer as well as for internet connectivity through the University. The effect which this had in reducing the FMS's isolation as well as in providing direct access to quality library facilities on the main campus as well as internet based research sources was a key driver in promoting research and the improvement of staff qualifications. (Kotze, 2012)

The first discernable move to create some type of research structure in the Faculty took place in 1997 when a research committee was established in the Faculty. (Visser, 2012) The committee's role initially was to report on research initiatives in the Faculty and channel research information on aspects such as funding opportunities through to the FMS. A second important development during this time was the transfer of the SANDF's historical journal *Militaria* to the FMS. The journal was renamed *Scientia Militaria* and revamped into a multi-disciplinary military studies journal. The editorial staff worked hard to establish a credible international editorial board and implement a peer review system. These efforts were fruitful and the Journal received accreditation status in 2004 which was backdated to 2000. The DoD ceased funding *Scientia Militaria* in 2004 and it has since been funded by international donors and the Dean's Fund.

This approach to research management began to change under Prof Johan Malan who served as Dean from 2000-2006. Professor Malan was not only a very sound administrator but also the first civilian Dean of the Faculty. He possessed crucial experience in Higher Education having served as a Dean at the University of the North West in his previous post. He pushed for a number of innovative changes early during his tenure including the reorganisation of the academic departments into five schools, the creation of new undergraduate and post graduate programmes and the introduction of distance learning. Malan identified three themes under which the new programmes would be designed and these were: military technology, military management and war and society. (Esterhuyse, 2007: 221)

The first attempt at launching a research plan for the FMS was in 2003. The 2003 Faculty Research Plan provides some insight into the development of a new research strategy for the Faculty. Included for the first time is the importance of staff development in this area. Prior to the onset of the decade staff did not usually attend research development workshops or courses. However from 2003 onwards there was an increased uptake of such opportunities. Mention is also made of mentorship within the Faculty but in reality this took place only on a limited scale. (Malan, 2003) There was a rise in co-authored articles between study supervisors and post-graduate assistants. It is noted that in the case of some staff members this type of

publishing formed the mainstay of their research output. It is perhaps arguable that these co-authorships constituted some form of mentorship in themselves.

During this time a number of new posts were created for post graduate students or academic assistants as they are known in the Faculty. These students served as research and administrative assistants in the various departments whilst studying for honours and masters degrees. This was a massive step forward in the Faculty's quest to increase post-graduate throughput and also assisted in increasing research output as a result of Faculty members spending less time on administration. The academic assistants were encouraged to attend research development opportunities and conferences alongside the permanent members of the department and some also assisted in sharing teaching loads. This led to a small percentage of Faculty members being able to take sabbatical leave for the first time. (Malan, 2003)

A persistent problem was the management of research focus areas although the 2003 FMS Research Plan refers to departmental research plans and research focus areas. Nevertheless in reality that there was limited success in managing research according to these plans or ensuring that research was aligned with the focus areas. It is unclear from the research that has been conducted what the focus areas were exactly. Malan writes that "These focus areas are therefore directed to the requirements of the SA National Defence Force as "client", the requirements of the broad community, as well as the requirements of the respective schools/subject groups for study material (textbooks, journal articles, study guides, etc.)". (Malan, 2003: 2-3)

This broad interpretation of focus areas ensured that Faculty research output remained somewhat disjointed and very individualistic. As a result no broader institutional or inter-disciplinary research projects involving a host of researchers, both junior and senior saw the light of day. Most researchers chose topics which appealed personally to them and in some cases these had no specific military focus whatsoever which was the only definite overarching focus area to which members were expected to conform. A random sample of some of the Faculty's conference papers for the year 2003 supports this assertion. (FMS Annual Report: 2003, App A) Examples of papers delivered during 2003 appear below:

- "Perceptions of Service Delivery: A Saldanha Case Study."
- "Low Cost Housing in South Africa: Assumption and Reality."
- "An analysis of the status of democracy in South Africa, with specific reference to local government." "Economic Growth and equity during the past ten years of democracy in South Africa."

- “Developing an IS-ICT Management Capability Maturity Framework.”
- “Old Wine in New Bottles: A South African Company Responds to the Challenges New Society.”

Whilst no one is intimating that such research was not valuable or sound the point is that, from a thematic focus viewpoint it seems to be completely random. Furthermore this is an ongoing challenge in the Faculty up until the present. This is possibly one of the reasons that the Faculty sometimes battles for recognition and financial support from the DoD in relation to its research endeavours.

Prof Malan also reformed the Faculty Research Committee which was expanded to include all the doctors and professors within the Faculty. The role of the Committee was also expanded and it was tasked with developing policy as well as processing requests for funding and sabbaticals. The years 2000 to 2006 showed the greatest progress in terms of research activity and outputs in the Faculty’s history. These outputs occurred at a time during which employment equity was undergoing significant implementation. As such Stellenbosch University appeared to be satisfied with the Faculty’s progress. Malan points out that at this stage the creation of research culture was the first priority and therefore it was decided to avoid attempts to oversteer research in terms of focus areas. (Malan, 2012)

Prof Edna Van Harte arrived in 2006 and from the outset placed a renewed emphasis on the importance of research. A number of attempts to manage and steer research production in the FMS took place under her tenure. Most notably was the emphasis placed on capacity building. Numerous research workshops were held for Faculty members, presented by scholars as well as the SU Division for Research Development. In addition, Prof van Harte encouraged the Schools to organise and host conferences and a number of successful conferences took place between 2006 and 2010. The Dean’s Fund supported the publication of the conference proceedings which were important not only from a subsidy point of view but also because they were widely disseminated throughout the DoD in an effort to create an understanding of the importance of this research to the organisation. These initiatives further served to develop post graduates students. (Van Harte, 2012)

During this period, Stellenbosch University appeared to raise the bar in terms of its expectations of the Faculty’s research activities. (Van Harte, 2012) In response to this in March 2007, the Research Committee produced a document entitled “Report: Review of FMS Research Plan within the *“Context of Curriculum Development and the Notion of an Ideal Military Scholar”*”. This report addressed at length the resource challenges which were (and still are) having a profound

impact on the research output of the FMS. It also discussed, importantly, the introduction of a targeted research plan for the FMS in an attempt to manage research output and focus areas on a school, departmental and individual level. The Dean of Military Science also instructed the Chair of the FMS Research Committee, to forward the key concerns highlighted within the report to Higher Headquarters. (Visser, 2012)

A memorandum was duly written and outlined barriers and constraints to research production and indeed academic freedom during the preceding decade. Matters which were raised included budgetary support, the clearance of research papers, the disintegration of CEMIS, the continued problem of staff vacancies and the threat that this posed to research in academic departments. Sadly this appeared to have no tangible effect on the prevailing situation and the situation has continued to remain much the same until the present day. An alternative view which provides insight into additional frustrations from the side of the Dean's Office came from Professor Van Harte, who highlighted some of her challenges as follows:

- “A factor that could have helped the research process was the filling of the vacant posts to develop a critical mass of new comers in the Academy at senior level – where perhaps these members could assist others who were having difficulties. It appears that there were Senior Faculty members who had decided not to publish themselves – they seemed intimidated - but they expressed a willingness to help students.”
- “The Research Committee was disappointing due to the practice of working within silos. Ongoing arguments between natural and social scientists, and the practice to use the Research Committee more for evaluation of applications for sabbaticals or for promotion purposes. The resignation of senior scholars from Military Academy to pursue greener pastures contributed to the failure of the Research Committee.” (Van Harte, 2012)

The importance of these comments lies in the fact that Van Harte is reflecting on a common theme echoed by other previous Deans. (Kotze, 2012; Malan, 2012) The greatest impediments to the creation of a viable and dynamics research culture appear come from within the Faculty itself. Furthermore the factionalism within the Faculty and infighting amongst the Schools has been utterly destructive in the Faculty's struggle to move forward.

### **4.3 2007 FMS RESEARCH PLAN**

The 2007 FMS Research Plan included Research Focus Areas for each School. At first glance it is immediately apparent that for a number of the Schools that there is a misunderstanding of the concept “focus area”. Instead the focus areas listed would actually appear to be topics. The

focus areas listed below by HOD and SciTech<sup>10</sup> in the 2007 Faculty Research plan provide good examples of this phenomenon. Again there were some focus areas listed which had no bearing on military research at all.

### **Research Priorities: Faculty Of Military Science, 2007 – 2011**

#### **School for Geospatial and Information Studies**

- The Military Geography of South Africa
- The Historical Military Geography of South Africa
- Military Terrain evaluation in South Africa
- The Military Geography of SADC states
- Theory and practice of Information Systems Management in the military context
- Information Systems education and training in the Southern African context
- Role of Information Systems in Information Warfare
- Science and Technology and the South African Military
- E-learning in a military environment
- Finding better geocodes for powerlines
- ICT in the development of football communities
- The utilisation of the Military Academy graduates in the DoD
- Gender and the Military

#### **School for Human and Organisation Development**

- The psychology of forgiveness: South Africa as an example
- Ubuntu therapy: A healing model for the families affected with HIV/AIDS in Africa
- An evaluation of stress levels of the final-year University students in Africa: A support programme for discussion
- The cream of the crop: A profile analysis of students at the South African Military Academy
- The impact of military operations on families of the SANDF members
- The impact of biographical variables on perceived organisational support and organisational commitment of students at the Military Academy
- Women in the military: Challenges and opportunities
- The effects of personality-program fit on academic performance
- Gender differences in job satisfaction among young junior officers of the SANDF
- Gender differences in the stress levels of final year university students in Africa
- Retention of skilled personnel: A challenge in the SANDF

---

<sup>10</sup> Two of the Schools within the Faculty. The Schools for Human and Organisational Development and Science and Technology.

- Prevalence of musculo-skeletal disorder
- Organisational behaviour, including leadership, commitment, attitudes, intention to quit, motivation, etc
- Validation and reliability of assessment instruments including SDS and others
- Military ethics
- Empowerment and human capacity building

#### **School for Defence Organisation and Resource Management**

- 21st Century Defence Management
- The South African National Defence Force Perspective Defence Management

#### **School for Science and Technology**

- Methods for Measuring light ion reaction cross sections.
- Multistep direct mechanism in the  $(p,^3\text{He})$  inclusive reaction on  $^{59}\text{Co}$  and  $^{93}\text{Nb}$  at incident energies between 100 and 160 MeV
- Reaction cross section calculations using the relativistic Impulse Approximation.
- Scientificness of sampling methods
- Laser Physics
- The statistical measuring and analysing of poverty and inequality
- Prediction tool of nautical conditions in Agulhas influence zone with specific reference to real-time rogue wave forecasting by means of numerical modelling
- Alternative excitation techniques for gas discharge lasers

#### **School for Security and Africa Studies**

- Africa's maritime experience: Past, present and future
- The history of the liberation struggle in South Africa
- Insurgency and counterinsurgency
- Institutional development
- The role of military history in the SANDF
- Armed forces and African society
- South African foreign policy and the military instrument
- Regional security co-operation
- Conflict and conflict resolution in Africa
- Strategic theory and application in Africa
- Leadership and command
- Operations other than war
- Contemporary security challenges

(Faculty Research Plan: 2007, App A)

It was a great pity that the plan which included the focus areas as well as output targets for each Faculty member was soon forgotten. No annual review of the plan or assessment of the outputs targets and their progress ever took place. (Visser, 2012)

#### **4.4 HUMAN RESOURCES MANAGEMENT IN THE FACULTY OF MILITARY SCIENCE**

One of the foremost catalysts for research development were the changes which were made to the Human Resource policy which governed Faculty members, namely, the Military University Educator (MUE) mustering, under which most Faculty members were staffed. The changes to the dispensation were first mooted in 1996 but were only promulgated in 1999. The entire MUE personnel management code which governs the service conditions of MUEs was rewritten. There were three major new reforms which would have an influence on and promote increasing research production. The first were the changes to the leave dispensation of MUEs which resulted in the usual public service of a 30 day per annum leave allocation being changed to 10 days per annum in addition to the five week winter recess and the Christmas recess. (PMC for MUE: 1999, 13) The motivation for this change was that Faculty members had no time to conduct research under the old dispensation and that, during the winter recess in particular, would afford them the opportunity to conduct research and attend conferences. In reality many Faculty members did not utilise this time for research initially until numerous interventions over the years were implemented in order to increase pressure on them to publish and account for their recess activities. (Esterhuysen, 2007: 217-218)

The second reform was to restructure the promotion system within the Faculty for the first time since its creation. Under the previous dispensation members were appointed according to their qualification with the usual ceiling being the public service post level 10 or the equivalent of a lieutenant colonel. Military members who had relatively low qualifications but entered the Faculty as lieutenant colonels had the option of remaining under their previous personnel mustering. Unfortunately this meant that there were many military members serving as lecturers with only an honours degree who were nevertheless sitting on the highest possible pay scale. The net effect of this was that there were no motivational incentives for them to complete masters and doctoral degrees or publish research. The downside of serving in uniform was that these members were expected to attend command and staff courses for promotion which take months, which meant that the burden of their workload fell onto their colleagues while they were away. (Esterhuysen, 2007: 217)

The rewriting of the personnel code was specifically geared towards addressing these issues and creating room for promotion all the way through to public service post level 12 by means of

amassing higher degrees and research credits. The different post and salary levels were linked for the first time to the academic rank levels of the University. This represented a considerable improvement in pay prospects as the gap between levels 10 and 11 in particular is large given the fact that levels 11 and 12 constitute what is termed the State's Middle Management Service and include perks such as a structured package and vehicle subsidies. In the MUE Dispensation it must be noted that levels 11 and 12 are supposed to correspond with the rank of associate professor and professor respectively. However there are a number of staff members who have been promoted to post level 12 who have not been made even associate professors by the University. The implementation of the new personnel code resulted in a significant shift in the way in which staff members viewed research and higher degree study and within a relatively short space of time there was a tangible upswing in research and registration for higher degrees. (Malan, 2012)

The points system for amassing research credits in order to gain promotion to levels 11 and 12 operates as per the table below. There are a number of issues which could arise when examining the manner in which points are awarded. Most notably it could be argued that too many points are awarded for non-subsidy bearing research. In addition it is open to debate whether a book chapter should accrue only half the points as compared to a paper published in conference proceedings. Even more questionable is the fact that subsidised proceedings receive equal weighting to accredited articles.

**Table 1: Relative Weights of Research Output for Performance Assessment in the FMS**

(Esterhuyse, 2007: 219)

Research Output	Relative Weight
• Article (not refereed)	0.5
• Article (not accredited/refereed)	1
• Article (accredited/national journal)	4
• Article (accredited/international journal)	5
• Paper (national conference)	2
• Paper (international conference)	3
• Supervision (Master students)	2
• Supervision (Doctoral students)	3
• Chapter in text book	2
• Complete academic text book	10

• Publication in subsidised conference proceedings	4
• Publication in subsidised international conference proceedings	5

The third reform was to allocate points for research in the personnel assessment procedure. Previously Faculty members were assessed using the usual DoD personnel assessments which were military and civil service in nature. For the first time the personnel assessment procedure was tailored to address the requirements of MUEs and assessed members in four key areas namely Research, Teaching and Learning, Community Service and Self Development. (Malan, 2003: 1) This introduced research accountability and targets for the first time with a minimum target of one conference paper and one accredited output per member per year. (Malan, 2003: 1)

In truth though to an extent some of these reforms, while well intended, required tweaking. For example, the research weighting system is clearly out of step with the national funding framework. There was no proactive auditing of staff research outputs either and this created problems when performance assessments took place as it is difficult for an assessment panel to ascertain facts such as whether proceedings were in fact subsidised or not.

Prof Van Harte was aware of the flaws in the performance and promotions systems but in reality was powerless to do anything about it. She has rightly pointed out that while the system has incentives it has no sanctions and that the performance appraisal process is subjective at best and fosters collusion within the Schools. Unlike at Stellenbosch where Dean's have the power to sever or in the very least discipline non performing staff, this is not the case in the FMS. (Van Harte, 2012)

On a positive note, there were a number of appointments to associate professor during this time and in a departure with the past, these appointments were made according to the same criteria and standards applied to staff on the main campus. Two members of the Faculty for the first time also received NRF Research Ratings. (Van Harte, 2012)

#### **4.5 RESEARCH FUNDING AND RESOURCES**

Notwithstanding these notable advances at the beginning of the previous decade, the system level constraints on research production remained. First and foremost was the lack of a budget for research. Seed funding, page fee funding and support for conferences were available from the Department of Defence throughout the 1990s and until around 2004 but then dried up.

(Malan, 2012) For quite some time, many Faculty members funded their own conference attendances in an effort to kick-start their research plans. When some form of funding was available it was often selective and quite often the DoD would pay for travel and accommodation for local conferences but not for the registration fees.

Whilst there was some official support for local conference attendance, funding for international travel was an enormous challenge and financial support from the DoD was negligible. Where such funding was forthcoming it was often allocated on the basis of demographic imperatives. Esterhuysen makes that point that “the allocation of funds by the military for such endeavours, especially the attendance of foreign workshops, conferences and seminars, is also highly influenced by the need for transformation.” (Esterhuysen, 2007: 248)

The Dean’s Fund, financed by Stellenbosch University was a fraction of the budget of other Deans at the University. This was due to the fact that the only money paid into the fund was derived from the publication of accredited articles. It was only after some members of the Faculty had managed to begin accruing funds in their own SOS Research accounts at Stellenbosch University together with the introduction of the National Research Foundation’s KIC travel grants that Faculty began to experience any sort of international mobility. (Malan, 2012)

#### **4.6 THE 2006 ASMAL REPORT AND THE FMS**

The shortcomings in the Faculty’s research output and the management thereof did not escape the scrutiny of Kader Asmal’s Parliament Defence Portfolio Committee either. As has already been discussed in a previous chapter, the Portfolio Committee visited the Academy in 2005. Aside from examining various political and management issues at the Academy, the Committee also requested detailed information on research papers and publications emanating from the Faculty of Military Science.

According to the Asmal Report, the information which was received spanned the years 1994-2003. The report mentioned that the 2003 output consisted of 56 papers and 41 publications. The Asmal Report noted that, there appeared to be some confusion between conference papers and research papers – with many of the former being reported as the latter. The Report stressed the need for a greater emphasis to be placed on publication in peer-reviewed journals. (Asmal Report, 2006: 11)

During the visit, the members of the Faculty also had a closed session with the Portfolio Committee and identified the following key concerns:

- “The University's role as a guarantor of academic, teaching and research development, support and excellence (Asmal Report, 2006: 6)
- Their perception that the Academy's academic stature, performance and education were being undermined;
- The Dean's authority had been undermined by the Academy's management and that he had only been issued a two-year contract, not a standard five-year contract, and was expected to operate without the requisite support staff.” (Asmal Report, 2006: 6)

A number of observations were made in the Committee's final report, which resonate throughout this study – namely the existence of fractured research management process, human resource management concerns and the role of Stellenbosch University as the provider of academic quality and credibility at the Military Academy.

The Report placed great emphasis on the need to upgrade the pay scales of the MUEs in the Faculty and bring them into line with those of other tertiary institutions. It pointed out that “It is very difficult to maintain quality when pay grades are so low. The fact is that the Academy competes against other universities and the private sector and needs to be resourced appropriately”. (Asmal Report, 2006: 13-14) The Asmal Report repeatedly stressed the imbalance at the Military Academy in the relationship between Stellenbosch University and the Department of Defence. It underlined the need to “review continuously and evaluate the relationship between the University and the Academy with explicit reference to degree accreditation and the conditions of employment of staff.” (Asmal Report, 2006: 13-14)

Subsequent to its oversight visit, the Committee received a copy of a letter from the Vice-Chancellor of Stellenbosch University, which had previously been sent to the Commandant of the Military Academy (it is not known whether a reply was ever received), which, in the words of the committee identified ‘critical issues’ before the Academy, and as a result was quoted at some length in the Asmal Report. The report reads; “Prof Brink writes that there appears to be a misunderstanding concerning the military and academic lines of authority at the Academy. His expression of this view follows a meeting at which the Commandant of the Academy, on grounds of ensuring representivity, overruled a recommendation made by an academic committee to hire two lecturers”. In order to highlight the tension between the military and academic cultures at the Academy and the manner in which these affected academic operations it is necessary to quote Prof Brink's letter at some length as it provides a valuable insight into the relationship between these two entities and some of the problems which this dysfunctional relationship produced.

Brink wrote to the Commandant that "your military authority (which is not in dispute) cannot be used in this fashion to overrule, by way of command, the academic decision-making process". He further indicated that there appeared to be "a clash between the military ethos and the academic ethos, which I am keen to avoid, it is quite clearly stated that you, as Commandant, represent the Department of Defence. On the other hand it is also indisputable that the University represents the Department of Education. While the Department of Defence is responsible for the training of soldiers, the Department of Education is responsible for the education of scholars. These two Departments have agreed on a collaboration that can generate the best of both worlds: the coupling of the Military Academy is meant to produce a cadre of academically trained officer-leaders, who are both soldiers and scholars. The interaction between the two Departments is manifested in the contract between the University and the SANDF which governs the operations of the Military Academy. It is in our mutual interest, and in the interest of South Africa, to ensure that this contract functions effectively. The contract is based on the fact that there are certain things only the defence force can do, and certain things only a university can do. Only a university can award degrees, or appoint professors. It would be completely within the spirit and the letter of the interaction between the SANDF and the University if you wished to raise an objection against any recommendation of the Subcommittee, but issuing an order to an academic committee is a different matter altogether, which is neither within the spirit nor the letter of the contract." (Asmal Report, 2006: 7-8)

This sheds important light on the stressed relationship between the University and the Department of Defence. The failure of the Department of Defence to encourage and nurture an academic ethos within the Faculty has over the years impacted severely on the quality of education and research at the Military Academy. Without a doubt, the various Deans in turn have battled to propagate a robust and progressive research agenda as a result of the fractured and somewhat competitive relationship between the University and the Department of Defence.

#### **4.7 THE TOBIAS REPORT**

The Portfolio Committee on Defence conducted a follow-up visit to the Military Academy on the 7<sup>th</sup> May 2007, led by the Chairperson, Ms Thandi Tobias, to investigate the implementation of recommendations made in the 2006 Asmal Report. One of the recommendations of the Asmal Report had been that a delegation from the Military Academy should pay a visit to the Canadian Defence Academy (RMC Kingston). Quite why Canada was identified and not – for example – the Australian Defence Academy, which is partnered with the University of New South Wales

and is therefore far closer in design and functioning to SAMA, is unclear. In any event, a delegation consisting of the Commandant and the Dean and a few other Academy members paid a visit to RMC Kingston. Billed as a “Study Tour” it took place between 26 February and 1 March 2007. As it so happens, the Portfolio Committee, also decided to visit RMC Kingston and did so in November 2006. The purpose of both tours was “to draw lessons and comparisons between the military academies of South Africa and Canada.” The following key observations regarding research were highlighted in their reports:

- “Canada perceived its Military Academy to be the think-tank and a rich source of information for defence operations. South Africa should head in such direction (*sic*).
- South Africa needed to improve its student/faculty ratios overtime. Unlike South Africa, a PHD is the minimum requirement for a teaching position in the Canadian Military Academy. South Africa needed to learn from this, as current requirements were merely an honours degree. Lecturers should be rotated and must be encouraged to develop themselves academically.
- Unlike its South African counterpart, the Canadian Military Academy benefits from greater private sector investment in its research. Access to greater research funding needs to be promoted.
- South Africa could draw a lesson from the Canadian strategy to attract the finest academics as well as improvements in its peer review systems, which is important in the academic promotion of teaching staff.
- Like the Royal Academy, South Africa needs to generate research on current peacekeeping operations it involved itself with, especially those in Darfur, Burundi and the Democratic Republic of the Congo (DRC). The contextualisation of teaching was essential. Lessons learnt from these missions should also be incorporated when theorising on these conflicts.” (Tobias Report, 2007)

While most of these observations are sound they are also somewhat obvious and at the time it was postulated within the Faculty that they were hardly the result of groundbreaking effort. As one could have anticipated there was a good deal of cynicism in the Faculty regarding the expense and purpose of the “study tours”. It was felt, with some justification, that there was nothing that either study group brought back with them which could not have been ascertained simply by visiting the RMC website. (Visser, 2012) This was aggravated by the fact that at management level little was done to implement these findings. In retrospect, a solid plan should have been implemented with the assistance of the Division for Research Development at Stellenbosch University. From its side, the Portfolio Committee failed to address the financial and human resource issues at top level within the Department of Defence. Indeed, it simply

threw the proverbial problem right back at the Faculty with this comment: “Creative ways of transforming South African Military Academy at Saldanha in the context of budgetary constraints are needed. Government’s budgetary priorities and emphasis on social spending reflect the pressing development challenges and latent security threats such as poverty and unemployment. Although the military development was important, the overall development of South Africa took precedence.” (Tobias Report, 2007)

The Tobias Report also discussed staff PhDs making the following comment: “The relevance of specialisation and the PhDs produced to the defence or security field is necessary, rather than only an increase in research produced. This research needed to be useful to the Department and to contribute in the understanding of security matters.” (Tobias Report, 2012) This point reinforces earlier discussions in this study which point to the need to identify proper focus areas for research which speak to the needs of the Department of Defence.

Some parts of the Report make little sense and point to a certain amount of confusion in the Portfolio Committee. For example, it alludes to “Annual staff development visits” which take place in June each year and states that “Interviews are conducted to ensure that faculty members and lecturers are enjoying their current research.” (Tobias Report, 2007) Neither of these statements have any bearing on fact as no such thing in fact ever took place. At one point it emphasises the need for transformation by stating that “The retention of lecturers and the increased development of PHD students needs to be prioritised. The recruitment of specialised lecturers, particularly black and female, should be actively promoted.” (Tobias Report, 2007) The report does not explain why black and female lecturers are regarded as “specialised”. The following quote in particular indicates that the Tobias Committee was unclear on certain aspects of research production: “Greater research outputs were demanded. This followed the result of a study undertaken by the Department of Education which illustrated the decline in research outputs by the Academy. In this vain (*sic*), the number of PHDs candidates produced by South African Military Academy at Saldanha would increase over time.” (Tobias Report, 2007) In the first instance no such study was ever undertaken by the DoE. In the second place there was no PhD programme in the FMS. It is a matter of some concern that national oversight bodies such as Parliament, which should be assisting in correcting problems, improving standards and building capacity within the Public Service, display such inaccuracy in their own reporting.

In closing the Tobias Report underlined its intention to return in 2008 to ensure that all of the remaining recommendations had been implemented. (Tobias Report, 2007) That visit never took place.

#### 4.8 CONSULTANT'S REPORTS AND RESEARCH CAPACITY BUILDING

The appointment of Prof Edna Van Harte marked a watershed in terms of the Office of the Dean of Military Sciences. In response to the recommendations of the Asmal Report, she became the first Dean of Military Science not to be remunerated by the Department of Defence. Prof Van Harte remained a staff member of Stellenbosch University under the same staff conditions of other Deans with a definite five year contract. (Morris Report, 2008: 4) As previously mentioned Prof Van Harte launched a number of initiatives intended to analyse, develop and steer research within the FMS. A further step was taken in inviting a number of outside views of the FMS. During her tenure, a number of consultants were contracted to evaluate the Faculty's research, curriculum, distance education and human resource programmes.

One of these consultants was Dr Siphon Masondo who was commissioned to report on research development and capacity building initiatives within the FMS. The Masondo Report was entitled "Research Development and Capacity Building Initiatives in the Faculty of Military Science at Stellenbosch University's Military Academy." The stated objectives of the report were as follows:

- Overview of international research programmes, projects and trends in South Africa, other parts of Africa and globally in military academies.
- Survey and reflective commentary on existing research projects, resources and capacity building initiatives at Saldanha Military Academy, in particular CEMIS and other related research structures.
- Restructuring of the Military Academy's Centre for Military Studies so as to reposition to best serve inclusively the needs of staff, students and the Department of Defence.
- To facilitate, via the Stellenbosch University's (SU's) Research Development Division, a close working relationship with the National Research Fund (NRF) especially in relation to incorporating military research in the NRF research focus areas.
- Based on the findings global survey of military related research resources, recommend to the Dean the strategy for enhancement of research development in the Military Academy at Saldanha. (Masondo, 2007: 1)

Masondo states in his report that his methodology was the use of "semi-formal interviews" as the primary mechanism for examining research challenges within the Faculty and he describes his sample group as "6 academic staff members and 3 black post-graduate students". He describes the interviews as follows "The purpose of the staff interviews was to gain an insight into academic staff members' viewpoints on the structuring of research activities in the Faculty, how they would like to see that structure and functions changed and the impact those changes could bring to the way research development is conducted in the Faculty. The interviews were free

flowing with both the interviewer and interviewee shaping and reshaping the interview flow.” (Masondo, 2007: 8) A shortcoming of the report was that it did not evaluate any of the actual research output of the Faculty but tended to focus solely on the environmental factors.

It would appear that the majority of the staff members pointed to a lack of research funding and the relatively junior profile of the Faculty as the major constraints on research activity. One researcher also mentioned the isolation of the Academy and lack of laboratory equipment as a problem for natural science researchers as ‘they are distanced from “Thembaluthu”’ (*sic*). (It is assumed that the Report was in fact referring to iThemba laboratories). (Masondo, 2007: 12) Some of the feedback was somewhat confusing, as is its relationship to research issues. For example this comment: “I have spoken to Admiral about who comes first, the institution or the students according to *Batho Pele*?” (Masondo, 2007: 13-14) The report also questions why the Department of Academic Development has not been utilised as a key player in developing staff and post-graduate research capacity. However, the Department’s function is as a teaching and learning facilitator and support mechanism for struggling undergraduate students.

On the interviews with the 3 post-graduate students, the Report’s main findings were as quoted:

- The students wanted to know which is the best method for acquiring sources.
- We need to develop research skills to be able to access literature sources.
- We need coaching on ideas for developing research thinking.
- We need mentoring to be able to do research well.
- There is no strong relationship between incoming postgraduate students and lecturers.

(Masondo, 2007: 15)

The first three comments are of particular concern given that the students are already at post-graduate level whilst the last two perhaps point to areas in which mechanisms can be constructed to address such concerns. As far as the first three comments are concerned, it is alarming that the students appear not to have already acquired these basic skills by the end of their under graduate studies and raises questions about the structure and didactics of certain undergraduate curricula.

The Masondo Report’s recommendations were:

1. Strategic positioning of the Dean’s Office for generating financial research resources, budget driven research programmes and output monitoring and reward system,
2. Increasing recruitment of postgraduate students, especially black and women students, so as to address equity and scholarship excellence within the Faculty’s context of research output acceleration,

3. Align Faculty's Research Business Plan with SU's Research Plan and NRF so as to carve out a niche area within the NRF ,
4. Align Cemis with SU's and DoD's Strategic Objectives,
5. Present joint R & D workshops, Lekgotla, and summer schools with the US's Research Development Division,
6. NRF, DoD, DoE, Department of Labour, ARMSCOR and other research partners,
7. Align Faculty's Research Plan with the NRF's Thuthuka programme so as to accelerate research capacity development for black and women postgraduate and post-doctoral students throughout qualifications and attainment of NRF rated research status,
8. Conduct R & D jointly with NRF in the areas of Researchers in Training (RiT) Women in Research (RiT) and Research Development Initiative for Black Academics (REDIBA),
9. Renegotiate, without sacrificing publication quality, the editorial policy of *Scientia Militaria* journal so as to create opportunities for mentored and emerging junior research students and other staff members to publish,
10. Create Science and Technology (S&T) research partnerships that leverage with the demand side of national democratic defence needs.
11. Create a quality assurance mechanism that measures research output and outcomes against the Faculty research plan's objectives,
12. Restructure and reposition the Academic Development Department to serve undergraduate and postgraduate learning and research capacity skills acquisition.
13. Faculty community outreach and project oriented skills development through MASIZA and Mfesane community development partnership support

(Masondo, 2007: 23)

As far as the first recommendation is concerned, the restructuring of the manner in which research is resourced, managed and rewarded is indeed long overdue. However, no mention is made of how to leverage additional funding for the Dean's Office from either SU or the DoD and whilst the suggestion is sound the constraints in this regard have already been discussed in this study. The increase in post graduate students mentioned in point 2 is also obviously desirable. With regard to aligning the FMS more closely with the NRF, there are numerous system level constraints as such an alignment would necessitate a higher level of Departmental input on the part of the DoD. Point 8 calls for more "in house" and junior publishing in the Faculty's journal *Scientia Militaria*. This type of manipulation could be harmful to the journal and damage its existing academic credibility and accreditation which has been hard won. Point 10 highlights an essential caveat in the management of the FMS research activities which have always been and continue to be largely based on personal choice and objectives. Points 11 and 12 are of debatable value as neither of these entities has a research focus. A definite omission is the lack

of focus on the role of senior academics in producing research and developing younger researchers and this is an area which requires urgent redress in the FMS with much emphasis being placed on the recruitment of emerging academics whilst there is no plan in place to develop them or to recruit and retain senior academics. Perhaps the Report could also have also examined the question of the creation of posts for visiting and extraordinary scholars to address this gap.

The Dean at the time commented on the Report were as follows “Regarding reports that I commissioned, I initially asked for the Masondo report to basically get a sense of research within the Faculty. There was a problem in the Faculty as members didn't co-operate well with consultants. Some members felt the Masondo plan was too basic. Masondo highlighted the lack of visibility of Military Academy as a whole in the annual reports of the DOD among other. These issues were discussed and ways to improve them. Although the Faculty didn't see the worth of this report the Dean felt it gave her direction on where to focus her research energies and it gave her insights into research at other Military Academies.” (Van Harte, 2012)

Ironically the Jansen Report of 2008, prepared by Prof Jonathan Jansen<sup>11</sup> as a study on curriculum development and not research provides more intuitive insights into the intellectual culture within the FMS. Jansen makes the statement that the Faculty has far too much subject matter content that is not adequately contextualized within the field of military education. This is important because teaching interests and the deepening of curricula tend to feed into the research exploits of staff and *vice versa*. (Jansen, 2008: 17)

He presents some sounds and intuitive arguments in support of this view: “One of the curious observations from a quick survey of the course materials and the academic year book is the easy attachment of the prefix “military” to traditional university subjects, such as military sociology or military history. While in some fields, such as military history, the content seems to be highly contextualized in others this appears not to be the case, such as the natural sciences but also in some of the traditional social science disciplines.” He makes the point that when a field is indistinguishable in its content from what is offered in a non-military university context, then the question can justifiably be asked why teach discipline or field X within the Military Academy? For the purposes of this study, Jansen's argument that contextualization of content cannot simply mean the use of examples from military environments; but that it must ask deeper questions about what it means to teach and learn accounting or sociology or physics within the context of military education in Southern Africa is very important. (Jansen, 2008: 17) The

---

<sup>11</sup> Now Rector at the University of the Free State.

importance of Jansen's observations from a research output point of view stem from the fact that, as is the case with the curricula of the Faculty's various programmes, so much of the research output of the FMS is not focused within the military arena.

Jansen goes further and draws attention to the fact that Stellenbosch University has perhaps not played a sufficiently dynamic role in managing either tuition or research in the Faculty. He states "While it may be difficult to shift the staffing budget from Defence to the university, the remaining academic responsibilities must rest within the institution. This means that the university is responsible for the library, for student selection, for quality assurance, for teaching and learning, for assessment, for curriculum evaluation, for staff development, for research programs, etc. It is perceived that the university stands at some distance from the core academic decisions that impact crucially on the integrity of the curriculum. This matter must be resolved, and it has financial implications for the university." (Jansen, 2008: 20) "The only consistent theme running through all the school and departmental reviews is money, money, money. The failure to recognize the critical breakdown in capacity as a result of the hopelessly inadequate financial plan for the Faculty threatens the academic enterprise at its core, the curriculum." (Jansen, 2008: 21)

#### **4.9 ACADEMIC FREEDOM**

Whereas under the *Apartheid* Government, research and even conference attendance by members of the Faculty was according to Colonel Louis du Plessis, the Director of CEMIS at the time, viewed with "continuous suspicion", there were high hopes that under a new government and more importantly a new groundbreaking constitution that this scenario would change significantly. Indeed, Deputy Minister Ronnie Kasrils stated in an address at the 1995 Military Academy conference that "if an academic institution restricts critical thinking on the part of its students and faculty, and if it censors or bans the publication of research, then it is engaged in indoctrination rather than academic pursuits. (Kotze & Steele, 1995) This engendered a great deal of hope amongst staff in the Faculty that a new era was imminent, one in which academic openness and a broad liberal education programme at the Academy would become the order of the day. Initially this appeared to be the case, however, as many commentators and observers in the security field have noted, the state has increasingly sought to draw a veil of secrecy over the governmental security cluster. (Seegers, 2010: 264)

There have been a number of embarrassing incidents over the past decade where international scholars and visitors have been turned away from the Military Academy due to the fact that the necessary security clearance could not be obtained in time. This has reflected badly on the

institution and the personnel who went to effort of organising the visits. As a result speakers from abroad seldom visit the Faculty any longer and this has entrenched the inward looking culture of the institution. Indeed every single conference which has been hosted by the Faculty since 2007 has been held at private premises or on the main campus at Stellenbosch. No place of higher learning can afford this type of isolationism and for those scholars who sought to collaborate with others abroad, this type of climate has been disheartening to say the least.

As a result many Faculty members have tended to steer clear of any research topics which might present unpalatable findings or appear controversial, or even avoid defence related topics altogether. The negative implications of such an approach are obvious. It goes without saying that it is imperative that the DoD acknowledges the necessity for all researchers within the Faculty to publish their research finding without fear of some sort of recrimination. Without such publication scholars in the Faculty are unable to build their credibility and stature or that of the Faculty. Furthermore, from an organisational perspective, the DoD needs to accept a certain degree of transparency in this regard including legitimate criticism which may be levelled at it in order to optimise the functioning of the Department. (Esterhuyse, 2007: 272-273)

“Regarding research, the policies of military academies internationally vary from complete academic freedom to the authorisation of publications by the relevant defence department.” (Kotze & Steele, 1995) The German *Universitaet der Bundeswher* and Australian Defence Academy guarantee their academic staff the same rights and liberties as their counterparts at civilian universities. So too do the various United States armed forces academies. In Britain the Royal Military Academy at Sandhurst applies the usual civil services restrictions on academic publications whereas these do not apply at the Royal Military College of Science at Shrivenham as staff are members of a college of Cranfield University which sets the institutional academic standards. (Kotze & Steele, 1995)

In the Faculty of Military Science the issue of academic freedom is vexatious and ongoing, particularly in the highly charged South African political environment. Whereas lecturers are expected to conduct research and publish their findings, indeed, their career and salary progression is heavily dependant on it, it would appear that the DoD is somewhat uncomfortable with publications or public appearances by personnel. (Heinecken & Gueli, 2005: 209-210) From the viewpoint of the DoD this is understandable in terms of issues of national security. One could further argue that it is not acceptable military protocol for members of the DoD to engage with media without some form of authority. However, the picture becomes less straightforward when dealing with academic activities. The fact that FMS personnel are employees of the DoD and not the University creates a grey area which neither the Department

nor the University have sought to manage or adequately address. It is incumbent on the University and the leadership of the Military Academy to resolve this issue and develop a unique and befitting policy which protects and serves all parties. Such a policy should be added as an addendum to the contractual agreement between Stellenbosch University and the Department of Defence.

#### **4.10 CONCLUSION**

When one considers Stellenbosch University's stated goals and environmental imperatives for research, it is clear that research at the Faculty of Military Science is badly out of step with the rest of the University. The environmental factors pertaining to issues like staff, equipment and funding have proved to be inadequate. The management of research in the Faculty improved from 2000 onwards and yet this too fell short when it came to the implementation and follow through of such plans. The problems experienced with CEMIS in particular created a large gap in the Faculty's research output and capacity and has highlighted the fact that staff retention is a critical when building research capacity.

There were however positive advancements as well. Most notably was the attempt to create a research culture through the hosting of research workshops and the organisation of conferences by the various schools. The conferences in particular were important in assisting with the creation of scholarly networks and partnerships with overseas universities and institutes in particular. The reinvigoration of the post graduate programmes at honours and masters level also assisted in growing research output.

Overall, however, it is probably fair to postulate that much more needs to be done in terms of staff development, mentoring and the development and implementation of a robust research strategy in order to take the Faculty to the next level. A higher level of commitment and involvement by the University is required in order to ensure that the Department of Defence invests sufficient resources in the Military Academy to improve facilities. Of arguably more importance is the role which the University should play in establishing a policy partnership with the DoD which would create a productive climate for research. Aspects of such policy should include issues such as academic freedom, posts for international and national visiting fellows and sound human resource practices.

It was very significant that during their interviews all of the former Deans of the Faculty for the period under review mentioned that their single biggest obstacle in implementing their research agenda was the Faculty members themselves. It has been an ongoing battle for each Dean to

convince the entire Faculty of the need to conduct research. In this struggle they are hamstrung by the fact that there are no sanctions available to ensure that everyone participates in some level of research. Van Harte gave this insight, “an initial workshop facilitated by the Director of Research at SU, Prof Petra Engelbrecht, emphasized the availability of research funds and strongly encouraged us to follow the latest research trends that favoured interdisciplinary or other collaborative approaches. Faculty and management members remained resistant to these ideas for some time.” (Van Harte, 2012) For its part therefore, the Faculty needs to embrace scholarly ideals and standards. Furthermore, the Faculty needs to ensure that its research is world class and speaks to the needs of academia as well as the Department of Defence.

## CHAPTER FIVE

### A BIBLIOMETRIC ANALYSIS OF THE RESEARCH OUTPUT OF THE FACULTY OF MILITARY SCIENCE 1990-2009

*“Research in the Faculty of Military Science is an alliance of the willing...”*

*Prof Deon Visser, 2012.*

#### 5.1 INTRODUCTION

From time to time, it is good practice for all Faculties to evaluate and assess their research production. Too often this is done in the context of how they are performing in relation to other Faculties within their University. However, this only tells half a story as most faculties have their own unique environments. A bibliometric analysis of a faculty's research performance therefore provides an essential insight into the unique research trends and trajectories within any given faculty. This is important from the perspective of understanding how the development of research and innovation in a faculty has evolved over time. Crucial questions arise from such a line of enquiry, for instance: Is research output increasing or decreasing? Who are the most productive staff members? Is research funding and facilitation adequate? What are the relative areas of strengths in the environment? From a research management point of view it is vital to understand both the progress of a faculty as a research entity within itself as well as in relation to similar faculties at other Universities and also in relation to the other faculties within the same University.

This bibliometric analysis of the Faculty of Military Science covers the period 1990 to 2009. In addition a discussion of the critical factors which influence research output and post graduate throughput rates is included. In order to properly understand the dynamics of knowledge production in the FMS it would be constructive to examine some of the important key questions which arise from the FMS' unique environment and the constraints and drivers which result.

#### 5.2 THE FACULTY OF MILITARY SCIENCE IN THE STELLENBOSCH UNIVERSITY RESEARCH PRODUCTION LANDSCAPE

In so far as the two decades which form the focus of this study are concerned, this 20 year period saw a growth in scientific output in South Africa. According to the Centre for Research on Science and Technology, between 1995 and 2007 the production of all scientific output

produced by South African universities increased from 80% to 86%. (Badsha & Cloete, 2011: 4) More accurately Kahn points to the fact that after 2004 research output in South Africa began a steep upward climb. (Kahn, 2011: 1)

Knowledge production capacity is not evenly distributed in South Africa and a 2011 study by the Centre for Higher Education and Transformation (CHET) indicates that the university system can be differentiated into three groupings in terms of knowledge production. During the period which forms the focus of this study, the universities of Cape Town, Rhodes, Stellenbosch and Witwatersrand constitute the high knowledge producing category, the remaining universities (excluding Walter Sisulu and Limpopo) fall into the medium category, whilst the universities of technology are in the low knowledge producing grouping. The medium knowledge producing group is quite dynamic with universities such as Western Cape, North West, Johannesburg and Fort Hare recently increasing their proportion of overall output, whilst others such as Pretoria and Nelson Mandela Metropolitan have declined. (Badsha & Cloete: 2011:4)

Whilst various studies position the top research universities rather differently with the University of Pretoria and the University of KwaZulu-Natal often moving into the category of top performing research institutions and Rhodes falling out, suffice to say that Stellenbosch University consistently appears within the ranks of the top four. (Du Toit, 2001: 4-5) The Faculty of Military Science is therefore situated in one of the top performing research universities in South Africa.

The Faculty of Military Science is a uniquely inter-disciplinary Faculty and home to one research centre and five schools which each house a number of departments and are listed as follows:

#### **School for Science and Technology (SCITECH)**

- Mathematics
- Physics
- Military Technology
- Nautical Science
- Aeronautical Science

#### **School for Geospatial Studies and Information System (GeoSys)**

- Military Geography
- Computer Information Systems
- Educational Technology

#### **School for Human and Organisational Development (HOD)**

- Industrial Psychology

- Military Law
- Academic Development

**School for Defence and Organisation Resource Management (DORM)**

- Public and Development Management
- Economics
- Accounting
- Military Management

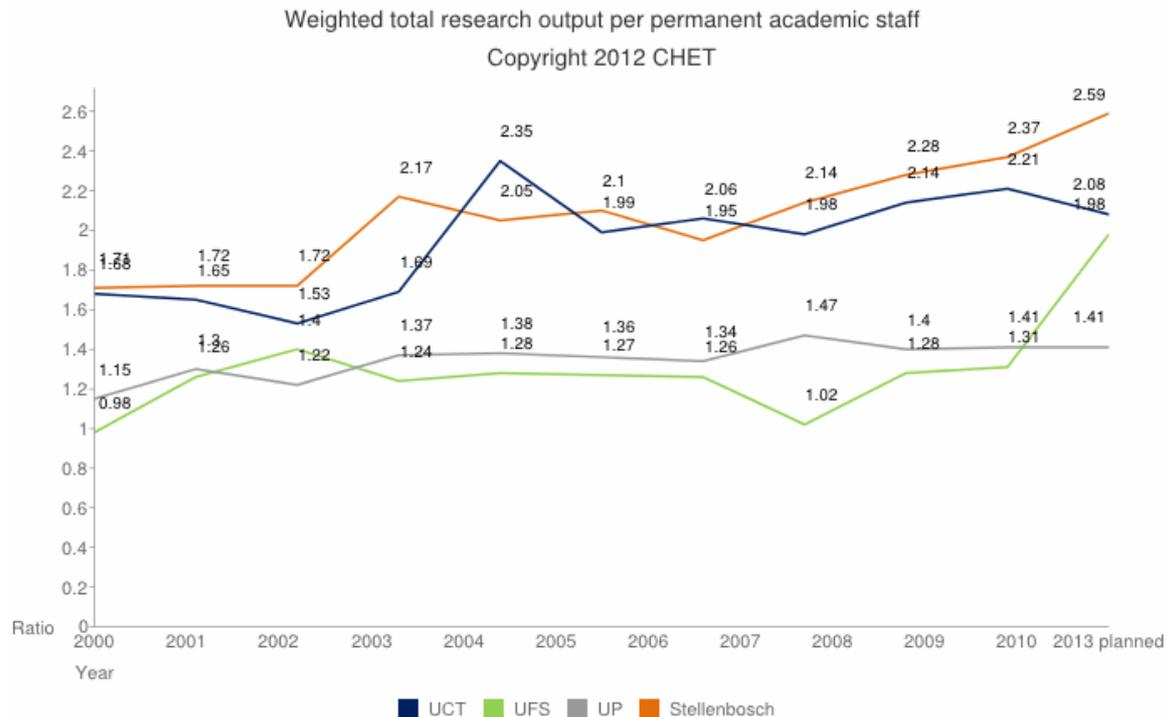
**School for Security and Africa Studies (SAS)**

- Military History
- Military Strategy
- Political Science

**Centre for Military Studies (CEMIS)**

- 1 x Director
- 5 Researchers

The Faculty of Military Science is one of 10 Faculties at Stellenbosch University. According to a 2012 CHET Report, Stellenbosch currently leads research production in terms of weighted research output per academic staff member with an average figure of 2.59 weighted academic outputs per full time equivalent (FTE) member of staff.



**Fig 1: Total Research Output per Academic Staff.**

At Faculty level, the FMS is by far the worst performing Faculty as a research producing entity and has consistently remained as the lowest research producing faculty with an average of 0.23. The next lowest performing faculty is Management Sciences with an output which is double that of Military Science. The overall picture for Military Science during the 20 period under review remains much the same with the decade of the 1990s proving even more bleak given the comparatively lower research output in the Faculty during that period.

**Table 2: Stellenbosch University Faculty Publication Units over Full Time Equivalent Staff members 2007-2010.<sup>12</sup>**

<b>Faculty</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>Average</b>
	PU/FTE	PU/FTE	PU/FTE	PU/FTE	PU/FTE
<b>Arts and Social Sciences</b>	0.8	1.0	1.0	0.7	<b>0.88</b>
<b>Education</b>	0.9	0.9	0.9	0.9	<b>0.92</b>
<b>Law</b>	0.5	0.7	0.9	0.8	<b>0.72</b>
<b>Theology</b>	4.1	2.7	3.2	3.2	<b>3.30</b>
<b>Economic and Management Sciences</b>	0.4	0.4	0.4	0.4	<b>0.41</b>
<b>Natural Sciences</b>	1.2	1.1	1.2	1.3	<b>1.19</b>
<b>Agricultural Sciences</b>	0.8	0.9	0.8	1.1	<b>0.92</b>
<b>Engineering</b>	1.0	0.7	0.9	0.8	<b>0.85</b>
<b>Health Sciences</b>	0.7	1.0	0.9	0.7	<b>0.82</b>
<b>Military Sciences</b>	0.2	0.2	0.3	0.2	<b>0.23</b>

Later in this Chapter the fact that the Faculty's research fell into a period of decline after 2006 will be discussed. Although the early 2000s were a substantial growth period for research production in the Faculty there was a levelling out and even a drop off in publication rates as the decade drew to a close. Despite extremely promising beginnings, the total growth of the FMS Research Output for the decade 2000-2011 indicated in Table 3 therefore evidences a negative growth rate. A further point of note is that Military Sciences is the only Faculty at the University besides the Faculty of Law with a negative growth rate. This is set against the overall University mean which is a positive growth rate of 6.1%.

<sup>12</sup>Information supplied by the Division for Research Development, Stellenbosch University

**Table 3: Average annual growth rate in article and article equivalent output by Faculty at SU (2000 – 2011) (CREST Report, 2012)**

Faculty	Articles	Fractions
Arts & Social Sciences	6.2%	4.8%
Agricultural Sciences	8.0%	5.6%
Economic & Management Sciences	9.5%	7.7%
Education	6.7%	5.7%
Engineering	9.0%	8.3%
Health	11.2%	8.6%
Law	-3.0%	-3.5%
<b>Military Science</b>	<b>-4.1%</b>	<b>-6.4%</b>
Natural Sciences	12.2%	9.8%
Theology	3.6%	3.5%
<b>Stellenbosch University</b>	<b>8.1%</b>	<b>6.1%</b>

The more detailed breakdown into two 5-year periods in Table 4 shows that the biggest growth in the Faculty's output has occurred between 2001 and 2005. The FMS total contribution to Stellenbosch University's total research output for the periods ending 2005 and 2011 were 2.44% and 1.14% respectively. This last figure in particular serves to indicate that whilst there has been a substantial increase in the number of papers published by most Faculties during the second half of the decade, Military Science and Law have shown an opposite trend.

**Table 4: Journal article equivalents by 5-year period by Faculty (CREST Report, 2012)**

Faculty	2001 - 2005	Column%	2006 - 2011	Column%
Agricultural Sciences	373.30	11.24	601.52	10.95
Arts & Social Sciences	624.01	18.80	987.26	17.96
Dentistry	43.32	1.30	0.00	0.00
Economic & Management Sciences	253.47	7.63	443.07	8.06
Education	176.82	5.33	271.03	4.93
Engineering	181.91	5.48	357.14	6.50
General	5.58	0.17	42.21	0.77
Law	144.00	4.34	132.75	2.42
Medicine & Health Sciences	518.25	15.61	998.40	18.17
<b>Military Sciences</b>	<b>81.17</b>	<b>2.44</b>	<b>62.69</b>	<b>1.14</b>
Science	619.98	18.67	1191.72	21.69
Theology	298.17	8.98	407.78	7.42
<b>Total</b>	<b>3319.98</b>		<b>5495.57</b>	

The performance of Military Science in the production of Masters and Doctoral degrees was equally unsatisfactory in comparison to the rest of the University as the FMS has no doctoral programme and an extremely limited number of Masters' students. This aspect will be discussed in detail later in this Chapter. It is clear from these statistics that the Faculty of Military Science faces serious challenges if it wishes to attain a knowledge production standard on a par with the rest of the University and a strong research management framework is required if to improve this situation.

### **5.3 THE FMS RESEARCH PRODUCTION: OUTPUT TRENDS 1990-2009.**

This section of the bibliometric survey focuses on the quantifiable research output of Faculty of Military Science. In general a fractional counting system was utilized in measuring the Faculty's research output. As a rule only the accredited research output of the Faculty was taken into account and comprised journal articles, books and chapters in books. There are a few instances however, where publications appeared in quality journals which are not accredited and these were included in the counting process. This is particularly the case with certain international journals such as the Royal United Services Institute (RUSI) Journal which, despite their lack of subsidy bearing status, would still be considered a prime and esteemed publication target for any FMS researcher.

#### **5.3.1 Conference Proceedings**

Until recently the annual Stellenbosch Research Report contained details of papers presented however this was discontinued in favour of reporting only accredited output. With the knowledge from these reports and more recent anecdotal evidence it appears that conference papers constitute a large proportion of research activity within the Faculty. A major concern for the Faculty should be the amount of papers presented at conferences without any further research or outputs resulting from these activities. Occasionally such papers appear to be taken up in conference proceedings which are often not subsidised. This problem has its roots in the fact that despite complaints from within the FMS that the Department of Defence does not support the Faculty's research endeavours, it has in fact funded numerous national conference attendances in particular and even some international conference visits more regularly over the past five years. As a result Faculty members are not solely reliant on generating research funding for the attendance of conferences and therefore do not appear to appreciate the financial need to convert papers to subsidy bearing outputs. The fact that the academic and scientific imperatives appear to escape them is another matter altogether. A mechanism to

manage the number of conferences sponsored versus papers published should perhaps be implemented within the Faculty.

Conference Proceedings were not taken into account for this bibliometric analysis although these are reported in the Stellenbosch University's Annual Research Reports. Although Peer-reviewed conference proceedings do earn subsidy, it is almost impossible to ascertain which conference proceedings were peer reviewed and received subsidy and which were not with the exception of those which appear in the WOS databases. There is also a vast difference in the quality between different conference proceedings. There would appear to be a tendency developing where conference papers which are published in proceedings seldom tend to never grow into proper research articles. This creates a false sense of productivity on the part of researchers in the sense that a physical output has been created and reported. In order to create a clear picture of actual scientific output proceedings were therefore not included. However for the sake of understanding the level of activity in this area the tables below serve to provide an overview of this area of academic activity in the FMS.

**Table 5: FMS Papers in National Conference Proceedings by 5 Year Period.** (SU Research Reports)

<b>National Proceedings</b>	1990-1995	1995-1999	2000-2004	2005-2009	<b>% of Output</b>
<b>SCITECH</b>	1	1	1	1	<b>7%</b>
<b>DORM</b>	0	0	5	0	<b>9%</b>
<b>SAS</b>	0	0	8	7	<b>28%</b>
<b>GEOSYS</b>	0	0	7	3	<b>19%</b>
<b>HOD</b>	1	0	4	11	<b>30%</b>
<b>CEMIS</b>	0	0	4	0	<b>7%</b>
<b>TOTAL</b>	<b>2</b>	<b>1</b>	<b>29</b>	<b>22</b>	

**Table 6: FMS Papers in International Conference Proceedings by 5 Year Period.** (SU Research Reports)

<b>International Proceedings</b>	1990-1995	1995-1999	2000-2004	2005-2009	<b>% of Output</b>
<b>SCITECH</b>	0	1	4	0	<b>17%</b>
<b>DORM</b>	0	0	0	0	<b>0%</b>
<b>SAS</b>	0	2	0	5	<b>23%</b>
<b>GEOSYS</b>	0	0	0	5	<b>17%</b>
<b>HOD</b>	0	2	4	2	<b>27%</b>
<b>CEMIS</b>	0	0	2	3	<b>17%</b>
<b>TOTAL</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	

The upward growth curve of papers in proceedings between 1990 and 2009 bears testimony to the increase in both research activity as well as mobility in the Faculty. There is a significant difference between the decades in both national and international papers. While international proceedings show steady growth there has been a slight tapering off of national conference activity. It is of particular interest that the proceedings output between the various schools is spread more evenly than is the case with accredited output. The Schools rank as follows in order of the proportionate contribution to both categories of proceedings combined:

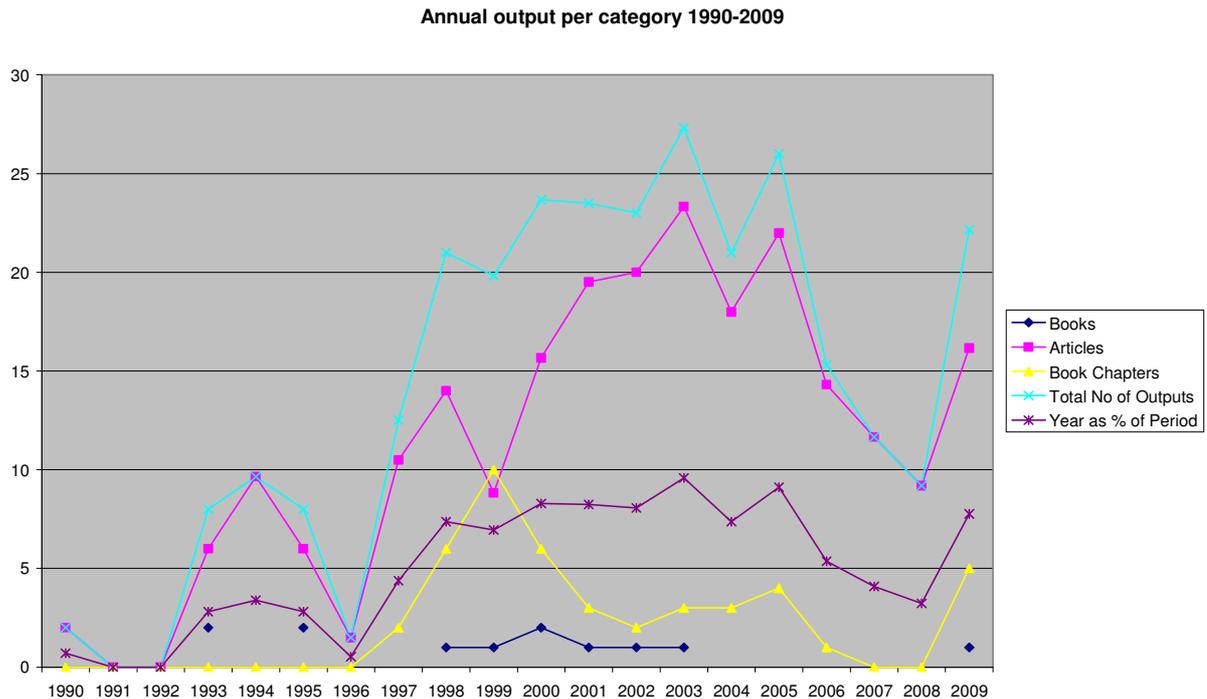
- **HOD** – 28.5%
- **SAS** – 25.5%
- **GEOSYS** – 18%
- **CEMIS** – 12% **SCITECH** – 12%
- **DORM** – 4.5%

The most notable aspect of the above rankings is that they are testament to the fact that all of the schools are engaged in research production at a more basic level. Some schools like HOD, GeoSys and SciTech appear to have challenges in converting their conference participation rates into accredited article outputs. CEMIS which is purely a research body shows a worrying downward trend in all forms of outputs, proceedings included. One could argue that CEMIS researchers should be more mobile than the teaching Faculty and should therefore have a higher level of conference engagement.

### **5.3.2 Accredited Research Outputs**

Accredited Research Outputs were deemed to be books, chapters in books and journal articles. This is in accordance with the current funding framework and the University's research reporting system. As is to be expected journal articles, followed by book chapters, are the primary form of output for most FMS researchers. It should perhaps be mentioned that whilst it is reasonably simple to assess journal output in terms of the quality and "scientific reach" of a journal, this proved to be somewhat more difficult with the books and book chapters.

A few of the books and chapters appear to be rather low level type publications printed by various organisations as opposed to being published by a reputable publishing house. One or two books are actually supplemental issues to journals. There are a number of chapters in quality international academic publications. Unfortunately, due to the size and constraints of this study it was not possible to break down this analysis to individual level although this would reveal interesting facts.



**Fig 2: FMS Accredited Research Output 1990-2009 (SU Research Reports)**

Figure 2 is an overview of accredited FMS research. It is immediately apparent that regardless of the fact that the FMS is outperformed by every other Faculty at Stellenbosch it has clearly shown signs of progress - albeit it from a near zero base. Figure 2 further illustrates that although output increased rather substantially from the mid 1990s to the mid 2000s it declined considerably before recovering somewhat towards the end of the decade. The turbulent history of SAMA during the mid 2000s together with high staff turnover could possibly account for this.

**Table 7: Annual Output 1990-1999. Number of publications per year as contribution to total percentage of output for period (SU Research Reports)**

Annual Output as % 1990-1999	90	91	92	93	94	95	96	97	98	99	Total Outputs category	% of Total Output
Books				2		2			1	1	6	7.2%
Articles	2	0	0	6	9.6	6	1.5	10.5	14	8.8	58.4	70.9%
Book Chapters	0	0	0	0	0	0	0	2	6	10	18	21.8%
<b>Total No of Outputs</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>9.6</b>	<b>8</b>	<b>1.5</b>	<b>12.5</b>	<b>21</b>	<b>19.8</b>	<b>82.4</b>	
<b>Year as %</b>	<b>2.4%</b>	<b>0%</b>	<b>0%</b>	<b>9.7%</b>	<b>11.7%</b>	<b>9.7%</b>	<b>1.8%</b>	<b>15.1%</b>	<b>25.4%</b>	<b>24 %</b>		

**Table 8: Annual Output 2000-2009. Number of publications per year as contribution to total percentage of output for period (SU Research Reports)**

Annual Output as % 2000-2009	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total Outputs category	% of Total Output
Books	2	1	1	1						1	6	2.96
Articles	15.6	19.5	20	23.3	17.9	21.9	14.3	11.6	9.1	16.1	169.8	83.7
Book Chapters	6	3	2	3	3	4	1	0	0	5	27	13.3
<b>Total No of Outputs</b>	<b>23.6</b>	<b>23.5</b>	<b>23</b>	<b>27.3</b>	<b>20.9</b>	<b>25.9</b>	<b>15.1</b>	<b>11.6</b>	<b>9.1</b>	<b>22.1</b>	<b>202.8</b>	
<b>Year as %</b>	<b>11.6%</b>	<b>11.5%</b>	<b>11.3%</b>	<b>13%</b>	<b>10.3%</b>	<b>12.8%</b>	<b>7.5%</b>	<b>5.7%</b>	<b>4.5%</b>	<b>10.9%</b>		

Tables 7 and 8 demonstrate that a positive sign is the increase in diversity of publication outputs types as the 1990s progressed as well as the increase in publication units overall during the second decade which saw a more than 100% increase in the number of publication units from 82.4 in the 1990s to 203 in the 2000s. However as the second table shows, the output levels throughout the 2000s declined through the decade which translates to a state of stasis rather than continuing improvement. One of the principal factors which gave rise to this decline was the shrinkage of CEMIS which saw a 100% turnover of staff between 2000 and 2006. For almost two years after 2006 CEMIS was in effect dormant with no staff members. The subsequent restaffing of CEMIS also did not yield the desired outcome. Furthermore, there is a tendency to utilise CEMIS for ad hoc tasks such as speech writing. This has negatively affected its accredited research output.

#### **5.4 THE SHAPE OF FMS RESEARCH - INCLUDING TRENDS IN COLLABORATION AND VISIBILITY.**

As far as the distribution of knowledge production is concerned, it is clear that the primary field of research production is the humanities. The bulk of the FMS research output was produced by CEMIS and the School for Security and Africa Studies (SAS). Like SAS, CEMIS produces research which is overwhelmingly located within the social sciences, primarily sociology and political science. The next largest groupings comprised the School for Human and Organisational Development (Department of Industrial Psychology) and Defence and Organisation Research Management (Department of Public and Development Management).

#### 5.4.1 Output per School and Department

During the twenty year period under review CEMIS and SAS have maintained their dominance over knowledge production. Together these two entities have produced 70% of all journal articles, 100% of the books and 81% of chapters in books published by the Faculty. This picture is in contrast to the national norm where the natural sciences are the most productive (36%), followed by the humanities (21%) and medical and health sciences (20%).” (Badsha & Cloete, 2011: 4)

**Table 9: Research Publication Output Categories by School as a percentage as contribution to the Faculty of Military Science total research output. (SU Research Reports)**

<b>Articles</b>	<b>No</b>	<b>%</b>	<b>Books</b>	<b>No</b>	<b>%</b>	<b>Books Chapters</b>	<b>No</b>	<b>%</b>
CEMIS	66.6	<b>29.2%</b>	CEMIS	7	<b>70%</b>	CEMIS	23	<b>48%</b>
SCITECH	8.3	<b>3.6%</b>	SCITECH	0	<b>0%</b>	SCITECH	0	<b>0%</b>
GeoSys	9.8	<b>4.3%</b>	GeoSys	0	<b>0%</b>	GeoSys	0	<b>0%</b>
SAS	100.1	<b>44%</b>	SAS	3	<b>30%</b>	SAS	16	<b>33.3%</b>
HOD	24.3	<b>10.6%</b>	HOD	0	<b>0%</b>	HOD	8	<b>16.6%</b>
DORM	18.3	<b>8.0%</b>	DORM	0	<b>0%</b>	DORM	1	<b>2%</b>
<b>Total Article Output</b>	<b>228</b>		<b>Total Book Output</b>	<b>10</b>		<b>Total Book Chapter Output</b>	<b>48</b>	

This output per field is also in stark contrast to other Military Academies worldwide where research in the science and technology fields form the dominant proportion of output. The FMS produces almost no research in these fields. The paucity of local facilities at the Military Academy such as well resourced laboratories for researchers in the applied sciences is one possible hindrance to knowledge production in the science and technology fields. However this alone cannot completely explain the exceptionally low output in the School for Science and Technology and the School for Geospatial Studies and Information Systems. These two entities account for only 8% of journal articles, 0% of books and 0% of chapters in books published by the Faculty between 1990 and 2009. The situation is further compounded by the fact that the Natural Sciences Faculty at Stellenbosch University is the second highest ranked research producing faculty after Theology. However, what should be noted at this juncture is that of the recent publications by both SciTech and GeoSys that most of these have appeared in relatively

prestigious journals and often WOS indexed journals. This is in stark contrast to some of the other schools like DORM which has a single WOS output over the past two decades.

**Table 10: Article Output by Department with percentage as contribution to total Faculty Output** <sup>13</sup> (SU Research Reports)

	1990-1999 No Articles	% of Total for Decade	2000-2009 No Articles	% Total Decade	Total	% Total Output
<b>CEMIS</b>	37	63	29	17	66	29
<b>MATHS</b>	1	1.7	3.2	1.9	4.2	1.8
<b>PHYSICS</b>	0	0	1.2	7	2	0.5
<b>N SCIENCE</b>	0	0	2.7	1.6	2.7	1.2
<b>AERO &amp; MT</b>	3	6	0	0	3	0.1
<b>MIL GEO</b>	2	3.4	6.3	3.7	8.3	3.6
<b>CIS</b>	0	0	1.7	1	1.7	0.7
<b>EDUTECH</b>	0	0	0.5	0.3	0.5	0.2
<b>POL SCI</b>	3.3	5.7	24	14	27	12
<b>MIL HIST</b>	4.8	8.3	37	22	42	18
<b>MIL STRAT</b>	2	3.4	31	18	33	14
<b>ACAD DEV</b>	0	0	0.5	0.3	0.5	0.2
<b>IDUS PSYCH</b>	3	5	15	8.7	17.8	7.8
<b>MIL LAW</b>	0	0	2	1.2	2	0.9
<b>MIL MAN</b>	0	0	0	0	0	0
<b>ACC</b>	1.3	2.3	0	0	1.3	0.6
<b>PDM</b>	2.7	4.5	9.3	5.5	12	5.2
<b>ECONOMICS</b>	1	7	5	2.9	6	2.6

Across the 17 Departments and CEMIS the production picture is equally skewed. As is to be expected CEMIS and the three SAS departments (Military History, Military Strategy and Political Science) account by some margin for the majority of articles published. A sizable number of eight departments fail to break even the 1% barrier as percentage of contribution to the total. A further three departments sit between 1 and 3% of contribution to output. In essence this

<sup>13</sup> N. Science – Nautical Science; Aero & MT – Aeronautical Science and Military Technology; Mil Geo – Military Geography; CIS – Computer Information Systems; Edutech – Educational Technology; Pol Sci – Political Science, Mil Hist – Military History; Mil Strat

translates to the fact that more than half the departments within the Faculty are therefore essentially dormant in terms of knowledge production.

#### 5.4.2 Range of Scientific Journals

As far as the FMS representation in journals is concerned there has been a discernable change in both the scope and quantity of journals during the period under review. Table 11 demonstrates that whereas in the early 1990s the journals utilised were predominantly national journals numbering only a few titles, during the period 2000 to 2009 this changed quite significantly to include other national journals as well as international journals and WOS indexed journals.

**Table 11: Journals with publications by FMS researchers 1990-2009.** (SU Research Reports)

	Number of National Journals which published an FMS article	Number of International Journals which published an FMS article
1990-1994	11	0
1995-1999	16	3
2000-2004	23	15
2005-2009	20	17

This was complemented by the rather noticeable growth in research output by the Faculty for the same period. However, the spread of journals remained rather narrow with the percentage of articles appearing in international journals, and in particular, WOS journals being rather low in comparison to local journals. As a result a large proportion of published FMS research remains somewhat invisible to the international scholarly community. It is not only important to publish in WOS Journals because they attract research funding in terms of the DHET Funding Framework but secondly, and more importantly, such publications enjoy enhanced 'scientific reach' and international invisibility.

One of the reasons for the rather narrow publication focus of FMS researchers could be attributed to the fact that Military Science is a niche academic field and as such certain publications are far more relevant than others. However, certain individual researchers have managed to spread their research over a much wider spread of journals than others. There are a number of researchers in the faculty who appear to target a few journals or in some cases only one journal for all of their output. A rather large number of 111 articles out of a total output of 228 appear in only five journals. These are *Administratio Publica*, *Historia*, the *Journal for*

Contemporary History, the Strategic Review for Southern Africa and Scientia Militaria. In reality only two of these journals, namely the Strategic Review and Scientia Militaria can be considered to be military studies specific journals. A further point to ponder is the fact that Scientia Militaria is the Faculty of Military Science's own journal which has carried some 15% of total FMS output and as such, staff should be wary of being over reliant on it as a publication mechanism.

Publication in international journals is a limited affair with the Faculty. Of the total accredited article output for the period under review 85.7 % of all articles were published in South African journals with a significantly lower 14.3% constituting the international journal output. Table 12 lists the WOS Journals in which FMS members have published. Only 6.3% of total journal output for the two decade period is represented in WOS Journals. It is notable that the first WOS output by the FMS was in 2001. The figure of WOS output as a percentage of the total for the second period from 2000 to 2009 is therefore somewhat higher at 8.5%.

**Table 12: Number of Articles by FMS members in WOS Journals<sup>14</sup>** (SU Research Reports)

WOS Journals	01	02	03	04	05	06	07	08	09	TOTAL
Administration and society					0.5					0.5
Applied Thermal Engineering						0.3				0.3
Armed Forces and Society	1		1					0.5		2.5
Commonwealth and Comparative Politics									0.5	0.5
Current Sociology/Sociologie Contemporaine		1								1
IEEE Journal of Ocean Engineering			1							1
Journal of Geography in Higher Education									1	1
Journal of Family History							1			1
Journal of Human Rights									0.5	0.5
Journal of Imperial & Commonwealth History			1							1
Nuclear Physics								0.2		0.2
War in History				1						1
Journal of Psychology in Africa								1	2	3
SA Journal of Economics			1							1
<b>Total</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>0.5</b>	<b>0.3</b>	<b>1</b>	<b>0.7</b>	<b>2</b>	<b>14.5</b>

It is clear that the Faculty needs to develop strategies to grow a research culture across all schools within the FMS and develop a wider base of prolific researchers. Furthermore a greater

<sup>14</sup> There were no articles published in WOS Journals for the period 1990-1999.

emphasis needs to be placed on publication strategies in order to increase exposure across a greater number of journal titles and in particular WOS journals.

### 5.4.3 Patterns of collaboration and international visibility

On the subject of cross institutional collaboration only 20 journal articles were published in collaboration with researchers from outside the Faculty of Military Science. Of these some were as a result of publications with promoters as a result of FMS staff members' own Masters and Doctoral studies. 7 of the Faculty's books were co-authored with academics outside of the Faculty and only 2 of the book chapters were as a result of collaboration with outside parties. There is also very limited evidence of inter-disciplinary publication. These figures point to a certain degree of academic isolation within the Faculty and a lack of robust involvement in productive national and international academic networks. In Table 13, the article outputs of the FMS have been divided into four categories in order to provide insight into publication patterns in terms of research collaboration. The four categories are international co-publication, national co-publication, single institute publication and post-graduate publication. The term single institute refers to co-authorship between two academics within Stellenbosch University as a whole and not just within the Faculty of Military Science. Post Graduate Publication denotes where a staff member has published an article in conjunction with a post-graduate student which he or she is supervising and which has arisen from such a student's thesis. It is worthwhile noting that of the total FMS Articles produced during the period (288) 64% were consequently single author articles.

**Table 13: Patterns of Research Collaboration (1990-2009)** (SU Research Reports)

	International Collaboration	National Collaboration	Single Institute Collaboration	Post-Graduate Collaboration
No of papers	5	19	53	26
% of Co-Authored Articles	5%	18%	52%	25%

**Table 14: Collaborative Publications as percentage of total FMS outputs.** (SU Research Reports)

Decade	International Collaboration	National Collaboration	Single Institute Collaboration	Post-Graduate Collaboration
% of Total FMS Article Output	1.7%	6.6%	18.4%	9%

The collaboration counts in Table 14 have been conducted using full article counts. The total number of FMS article outputs using full counts was 288 between 1990 and 2009. Of these some 103 articles were co-authored. It is evident from Table 13 that there is an over emphasis on publishing with colleagues and students within the FMS with these types of endeavours totalling 77% of all co-authored articles. As could be expected there was a significant rise in the number of collaborations during the 2000s due to the fact that there was a large increase in publications overall. The Post Graduate Collaborations are the category which has grown the most rapidly, which is perhaps reflective of the growth in the number of students. This is closely followed by Single Institute Collaborations which occurred mainly *intra* the FMS. Whilst National Collaborations increased by 11% the number of International Collaborations remained very low at around 5%. The last category points to an area of concern for the Faculty in terms of increasing international visibility through greater exposure to international journals, improved citations and strengthening global research networks.

#### 5.4.4 Publications in WOS Indexed Journals

In Table 15 we can see that exactly 50% of the Faculty's WOS papers have been co-authored. However, only 22% of all the WOS papers have been co-authored with researchers who are based either outside of the Faculty or Stellenbosch University. Only two WOS publications were as a result of international collaboration.

**Table 15: FMS WOS Publications by collaborative category with Journal Impact Factors.<sup>15</sup>**

Date	Cat	WOS Journal	IF
2001	International Collaboration	Armed Forces & Society	0.815
2002	Single Institute Collaboration	Current Sociology/Sociologie Contemporaine	0.896
2003	Single Institute Collaboration	IEEE Journal of Oceanic Engineering	0.950
2003	Single Institute Collaboration	South African Journal of Economics	0.426
2003	Single Institute Collaboration	Armed Forces and Society	0.815
2003	Single Institute Collaboration	Journal of Imperial & Commonwealth History	N
2005	International Collaboration	Administration & Society 2005	0.730
2005	Single Institute Collaboration	War in History	0.176
2006	National Collaboration	Applied Thermal Engineering	2.389
2007	Single Institute Collaboration	Journal of Family History	0.5
2008	National Collaboration	Nuclear Physics	1.576
2008	Single Institute Collaboration	Armed Forces and Society	0.815
2008	Single Institute Collaboration	Journal of Psychology in Africa	0.116
2009	Post graduate Collaboration	Journal of Psychology in Africa	0.116
2009	Single Institute Collaboration	Commonwealth and Comparative Politics	N
2009	Post graduate Collaboration	Journal of Psychology in Africa	0.116
2009	Single Institute Collaboration	Journal of Human Rights	N
2009	Single Institute Collaboration	Journal of Geography in Higher Education	N

<sup>15</sup> Impact Factors as provided by Thompson Reuters WOS

All the WOS articles were published between 2000 and 2009 with an relatively even spread across the decade indicating that there is no definite sign of an upward curve in terms of WOS output although such output has remained relatively constant. Of further note is the fact that two of the outputs were in collaboration with post-graduate students in the Faculty. Of concern for the FMS should be the comparatively limited amount of national and international collaboration as this has been identified by Kahn as a driver of growth in terms of scientific output. Whereas in the rest of South Africa, international publication collaboration had grown to 47% of all articles in 2010, within the FMS this figure is far lower and stands at 5% for the decade of the 2000s. (Pouris, 2012)

The journal impact factors provided in Table 15 indicate that but for two of the publications, the journals all have a low impact factor if considered against a median of 1.00 as the normative WOS indicator. The impact factors used were the 5 year impact factors listed in 2011 in the Journal Citation Reports of the Web of Science . Where there is no impact factor available for a journal this has been indicated by the letter "N". Usually in this case the journal was listed in the WOS database at the time the article was published but has since been delisted.

## **5.5 THE DEMOGRAPHICS OF RESEARCH OUTPUT IN THE FMS**

The demographics of knowledge production are important in enabling an institution to understand the dynamics of its human capital base and in order to determine whether development initiatives are working. They are also important from a succession planning and intervention point of view. It is well known that the productive researcher base at South African universities is ageing and dominated by white males.<sup>16</sup> This points to the imperative of recruiting quality human capital and the need for workable staff retention strategies. For the purposes of this study the focus will be on gender, age and race.

### **5.5.1 Qualifications of FMS Staff Members**

The FMS is in all probability the Faculty within Stellenbosch University with the lowest number of Doctoral degrees and Professorships. It is also, in all probability, the Faculty with the highest number of permanently appointed lecturers who currently hold only an honours or masters degree.

---

<sup>16</sup> Crest, SA Knowledge Base

What is the reason for this peculiar human resource profile? There are unique institutional level imperatives and challenges which are the drivers of the HR practices in the FMS. The single largest contributing factor is that the FMS is staffed via the Department of Defence and not the University. In terms of the contract between Stellenbosch University and the DoD, all FMS members, with the exception of the Dean of Military Science, are employed and remunerated by the DoD. The University's appointments committee is required to ratify such appointments but this process has become something of a formality. In reality, for aspiring academics, the DoD is not an employer of choice, this is for no reason other than that most flourishing academics would rather be in a more mainstream and urbanised academic environment than the small, relatively isolated and comparatively under resourced satellite campus which is the Military Academy. Advertisements for positions in the FMS do not draw the large numbers of quality applicants which the powers that be would hope for.

An additional factor which should not be underestimated is the staffing preferences of the DoD itself. Since its inception as an institution of higher education, the DoD has manifestly preferred to staff vacant posts in the FMS from the ranks of uniformed SANDF personnel. There are good arguments both for and against this practice; however, for the purpose of this study it's important to note that this has resulted in the internal appointments over the years of staff who usually enter tenured academia with only an honours degree. Many of these staff members, particularly within the last decade have pushed on to attain Masters and Doctoral degrees, however, this is a process which takes time and adversely impacts research output. Furthermore, the DoD has implemented a far more aggressive transformation agenda in terms of employment equity than the University. This has left the Faculty with very little option but to "grow its own timber". In essence, it has become common to staff identified post-graduate students in the FMS as soon as they obtain an honours degree. In so doing, vacancies which have not been filled for months and sometimes even years, can be addressed through a relatively uncomplicated internal appointment as can the issues of race and perhaps gender. However, what is gained on the transformation front is countered by the impact of these staff members having to devote the next 5 to 7 years to further post graduate qualifications. Frustratingly, many of them are head hunted after obtaining their masters degrees and the entire process then begins again.

"Overall in South Africa, only 35% of academics have PhD's. A study by CHET showed a 0.82 correlation between having a PhD and producing WOS accredited publications, meaning that it is only in exceptional cases that people without a PhD publish internationally." (Badsha & Cloete, 2011: 6) In the Faculty of Military Science this appears to be the case as well with the current ratio of staff with doctorates in the Faculty being 30%. Whilst this may position the FMS firmly on the national trend line it remains far below the Stellenbosch University benchmark which is

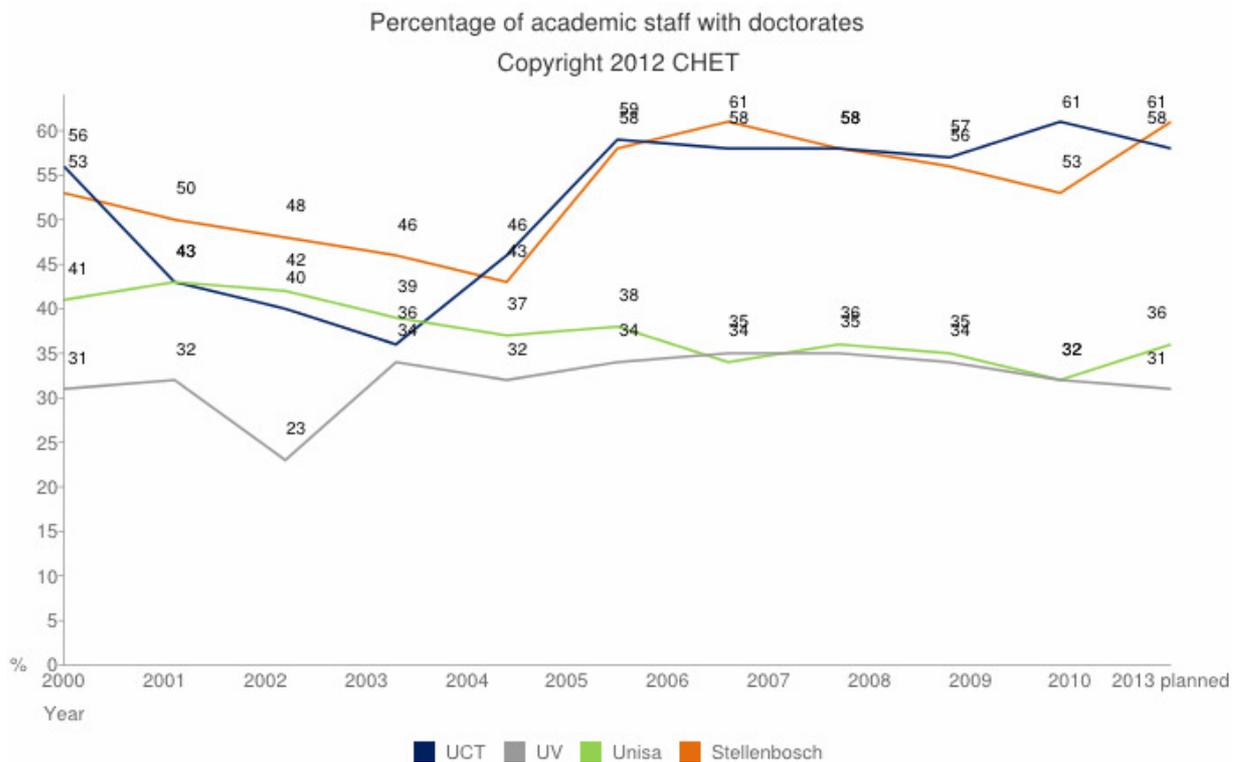
61%. This is an ongoing challenge for the FMS which has experienced high staff turnover during the past decade and also faces significant challenges with the recruitment and retention of senior personnel.

**Table 16: Degree Qualifications of FTE Staff members - Faculty of Military Science (SU Yearbooks)**

Period <sup>17</sup>	B Degree	Honours	Masters	Doctorate	Total
1990-1994	2	13	9	5	29
1995-1999	0	7	13	2	22
2000-2004	1	7	10	3	21
2005-2009	1	7	14	9	31
2010	2	14	22	16	54

Table 16 indicates that the personnel in the FMS have never been as highly qualified as is presently the case. However the high number of FMS members holding a Masters or Honours degree is in sharp contrast to the SU's current personnel structure which shows that 26.8% hold a Masters and only 5.9% hold an Honours. (SU Feiteboek, 2011: 28) The FMS must attempt to make more appointments on senior levels. While on the one hand the increase in Masters and Doctoral qualifications obviously results in fewer research outputs from those Faculty members while they are studying, the reverse is also true. With the higher than ever numbers of doctoral degrees in the FMS questions arise as to why the Faculty's research output is lower for 2005-2009 than it was in the period 2000-2004.

<sup>17</sup> Calculated as per exit qualification of staff members. Total therefore also indicates staff turnover for each 5 year period.



**Fig 3 : Percentage of Staff with Doctorates at South African Universities. (CHET, 2011).**

The introduction of an Occupational Specific Dispensation (OSD) for Military University Educators is imminent. The OSD aims to address both staff retention and to encourage the attainment of PhDs. It has, however, been in the pipeline for a number of years and it is doubtful that the relatively low salaries for junior lecturers and lecturers will halt resignations of younger, mobile staff members. The OSD should also assist in promoting service conditions which are more akin to those of university academics such as sabbatical leave. On a more positive note, the FMS currently has the highest proportion of professorships and staff with doctoral degrees in its existence. A comparison between the 1990s and 2000s would illustrate that the FMS has improved its staff profile quite dramatically despite crippling bureaucratic challenges in terms of both staffing vacancies and promoting staff. Many staff members who are due for promotion wait for up to two years for this to be effected. Issues such as these adversely affect staff morale, staff retention and productivity.

### 5.5.2 Racial and Gender Demographics of the FMS

The race and gender profile is unlike that of other Faculties at Stellenbosch University. Whilst racial diversity in the African group is better represented the numbers of women staff are lower. Table 17 below presents a breakdown of employment figures in the FMS as per race and gender

between 1990 and 2011. The figures in Table 17 were compiled using resignation statistics (which are accurate) as complete human resource statistics for the FMS were unavailable with the exception of 2011. It is clear that as is the case with most universities, the Faculty was primarily staffed by white males between 1990 and 1999 who constituted around 90% of the total staff complement. This picture evolved somewhat during the following decade with the number of white male employees almost halving. Women continue to make up less than 20% of the Faculty's workforce. At present approximately 60% of FMS staff are white. That being said, in terms of race the FMS has the highest percentage of African academics of all Faculties at Stellenbosch University. At Stellenbosch University whites currently constitute 82.30 % of the academic staff whilst all other races combined make up the remaining 12.02% of academic staff. (SU Factbook, 2011: 20) This discrepancy between Military Science and the rest of the University can be attributed to the DoD's employment equity plans which are more robust than those of the University. However across both genders, academics from the formerly disadvantaged groups are not present in the required numbers in the Faculty. The same applies to the number of women employed in the Faculty. Woman at present constitute a mere 15% of FMS personnel in contrast to representing 40.77% of the academic workforce in the other SU faculties. (SU Factbook, 2011: 24)

**Table 17: FMS Employment Statistics by Race and Gender per decade (SU Yearbooks)**

1990-1999					2000-2011				
	Male	%	Female	%		Male	%	Female	%
<b>White</b>	46	90%	3	6%	<b>White</b>	50	47%	14	13%
<b>African</b>	1	2%	0	0%	<b>African</b>	28	26%	4	4%
<b>Coloured</b>	1	2%	0	0%	<b>Coloured</b>	7	7%	1	1%
<b>Asian</b>	0	0%	0	0%	<b>Asian</b>	2	2%	0	0%

As the case in many Higher Education Institutions in South Africa, the FMS research output is lead by a small cohort of white males in the age group 40 plus.

**Table 18: Journal Articles by Decade and by Gender and Race** (SU Research Reports and SU Yearbooks)

Race x Gender	Decade: 1990-1999											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	TOTAL	%
African female	0	0	0	0	0	0	0	0	0	0	0	0%
African male	0	0	0	0	0	0	0	2	2	0	4	5.6%
Asian female	0	0	0	0	0	0	0	0	0	0	0	0%
Asian male	0	0	0	0	0	0	0	0	0	0	0	0%
Coloured female	0	0	0	0	0	0	0	0	0	0	0	0%
Coloured male	0	0	0	0	0	0	0	0	1	0	1	1.4%
White female	2	0	0	2	4	4	0	5	3	3	21	29.6%
White male	2	0	0	4	10	6	2	5	9	7	45	63.4%
<b>Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>14</b>	<b>10</b>	<b>2</b>	<b>12</b>	<b>15</b>	<b>10</b>	<b>71</b>	<b>100%</b>
Race x Gender	Decade: 2000-2009											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	TOTAL	%
African female	0	0	0	0	0	1	0	1	0	0	2	1.1%
African male	0	0	0	1	0	1	1	1	2	1	7	4%
Asian female	0	0	0	0	0	0	0	0	0	0	0	0%
Asian male	0	0	0	0	0	1	1	0	0	0	2	1.1%
Coloured female	0	0	0	0	0	0	0	0	0	0	0	0%
Coloured male	0	0	0	0	3	0	1	0	0	1	5	2.9%
White female	2	5	3	3	1	5	2	3	0	3	27	12.2%
White male	15	15	19	23	26	18	16	12	13	0	175	80.3%
<b>Total</b>	<b>17</b>	<b>20</b>	<b>22</b>	<b>27</b>	<b>30</b>	<b>26</b>	<b>21</b>	<b>17</b>	<b>15</b>	<b>23</b>	<b>218</b>	<b>100%</b>

Table 18 represents the number of accredited articles published according to race and gender and quantifies these as a percentage of total article output per decade. As is to be expected, research production was led by white males over both decades. Somewhat strangely however, white males increased their percentage of contribution to total output during 2000-2009 quite significantly in spite of constituting a significantly smaller proportion of the total workforce than before. Of equal note is research produced by African males decreased slightly during 2000-2009 despite the increase in this component of the workforce.

**Table 19: Percentage of total output per decade as per Gender** (SU Research Reports and SU Yearbooks)

<b>Male</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>% of output</b>
Articles	2	0	0	4	10	6	2	7	12	7	<b>70.4%</b>
<b>Female</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>% of output</b>
Articles	0	0	0	2	4	4	0	5	3	3	<b>29.6%</b>
<b>Male</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>% of output</b>
Articles	15	15	19	24	29	20	19	13	15	20	<b>86.7%</b>
<b>Female</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>% of output</b>
Articles	2	5	3	3	1	6	2	4	0	3	<b>13.3%</b>

The question of gender based research production poses similar anomalies. Table 19 provides a basic mapping of publication trends for each gender by year. Table 20 below demonstrates gender and race as percentage of the workforce with related publication outputs. What is immediately of interest is that despite white women only constituting 6% of the workforce during 1990 – 1999 they produced a substantial 29.6% of article based research. This is a rather surprising statistic when considered against both against the Faculty and the national norm. As is the case with African males however, despite females increasing to comprise 18% of the Faculty between 2000 and 2009, their research output dropped to 13.3% of the total.

**Table 20: Journal article output by decade relative to Gender/Race** (SU Research Reports and SU Yearbooks)

<b>1990-1999</b>	<b>Male</b>	<b>Male</b>	<b>Female</b>	<b>Female</b>
	% of Workforce	% Outputs	% of Workforce	% Outputs
<b>White</b>	90%	<b>63%</b>	6%	<b>30%</b>
<b>African</b>	2%	<b>6%</b>	0%	<b>0%</b>
<b>Coloured</b>	2%	<b>1%</b>	0%	<b>0%</b>
<b>Asian</b>	05	<b>0%</b>	0%	<b>0%</b>
<b>2000-2009</b>				
<b>White</b>	47%	<b>79%</b>	13%	<b>12%</b>
<b>African</b>	26%	<b>4%</b>	4%	<b>1%</b>
<b>Coloured</b>	7%	<b>3%</b>	1%	<b>0%</b>
<b>Asian</b>	2%	<b>1%</b>	0%	<b>0%</b>

Despite this drop in female productivity the overall percentages of output in the table above the period 2000 to 2009 indicate that research production along gender lines is broadly in keeping

with the ratio of males to females and indicates that in the Faculty women are more or less keeping pace with men in terms of article output.<sup>18</sup> This is in contrast to national trends where male scholars publish almost twice the amount of accredited journal articles as their female colleagues. (Prozesky, 2012: 106)

### 5.5.3 Age Demographics

The Faculty of Military Science has quite a high number of young staff members. This is primarily due to the fact that historically appointments have been made from within the postgraduate student body. This is for two reasons, firstly due to some of the specialised subject fields which make it difficult to make suitable appointments from outside. Secondly as a result of the Faculty's employment equity redress imperatives which have resulted in a "grow your own timber" strategy due to the difficulty in recruiting suitable numbers of non-white academics.

**Table 21: Article production: Analysis of producing researchers by Age and Gender (SU Research Reports and SU Yearbooks)**

	<b>African</b>	<b>Coloured</b>	<b>Asian</b>	<b>White</b>	<b>Male Age Group Output</b>
<b>Age Cohort</b>	<b>Male</b>	<b>Male</b>	<b>Male</b>	<b>Male</b>	<b>% of articles by Age Cohort</b>
20-30	0.7%	0.7%	0%	4.2%	<b>5.6%</b>
31-40	3.1%	0.3%	0.3%	27.2%	<b>31%</b>
41-50	0%	1.0%	0.3%	32.4%	<b>33.8%</b>
51-60	0%	0%	0%	11.8%	<b>11.8%</b>
61-70	0%	0%	0%	0.3%	<b>0.3%</b>
	<b>African</b>	<b>Coloured</b>	<b>Asian</b>	<b>White</b>	<b>Female Age Group Output</b>
<b>Age Cohort</b>	<b>Female</b>	<b>Female</b>	<b>Female</b>	<b>Female</b>	<b>% of articles by Age Cohort</b>
20-30	0%	0%	0%	0.7%	<b>0.7%</b>
31-40	0.3%	0%	0%	7.7%	<b>8.0%</b>
41-50	0.3%	0%	0%	5.2%	<b>5.6%</b>
51-60	0%	0%	0%	3.1%	<b>3.1%</b>
61-70	0%	0%	0%	0%	<b>0%</b>
	<b>African</b>	<b>Coloured</b>	<b>Asian</b>	<b>White</b>	<b>Combined Age Group Output</b>
<b>Age Cohort</b>	<b>Combined</b>	<b>Combined</b>	<b>Combined</b>	<b>Combined</b>	<b>No of articles by Age Cohort</b>
20-30	0.7%	0.7%	0%	4.9%	<b>6.3%</b>
31-40	3.5%	0.3%	0.3%	34.8%	<b>39%</b>
41-50	0.3%	1%	0.3%	37.6%	<b>39.4%</b>
51-60	0%	0%	0%	15%	<b>15%</b>
61-70	0%	0%	0%	0.3%	<b>0.3%</b>

<sup>18</sup> The bulk of research produced by women in the FMS was produced by one individual, who resigned in 2006 hence the decline in research output by women for the remainder of the period.

It is immediately obvious in Table 21 that there are limited numbers of non-white researchers in the senior age segments. Publications according to age groups as set out in the above table provide evidence that the most productive age groups for both genders are between 31-40 and 41-50. As is to be expected the research productivity of staff members in the 20 to 30 Age Cohort is low. This is partly due to the fact that many are still studying towards post graduate qualifications as well as coming to grips with the demands of their new academic careers.

In terms of the 31-40 and 41-50 age groups, what is notable about this figure is that many of the authors who published in between 1990 and 1999 were in the 31-40 age group. This same cohort of very productive authors continued to form the mainstay of output between 2000 and 2009 but had now moved into the 41-50 age group. It is a matter of some concern that some of these researchers have now moved to other universities whilst others are now nearing retirement age. To date there is no obvious new cluster of researchers who are displaying the potential to emulate the feats of this grouping.

The 51-60 age group is only the third most productive age cohort. This is somewhat surprising as it is in contrast to the national trend which sees this group as a highly productive entity. The reason for this is that the Faculty actually has relatively few staff members over 50. In many cases this can be attributed to the long running voluntary severance packages offered by the DoD which has seen many staff members opt for early retirement from the Faculty. The equally important 60+ group has almost no research contribution impact in the FMS. The reason for this is that the Faculty has very few staff members over the age of 60 as the retirement age in the SANDF is 60. If one considers that on average the age of profile of researchers in South Africa is 10 years older as compared to other sectors this means that in the case of both groups, an important knowledge producing cohort is lost to the Faculty. (Kahn, 2008: 145) Clearly this is not the case at other academic institutions and the untimely departure of these experienced academics is no doubt undermining an important potential source of both knowledge production and research mentoring.

## **5.6 RESEARCH PRODUCTIVITY MEASURES.**

In order to understand knowledge production trends in the Faculty of Military Science it is important to shift the enquiry focus away from school or faculty level down to an individual level. There is typically a difference between active researching and publishing staff at an institution and the actual staff complement. Therefore statistics which indicate the number of publication units per FTE staff member actually only tell half the story as research productivity is typically unevenly distributed through a system. This section of the study therefore examines the 'active

human capital base' of the FMS and assesses the trends in terms of the actively contributing authors.

### **5.6.1 Productivity Profile of the FMS**

There appear to be three types of people in the FMS; those who don't conduct any research, those who publish very occasionally and then those who appear to place a high premium on research. Approximately 157 persons have been employed in the FMS between 1990 and 2009. Of these 100 FTE members have never produced any type of accredited research or stated differently some 64% of FMS Staff have never published or produced any type of accredited research output.

In general the most productive researchers in the FMS have almost without exception, been long term employees with service periods of at least 10 years or more. (On the hand there are also quite a number of extremely long serving staff members who have never produced any research). Typically many of the staff who tend to be short term also produce little or no research during their service in the FMS. In terms of mobility, when the top researchers leave it is almost always for senior academic positions at another University. There is limited mid-level academic mobility within the FMS staff corps. That is to say those lecturers with a masters degree tend to leave for policy jobs within government and not academic appointments elsewhere. The Faculty employed a total of 157 FTE personnel between 1990 and 2009. It is remarkable that over the past two decades a conspicuous 71 % of the total FMS research output has been produced by only 10 Faculty members. It should be of some concern then that the remaining 147 personnel members accounted for a miserly remaining 29 % of output between them. The table below represents a fractional count of all articles produced in the FMS for the period under review, including outputs by post graduate students. So by way of explanation, Researcher A, who was a member of the Faculty for approximately 10 years during this time produced 41 articles and is the only member in the top 10 percentile.

**Table 22: Distribution of relative research productivity in the FMS (1990-2009) (SU Research Reports and SU Yearbooks)**

Group Percentiles	Nr of FTE Personnel	Average Article Units Per Group over the 20 year period
Top 10 percentile	1	2.05
90-81	0	1.50
80-71	1	1.29
70-61	1	0.90
60-51	4	0.63
50-41	4	0.34
40-31	7	0.04
30-21	13	0.08
20-11	33	0.03
Bottom 10%	64	0

### 5.6.2 Individual Productivity

To an extent the publications patterns of staff in the FMS conform to what is known as “Lotka’s Law”. Lotka’s Law briefly translates to the equation that “from the authors in a given field, 60 % will have just one publication, 15% will have two publications, 7% will have three publications and so on”. (Rowlands, 2005: 5) The Faculty of Military Science is therefore not unique in this pattern of publication. However, the output of the FMS is nevertheless extremely low.

**Table 23: Most Prolific Researchers in the FMS : Output as Percentage of Total FMS Output for the period 1990-2009 (SU Research Reports)**

Name	Books	Chapter	Articles	Total Outputs	Percentage
Researcher A	1	6	41	48	16.9%
Researcher B	1	5	25.3	31.3	11%
Researcher C	2	4	13.5	19.5	6.8%
Researcher D	0	7	11	18	6.3%
Researcher E	0	0	18	18	6.3%
Researcher F	0	6	9.6	15.6	5.5%
Researcher G	1	0	13.6	14.6	5.1%
Researcher H	0	1	12.5	13.5	4.7%
Researcher I	4	10	3	17	6%
Researcher J	0	2	5.6	7.6	2.7
<b>TOTAL</b>	<b>9</b>	<b>41</b>	<b>160.5</b>	<b>210.5</b>	<b>71.8%</b>

Rowlands poses the question as to why scientific authorship is patterned in this manner and why some scholars are so much more productive than others. He underlines the fact that the underlying human behaviour behind such scientific outputs patterns is far from understood but alludes to the “success breeds success” phenomenon. Indeed in the absence of alternative explanations this seems to be the case in the FMS where despite the fact that all staff members have access to the same resources we find concentrated pockets of intensive research activity for example in the School for Security and Africa Studies. (Rowlands, 2005: 6)

Obviously these statistics give rise to a number of questions, primarily what exactly it is that prompted these individuals to perform on a level far exceeding the rest of the group. A further question would be how well the same group has performed compared to the Stellenbosch University average. In other words are any of these individuals exceptional or are the remaining members of the Faculty far below par?

Only five of this group remain with J and I retired from the Faculty. B and A moved to Sociology at Stellenbosch University and Political Sciences at Free State University respectively. C moved to the Department of Public Service Administration. F, G and H are all approaching retirement which leaves only D and E as potential future knowledge producers.

Serious questions need to be asked about where the next generation of prolific researchers will come from and why some full time researchers at CEMIS are producing less than one accredited output per year.

## **5.7 POSTGRADUATE DEGREE PRODUCTION**

Military Science offers a number of programmes for the BMil Honours degree and the MMil (Masters) degree. There is no PhD programme in place nor can a student register to read for a doctorate under a supervisor in the Faculty. In cases where a Faculty member is specifically requested by a student as a supervisor the student registers for study in one of the departments on the main campus at Stellenbosch and the FMS member is appointed as a co-supervisor.

### **5.7.1 The FMS PhD Programme**

Until 2011, the introduction of a PhD programme in the FMS was not feasible due to a shortage of the required number of professors and doctors in all the given programmes. A project to launch the first PhD programme in the FMS was undertaken in 2011 and would have been

implemented in the School for Security and Africa Studies. This is now on hold due to various factors although the project is still underway but is no longer focused on introducing a PhD programme in SAS alone. The precise reasons for the delay in introducing the PhD programme are not clear to the writer. However a former Dean who tried to implement the programme commented as follows: "The University was concerned about the low research output by faculty members and was very supportive of initiatives to increase such output. The Dean realized that the lack of a doctoral programme at the faculty seriously hampered our research output. The University therefore was supportive of the Dean's initiative to establish a doctoral program within the faculty in contrast to previous opposition by the University to the establishment of such a program. The faculty retarded progress because of in-fighting as to the nature and location of a doctoral program." (Van Harte, 2012)

There are numerous negative implications for the Faculty of Military Science in not offering PhD programmes. First is the obvious drawback that senior staff in the FMS can at best become co-supervisors of a PhD thesis at another university or within another Faculty at Stellenbosch. The second, and perhaps more serious problem from a research output aspect, is that large number of PhD students inevitably translate into increased research output. (Kahn, 2011: 4) Finally there is the funding implication given the fact that under the current framework, Faculties receive a substantial monetary allocation for each successful doctoral graduate.

### **5.7.2 Masters of Military Science Programmes**

There are a number of Masters Degree programmes in the Faculty however, as this study will indicate the number of enrolments and throughput rates are low. There are a number of reasons for this, which are discussed below.

It is imperative to note from the outset of this discussion that the programmes offered by the FMS are only open to full time members of the DoD. This means that the potential pool of candidates for masters and doctoral study is, in fact, minuscule. There is currently one member of the Part Time Forces who is studying history, however he is paying privately for the degree and the policy remains murky so some would be candidates in the Part Time Forces find success in registrations and other do not. This is a constant source of frustration to members of the Faculty and would be students alike.

**Table 24: FMS Masters graduates as percentage of total SU Masters graduates per year**  
(SU Fact Book, 2011: 22)

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
3.28	2.21	1.66	1.05	2.28	1.67	6.36	6.64	6.08	4.43

In addition to the limited pool of potential students eligible for post graduate study, it must be mentioned that there are many other degreed professionals in the DoD, however many are medical or legal staff who cannot further their studies through the FMS. Furthermore, many SANDF members choose to study in a direction which will prepare them for life beyond the military, for example an MBA, whereas post-graduate programmes in the FMS are aimed at those seeking a long term military career. The Faculty has been trying without success for at least five years to open its post-graduate programmes to candidates outside the DoD.

A further factor which has impacted negatively on potential student numbers was the introduction of a new intake system in 2002 under the Military Skills Development System (MSDS). Under this system first year students at the Military Academy are enrolled for a Certificate in Military Studies which is a one year exit level qualification. Only around 30% of these students are approved to continue with second and third year study enabling them to complete a BMil degree. (Visser, 2004: 86) The remainder leave the Military Academy at the end of their first year. In essence then only around 40 students remain on to continue with their second year which shrinks the pool of BMil graduates even further.

### **5.7.3 Throughput rate of post graduate students**

In addition to the low number of students enrolling for Masters studies in the Faculty of Military Science there is the issue of what appears to be a rather low throughput rate. The Table below gives comparative annual figures for both enrolments and degrees conferred.

**Table 25: M MMil Degree Enrolments and Conferment per year. (Faculty Student Records)**

<b>MMil Enrolments</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
	0	2	3	2	3	3	7	3	4	1
<b>MMil Enrolments</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	3	11	14	19	15	13	15	12	13	9
<b>MMils Conferred</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
	0	0	0	0	1	0	0	0	2	0
<b>MMils Conferred</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	0	0	2	3	2	3	2	3	1	2

It is clear from the above that the Masters degree programmes have enjoyed an increased degree of enrolments between 2000 and 2009 with the bulk of degrees being awarded occurring after 2001. A total of 18 M Mil degrees were awarded between 2000-2010, whilst only 3 M Mills awarded between the years 1990-1999. The reasons for the low success rates of enrolled Masters' students do, however, required some further explanation.

Unlike on the main campus at Stellenbosch University, many of the post graduate students who are non residential part-time students in the Faculty are situated at a considerable distance from the Military Academy and outside of the Western Cape altogether. These students are full time serving members of the SANDF and aside from having to shoulder a normal occupational workload and balance this with family life and so on they have the additional burden of deployment. Some are deployed on peace keeping missions, others on military exercises etc. This has proven to be an extremely disruptive factor for students especially during the thesis phase of study. Many students complete the coursework phase only to discontinue study during the research phase of a degree. The success rate of those students who are selected for residential post graduate study is far more satisfactory despite the fact that these students are employed as academic assistants. It is clear therefore that in the combined absence of supervisors, a post-graduate peer group and the infrastructure (primarily the web portal services and the library) provided by the University that students in isolated locations really experience extreme difficulty managing work commitments, obtaining sources and remaining engaged with their studies.<sup>19</sup>

<sup>19</sup> All M Mil Statistics were calculated by writer. Records supplied by the Faculty Office, Faculty of Military Science, Stellenbosch University.

From 2000 a system was implemented in the Faculty whereby a certain number of Masters and Honours students have been allowed to remain at the Military Academy for the duration of their degree studies and serve as “academic assistants” in the various schools. Although these students work a nominal 40 hour week, in reality they are usually allocated a certain amount of time per week to pursue their studies. The success rates of these residential students is therefore far higher as they have the added advantage of being situated in an academic environment and having access to their supervisors as well as the library and web based research portals provided by the University.

**Table 26: M Mil Students based at the Military Academy versus Distance Students** (Faculty Student Records)

<b>Enrolled 1990-2009</b>	<b>Distance</b>	<b>Employed @ Military Academy</b>
Did Not Complete Degree	18	14
Awarded Masters Military Science	6	15
Total	24	28
<b>Throughput Rate</b>	<b>25%</b>	<b>53.6%</b>

Table 26 provides an accurate indication of the considerable difference in graduation rates between students who are based as the Military Academy for the duration of their studies and those who are based elsewhere. However Stellenbosch as a whole is experiencing challenges with its post graduate throughputs. The 2011 Fact Book states “The SU graduation rate for master’s degrees was 22.4% in 2010. Analyzing the SU graduation rates of the past 4 years it is evident that the completion of a masters degree takes on average almost 5 years, while the average completion time for a doctoral degree is 6 years.” (SU Fact Book, 2011: 9) What is rather remarkable to note here is that the throughput rate of Masters students in the Faculty of Military Science is considerably higher than the rate for the remainder of the University.

A demographic breakdown of the students who have enrolled for Masters studies provides further insight into throughput patterns in the Faculty. Of particular interest is the fact that African students have the highest success rate in the MMil programme. Note that there have been no full time enrolments for the MMil qualification. All students are expected to complete the degree as a part time endeavour.

**Table 27: Enrolment and Throughput Rates per Race** (Faculty Student Records)

<b>1990-2009</b>	<b>Black</b>	<b>Coloured</b>	<b>Asian</b>	<b>White</b>	<b>Total</b>
Total Enrolments	11	4	0	43	58
Passed	7	0	0	14	21
Currently enrolled	2	2	0	3	6
Did Not Complete	2	2	0	26	32
Employed @ Milacad while studying	72.7%	55.8%	n/a	50%	
<b>Throughput Rate</b>	<b>63.6%</b>	<b>0%</b>	<b>n/a</b>	<b>32.5%</b>	<b>36.2%</b>

With regard to gender statistics one can clearly see that there is a large disparity between male and female enrolments. This is to be expected in a male dominated military environment.

**Table 28: M Mil Enrolment and Pass Rate Statistics per Gender** (Faculty Student Records)

	<b>Females</b>	<b>%</b>	<b>Males</b>	<b>%</b>	<b>Total</b>
Percentage of M Mil Degrees Conferred	4	19%	17	80.9%	21
Component of Total M Mil Enrolments	11	19%	47	81%	58

From the above table it is apparent that the performance of male and female students in the MMil programme is almost completely even with throughput rates for each group correlating almost exactly to the matching the percentage of the enrolment rate for each gender.

In conclusion it is rather obvious that the growth of the Doctoral and Masters degree programmes is essential for the Faculty on a number of different levels. From a supervision and research output point of view it is essential. The opening up of these degree programmes to persons outside the DoD is critical in order to grow the base of potential students. However until organisational system level constraints are overcome it is in reality a matter beyond the means of the Faculty to resolve. A concern regarding the current system however is that the number of enrolments appeared to be declining towards the end of the 2000s.

## 5.8 CONCLUSION

In comparison to other Faculties at Stellenbosch University, the Faculty of Military Science is a low performing research unit. While this situation has shown some improvement between 1995 and 2005 it has since declined again. There are huge differences in output between individuals and the various schools pointing to the need for urgent intervention. The most obvious solution

is to apply the performance management system far more stringently and transparently than is presently the case with the necessary appraisals and establishment of individual targets. There is also a need for more active mentoring and support programmes for emerging researchers.

In terms of the quality of research produced there is an over reliance on certain journals and insufficient collaboration beyond the boundaries of the Faculty. Research tends to be rather individually based. More emphasis is evidently required on larger, preferably cross institutional networked research projects. Likewise the Faculty needs to actively drive a greater proportion of its output towards WOS, Scopus and IBSS journals. The implementation of a focused publication strategy could be helpful in informing staff on greater scientific reach and impact for their research.

The absence of PhD programmes and the low numbers of MMil students further impact negatively on scientific activity. Stellenbosch University could play a more active role in overcoming the obstacles which currently prevent students from outside the DoD enrolling in such programmes. Furthermore more active strategies to retain and assist distance part time students are required.

---

## CHAPTER 6

### EPILOGUE

*“A complacent satisfaction with present knowledge is the chief bar to the pursuit of knowledge.”*

*Jacob Bronowski*

In closing it is necessary to revisit the primary question under investigation in this study, namely, why the Faculty of Military Science has consistently struggled to establish a vibrant research culture and viable research production output? This study has shown that there are a plethora of factors which have contributed to this situation.

#### **6.1 RESEARCH INPUTS VERSUS RESEARCH OUTPUTS**

The concluding comments on this question can be viewed through the lens of a relatively simple input versus output model. Or phrased in another way by asking the question “what are the enablers of research”? This can be enumerated under the following headings:

##### **6.1.1 Time Allocation for Research**

When considering the issue of time it is important to consider the policy environment of an institution. Are researchers empowered to undertake research in terms of their teaching and administrative loads? Is there a sabbatical policy in place supported by a teaching replacement programme? Are people rewarded for producing research in terms of performance management structures?

Within the Faculty of Military Science the research policy environment was first formally introduced in 2000. Prior to that point research was not managed or identified as a mainstream activity for personnel. Yet despite the formulation of a basic research policy at this point, system level constraints have continued to hinder effective implementation due to factors such as the inadequate application of performance management indicators. Too often the best performing researchers in the Faculty were not the people who receive the highest scores on their performance assessments. Furthermore, sabbatical leave remains a challenge in the small departmental environments where the norm is often two to three staff members. Post graduate students are sometimes used as replacement lecturers but this is not optimal from a teaching quality perspective and at best ensures that sabbaticals must be kept to short periods. It also

necessitates that the members on sabbatical must remain within the ambit of the Military Academy should problems arise. For this reason no FMS member has to date ever taken up a research fellowship at another institution during a sabbatical. In truth most sabbaticals are utilised to assist members in furthering their qualifications due to the junior staff profile of the FMS and not for research per se.

### **6.1.2 Research Resources**

Resources for research usually equate to funding. This is the case whether the funding is required for equipment, post doctoral assistants, travel or the like. Due to the funding framework this has become something of a vicious circle for the FMS where due to low output the Dean's Fund remains under intense pressure. As such there is insufficient seed funding to propagate young researchers or support large projects. It could be postulated that the FMS should have set up a strategic fund for research a long time ago in order to mobilise research in conjunction with Stellenbosch University. Masondo alluded to this in his report through underlining the need for a closer relationship between the Faculty and the SU Research Office.

However, in truth staff in the Faculty need to accept that academia also entails the sometimes tedious task of applying for funding from the various national and international funding initiatives on offer to all scholars. To date efforts in this regard have been minimal, possibly due to the lack of vision in constructing collaborative large research projects which attract precisely that type of funding. One envisions the type of projects that would include teams of researchers including post graduate students and visiting fellows working across institutions. The Faculty requires a shift in focus away viewing funding simply as an exercise in undertaking an individual annual conference attendance.

### **6.1.3 Human Resources**

Undoubtedly one of the single largest contributing factors to the Faculty's lack of research advancement is the issue of human resources. The relatively junior nature of most personnel in terms of qualifications poses a considerable challenge. A number of factors present a problem in this area. Firstly the loss of senior productive researchers has been directly responsible for the downturn in research productivity over the past five years. There is no retention strategy in place to address this. Secondly the push for demographic transformation has come at a cost. While the requirement for such transformation is not being questioned the manner in which it has been applied has not been optimal. The transformation process has to be carefully managed. It requires a long term strategy because research and scholarship is a long term investment. In the university sector good scholars usually only become productive researchers after about 15 years and only about 5 years after obtaining their PhD. It stands to reason then that if senior

researchers are lost in quick succession and replaced with junior scholars that research output will plummet. The delay in staffing vacant posts is an additional and serious problem with most posts remaining vacant for up to two years. The introduction of the new Occupational Specific Dispensation for MUEs will hopefully assist with recruitment and retention; however this needs to be implemented as a matter of urgency after having been in process for a number of years.

#### **6.1.4 The Research Environment**

Environmental factors again point to the policy environment. The Asmal Report was an important contribution in highlighting the environmental flaws within the Military Academy. It underlined the fact that in an institution such as this, adequate policies, plans and structures are required. The difficulties and tensions evident in the relationship between the DoD and Stellenbosch University over many years has created an uncertain and morale sapping environment at the Military Academy. At times it would appear that the DoD does not adequately understand that the Faculty of Military Science is in fact a university faculty and therefore needs to be operated and resourced accordingly. Throughout the history the Faculty, its personnel have laboured under destructive identity confusion. The challenge of serving two such disparate masters should not be underestimated. Too many members of the Faculty have failed to internalise the values and attributes of a scholar and their teaching and research are the poorer for this. Furthermore, the need for security within the DoD has introduced another layer of bureaucracy to the research process and poses a problem both in terms of collaboration and publication. An additional factor has been the constant threat of closure throughout the Military Academy's history. This has not been helpful in moving the institution forward or in creating a dynamic and productive staff environment.

## **6.2 MAIN FINDINGS OF THE STUDY**

Perhaps the most salient point at this juncture is that the Faculty of Military Science's research capacity and output cannot be viewed purely in terms of success or failure. There have been constraints and setbacks whilst at the same time there have been successes.

### **6.2.1 The Positive Factors**

On the positive front there have been real gains, particularly in the period 2000 to 2005. Over the past decade in particular, noteworthy strides have been made with regard to research. During this time research was institutionalised under Prof Malan who entrenched research policy, improved service conditions and the expanded the role of the Faculty Research Committee. Under his successor Prof Van Harte there was an equally important emphasis on

human capacity building and the requirement of building research networks and institutional capacity. The foremost gains can be summarised as follows:

- The formulation and implementation of human resource policies which identify research as a primary activity for all full time Faculty members.
- The relocation of *Scientia Militaria* to the FMS and its subsequent accreditation.
- Greater mobility with regard to the attendance and presentation of papers both nationally and abroad.
- The appointment of academic assistants in the Faculty and increased enrolments in the MMil programmes.
- Increased international and national outreach through the hosting of a number of conferences by the Faculty.
- The increased research output in accredited journals and books during the period 2000 to 2009.
- The increase in the number of professors in the Faculty and members holding doctorates.
- Two members of the Faculty qualified for NRF research ratings during the past five years, indicating that the potential to succeed exists.

### **6.2.2 The Negative Factors**

Unfortunately the negative factors appear to outweigh the positives in terms of their effect and influence and they have been discussed at length. The principal constraints can be summarised as:

- The dysfunctional relationship between Stellenbosch University and the Department of Defence. This partnership has never been adequately developed within the confines of an extensive policy framework. To date the agreement between the parties has sought to regulate financial matters, degree requirements and termination dates in particular. However issues such as staff performance and promotion, research production (and subsequent points for eg: “who owns the research? ie SU or the DoD”), security concerns and the like need to be properly addressed and catered for within agreed policy guidelines.
- The lack of individual accountability in terms of research output due to the problematic application of the performance management system.
- The far reaching financial constraints. This has numerous negative consequences most notably with regards to facilities connected to research such as teaching replacements, the library, technology platform and laboratories.

- Human resource management practices. The human capital in the Faculty needs to be adequately developed and retained.
- The lack of purposeful vision on the part of the Department of Defence with regard to the role and nature of the Military Academy. Coupled with this is the insufficient emphasis placed on military education and research within the Department.
- The lack of an adequate research management strategy at Faculty which incorporates developmental goals, focus areas, targets and a review system.
- The renewed downwards trend in the FMS Research Output and Masters Degree graduates.
- The absence of a doctoral degree programme in the FMS.
- The absence of a teaching fellows programme and formal institutional partnerships.
- The decline of CEMIS.

### **6.3 CONCLUSION**

In conclusion it is postulated that investment, reforms, accountability and determination will be required in the future if the Faculty of Military Science is to reach a level of research performance which is on a par with the other Faculties at Stellenbosch University. This is both possible and desirable but will also need to be accompanied by honest introspection within the Faculty itself. Research management and primarily, accountability coupled with reward, has not been optimal in the Faculty but so too the various attempts to innovate by the former Deans have been met with stout resistance. As one laments “An academic vibrancy to have brown bag lunches to discuss research projects, or greater attendance of faculty members at colloquiums where postgraduate or faculty members presented their research proposals remained problematic.” (Van Harte, 2012)

Various external pressures have also exercised a rather damaging effect on the Faculty. The ongoing personnel crisis is the most serious of these. The major casualty of this moribund bureaucracy has been CEMIS. Despite having eventually been restaffed, the management board of CEMIS has been remiss in failing to identify the reasons for the subsequent lack of accredited research production and introduce the necessary corrective measures. The decline of CEMIS is one of the single largest reasons for the negative growth in the Faculty’s research output post 2006. CEMIS is an essential component of the Faculty and holds the key to bridging the research divide between the Faculty and the Department of Defence. The successful functioning of this entity is critical to the Faculty’s future development.

It is furthermore submitted that in the absence of real and tangible innovations such as the introduction of research fellowships and post-doctoral positions that the FMS will struggle to move onto a higher level of knowledge production. At present even though it may be possible to improve the quantity of the annual research output, knowledge production needs to move beyond the level of the individual into a greater more networked, visible and collaborative space.

It is apparent that the policy environment requires restructuring. Both at Faculty level but perhaps more importantly, at the higher level between the University and the DoD. Certainly the Faculty needs to work more closely with the Division for Research Development in articulating and implementing workable strategies and solutions. This will yield faster and more tangible results than will waiting upon the wheels of government bureaucracy to grind slowly forward. It goes without saying then that far more emphasis will have to be placed on raising funds through third stream income and external research funding. So too the expansion of the Masters and PhD programmes to include student enrolments from outside the DoD will provide much needed capital and supervision expertise.

High performance and impact research are essential to cementing the Faculty's future as an indispensable and respected entity within both the University and the Department of Defence. A start has been made on the road to creating a research orientated Faculty. However at this point it remains just that – a start. Concrete planning and strategies are required to determine which interventions are required to move to the next level and beyond. In the immortal words of Winston Churchill: "Now this is not the end. It is not even the beginning of the end, but it is, perhaps, the end of the beginning."<sup>20</sup>

---

<sup>20</sup> Speech by Churchill given at Mansion House on November 10, 1942.

## BIBLIOGRAPHY

- Armaments Corporation of South Africa. (2011) *Annual Report 2010-2011*. Pretoria.
- Auf der Heyde, T. and Mouton, J. (2007) *Review of the NRF Rating System; Synthesis Report*. Report Commissioned by Higher Education South Africa. National Research Foundation, DST, Pretoria.
- Badsha, N. and Cloete, N. (2011) *Higher Education: Contribution for the NPC's National Development Plan.* Centre for Higher Education Transformation, Commissioned Papers.
- Batchelor, P., Dunne, P and Saal, D. (1999) *Military Spending and Economic Growth in South Africa*. SACDI Defence Digest, Working Paper No 6.
- Boshoff, N. & Mouton, J. (2003). "Science policy indicators". Chapter 9 (pp. 208-233) in *Human Resources Development Review 2003: Education, Employment and Skills in South Africa*, by A Kraak & H Perold (eds). Cape Town: HSRC Press and East Lansing: Michigan State University Press.
- Botha, D. (2003) *South Africa's Defence Industry -Charting A New Course?* Institute for Security Studies, Occasional Paper 78, September 2003.
- Cawthra, G. (2003) Security Transformation in Post-Apartheid South Africa. (pp. 31 – 56) In: Cawthra, G. and Luckham, R. (Eds), *Governing Insecurity, Democratic Control of Military and Security establishments in transitional democracies*. Zed Books, London and New York.
- Centre for Mediation in Africa. (2012) *Activity Report, No. 1: September 2011 – February 2012*. University of Pretoria, Pretoria.
- Centre For Mediation In Africa. (2012) *Activity Report No. 2: March - August 2012*. University of Pretoria, Pretoria.
- Cherry, M. (2010) South African Science: Black, White and Grey.' *Nature*, Vol 463, 726-728.
- Cilliers, J. (1996) Defence Research and Development in South Africa – The role of the CSIR. *African Security Review*, Vol 5, No 5 39-52.

Cilliers, J. (2003) A Brave new South African Defence Industry? *African Security Review*, Vol 12, No 4.

Cilliers, J. (2009) *Adaptation from a speech by Dr. Jakkie Cilliers*. In the ISS Annual Report and the launch of African.org. Pretoria.

Council for Scientific and Industrial Research. (2011) *Annual Report 2010-2011*. CSIR, Pretoria.

Council for Scientific and Industrial Research, *Sciencescope*, Quarterly Publication of the CSIR, Vol 4, No 4, May 2010.

Council for Scientific and Industrial Research (2005) *Technology that Transforms- Creating the defence science, engineering and technology capability of the future*. CSIR, Pretoria.

Department of Defence. (2011) *Annual Report 2010-2011*. Pretoria.

Department of Arts, Culture, Science and Technology. (1996) *White Paper on Science and Technology - Preparing for the 21<sup>st</sup> Century*. Pretoria.

Dunne, J.P. (2006) The making of Arms in South Africa. *The Economics of Peace and Security Journal*. Vol 1, No 1, 40-48.

Du Toit, A. (2001) *Revisiting academic freedom in post-apartheid South Africa: current issues and challenges*. Centre for Higher Education Transformation, Commissioned Papers.

Ekron, Z. (2004) Saldanha – ‘Torn in two. *www.news24.com*, 25 August 2004.

Engelbrecht, L., (2012) Defence Review re-orders SANDF technology priorities. *Defence Web*, 17 April 2012.

Engelbrecht, L., (2012) *SA Army explores future technology*. *Defence Web*, 20 April 2012.

Esterhuyse, A.J. “Professional Military Education in the South African National Defence Force: The role of the Military Academy.” Doctoral Thesis, Stellenbosch University, 2007.

Fokkens, A.M. “*Idealised Redesign: The South African Military Academy by the Year 2030.*” Unpublished M MPil Thesis, Stellenbosch University, 2011.

Gerardy, J. (2010) Reboot for SA's defence industry. *Mail and Guardian*, 29 September 2010.

Gibson, E. (2004) Saldanha - a 'racial hotspot'. *www.news24.com*, 8 October 2004.

Gibson, E. (2004) Military Academy enquiry upset. *www.news24.com*, 19 October 2004.

Gibson, E. (2004) Saldanha academy 'the loser'. *www.news24.com*, 12 April 2005.

Gwatyu, M.M. (2005) Academy 'still too white'. *www.news24.com*, 01 September 2005.

Heinecken, L. and Gueli, R. (2005) The cultural gap between the Military and the Parent Society in South Africa. In Carforio, G. and Kuemmel, G. (Eds) *Military Missions and their Implications Reconsidered: The Aftermath of September 11<sup>th</sup>* (pp 193-212). Elsevier, Amsterdam.

Heinecken, L. and Visser, D. (2008) Officer Education at the South African Military Academy – Social Science but no Sociology. *Armed Forces and Society*, Vol 35, No 1, 145-161.

Henk, D. (2004) Guns and Butter - Reframing South Africa's arms industry. *African Security Review*. Vol 13(3), pp 13-31.

Ittman, H.W. van Dyk, F.E. Meyer, I.A. and Van Rensburg, S.J.J. (2007) Operations research at CSIR: A brief history through cases. *Orion*. Vol 23, No 1, 73-88.

Institute for Security Studies, (2011) *ISS Annual Review 2011*, ISS, Midrand.

Jansen, J.D. (2002) Mode 2 Knowledge and Institutional Life: Taking Gibbons on a walk through a South African University. *Higher Education*, No 43, 507-521.

Jansen, J.D. (2008) Jansen Report, *The Military Academy*, External Consultancy Report – Curriculum Review, Faculty of Military Science, Stellenbosch University. Johannesburg.

Kahn, M. (2006) After Apartheid – The South African National System of Innovation: from constructed crisis to constructed advantage? *Science and Science Policy*, Vol 33, No 2, 125-136.

Kahn, M. (2008) Science and Technology Policy. In: Kraak, A. & Press, K. (Eds). *Human resources development review 2008: education, employment and skills in South Africa* (pp 134-160). HSRC Press, Cape Town.

Kahn, M. (2011) A Bibliometric Analysis of South Africa's Scientific Outputs – some trends and implications. *South African Journal of Science*, 107 (1/2), 6 pp.

Kaplan, D.E. (1997) Reversing the Brain Drain: The Case for Utilising South Africa's Unique Intellectual Diaspora. *Science Technology & Society*. 2, 387-406.

Kenkel, K.M. (2006) Civil Society Participation in Defence Policy Formulation: Academic Experts and South Africa's Post-Apartheid Defence White Paper. *Journal of Security Sector Management*, Volume 4, No 1, 2-26.

King, D.A. (2004) The scientific impact of nations - What different countries get for their research spending. *Nature*, Vol 430, 15.

Kotze, E. & Steele, R. (1995) Civilian Participation in the Education and Development of Officers. *African Security Review*, Vol 4, No 4, 21-30.

Kwinn, M.J. (2004) *Analysis of the Research and Studies Program at the United States Military Academy*. Operations Research Center Of Excellence, Technical Report No: Dse-Tr-0426, Dtic #: Ada426262, United States Military Academy, West Point, New York. September 2004, West Point, New York.

Lamprecht, S. (2011) Ooreenkoms met Afrika Forum gesluit., [www.diehooprojek.co.za](http://www.diehooprojek.co.za), 11 April 2011,

Last, D., Emelifeonwu, D. and Osemwegie, L. (2012) *Security Education in Sub-Saharan Africa: Prospects for Regional Human Security*. Communities Discussion Paper for CIGI Africa Initiative, May 2012.

Lloyd Brown, P.E., Burkhardt, J., Joyce, P, Moran, A and Schubbe, J. (2009) Research at the United States Naval Academy: More Than Meets the Eye. *ITEA Journal*. 30, 202–208.

Malan, D.J. (2003) *Annual Research Report - 2002*. Faculty of Military Science, Stellenbosch University, Saldanha.

Malan, D.J. (2003) *Research Plan Faculty of Military Science.- 2003*. Faculty of Military Science, Stellenbosch University, Saldanha.

Malan, D.J. (2005) *Appendix to 2004 Annual Research Report*. Faculty of Military Science, Stellenbosch University, Saldanha.

Malan, D.J. (2005) *Faculty of Military Science - Annual Research Report - Appendix to 2004 Annual Research Report*. Faculty of Military Science, Stellenbosch University, Saldanha.

Marais, H.C. (2007) *Impact of the NRF evaluation and rating system – a review*. ST&I Network. Pretoria.

Marais H.C. & Pienaar, M. (2010) Evolution of the South African Science, Technology and Innovation System 1994-2010: An exploration. *African Journal of Science, Technology, Innovation and Development*, Vol. 2, No 3, 82-109.

Masondo, S. (2007) Masondo Report, *Research Development and Capacity Building Initiatives in the Faculty of Military Science at Stellenbosch University's Military Academy*. Saldanha.

Morris, P.J. (2008) Morris Report, *Factors influencing Staff Retention at the Faculty of Military Science*. Peter J. Morris Human Resources Consulting Service, Stellenbosch.

Michael, S. (2002) *The Role of NGOs in Human Security*. Working Paper #12, The Hauser Center for Nonprofit Organizations and The Kennedy School of Government, Harvard University, November 2002.

National Conventional Arms Control Committee (1999) *White Paper on South African Defence Related Industries*, December 1999, Pretoria.

Neethling, T. (2006) The relevance of Political Sciences at the South African Military Academy: context, comparative perspectives and reflections. *Strategic Review for Southern Africa*. Vol 28(1), 124-140.

Nzimakwe, T.I. (2008) South Africa's NGOs and the Quest for Development. *International NGO Journal*, Vol. 3 (5), 90-97.

Parliamentary Portfolio Committee on Defence. (2005) (Asmal Report), Portfolio Committee On Defence Draft Report To The National Assembly On The South African Military Academy, *Report to the National Assembly*. Parliament, Cape Town, April 2005.

Parliamentary Portfolio Committee on Defence. (2007) (Tobias Report), Portfolio Committee on Defence Report on Oversight visit to Simon's Town Naval Base and the South African Military Academy at Saldanha: 07 – 08 May 2007. *Report to the National Assembly*. Parliament, Cape Town, 9 October 2007.

Pouris, A. (2012) Scientometric Research in South Africa and successful Policy Instruments. *Scientometrics*, Volume 91, 2, 317 - 325

Prozesky, H. (2006) Gender differences in the journal publication productivity of South African academic authors. *South African Review of Sociology*. 37(2), 87-122.

Rowlands, I. (2005) Emerald Authorship Data, Lotka's Law and Research Productivity. *New Information Perspectives*, Vol 57, No 2, 5-10.

RSC Report by the National Research Foundation (2008) *2007 Review of the NRF Rating System for the Evaluation and Rating of the Individual Researchers – Findings and Recommendations*. National Research Foundation, DST, Pretoria.

Southern African Defence & Security Management Network. (2006) Annual Report 2005/06, SASDEM, Johannesburg.

Schlenther, B. (2009) Armscor and Denel: A History of South Africa's Arms Industry. *Ex Plus Ultra*, 1, 59-80.

Seegers, A. (2010) The new security in democratic South Africa: a cautionary tale. *Conflict, Security & Development*, No 10, Vol 2, 263-285.

South African 2012 Defence Review Commission. (2012) *Consultative Draft Document of the South African Defence Review 2012*. 12 April 2012, Pretoria.

South African Institute of International Affairs. (2010) *SAIIA Annual Report 2010*, SAIIA, Johannesburg.

Staff Reporter. Saldanha: Changing too slowly. *www.news24.com*, 9 August 2004.

Stellenbosch University. (2008) *Research Policy of Stellenbosch University*. Division for Stellenbosch University, Research Development, Stellenbosch University.

Stellenbosch University. (1993) *Stellenbosch University Annual Research Report - 1992*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1994) *Stellenbosch University Annual Research Report - 1993*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1995) *Stellenbosch University Annual Research Report - 1994*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1996) *Stellenbosch University Annual Research Report - 1995*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1997) *Stellenbosch University Annual Research Report - 1996*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1998) *Stellenbosch University Annual Research Report - 1997*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1999) *Stellenbosch University Annual Research Report - 1998*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2000) *Stellenbosch University Annual Research Report - 1999*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2001) *Stellenbosch University Annual Research Report - 2000*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2002) *Stellenbosch University Annual Research Report - 2001*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2003) *Stellenbosch University Annual Research Report - 2002*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2004) *Stellenbosch University Annual Research Report - 2003*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2005) *Stellenbosch University Annual Research Report - 2004*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2006) *Stellenbosch University Annual Research Report - 2005*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2007) *Stellenbosch University Annual Research Report - 2006*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2008) *Stellenbosch University Annual Research Report - 2007*. Stellenbosch University, Stellenbosch University, Stellenbosch.

Stellenbosch University. (2009) *Stellenbosch University Annual Research Report - 2008*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2010) *Stellenbosch University Annual Research Report - 2009*. Stellenbosch University, Stellenbosch.

Stellenbosch University. Factbook (2011) PART 4: Selected personnel statistics for 2011. Division for Institutional Research and Planning. Stellenbosch University Stellenbosch.

Stellenbosch University. Factbook (2011) PART 2: Degrees, diplomas and certificates awarded in 2011. Division for Institutional Research and Planning. Stellenbosch University Stellenbosch.

Stellenbosch University. (1990) *Universiteit Stellenbosch Jaarboek 1990, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1991) *Universiteit Stellenbosch Jaarboek 1991, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1992) *Universiteit Stellenbosch Jaarboek 1992, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1993) *Universiteit Stellenbosch Jaarboek 1993, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1994) *Universiteit Stellenbosch Jaarboek 1994, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1995) *Universiteit Stellenbosch Jaarboek 1995, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1996) *Universiteit Stellenbosch Jaarboek 1996, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1997) *Universiteit Stellenbosch Jaarboek 1997, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1998) *Universiteit Stellenbosch Jaarboek 1998, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1999) *Universiteit Stellenbosch Jaarboek 1999, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2000) *Universiteit Stellenbosch Jaarboek 2000, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2001) *Universiteit Stellenbosch Jaarboek 2001, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2002) *Universiteit Stellenbosch Jaarboek 2002, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2003) *Universiteit Stellenbosch Jaarboek 2003, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2004) *Universiteit Stellenbosch Jaarboek 2004, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2005) *Universiteit Stellenbosch Jaarboek 2005, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2006) *Universiteit Stellenbosch Jaarboek 2006, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2007) *Universiteit Stellenbosch Jaarboek 2007, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2008) *Universiteit Stellenbosch Jaarboek 2008, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (2009) *Universiteit Stellenbosch Jaarboek 2009, Deel 1 Algemeen*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1991). *Universiteit Stellenbosch Navorsings Verslag -1990*. Stellenbosch University, Stellenbosch.

Stellenbosch University. (1992). *Universiteit Stellenbosch Navorsings Verslag -1991*. Stellenbosch University, Stellenbosch.

Stellenbosch University News. Experts lay foundation for SIGLA's future. November 30, 2011.

University of New South Wales. (2011) *UNSW@ADFA Research and Research Training Report*. UNSW@ADFA, Canberra, ACT.

University of New South Wales. (2005) *UNSW@ADFA Research and Research Training Management Plan 2005 – 2009*. UNSW@ADFA, Canberra, ACT.

United States Naval Academy. (2011) *Research By Naval Academy Faculty*. ACDEANINST 3920.1M 8 June 2011, Academic Dean and Provost Instruction 3920.1 M, From: Academic Dean and Provost, Annapolis, Maryland.

United States Air Force Academy. (2011) *Research at the United States Air Force Academy*. USAF, Colorado Springs.

Visser GE, Kapp PH, Kotze JS. (1999) Die Dekaan van die Militêre Akademie in historiese perspektief. [The Dean of the Military Academy in historical perspective.] *Historia*, 44(2): 307-327.

Visser, G.E. Die Geskiedenis van die Suid-Afrikaanse Militêre Akademie 1950-1990. *Supplementa ad Scientia Militaria*. Published Doctoral Thesis, Stellenbosch University, 2000.

Visser, G.E. (2004) The South African Military Academy's Educational Offering and the National Threat Perception. *Scientia Militaria*, Vol 32, No 1, 61-88.

Visser, G.E. (2007) *Report: Review of FMS research plan within the context of curriculum development and the notion of an ideal military scholar*. March 2007. Faculty of Military Science, Stellenbosch University, Saldanha.

Visser, G.E. (2009) Civilian-Military interaction on the Matie campus: the 'Battle of Wilgenhof', 1957. *Scientia Militaria*, Vol 37, No 2, 82-106.

Vreÿ, F. (2004) Paradigm Shifts, South African Defence Policy and the South African National Defence Force: From Here to Where? *Scientia Militaria*, Vol 32, No 2, 89-188.

Walwyn, D. (2006) 'The South African National System of Innovation: Structures, Policies and Performance. In National Advisory Council on Innovation. *Background report to the OECD Country Review of South Africa's National System of Innovation*. NACI, Pretoria.

Williams, R. (1995) Between a Rock and a Hard Place: Morality and the Development of a Professional Military Ethic. *African Security Review*, Vol 4, No 3.

## **Interviews**

Cowling, N. (2010) (Interview with Mr F. Anderson, Researcher DERI, CSIR) Stellenbosch. 5 December 2010.

Cowling, N. (2010) (Interview with the Director SANDF Documentation Service, Ms L. Jooste.) Pretoria. 20 Dec 2010.

Cowling, N. (2010) (Interview with Mr CEO DERI, ARMSCOR, Mr K. Hanafey) Pretoria. 21 Dec 2010.

Cowling, N. (2010) (Interview with Mr J. Strydom, Strategic Research Manager, CSIR Defence, Peace, Safety and Security) Pretoria. 22 Dec 2010.

Cowling, N. (2012) (Interview with Prof G.E. Visser) Saldanha. 14 August 2012.

Cowling, N. (2012) (Interview with Prof D.J. Malan) Stellenbosch. 14 September 2012.

Cowling, N. (2012) (Interview with Prof E.L. van Harte) Durbanville. 25 September 2012.

Cowling, N. (2012) (Interview with Prof K. Kotzé) Saldanha. 2 October 2012.

---