University of Southampton

FACULTY OF LAW, ARTS AND SOCIAL SCIENCES

School of Management

Centre for Higher Education Management and Policy (CHEMPaS)

Entrepreneurship in Higher Education: A Case Study of the University of Wollongong

by

James Wilbur Langridge

This thesis is presented as part of the requirements for the award of the Degree of Doctor of Business Administration of the University of Southampton

August 2006

Correction sheet

Abstract

UNIVERSITY OF SOUTHAMPTON
ABSTRACT
FACULTY OF LAW, ARTS AND SOCIAL SCIENCES
SCHOOL OF MANAGEMENT
CENTRE FOR HIGHER EDUCATION MANAGEMENT AND POLICY (CHEMPAS)
Doctor of Business Administration
ENTREPRENEURSHIP IN HIGHER EDUCATION: A CASE STUDY OF THE UNIVERSITY OF WOLLONGONG
By James Wilbur Langridge

In 1998, Burton Clark published his seminal work, *'Creating Entrepreneurial Universities: Organizational Pathways of Transformation' (1998)* arising out of an international study of five European Universities: Warwick, Twente, Strathclyde, Chalmers and Joensuu. His study explored the significant research question 'How do universities, by means of entrepreneurial action, go about transforming themselves?'

The major findings of the research gave rise to what Clark describes as pathways of transformation and in his view, 'five elements constitute an irreducible minimum'. (Clark 1998, p.5) These are defined as:

- A strengthened steering core;
- An expanded developmental periphery;
- A diversified funding base;
- A stimulated academic heartland; and
- An integrated entrepreneurial culture.

The key research question was defined as follows: Using the five headings developed by Clark (1998), which are termed the pathways of transformation, is the UOW an entrepreneurial university?

The research, both quantitative and qualitative, was conducted as a case study. The quantitative study involved the use of an online survey and the findings of the sample group represent the totality of staff perception. The qualitative study, using a semi-structured interview program, again focused on the UOW and the extent to which a sample of its academic staff and senior executive and academic managers, perceive the UOW to be an entrepreneurial university.

The findings of the research, based upon the case study, supported by the views and perceptions of its staff, support the contention that the UOW is an entrepreneurial university, as characterized by Clark's (1998) pathways of transformation. However, they also provide insights into the extent to which the UOW adheres to these pathways of transformation, the critical nature of the leadership, in particular the role of the Vice-Chancellor, and how different staff constituencies, including gender, perceive the entrepreneurial culture of the UOW.

Table of Contents

Correction sheet ..... *ii*

ABSTRACT ..... **III**

TABLE OF CONTENTS ..... **IV**

LIST OF TABLES ..... **VII**

LIST OF FIGURES ..... **VIII**

AUTHOR'S DECLARATION ..... **IX**

ACKNOWLEDGEMENTS ..... **X**

ABBREVIATIONS ..... **XII**

CHAPTER 1: INTRODUCTION **1**

OVERVIEW OF THE CHAPTER 1
BACKGROUND TO THE STUDY 1
THE RESEARCH PROBLEM 2
PURPOSE OF THE STUDY 7
THE SIGNIFICANCE OF THE STUDY 8
RESEARCH METHODS 10
POTENTIAL OUTCOMES 12
LIMITATIONS 13
PLAN OF THE THESIS 13
SUMMARY 14

CHAPTER 2: LITERATURE REVIEW **16**

OVERVIEW OF THE CHAPTER 16
INTRODUCTION 17
CLARK'S 'PATHWAYS OF TRANSFORMATION' 19
i. The Strengthened Steering Core *19*
ii. The Expanded Development Periphery *26*
iii. The Diversified Funding Base *29*
iv. The Stimulated Academic Heartland *35*
v. The Integrated Entrepreneurial Culture *39*
THE ENTREPRENEURIAL UNIVERSITY 42
LEADERSHIP 47
SUMMARY 51

CHAPTER 3: RESEARCH METHODOLOGY **55**

OVERVIEW OF THE CHAPTER 55
RESEARCH DESIGN 55
Overview *55*
Introduction *55*
The Case Study Approach *57*
Limitations of the Case Study Method *60*
The Case Study Design *61*
The Mixed Mode Approach *64*
Issue of Sample Size *66*
Threats to Validity *66*
DESIGN PHASES AND PROCEDURES 69
Phase One: Literature Review and Document Analysis *69*
Phase Two: The Survey *71*
Phase Three: Sample Determination *78*
Phase Four: Administering the Survey *80*
Phase Five: Data Collection and Management *80*
Phase Six: Semi-structured Interviews *83*
Phase Seven: Analysis of the Dataset *85*
SUMMARY 88

CHAPTER 4: CASE STUDY – THE UNIVERSITY OF WOLLONGONG..... 90

OVERVIEW OF THE CHAPTER..... 90
INTRODUCTION..... 90
Goal 1: Research Intensive..... *92*
Goal 2: Engaged with Regional Community..... *99*
Goal 3: National Leader in Higher Education..... *101*
Goal 4: Develop an International Reputation..... *102*
ILLAWARRA TECHNOLOGY CORPORATION LTD..... 105
CULTURE OF THE UOW..... 112
THE ART OF MANAGEMENT AT THE UOW..... 117
THE UOW APPROACH TO HUMAN RESOURCES..... 119
LEADERSHIP AT THE UOW..... 121
SUMMARY..... 124

CHAPTER 5: RESULTS & ANALYSIS..... 126

OVERVIEW..... 126
INTRODUCTION..... 126
THE SAMPLES..... 127
The Quantitative Sample..... *127*
The Qualitative Sample..... *132*
RESEARCH QUESTION ONE: A STRENGTHENED STEERING CORE..... 136
Online survey..... *136*
Semi-structured interviews..... *142*
RESEARCH QUESTION TWO: AN EXPANDED DEVELOPMENTAL PERIPHERY..... 144
Online survey..... *144*
Semi-structured interviews..... *150*
RESEARCH QUESTION THREE: A DIVERSIFIED FUNDING BASE..... 152
Online survey..... *152*
Semi-structured interviews..... *158*
RESEARCH QUESTION FOUR: A STIMULATED ACADEMIC HEARTLAND..... 159
Online survey..... *159*
Semi-structured interviews..... *165*
RESEARCH QUESTION FIVE: AN INTEGRATED ENTREPRENEURIAL CULTURE..... 167
Online survey..... *167*
Semi-structured interviews..... *173*
RESEARCH QUESTION SIX: THE ENTREPRENEURIAL SCALE..... 175
Online survey..... *175*
ENTREPRENEURIAL SUBSCALES..... 180
ONLINE SURVEY – ACADEMIC STAFF..... 184
SEMI-STRUCTURED INTERVIEWS – SEAM AND ACADEMIC STAFF..... 188
SUMMARY..... 190

CHAPTER 6: DISCUSSION AND RECOMMENDATIONS..... 191

OVERVIEW..... 191
PURPOSE OF THE STUDY..... 191
DISCUSSION AND CONCLUSIONS..... 192
Online Survey..... *193*
Semi-structured Interviews..... *193*
Leadership..... *194*
Research Question 1..... *195*
Research Question 2..... *196*
Research Question 3..... *197*
Research Question 4..... *198*
Research Question 5..... *199*
Research Question 6..... *200*
SIGNIFICANCE OF THE STUDY..... 201
FURTHER RESEARCH..... 202
SUMMARY..... 203

APPENDICES..... 204

APPENDIX 1: SAMPLE EMAIL: ALL STAFF..... 204
APPENDIX 2: ONLINE STAFF SURVEY..... 205

APPENDIX 3: SAMPLE EMAIL: SEMI-STRUCTURED INTERVIEWS 212
APPENDIX 4: STAFF INTERVIEWED 213
APPENDIX 5: SAMPLE INTERVIEW 214
LIST OF REFERENCES 218

List of Tables

Table 1 Nelson reform policy changes: Our Universities: Backing Australia's Future 5
Table 2 Funding trends for Australian and UK Universities 32
Table 3 Survey design: Academic and Administrator Panel 72
Table 4 Attributes of the survey instrument 74
Table 5 Pilot study: test/re-test Intra-test reliability and correlation 76
Table 6 Pilot study: test/re-test mean and standard deviation 77
Table 7 Pilot study Q6: mean and standard deviations for test and retest 77
Table 8 Email communication to UOW staff 80
Table 9 Likert and Semantic Differential coding scales 81
Table 10 Demographic data coding 82
Table 11 Academic semi-structured interviewees 83
Table 12 Semi-structured interview questions 84
Table 13 Subscales calculated for analysis 87
Table 14 A summary of the research questions, variables and analyses 89
Table 15 UOW: Research income by type, ($M) 2000-04 93
Table 16 Discipline area for faculty survey responses for analysis 127
Table 17 Responses by staff category and gender and UOW staff composition 128
Table 18 Responses by staff category, gender and UOW staff composition 128
Table 19 Response by UOW controlled entity 128
Table 20 Response by UOW faculty 129
Table 21 Survey responses: semantic differential questions 131
Table 22 Survey responses: likert questions 131
Table 23 Semi-structured interviews: top 10 word grouping frequencies 133
Table 24 Semi-structured interviews: top 20 word frequencies 134
Table 25 Semi-structured interviews: word count for each pathway 134
Table 26 Semi-structured interviews: word count for each pathway 135
Table 27 Semi-structured interviews: top 5 word grouping frequencies 135
Table 28 Semi-structured interviews: top 10 word frequencies 135
Table 29 Research question one 136
Table 30 Mean (+ sd) for research question one, by gender 140
Table 31 Mean (+ sd) for research question one, by staff category and gender 141
Table 32 Research question two 144
Table 33 Mean (+ sd) for research question two, by gender 148
Table 34 Mean (+ sd) for research question two, by staff category 149
Table 35 Research question three 152
Table 36 Mean (+ sd) for research question three, by gender 156
Table 37 Mean (+ sd) for research question three, by staff category 157
Table 38 Research question four 160
Table 39 Mean (+ sd) for research question four, by gender 163
Table 40 Mean (+ sd) for research question four, split by staff category 164
Table 41 Research question five 167
Table 42 Mean (+ sd) for research question five, by gender 171
Table 43 Mean (+ sd) for research question five, by staff category 172
Table 44 Research question six: Semantic Differential Scale 175
Table 45 Mean (+ sd) for research question six, by gender 178
Table 46 Mean (+ sd) for research question six, by staff category 179
Table 47 Cronbach's Alpha scores for subscale calculations 180
Table 48 Mean (+ sd) for research subscales 181
Table 49 Mean (+ sd) for subscales, by staff category and gender 183
Table 50 Academic staff: responses and staff composition 184
Table 51 Question 3: Academic staff non response rate by gender 184
Table 52 Response rate for academic staff and all staff, by question 185
Table 53 A summary of the research questions, variables, analyses and findings 190
Table 54 Semi-structured interview: positions interviewed 213

List of Figures

Figure 1 Australian Universities: changing funding sources 1989-2004 31
Figure 2 Survey and interview of UOW staff 78
Figure 3 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2000 94
Figure 4 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2001 94
Figure 5 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2002 95
Figure 6 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2003 95
Figure 7 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2004 96
Figure 8 UOW: ARC grants (normalised by staff FTE), 2000-04 96
Figure 9 UOW: Research income by type (% of total), 2000-04 97
Figure 10 UOW: all revenue sources 2001-04 97
Figure 11 UOW: operating grant and international student fee revenue (2001-04) 98
Figure 12 UOW student load by funding 98
Figure 13 UOW student tuition fee income 99
Figure 14 International students as a percentage of all students at UOW (NSW and Australia) 104
Figure 15 International students as a percentage of all students at UOW (NSW and Australia) 104
Figure 16 UOWD: total annual enrolment trends, 2000-06 105
Figure 17 Overview of ITC timeline 108
Figure 18 Question one: % staff moderately and strongly agree 137
Figure 19 Question one: General and Academic staff 139
Figure 20 Question one: Female and Male staff 139
Figure 21 Question one: General and Academic staff by gender 139
Figure 22 Question one: by staff groupings 139
Figure 23 Question two: % staff moderately and strongly agree 145
Figure 24 Question two: General and Academic staff 147
Figure 25 Question two: Female and Male staff 147
Figure 26 Question two: General and Academic staff by gender 147
Figure 27 Question two: by staff groupings 147
Figure 28 Question three: % staff moderately and strongly agree 153
Figure 29 Question three: General and Academic staff 155
Figure 30 Question three: Female and Male staff 155
Figure 31 Question three: General and Academic staff by gender 155
Figure 32 Question three: by staff groupings 155
Figure 33 Question four: % staff moderately and strongly agree 160
Figure 34 Question four: General and Academic staff 162
Figure 35 Question four: Female and Male staff 162
Figure 36 Question four: General and Academic staff by gender 162
Figure 37 Question four: by staff groupings 162
Figure 38 Question five: % staff moderately and strongly agree 168
Figure 39 Question five: General and Academic staff 170
Figure 40 Question five: Female and Male staff 170
Figure 41 Question five: General and Academic staff by gender 170
Figure 42 Question five: by staff groupings 170
Figure 43 Question six: % staff moderately and strongly agree 176
Figure 44 Question six: General and Academic staff 177
Figure 45 Question six: Female and Male staff 177
Figure 46 Question six: General and Academic staff by gender 177
Figure 47 Question six: by staff groupings 177
Figure 48 Subscales: % staff moderately and strongly agree ..... **Error! Bookmark not defined.**
Figure 49 Question one: academic staff 186
Figure 50 Question two: academic staff 186
Figure 51 Question three: academic staff 186
Figure 52 Question four: academic staff 186
Figure 53 Question five: academic staff 187
Figure 54 Question six: academic staff 187

Author's declaration

I, **James Wilbur Langridge** declare that the thesis entitled ***Entrepreneurship in Higher Education: A Case Study of the University of Wollongong*** and the work presented in it are my own. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;
- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- where I have consulted the published work of others, this is always clearly attributed;
- where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
- I have acknowledged all main sources of help;
- where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
- none of this work has been published before submission;
- at the time of writing the author of this Thesis held a joint appointment at the University of Wollongong and the Illawarra Technology Corporation.

Signed _____

Dated _____

Acknowledgements

I would like to acknowledge and thank the following people:

Professor John Taylor, Director, Centre for Higher Education Management and Policy (CHEMPaS), University of Southampton who, as my supervisor, provided thoughtful advice and direction at critical times during my candidature. Despite his own caseload, he was always generous and accommodating with his time. His friendship, encouragement and advice have been critical to my endeavours.

Professor Gerard Sutton, Vice-Chancellor and Principal, University of Wollongong, who allowed me the freedom to interview academic staff and the senior leadership team of the University, and to undertake a survey of all staff at the University of Wollongong, in addition to his ready agreement to me undertaking this 'journey of a lifetime'.

Dr Brian Hickman, Chairman of the ITC Group of Companies, and George Maltby, the previous Chairman, for their ready willingness and encouragement to allow me to undertake this program of study, and to meet, in full, the fees and associated costs.

Dr Tayeb Kamali, Vice-Chancellor of the Higher Colleges of Technology, United Arab Emirates, who first gave me the idea to commence this academic journey.

Professor Chris Brink, Vice-Chancellor, University of Stellenbosch and Professor John Patterson, Deputy Vice-Chancellor (Operations), University of Wollongong who willingly 'sponsored' my original application and, together with Professor Nick van der Walt, CEO of the University of Wollongong in Dubai, offered me friendship and encouragement during difficult periods of the journey.

Professor David Steel, Associate Dean (Research), Faculty of Informatics, University of Wollongong, who provided advice and direction in relation to the construction of the survey instrument, and the staff of CEDIR, especially Daniel Judge, who converted the survey document into a web based instrument.

Ms Helen Mandl, Associate Librarian, University of Wollongong who facilitated my access to databases and to other Library resources. I am also indebted to her for her personal assistance with a range of Endnote problems, some of which were 'user inspired' due to my lack of experience.

Ms Elizabeth Phillips, Ms Jennifer Nelson, Ms Michelle Wallace and Ms Tricia Koster who, at various times, gave generously of their time to the transcription of notes and interviews, and the keying of entries into my database.

To Ms Kate Lloydhope who, despite her own significant and difficult period of illness, gave enthusiastically and generously of her time in assisting me with the layout of the Thesis, the preparation of the survey instrument, statistical analysis of the survey, the preparation of transcription notes from each of the interviews, and other assistance including editing. Kate also provided me with the overall formatting for the Thesis, in accordance with the requirements for submission.

And finally, my thanks go to my very supportive family, but especially to my wife, Helen, without whose support, patience and tolerance, I would not have completed this mission. Especially during my 18 months of ill health, Helen was there for me, despite fighting her own lifelong battle with illness. Only the recorders of eternal history, and the God in whom I trust, know the debt I owe to the bride of my youth, for sustaining me on this journey.

I salute all of the above, to whom I am indebted. The successful completion of this Thesis is a testament to their support, enduring patience, friendship, encouragement and goodwill.

For "...No man is an island, entire of itself..." John Donne

Abbreviations

Adelaide	University of Adelaide
ANU	Australian National University
ARC	Australia Research Council
AUQA	Australian Universities Quality Agency
AVCC	Australian Vice-Chancellors Committee
CDU	Charles Darwin University
CEDIR	Centre for Educational Development and Interactive Research
CGS	Commonwealth Grants Scheme
CHESSN	Commonwealth Higher Education Student Support Number
DEST	Department of Education Science and Training
EAU	Entrepreneurial and Adaptive Universities
EFTSU	Equivalent Full Time Student Unit
EUEREK	European Universities for Entrepreneurship - their Role in the Europe of Knowledge
FEE-HELP	FEE Higher Education Loan Programme
FTE	Full time equivalent
Griffith	Griffith University
HBS	Health and Behavioural Sciences
HECS	Higher Education Contribution Scheme
IMHE	Institutional Management in Higher Education
IP	Intellectual Property
IR	Industrial Relations
ISF	Indigenous Support Funding
ITC	Illawarra Technology Corporation Ltd.
ITCI	ITC International Projects Division
ITS	Information Technology Services (UOW)
JCU	James Cook University
Monash	Monash University
MQ	Macquarie University
Murdoch	Murdoch University
Newcastle	University of Newcastle
NHMRC	National Health and Medical Research Council
NPM	New Public Management
NSW	New South Wales
NTEU	National Tertiary Education Union
PELS	Postgraduate Education Loan Scheme
R&D	Research and Design
SEAM	UOW Senior Executive and Academic Managers
SVAC	Student Visa Application Charge
UniMelb	University of Melbourne
UNSW	University of New South Wales
UOW	University of Wollongong
UOWD	University of Wollongong in Dubai
UQ	University of Queensland
USyd	University of Sydney
UTas	University of Tasmania
UWA	University of Western Australia
VSU	Voluntary Student Unionism
WCA	Wollongong College Auckland
WUCS	Wollongong University College Sydney
WUCW	Wollongong University College Wollongong

Chapter 1: Introduction

Overview of the Chapter

Chapter One describes the background and purpose of the study. It provides a brief overview of the significance of the study, including the limitations and potential outcomes. Chapter One also introduces the framework and plan for the thesis.

Background to the Study

In the text *Creating Entrepreneurial Universities: Organizational Pathways of Transformation,* Burton Clark (1998) reported the outcomes of the research involving case studies of five European Universities. Clark observed that during the 1980s and 1990s, universities seemed to be under increasing pressure to reshape themselves, to modify their organizational approach and to become more adaptive and responsive to their operational environments. His study concluded that a small number of universities had "become more enterprising, even aggressively entrepreneurial". (Clark 1998, p.xiv) Clark determined, moreover, that "an entrepreneurial university, on its own, actively seeks to innovate in how it goes about its business" (Clark 1998, p.4) and developed a series of findings which he described as pathways of transformation. Clark (1998) developed five key headings for these pathways of transformation:

1. A strengthened steering core;
2. An expanded developmental periphery;
3. A diversified funding base;
4. A stimulated academic heartland; and
5. An integrated entrepreneurial culture.

Prima facie, the University of Wollongong (UOW) could be considered an entrepreneurial university within the terms of Clark's paradigm.

The Research Problem

In Australia in the early 1980s, there was a national focus on entrepreneurship and innovation. Universities were being invited to play a significant role in this national priority area but the response varied from enthusiastic involvement to total disinterest (Jones 1986). Universities in regional cities such as Wollongong and Newcastle seriously affected by the collapse of the steel industry in the early 1980s had, in addition to their national role as publicly funded research universities, been asked to play a significant role in regional development through the creation of new industries to assist in the generation of employment opportunities. Additionally a phenomenon existed specifically within what is called the developed world, but also within higher education more generally worldwide, whereby governments were pushing universities to become more self supporting and income generating, thereby leading to less reliance on traditional sources of public funding.

> One can argue that the pressure applied by successive governments for universities to contribute more effectively and immediately to wealth creation in order to justify continuing public investment has led to a normative expectation that universities should adopt a regional role in addition to their national and international missions. (Atkins, Dersley *et al.* 1999, p.98)

At the same time, Australia had a reformist Federal Labor Minister, Hon John Dawkins, who was preparing for a major reshaping of the Higher Education Sector through forced amalgamations and the creation of a Unified Higher Education System. This was to be achieved through the abolition of the binary system, which had until then, separated the 19 public universities from the Institutes of Higher Education.

Some universities are better positioned than others to adapt to such change. Their positioning may be the result of artefacts of history, educational focus, geographic location, disciplinary mix, or a number of other factors, not the least of which is the ability to recognize and respond to the changing external environment.

> Australian universities are being jolted into another universe. It's the kind of epochal change that comes along every 10-15 years: Whitlam and free education in 1974; the Dawkins reforms in 1987-1989; Howard's budget cuts in 1996, which drove accelerated overseas marketing; and now the

> Nelson reforms. Such changes are never about teaching, learning or knowledge. They are always about university fees, finances and structures. Australian policy-makers are economic determinists. Get the economic incentives right, they reason, and the best possible social and educational world will follow. (Marginson 2005, p.11)

This then forms the background in Australia for this study, which seeks to understand and evaluate how and to what extent, the UOW responded to this climate of change, subsequently gaining national recognition for its newly created reputation for entrepreneurial activity. The study also attempts to understand whether these changes have really permeated the institutional culture at the UOW.

Clark discusses the nature of universities that exhibited characteristics of adaptation and responsiveness to political and fiscal climate change, and described such institutions as 'Entrepreneurial Universities'. The findings were based on five case studies of European Universities: Warwick, Twente, Strathclyde, Chalmers and Joensuu. (Clark 1998, p.426) It is interesting to contemplate which universities might have been chosen if a theoretical framework had existed to form the basis of selection, and to what extent the five selected universities produced bias, or undue influence, over the eventual outcomes constituting the process of transformation.

Australia in particular has not been immune to changes in higher education policy as successive governments have withdrawn funding from universities and promoted a greater need for financial self sufficiency among its higher education institutions. The push for greater interactions between university-industry-government is seen as crucial for the innovative capacity of a country. (Bunders Broerse *et al.* 1999) This has been referred to as the triple helix model of interaction, and is observed to be a worldwide phenomenon across a broad range of countries including, by way of example, Portugal (Castro, Rodrigues *et al.* 2000), Sweden (Danell and Persson 2003), Brazil, Israel and Turkey (Etzkowitz 2000), Finland (Kaukonen and Nieminen 1999) and Algeria (Saad 2004). It involves a variety of methods of application and interaction, including incubation

systems, technology transfer, and various models of research accountabilities.

> Fundamental changes occurring at organizational and institutional levels within and between university, industry and government, constitute a new environment for innovation, replacing the linear model. Bilateral government-industry and university-industry ties have expanded into trilateral relationships at the regional, national and multinational levels. Encouraged by government, universities have become the key element in innovation policies through the world, as a source of technology, for both start-up firms and older companies...In the triple helix model, the knowledge base of this economy is analysed in terms of university-industry-government relations. (Etzkowitz and Leydesdorff 1998, pp.207-8)

The application of the triple helix model at the UOW, although not consciously termed this way, was through the Illawarra Technology Corporation Ltd (ITC) and is specifically examined in Chapter 4.

The UOW, from the time of its establishment as a division of the then NSW University of Technology in 1951, to its status as a college of the University of New South Wales in 1961, culminating in it being granted its own charter as the UOW in 1975, has exhibited much success in responding to its ever changing environment. This is especially evident when measured by its more recent revenue diversification, with its government block grant declining from 33.9% in 2001 to 28.2% in 2004 and its international student fees rising from 22.5% in 2001 to 28% in 2004. It is now poised again to respond to changes being enacted by the current Federal Government, through initiatives set in motion by Dr Brendon Nelson and to be continued by the new Minister for Education, Ms Julie Bishop, appointed to the position in a cabinet reshuffle in early 2006. Table 1 outlines a summary of the key initiatives announced by Minister Nelson in 2003 with the release of the public policy initiative *Our Universities: Backing Australia's Future.*

Table 1 Nelson reform policy changes: Our Universities: Backing Australia's Future

Area affected	Changes
The Commonwealth Grant Scheme	▪ University operating grants replaced by the Commonwealth Grant Scheme (CGS). Universities and the Government now negotiate annual Funding Agreements, giving the Government the capacity to determine which disciplines can be offered by universities and funding is dependent on university compliance with new workplace relations policies and governance reforms.
Postgraduate coursework students: full fee paying	▪ The Postgraduate Education Loan Scheme (PELS) was replaced by FEE Higher Education Loan Programme (FEE-HELP) in 2005. FEE-HELP loans accrue 3.5 per cent interest as well as being adjusted in line with CPI. ▪ Students can borrow a maximum of $50,000, regardless of whether their course fees exceed this amount.
Postgraduate coursework students: Higher Education Contribution Scheme (HECS)	▪ From 2005, students were restricted to five years of full time equivalent Commonwealth subsidised study before they exhausted their 'Learning Entitlements'. This is tracked through a Commonwealth Higher Education Student Support Number (CHESSN). ▪ From 2005, universities were able to charge HECS students up to 30 per cent more for their places than the previous HECS fees (except Nursing and Teaching). ▪ From 2005, HECS was replaced by the HECS Higher Education Loan Programme (HECS-HELP) which will remain interest free but adjusted for CPI. ▪ The HECS-HELP repayment threshold increased to $30,000 in 2005-06, still less than the average wage. ▪ The discount for up-front payment will be reduced from 25 to 20 per cent and the bonus for voluntary repayment will be reduced from 15 to 10 per cent.
Postgraduate research students	▪ The Research Training Scheme is to be reviewed, although there is no discussion of whether students will be consulted during this evaluation. ▪ 31 new APAs will be introduced by 2007. ▪ An additional $1 million will be allocated over four years for doctoral and postdoctoral researchers to participate in overseas specialist conferences.
Aboriginal and Torres Strait Islander postgraduate students	▪ Indigenous Support Funding (ISF) will increase by $10.4 million over three years to 2007. ▪ An Indigenous Higher Education Advisory Council will be established. ▪ Five Indigenous Staff Scholarships per year will enable academic and general staff to take leave of one year in order to undertake full time study. Priority will be given to staff undertaking postgraduate degrees. ▪ Full-time undergraduate Aboriginal and Torres Strait Islander students will be able to apply for new Commonwealth Learning Scholarships.
Postgraduate Student Associations	▪ The Government passed Voluntary Student Unionism (VSU) legislation, effective July 2006. Commonwealth funding to universities is linked to compliance.
International postgraduate students	▪ The Student Visa Application Charge (SVAC) increased from $315 to $400 on 1 July 2003; it is now $420. ▪ The Government funded 30 new international postgraduate scholarships, with 6 month durations. ▪ Additional funding has been allocated for promoting Australia as an international education destination, as well as for quality assurance.

Area affected	Changes
Postgraduate students on regional campuses	▪ Regional campuses (campuses located in a population centre with fewer than 250,000 people) will receive an additional $122.6 million over 4 years. The UOW received $4 million extra funding over the 4 year period. ▪ Funding is dependent on compliance with workplace relations policies and governance reforms. ▪ The Government will have the capacity to dictate the breadth of disciplines offered by universities, creating a funding mechanism to achieve 'specialisation by stealth'.
Postgraduate representation on university governing bodies	▪ Additional Commonwealth funding dependent on universities' compliance with new National Governance Protocols for Public Higher Education Institutions. ▪ Protocol 3 stipulates that all members of a university governing body must act solely in the interests of the university rather than as a representative of a particular constituency, and demands the removal of any member who fails to do so. This is a criticism that has been directed at student and staff representatives in earlier university governance reviews. ▪ Protocol 5 reduces the size of university governing bodies to 18 members.

Adapted from *Our Universities: Backing Australia's Future (Pearse 2003)*

The University of Wollongong (UOW) has established a growing reputation of achievement within the Australian university system, and has aspirations, through its mission statement, to be research intensive, to be regionally engaged, to be a national leader in the higher education sector and to be internationally known and respected for its scholarship, research and academic excellence. The UOW has gained a reputation within Australia for being an innovative and entrepreneurial university, winning University of the Year in both 1999-2000 and 2000-2001. (Wollongong 2002 (b), p.5) Although its Strategic Plan has mapped a vision to be known as an international research university, it is for its entrepreneurial approach in particular that the UOW has gained its reputation over the past two decades.

> The University of Wollongong is a comprehensive university which has justifiably earned an excellent reputation...through innovative and entrepreneurial approaches to meeting the needs of its communities. (AUQA 2006)

Shattock confirms that this nexus between research intensive ambitions and entrepreneurial endeavour is both appropriate and an expected outcome.

> Clearly research intensive universities have more particular opportunities to be entrepreneurial because their research strengths give them the ability to launch research initiatives, establish research partnerships with industry, exploit their research in spin off companies and derive profit from intellectual property rights. The more research active the academic staff the more likely they are to be risk takers in an academic sense and probably the more willing the institution will be to take risks on them in a financial sense. (Shattock 2005, p.20)

Growing from a small regional college of the University of New South Wales (UNSW), it is now a medium sized, national, comprehensive university with a student population of 16,000 of which 25% are international students. Responding to changes in the market, reshaping its organizational structure and diversifying its funding sources are all reasons why, prima facie, the UOW is considered an entrepreneurial university.

It is against this historical background, and the increasing acknowledgement of an entrepreneurial reputation, that the study of the UOW, outlined in the next section, was devised and constructed.

Purpose of the Study

The purpose of the study was to examine, describe and evaluate the UOW against the key characteristics of entrepreneurial universities expressed by Clark as the pathways of transformation. This study was structured using, among other factors:

- Clark's findings, summarized as pathways of transformation, and
- Clark's own description of entrepreneurial, described in the following terms: Entrepreneurial…is a characteristic of social systems that is, of entire universities and their internal departments, research centres, faculties, and schools. (Clark 1998, p.4)

The key research question was defined as follows: Using the five headings developed by Clark (1998), which are termed the pathways of transformation, is the UOW an entrepreneurial university?

The research, both quantitative and qualitative, was conducted as a case study, and employed the use of document analysis, a survey instrument and a program of semi-structured interviews. The development and implementation of a survey instrument was used to measure the perceptions of staff at the UOW, and gave rise to quantitative data. The questions were developed around each of the pathways of transformation to assess the extent to which the UOW is seen by its staff to be entrepreneurial, in the

context of Clark's five pathway headings (pathways of transformation). This mixed mode approach was designed to capture both the elements of perception, and the fact of the entrepreneurial nature of the UOW. The document analysis undertook an investigation of the facts for entrepreneurial culture and practices at the UOW, and the survey and semi-structured interviews were able to compare the perception of staff at the UOW against the five key headings within Clark's pathways of transformation.

The qualitative aspect of the study focused on the extent to which the leadership of the UOW perceived it to be an entrepreneurial university. This was achieved through semi-structured interviews with a sample of academic staff and Senior Executives and Academic Managers (SEAM) of the University, and again was designed to ascertain their views of the university to compare against the key themes of Clark's (1998) 'pathways of transformation'.

These methods enabled the measurement of the perceptions of a representative sample of the University's staff. Additionally, it allowed for the examination of the perceptions of the leadership (SEAM) at the UOW, whose job is it to work within this domain in their everyday activity.

The Significance of the Study

The essential nature of contemporary universities at the beginning of the Twenty-first Century is one of change and responsiveness to accommodate the increasing demand for relevance to society.

> Universities are part of society; they are not magically immune from the forces that have produced transformations across the globe and within Australia...These principles emphasize accountability, efficiency, performance, a role for the market where appropriate, and attention to outputs. (Coaldrake 2000, p.9)

Universities are revisiting their mission statements as they seek to sustain their central role in the development and transmission of knowledge. "In recent years increasing demands that universities be more accountable for their activities and their use of limited resources have highlighted their need to examine and question what their goals are now, and to clarify and

articulate what they should be". (Patterson 2001, p.160) But this contemporary institutional behaviour has not always been necessary.

> Characteristics of the nineteenth-century universities included their relative stability, their clear and unswerving purposes, their relatively predictable student population and teaching force, their curriculum that changed slowly and then mainly in response to changes in the development of knowledge. In the late nineteenth and twentieth centuries the pattern of British and other universities diversified, but the characteristics of each type of institution remained roughly constant. (Hannan and Silver 2000, pp.61-62)

However, the necessity for universities to embrace change, imposed by a combination of regulation and competition, is a very contemporary phenomenon.

> Another way of putting this is to say that the balance between regulation and competition in European higher education is changing. The increased number of actors in teaching, research, and 'third stream' activities has created a more competitive environment, which cannot be ignored by policymakers. What we are seeing in response, across Europe, is the emergence of regulated competition in higher education, supported by more entrepreneurial methods in the institutions concerned. (Temple and Shattock 2005, p.9)

It is within this context of changing societal expectations that the notion of entrepreneurship, as it relates to university practice and culture, has developed. It is an important issue worthy of further research and the UOW provides an appropriate basis for an in depth case study. Evidence that UOW is seen as 'entrepreneurial' in the marketplace prompted examination of insider perceptions which also sheds light on the issue of leadership.

The study is important for several reasons, including:

- its potential contribution to the further understanding of the attributes and characteristics of an entrepreneurial university, and in particular, the extent to which the UOW is seen to possess such characteristics;
- the way in which those understandings may be used and applied by the leadership (SEAM) of the UOW;
- the potential to replicate the study across other universities to assess the extent of their transformation process;
- its potential to assist in understanding the process of transformation as a contributing factor to the development of an entrepreneurial culture;

- insights which might inform educational leaders in higher education institutions, both contemporary and future, seeking to introduce reforms and innovations; and
- to provide important questions for future study.

The study also explores the extent to which particular activities were seen to make the greatest potential contribution to the fostering of entrepreneurship in universities.

Clark also provides an important justification for this study, and reinforces the decision to base it on a major case study of the UOW. "Universities have to be more entrepreneurial, in a word, more capable of finding new ways to proceed that can be mixed with traditional procedures". (Clark 1996, p.426)

It was also thought that one of the most noteworthy outcomes of the research project, in addition to providing valuable insights for the current leadership of the UOW (SEAM), might in fact be the potential application of the analysis of the UOW to other universities.

> While generalisability is not a primary concern in case study research, the 'testing' of ideas (developed in one place) in other sites can support arguments for the legitimacy of case studies in terms of highlighting common problems, issues and resolution initiatives across contexts. (MacPherson, Brooker *et al.* 2000, p.56)

But assessing and determining a process for the implementation of such application is not part of the scope of this study.

A key aim of the case study, therefore, was to determine the extent to which the UOW is seen by its staff to have an entrepreneurial and innovative culture, using the five key headings developed by Clark to describe his pathways of transformation, and a robust and comprehensive methodological approach was adopted to enable such a judgment to be made.

Research Methods

The research methodology is based upon the case study approach. Yin describes a case study as "an empirical inquiry that investigates a

contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident". (Yin 1994, p.13) The selection of this methodology, as being the most appropriate approach to the key research question, is supported by the views of a number of writers in the field of qualitative research. (Platt 1992; Yin 1992; Yin 1994; McDonnell, Lloyd Jones *et al.* 2000; Sullivan 2000)

According to Clark, "case study narratives additionally weave uniqueness around common elements and their amplifying variations". (Clark, 2005)

The study combines qualitative and quantitative investigation within the case study methodology. The quantitative characteristic of the study involves the use of a survey instrument with both Likert style questions and semantic differential questions which produces data for analysis. This approach is supported by Yin, when suggesting that, "we also can use more than one strategy in any given study (for example, a survey within a case study or a case study within a survey). To this extent the various strategies are not mutually exclusive". (Yin 1994) The quantitative research model was designed in collaboration with the Faculty of Informatics, University of Wollongong to avoid possible subjectivity.

The qualitative aspect of the study includes a series of semi-structured interviews with a sample of academic staff and the SEAM of the UOW, which were analyzed using the process of content analysis. As Yin asserts, "even though the case study is a distinctive evaluation method, it can be used in combination with other methods". (Yin 1992, p.137) The technique of participant-observation was employed with the semi-structured interviews. At the time of writing, the author of this thesis held a joint appointment at the University of Wollongong and the Illawarra Technology Corporation.

Like Labaree, in the research there was insider knowledge, but at other times the research was undertaken as an outsider. "Although I am an insider...I am at the same time an outsider to these other group members and their

'truths' (as well as fictions) about the organization". (Labaree 2002, p.101) This was especially true for the academic interviews.

The primary methodological approach adopted for this study is best captured by the term 'case study'.

Potential Outcomes

Expected findings included the following:

- that the perception of a sample of all of the staff (academic and general) is that the UOW exhibits the characteristics of an entrepreneurial university as defined by Clark;
- that evidence would emerge, during the project, pointing to the importance of leadership in establishing the corporate culture, ethos and management style for entrepreneurial success within the UOW; and
- that the case study, informed by a series of semi-structured interviews and a survey of all staff, would establish that the UOW is entrepreneurial in the context of Clark's 'pathways of transformation'.

Platt argues the importance of presentation, claiming that it is, "of course, a valuable social scientific achievement to understand and explain a social situation so thoroughly that you can make its outcomes and your theories about them look self-evident". (Platt 1992, p.32)

Regardless of the predicted outcomes of the research, however, and the intended method of presenting the outcomes of the study, an overriding principle which governed the approach to the study was that "the success of the project depends upon the quality of the researcher's engagement with the problem and the agreed process". (Rowley 2002, p.23) This was a key challenge in ensuring that the research project not only produced meaningful results, but made a genuine contribution to the body of knowledge in the field of higher education policy and management, and could be replicated if necessary.

Limitations

The investigation undertaken in this study attempted to understand how staff of the UOW viewed the University in terms of the five headings developed by Clark to characterize the pathways of transformation. A survey instrument, specially designed for use in this study to obtain the views of a representative sample of all UOW staff, was also useful in describing characteristics of an entrepreneurial university. However, not all of the staff population was able to be surveyed and this may have affected the study results although a response rate of 16 per cent was achieved which is well above the bench mark for a representative response rate. The survey was made available to those with internet access, and the results may have been affected by:

- staff not having access to the internet/email in their employment. This may have resulted in some of them being unable to access the survey instrument;
- staff were surveyed near the end of the academic session, which may have resulted in some staff being absent from campus. An attempt was made to minimize this potential problem by keeping the online survey open for a period of 6 weeks (27/10/05 to 9/12/05); and
- the calculation of means and standard deviations. The use of such analytical procedures with data at the ordinal level, although commonly used, is sometimes questioned, as small errors may occur due to the difference between two adjacent ranks not being equivalent to the difference between two other adjacent ranks. (Labovitz, 1970)

Plan of the Thesis

The Thesis is presented in the following form:

Chapter One presents an overview of the study, including the purpose and significance of the study, the potential outcomes, the plan of the Thesis and its limitations;

Chapter Two presents the relevant literature, including an overview of Clark's (1998) 'pathways of transformation' which form the backdrop to the study. This review also includes a consideration of the definition of Entrepreneurial as it applies to universities and the perceived role of leadership in creating the entrepreneurial culture;

Chapter Three outlines the research methodology. This includes the research design, the design phases, the case study approach, the survey construction, the pilot, administration of the survey, data collection, the program of semi-structured interviews of senior staff and the method of analysis. Also included are the data types to be analyzed;

Chapter Four presents the case study of the UOW. A consideration of the structure and development of the University is undertaken with a deliberation on the goals of the UOW. The approach to management, human resources and leadership at the UOW are also examined;

Chapter Five consists of the presentation of the analyses, the results derived from the online survey and the key themes arising from the semi-structured interviews of staff; and

Chapter Six provides a consideration of the outcomes of the study and an interpretation in terms of the key research question. Conclusions and recommendations are also summarized.

Summary

The UOW did not have time to become a good classical university. By the time it gained its autonomy in 1975, the embers of the entrepreneurial flame had begun to glow. Even so, the challenge referred to by Fourie and Fourie (2001) was no less real. "Being and remaining a good classical university always is a challenge, especially in an era of globalisation, internationalisation and the knowledge society. Changing such a university to being a good entrepreneurial university, whilst preserving and stimulating

the academic heartland, is a greater challenge". (Fourie and Fourie 2001, p.82)

It was this challenge, and how well the UOW has been seen, especially by its staff, to have dealt with it, which is the basis of the study. For the UOW, there was no choice but to get on with the process of change to become an entrepreneurial university. "Like democracy, university entrepreneurship can be unattractive until you consider the alternatives. Doing nothing poses very large risks". (Clark 2001, p.18) The key research question was defined as follows: Using the five headings developed by Clark (1998), which are termed the pathways of transformation, is the UOW an entrepreneurial university?

There were also several supporting research questions, which were developed around the themes of the five pathways:

- to test the adherence of staff at the UOW to the pathways of transformation;
- to inform future decision making based upon the data analysis; and
- to provide a background for the construction of future policy objectives.

The literature survey, structured in the next chapter around the key themes of Clark's (1998) pathways of transformation, informed the study, both by examining the relevant and available scholarship, and also by dealing specifically with the nature of an entrepreneurial university, and the importance of university leadership in its achievement according to the general literature.

Chapter 2: Literature Review

Overview of the Chapter

This chapter reviews the available literature to gain an understanding of what is meant by the term 'entrepreneurial university', and the associated terminology such as 'entrepreneurialism' and 'entrepreneurship'. Other terms, similarly and often interchangeably used by authors to describe the general activities associated with this term, are also incorporated within this survey of the literature, and include academic capitalism and market behaviours (Slaughter and Leslie 1997), adaptive (Davies 1987), enterprising and transformation (Marginson 1999; Duderstadt 2000; Clark 2001) and innovative and responsive (Shattock 2003).

So in determining a structure for this literature review, and given the chosen thesis topic, it is appropriate that the main structure of the chapter be organized around the five key headings developed by Clark (1998) and which are termed the 'pathways of transformation'. An investigation of what constitutes an entrepreneurial university, and the crucial role of leadership in achieving the fundamental institutional transformation of such institutions, are also canvassed within supporting sections of the review.

Although Clark (1998) did not see leadership as vital to transformation, Davies hints at the importance of leadership suggesting "...the role of the university leadership in culture change is important". (Davies 2001 (a), p.41) And in their case study of the institutional culture in five UK higher education institutions, Hannan and Silver (2000) discovered that "leadership and perceptions of leadership both proved to be more important in relation to institutional culture and to teaching and learning within it than was originally assumed". (Hannan and Silver 2000, p.95) Again when examining successful systematic change at a Florida based Community College Wolverton (1998) found that "...successful systemic change requires not two but three types of leadership - champions of change, change agents and collaborators in change - each working in concert with the others...".

(Wolverton 1998, p.19) The work of Gronn (2002), Shattock (2003) et al provided a further important contribution to the exploration of what constitutes an institution's leadership practice, by exploring the concept of distributed leadership.

Introduction

It would seem that the term 'entrepreneurial university' has become a compulsory inclusion in contemporary literature when defining a modern university, on the basis that the term is somehow a higher order of descriptor. There appears to be a substantiate view that the use of this term adds lustre to the reputation of any university, that the listeners will automatically understand what the application of the term signifies, and that there is benefit from conferring the term on a university. However, Shattock notes that "...while the word 'entrepreneurial' has entered the higher education lexicon, its institutional achievement is thus by no means so common". (Shattock 2003, p.156)

The determination of an entrepreneurial university is broad and complex. In searching for an adequate definition, it became clear that there is a paucity of discussion in the literature defining the term, an observation supported by Louis, Blumenthal et al.

> Despite the high levels of interest in entrepreneurship, there is remarkably little systematic data on the nature of entrepreneurship in the university or other non business settings. Discussions about what stimulates university faculty to be more entrepreneurial are similarly speculative. (Louis, Blumenthal et al. 1989, p.112)

It would seem that the concept of an entrepreneurial university and its distinguishing features, prior to Clark's *Creating Entrepreneurial Universities: Organizational Pathways of Transformation* (1998), which was based upon the findings of five case studies of European universities, had drawn little international attention. An apparent vacuum in the literature was filled by Clark (1998). Subsequently, Shattock writing in 2005 drew attention to this lack of definition for the term. "Entrepreneurialism, as an economic phenomenon, is a term which is widely used in a popular sense but which has defied definition". (Shattock 2005, p.16) One simple definition, which

belies its profound contribution, is provided by Fuller: "In short, entrepreneurs make you want what only they can provide". (Fuller 2005, p.39)

However, it is noted that Davies (1987) writing a decade earlier, uses key terminology such as 'the Entrepreneurial and Adaptive University' (EAU). In the preamble to *The Entrepreneurial and Adaptive University: Report of the Second US Study Visit,* Davies writes:

> Entrepreneurial and adaptive behaviour thus historically constitutes more of a challenge to and departure from European conventions and traditions. Indeed, this is a volatile mixture which even US universities find troublesome, and thus we identify at the outset a basic tension between the traditional purpose of the university, and some latter-day imperatives to stability and survival. (Davies 1987, p.15)

While Clark (1998) does not refer to this earlier work by Davies, it is noted that Davies (1987) deals with "the dynamics of the process of transformation" and associated issues in elaborating on the Group's[1] findings. However, it is not the purpose of this literature review to pursue this matter, but to make the observation.

Recently, the scope of the research, *European Universities for Entrepreneurship – their Role in the Europe of Knowledge (EUEREK), an EC Framework 6 project*, was outlined and the findings of the research, when published, may contribute useful definitional material which is currently missing, or not covered in depth, in existing literature. (Temple and Shattock 2005) The project, including public and private universities across six countries, aims to examine entrepreneurialism in the context of national policies and develop an explanatory theoretical framework. This, in particular, will be a useful addition to the literature by providing a framework within which initial judgments can be made about the nature, extent and the reality of a university's entrepreneurial character. The importance of this is reflected in Clark's writing about the five case studies and the basis on which they were originally chosen and initiated in 1994-95. "The institutions selected are reputedly entrepreneurial/innovative in their national context and

---

[1] A group of 12 senior university administrators from six European countries sponsored by the IMHE Programme to study the entrepreneurial university. (Davies 1987)

have developed that character over a period of five to ten years or more". (Clark 1996, p.426)

While noting the issue raised earlier about the method of site selection for Clark's case studies, there is a further difference in the stated approach of the EC project. It differs from the work of Clark (1998) in at least one important way: "our aim (unlike Burton Clark's) has not been to identify outstandingly effective (on some measure) institutions; rather, we have aimed at examining cross-sections of national provision, in an attempt to see how far entrepreneurial-type change is spreading – and to try to identify the barriers to it". (Temple and Shattock 2005, p.4) Such outcomes, if suitably identified, will further enhance and enrich the scholarship in this area.

Clark's 'Pathways of Transformation'

i. The Strengthened Steering Core

The strengthened steering core is the first of what Clark (1998) describes as the 'pathways of transformation'. Its importance to the process of entrepreneurial endeavour is best summed up by Clark himself in this way:

> Traditional European universities have long exhibited a notoriously weak capacity to steer for themselves...Unambitious universities can ignore this need and drift with the tides of traditional patronage...But ambitious universities, and universities concerned about their marginality, and even their suitability, cannot depend on old habits of weak steering. (Clark 1998, p.5)

The early statements emanating from the work of the current EC project referred to earlier, have already confirmed a key theme of Clark's first pathway: "that the university's internal structures, processes and cultures are of the utmost importance in determining what it may achieve". (Temple and Shattock 2005, p.3) This is further supported by the views of Trowler and Knight, who observe what they term, the culture of tensions:

> There are tensions between disciplinary cultures, those of the department and institution, and those of research, teaching and service to the community. This is a picture of cultures in tensions where individuals arrive, perhaps unwittingly at their own particular formulation. (Trowler and Knight 1999, p.186)

But some of these components are often required to undergo significant change in order for this first pathway to be realized. Marginson (1998) and

(1999 (d)) made a number of observations about the process of change in relation to 'steering capability' through the findings of various case studies as part of an overall research project involving 17 (out of 36) Australian research universities. In particular, he noted that a shift had occurred in the way universities organized themselves and that their move towards models derived from business was greater than expected. In support of these observations, and reflecting upon the growing area of transnational education, McBurnie and Pollock (2000) reaffirmed the importance of looking outside the university sector as part of acquiring the ability to self steer.

> The corporate world provides lessons which can assist universities in adapting their management structures and processes to meet the challenges...Whether or not one regards education as a business, there are persuasive arguments for institutions to take a business-like approach as they participate in the global trade in services. (McBurnie and Pollock 2000 (b), p.342)

Clark, in writing more recently, also made several observations about change in relation to the character of the entrepreneurial university.

> The newly highlighted dynamics of change stress, first, mutually supportive interaction among transforming elements; second, a newly established forward-looking 'perpetual momentum'; and, third, behind the scenes, an institutionalized volition, a collective will, stimulates and guides a self-sustaining and self-selecting forcefulness in responding to societal demands... (Clark 2005, p.2)

Shattock also notes that a university is somewhat shaped by external forces.

> The overall management of university systems remains, however, vested in individual national governments and variations in modes of state governance, funding regimes, levels of investment, and human resource policies, can have critical impacts on their outputs, and in particular on their capacity to innovate, introduce organisational change and act entrepreneurially. (Shattock 2005, p.14)

In discussing the effect of external change on governance and academic practice in higher education, Middlehurst and Elton saw a number of key changes. They include the "reduction in public funding to the point where expansion turned first to contraction and then to expansion at reduced cost per student, with commensurate encouragement to increase alternative sources of funding; political emphases on greater market responsiveness and public accountability; a tighter coupling between higher education and the so-called wealth creating needs of society; and a considerable expansion of and diversification in access to higher education". (Middlehurst and Elton 1992, p.252)

The challenges of bringing about change must be confronted, and it is a necessary pre-requisite in proceeding down the path of transformation. Clark emphasizes that this first 'pathway' is not optional. "A strengthened steering core becomes a necessity...It must operationally reconcile new managerial values with traditional academic ones". (Clark 1998, pp.5-6)

But change is not of itself sufficient to ensure the achievement of this self steering capacity. In the findings of a three year study of five universities, looking in particular at the impact of new technologies on organisational practice, and their ability to create a 'network organisation', it was found that, while this had potential, it had brought about mixed results in relation to its ability to redistribute power and impact positively on organizational structures, in the context of changes in the role and development of modern universities. (Lewis, Marginson et al. 2005) In an Australian Research Council (ARC) project focusing in part on university governance and management, Marginson, while noting that a new strategic leadership had emerged which was "more efficient and more user-friendly from a managerial point of view" cautioned that in practice another issue needed to be addressed: "universities are no longer governed primarily by legislation: they are ruled by formulae, incentives, targets and plans". (Marginson 1999, p.6)

This in part, is incorporated within the description of 'New Public Management' (NPM), and has arisen out of the reforms of the last few decades of the Twentieth Century. These reforms included marketization, application of business management theories and practices to the delivery of social services, including education, and reforms to structural governance and accounting for government expenditures. Tolofari observes that NPM has impacted upon universities, where "the state still sees the universities as representing a big chunk of public expenditure and demands parsimony and output measures. So, while autonomy should give freedom to act, this is not so. The case in reality is rather that there is greater bureaucratic control". (Tolofari 2005, p.85)

But Dunleavy, Margetts et al. are not as concerned about the ongoing impact of NPM.

> This cognitive and reform schema is still afloat, and a minority of its elements are still actively developing. But key parts of the NPM reform message have been reversed because they lead to policy disasters, and other large parts are stalled. Often these past innovations are incapable now of being easily reversed. Even their strongest advocates now expect them to have little impact on altering the overall effectiveness of government. (Dunleavy, Margetts et al. 2005, p.2)

Currie, in the introduction to Universities and Globalization: Critical Perspectives (Currie and Newson 1998) is critical of the way in which universities have responded to their changing circumstances with a kind of 'herd mentality'. In the context of globalization, the author reflects "on the way many universities have been changed...without sensible debate as to its consequences". (Currie 1998, p.5) Marginson is equally as strong in supporting this observation and expresses the view that:

> The principles animating structural innovation within universities are the sidelining, remaking or replacement of earlier collegial or democratic forms of governance, and the replacement of those forms of governance with structures that operationalise executive power, and selected mechanisms for participation, consultation and internal market research. (Marginson 1999, p.6)

Shattock (2002) further cautions that it is necessary to undergo what is termed 're-balancing modern governance', to ensure that the corporate and collegial approaches are in balance and share a common purpose. Clark, in a follow up to his 1998 study, also comments on this aspect when reviewing the case study of Twente, observing that "central administration understood the dual need for central steering, and devolved control". (Clark 2004 (a), p.48)

It is not surprising that in the context of the growing tension between the decline of state funding and the resultant demand for universities to be more self-reliant, Shattock (2000) examined what he describes as an uncertain future for European universities. Issues such as competitiveness, opportunism, income generation and cost reduction, relevance, excellence and reputation are considered. Shattock concluded in part that "the role of strategic management is to weave these strands together within the necessary resource constraints so as to improve institutional effectiveness" and that "the strengthened steering core...stands at the interface of these

pressures and can act corporately and if necessary, decisively to resolve them". (Shattock 2000, p.103) Middlehurst (2001) looked at some of these emerging pressures, particularly in the context of 'Borderless Education', and the extent to which factors such as the emergence of the 'knowledge economy,' the demand for life-long learning, and advances in information and communication technologies were presenting challenges to universities and governments. In the context of globalization, Temple and Shattock also observed that it seemed to be "generating new demands, either directly or mediated through national policies, on the university for knowledge production and transfer, to which the university is responding in various ways (for example, through cost-reduction strategies, the international recruitment of students, the seeking of new research partners and clients)". (Temple and Shattock 2005, p.2)

This push for change, the underlying causes of the move to entrepreneurial activity and the associated pressures being applied to universities are complex issues, and part of the accumulated pressure being placed upon universities. It is the function and responsibility of the central steering core to adequately appraise, assess and appropriately classify their priority and resource needs. The issues must be assessed in the context of the

> institutional mission, values and 'core curriculum'...there are questions about access and widening participation, exclusion by gender, ethnicity, age, social class and other more subtle criteria; about civic education and preparation for citizenship in a finite resource-sustainable society; and about employability and the adaptability to learn new skills or to employ oneself in the changing and reshaping 'knowledge society'. Management has a responsibility to ensure that these wider purposes and longer directions are not lost from sight in a competitive scramble to create and deliver new courses which may be only apparently successful, and from only a limited perspective. (Duke 2002, p.93)

But getting the mission of the institution right is also a necessary part of this complex, but not optional, first pathway. It should encourage "a clear sense of purpose...facilitate decision making...and communication...aid evaluation activity...and clarify marketing strategy". (Peeke 1994, pp.9-10)

Clark followed up on this theme of change, as an underlying prerequisite to transformation, in Sustaining Change in Universities: Continuities in case studies and concepts. In response to continuing criticism from within

academia, Clark responded that the process of change through entrepreneurial actions, whilst complicated, was inevitable, and needed to be undertaken through both collegial and personal action. "Entrepreneurial is an embracing but pointed term for referencing the attitudes and procedures that most dependably lead to the modern self-reliant, self-steering university". (Clark 2004 (a), p.7) This is an important point and a recurring theme in Clark's case study findings: in revisiting the initial work on the University of Strathclyde, it is reemphasized that "understanding organizational change in universities does indeed lie in the details of accomplishment, especially amid academic sensitivities about who governs" (Clark 2004 (a), p.25) and it is noted that the university encourages, even if some of the credit needed should be given to the State, the whole notion of self steering.

But Clark (2004 (a)) also warns of two ongoing problems observed in relation to achieving this first pathway, that of a strengthened steering core. The first relates to the reconciliation of managerial values with traditional academic expectations. The second, in the context of achieving coherence and enhancing initiative, involves the balancing of authority and responsibility across the 'rich tapestry' of a university organization. Shattock, in looking at the future for management and governance in the British Universities, concluded that most will lie somewhere between the collegial and the executive management style of the post-Dearing era. (Shattock 1999)

The tension between a strengthened steering core (setting strategy and direction) and centralization (management) is a crucial issue and needs to be approached creatively. The key is to get a balance between the strengthened central core and a devolved approach to decision making to encourage initiative and entrepreneurial endeavour.

> Institutional management is much more than management by a subset of individuals within a university: like leadership it must be distributed throughout the institution. Their working relationships, the way they resolve tensions between competing interests, their attitudes to environmental pressures, their shared understanding of the institution's central objectives and their confidence in their capacity to read situations, take risks, back new ventures and reach decisions quickly will have a huge impact on the university's ability to sustain its forward momentum. (Shattock 2003, p.177)

Duderstadt, looking into the future, sounded a similar caution to that of Shattock:

> The entrepreneurial university has been remarkably adaptive and resilient throughout the twentieth century, but it still faces some major challenges as it moves into the next century...Our challenge is to tap the great source of creativity and energy associated with our faculty's entrepreneurial activity in a way that preserves our core missions, character, and values. (Duderstadt 2000, pp.51-52)

But an important issue, underplayed it would seem in the Clark pathways of transformation, is the role of leadership, especially that of the Vice-Chancellor. Clark concluded from the case studies, "that sustainable adaptive universities do not depend on ephemeral personal leadership. Charismatic leaders can serve for a time but in the lifeline of universities they are here today and gone tomorrow". (Clark 2004 (a), p.5) But the importance of leadership, in creating and sustaining an entrepreneurial culture within a university, was highlighted in the literature. Bolman and Deal (1994) discussed the role of leadership and its importance to organizational well being, concluding: "In modern organizations management provides consistency, control and efficiency. But leadership is needed to foster purpose, passion and imagination". (Bolman and Deal 1994, p.77) The literature also argued the importance of leadership in leading the change process, as opposed to focusing on structure and roles. (Middlehurst 2004).

In the program of semi-structured interviews undertaken as part of this research at the UOW, institutional leadership in its more traditional and personalized form was often attributed to the Vice Chancellor. However, Gronn (2002) usefully explores the concept of distributed leadership, in its institutionalized form, which takes the form of a "leadership group headed by a first among equals, or a leadership team 'of equals with a primus', instead of the hierarchical system of 'the lone chief atop a pyramidal structure' typical of many organizations. (Gronn 2002, p.430)

The topic of leadership, therefore, is separately covered later in this chapter, for "...there is much to be gained by focusing more closely on the practice of leadership in higher education". (Middlehurst 1999, p.311)

ii. The Expanded Development Periphery

The expanded development periphery is the second of what Clark (1998) describes as the five pathways of transformation. This pathway is based upon academic departments which are prepared to undergo change, foster an enterprising spirit and a desire to raise funds, establish innovative programs to meet changing market needs, and deliberately set out to participate in the overall success of the university. For, "...strong universities are built on strong departments...Altered heartland departments...are a necessary part of the bargain of transformation". (Clark 2004 (a), pp.178)

Its importance to the process of entrepreneurial endeavour is best summed up in this way:

> Enterprising universities exhibit a growth of units that, more readily than traditional academic departments, reach across old university boundaries to link up with outside organizations and groups...Academic departments based on disciplinary fields of knowledge will go on being important...But the departments alone cannot do all things that universities now need to do. (Clark 1998, p.6)

The importance of this second pathway is widely supported. In the context of looking at the impact of the quality movement in Australia, Lindsay (1994) considered the role of stakeholders and concluded that the development periphery was now a crucial ingredient in university planning. Its value, specifically the involvement of stakeholder input into significant academic decision making, had become widely accepted. Duke (2002) also explored the need to revisit traditional thinking, although commenting specifically in the context of the complexities of the current ecological crisis and the need for sustainability. One of its values was observed as giving fresh meaning to the 'third leg of community service', and providing a basis for choice and judgment in respect of the traditional twin purposes of teaching and research. At the same time, virtue was seen in "shaking traditional modes of operating, and surviving disciplinary complacencies, to their foundations". (Duke 2002, p.143)

However, shaking up the traditional operating modes has a level of risk, and Barnett notes that institutions must consider more than financial risk.

> ...the entrepreneurial university...wants its capital to grow, whether that is financial, intellectual, social or cultural. The financial risk, though, has attracted the most attention ...but the other forms of risk deserve at least equal consideration for they do pose considerable risks in their own right. (Barnett 2005, p.53)

According to Clark, it is essential for entrepreneurial universities to cultivate substantial organizational creativity, develop new methods of interaction and "take the risk of promoting an entire new periphery of non-traditional units" if it was to keep in contact with its external groups. (Clark 1998, p.6) Ongoing changes in overall trends and demands of society made this mandatory.

> The new peripheries that enterprising universities construct also take quite different specific forms. They variously consist of outreach administrative units that promote contract research, contract education, and consultancy. (Clark 1998, p.138)

The five European case studies highlighted no single model for this second pathway, but they did have a common theme: a dual structure where specific links to the outside world were reinforced by the creation of centres along side traditional academic departments. (Clark 1998)

Shattock confirmed the problems for institutions with the current levels of uncertainty in funding.

> The combination of the depletion of the institutional resource base and the greater reliance on market drivers along with the consequential changes in managerial structures, at national as well as institutional levels, and the impact of globalisation have created uncertainty about academic identity and institutional mission and direction. (Shattock 2005, p.16)

Clark has also looked at common problems and demands upon universities and their ability to respond within their resource and institutional capacities. This included an examination of the tension for universities between the endless demand to supply services and the ability of universities to deliver, given their limitations of both resources and infrastructure. Clark (1997 (a)) concluded on this issue that if universities are over extended, then they are under focused.

The fundamental importance of developing and maintaining relationships with external groups, and reshaping internally to meet changes in the external funding environment, a key element of the second pathway, is also underlined by the work of Leslie and Slaughter (1997 (b)). In their findings on

the US post secondary education market, and the impact of market forces, they observed a decline in public funding, leading to an increase in the financial burden placed upon students, a decline in allocations for the teaching enterprise and an increase in the allocation for research and administration. This led to instability within institutions and a redistribution of university power with a resultant loss of community.

In their substantial work on what they describe as academic capitalism, Slaughter and Leslie explored some of the implications of this and concluded, with some implied criticism, that such "concentration of academic capitalism in the centers and institutes is hardly surprising, given that their creation and maintenance often are for the sole purpose of responding to external funding opportunities". (Slaughter and Leslie 1997, pp.116-117)

By contrast, in Clark's later work, Chalmers University of Technology was highlighted for its willingness to experiment with its periphery, an approach which seemed to have support across the organisation layers. "Utilizing such formal lines of outreach as an incubator building, spin-off firms, and science-park affiliations, Chalmers did not fret about commercialization". (Clark 2004 (a), p.62)

But in returning to the findings from the five case studies, Clark found that "as a halfway house to the outside world, the development periphery becomes an organized location within a university for the entry and absorption of whole new modes of thinking". (Clark 1998, p.138) In the Australian context, Marginson found confirmation, through a series of case studies, of the existence of "vice-chancellor's advisory groups, occasional meetings in selected locations, the 'road testing' of new and controversial proposals through ad hoc consultative networks, and improved internal marketing and media". (Marginson 1999, p.6)

In an earlier work looking into common problems and adaptive responses, Clark described the virtues of this second pathway in this way:

> ...a developmental periphery of new outreach administrative offices, new interdisciplinary research centers, and new contract education programs that pay their way can be added to the organizational framework that will supplement what the traditional academic departments can do. (Clark 1997 (a), p.294)

Clark contended that it would require self steering to achieve this outcome, a reference to the first of the five pathways of transformation. It would also require "reconciliation of the new managerial values with traditional academic values" (Clark 1997 (a), p.295) which affirmed both the interrelatedness of the pathways and the need for each to be cultivated and developed as part of the overall package of transformation. Middlehurst takes this further noting that:

> There is clear potential for creating collaborations and partnerships across the boundaries between the heartland and the periphery to meet the needs of new or existing clients and markets and indeed, to create similar lateral relationships and cross-organizational roles between the university and other organizations. (Middlehurst 2004, p.275)

It is also evident from the early findings emerging from the most recent case studies, that this interrelatedness is a strengthening theme, "...so that now professors often have other roles in university research units or income-generating groupings in the 'development periphery' around the university core". (Temple and Shattock 2005, p.8)

iii. The Diversified Funding Base

The diversified funding base is the third of Clark's (1998) pathways of transformation. Clark (1998) sees public universities as having three primary sources of funds: Government funds, usually in the form of block grants; funds from Government Research Councils; and other or 'third stream' income. The importance of a diversified funding base to the process of entrepreneurial endeavour is best summed up in this way:

> Enterprising universities ...set out to construct a widening and deepening portfolio of third-stream income sources...Third stream sources represent true financial diversification. (Clark 1998, p.6)

Much has been written on this particular 'pathway'. In emphasizing the importance of encouraging the development of funds diversification, Marginson found through the series of 17 case studies, that entrepreneurialism and business modeling brought together a "partial

devolution of responsibility for funding, fund management and performance, so that academic units begin to resemble small specialist firms within a large conglomerate". (Marginson 1999, p.10) But such diversification fosters revisions to internal resource allocation policies. Davies (2001 (a)), in looking at European cultures in entrepreneurial universities, referred to the formidable challenges involved, especially when one seeks to shift resources between under performing and newly developing areas across the university.

Clark contends that to "fashion a new change-orientated character, a university generally requires greater financial resources: it particularly needs discretional funds. Widening the financial base becomes essential". (Clark 1998, p.6) Funding diversification enables a university to determine its own future.

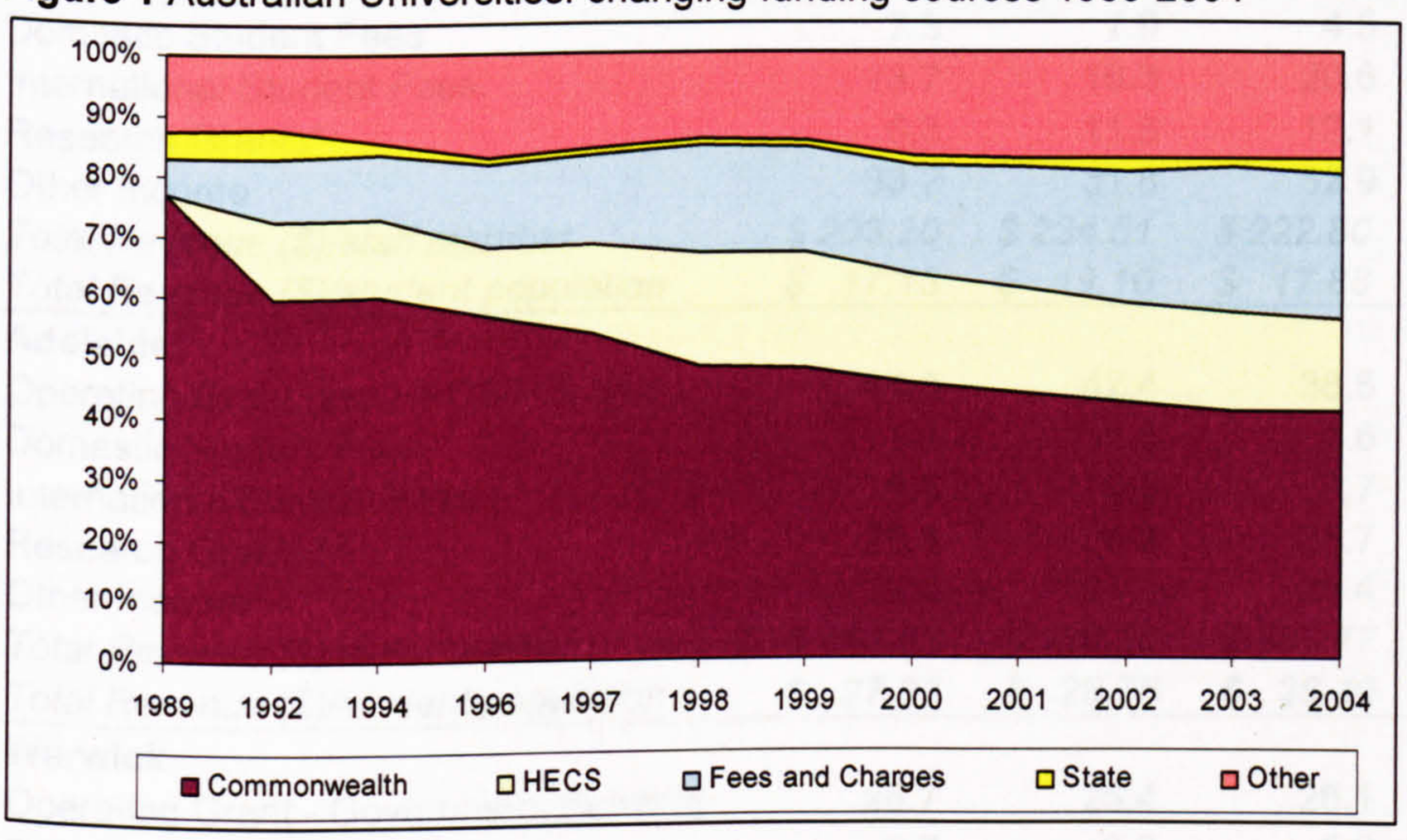
Clark (2004 (a)) looked into this third pathway of transformation in some detail in later work, examining what were described as the three 'sub streams' of third-stream funding: other organized government sources, private organized sources (in particular business firms) and university generated income. The latter 'sub stream' was defined as including endowments, alumni fund-raising, student tuition fees, campus operations and royalty income from patented inventions and licensing of intellectual property. (Clark 2004 (a), pp.77-81)

The development of the international full fee student market, part of the 'third sub stream' of third-stream income, is a source of income in which Australian universities in particular have excelled over the past few decades. In particular Bennell and Pearce draw attention to the changing landscape in Australia, noting that "since the late 1980s, the government has given very high priority to attracting overseas students from South-East Asia and elsewhere". (Bennell and Pearce 2002, p.15) Pratt and Poole argued in their work on the impact of globalization on Australian universities, that it had prompted universities, especially at the senior level, "to embrace entrepreneurialism" (Pratt and Poole 2000, p.22) including expansion of international full fee paying student markets and commercial opportunities

associated with applied research. But one of the two key changes they noted, in apparent support of the earlier view of Davies (2001 (a)), was the "uneven impact of entrepreneurialism upon different parts of universities". (Pratt and Poole 2000, p.22)

An analysis of Australian universities supports the concept of declining Federal Government support and the increase in fee revenue, as outlined in Figure 1. An indication of trends over time in sources of income, both for the UOW, and other selected universities, is listed for comparison in Table 2. This also indicates that Federal Government support for public universities is declining in Australia.

Figure 1 Australian Universities: changing funding sources 1989-2004



Source: AVCC; Prior to 1993, DEET National Report on Australia's Higher Education Sector, May 1993 (Table 4.6); from 1993 onwards, DEST Selected Higher Education Finance Statistics

In the context of the Canadian experience, McKittrick (2001) also notes the need to get the balance right between academic and commercial motivations, while recognizing "that there is no other single product that can be grown, extracted, harvested or made with our hands that has the export income potential of the knowledge industry, not to mention the collateral benefits to all Canadians". (McKittrick 2001, p.9)

Table 2 Funding trends for Australian and UK Universities

(%)	2001	2002	2003	2004
UOW				
Operating Grant (incl HECS/PELS)	33.9	28.5	30.1	28.2
Domestic Student Fees	1.0	0.6	0.7	0.7
International Student Fees	22.5	26.4	27.2	28.0
Research Grants*	19.7	19.9	16.8	15.4
Other Income	22.9	24.6	25.1	27.6
Total Revenue ($)/staff member	*$ 191.46*	*$ 210.95*	*$ 218.71*	*$ 221.09*
Total Revenue ($)/student population	*$ 20.31*	*$ 19.89*	*$ 19.74*	*$ 20.58*
Monash				
Operating Grant (incl HECS/PELS)	40.9	38.0	26.7	25.7
Domestic Student Fees	3.5	4.4	4.9	5.0
International Student Fees	12.6	14.2	16.2	17.5
Research Grants*	13.0	14.1	21.3	21.0
Other Income	30.0	29.3	30.9	30.7
Total Revenue ($)/staff member	*$ 158.26*	*$ 175.69*	*$ 166.45*	*$ 174.97*
Total Revenue ($)/student population	*$ 20.23*	*$ 21.07*	*$ 22.19*	*$ 22.77*
Macquarie				
Operating Grant (incl HECS/PELS)	39.5	32.1	29.9	29.8
Domestic Student Fees	7.3	7.9	4.5	3.6
International Student Fees	13.7	16.3	20.6	23.8
Research Grants*	6.3	11.8	12.1	12.9
Other Income	33.2	31.8	32.9	29.9
Total Revenue ($)/staff member	*$ 203.20*	*$ 234.51*	*$ 222.80*	*$ 223.02*
Total Revenue ($)/student population	*$ 17.13*	*$ 19.10*	*$ 17.88*	*$ 17.87*
Adelaide				
Operating Grant (incl HECS/PELS)	44.0	42.4	38.5	34.9
Domestic Student Fees	1.4	1.5	1.6	2.1
International Student Fees	6.5	7.4	7.7	9.4
Research Grants*	25.8	24.2	26.7	28.4
Other Income	22.2	24.5	25.4	25.3
Total Revenue ($)/staff member	*$ 154.63*	*$ 180.38*	*$ 187.77*	*$ 191.21*
Total Revenue ($)/student population	*$ 27.33*	*$ 28.76*	*$ 28.49*	*$ 29.20*
Warwick				
Operating Grant - Government Funding	26.7	26.4	26.1	25.1
Domestic Student Fees	6.7	6.2	5.9	12.8
International Student Fees	6.8	9.6	10.0	10.3
Research Grants	15.1	14.7	14.3	16.4
Other Income	44.8	43.1	43.7	35.5
Strathclyde				
Operating Grant - Government Funding	44.5	44.2	43.3	44.1
Domestic Student Fees	12.7	12.6	12.4	13.1
International Student Fees	7.0	7.1	7.8	7.8
Research Grants	13.8	14.3	14.2	14.6
Other Income	22.1	21.8	22.3	20.4

Source: UOW Annual Report 2001-2004, Monash University Annual Report 2001-2004, Macquarie University Annual Report 2001-2004, Adelaide University Annual Report 2001-2004, Warwick University Annual Report 2001-2004, University of Strathclyde Annual Report 2001-2004, and UniFocus

* *includes consultancies and contract research*

Marginson would appear to argue a stronger position on this issue of balance, arising from an exploration of the implications of national and global markets for Australian universities in the context of the Nelson (the then Australian Federal Minister for Education, Science and Training) reforms, national and international league tables, and issues of global market forces. In considering issues influential in creating an entrepreneurial university, the findings support a softer line: for aid not trade, internationalization over market exchange, and an emphasis on scholarship programs, non commercial student exchanges and research projects as the way for Australian universities to approach the issue of global education. (Marginson 2004)

Interestingly, in defining what was included or excluded in the definition of entrepreneurism in their findings of two Australian university case studies, Slaughter and Leslie decided to "exclude basic research as well as efforts to generate university revenues through recruitment of students who would pay full or high fees". (Slaughter and Leslie 1997, pp.114-115) While specifically providing a definition of entrepreneurism contributed to filling the gap in the literature referred to earlier, excluding this latter component is at odds with the whole notion of expanding third-stream income as part of funding diversification, and the use of similar terms by writers such as Clark (1998; 2004 (a)).

Both Slaughter and Leslie (1997 (a)), and Marginson (2000), point out the potential downside for universities through increasing their 'third-stream' income, with the biggest risk being the loss of some degree of their autonomy. Shattock is not as negative on this point believing universities are capable of accommodating and balancing this potential risk:

> Successful universities on the other hand have a self directed autonomy which enables them to establish goals intrinsic to their own ambitions, to establish resource allocation criteria to fit their own aspirations, to resist the automatic bidding culture, to accommodate accountability rules within academic structures that grow out of the management of academic disciplines, modes of teaching, and research environments and to merge state and non-state income streams to match the needs of the institution. (Shattock 2003, p.181)

However, aside from issues of definition, Clark is emphatic about the value of this funding diversification, and does not share this negative position. "The main point is that there is no limit to the possibilities of third-stream income in its many sub streams". (Clark 2001, p.14)

In this context, it is interesting to note the more recently published competing view in Temple and Shattock.

> The Clark view of entrepreneurialism places some emphasis on universities generating income streams independent of normal state funding...A competing view is that the university's prime purpose is to serve societal ends, decided through the national political process, and that the university should expect to receive public money to allow it to do so. (Temple and Shattock 2005, p.3)

With reference to this diversification, over the previous 15 years of change i.e. the 1980s and first half of the 1990s, McNay, in looking at the UK in the context of the higher education sector, discussed what is referred to as "several alliterative policy themes aggregated during the period" noting that the "proportion of institutional budgets funded through private funding has increased substantially". (McNay 1999, p.36)

Going further, Currie and Newson address this issue in the context of privatization. "By privatization, we refer to more than the sources of funding for universities and their activities. In fact, privatization can take forms that involve the continuation of primarily public funding while the uses of university activities become privatized". (Currie and Newson 1998, p.148)

So it is not surprising that in revisiting the earlier case studies, Clark (2004 (a)) again expresses admiration for the approach of Chalmers, one of the universities in the original five case studies, (Clark 1998) to entrepreneurial activity, and commercialization more generally. Entrepreneurial activity became all embracing, involving undergraduates, alumni and the devolution of budgeting more broadly across the institution. Chalmers had arrived at a position where its core funding was about half of its total income and it had maximized its income from external sources such as commissioned research, government departments and research councils. It had also taken

advantage of the source of greatest discretion, 'contributions, funds and gifts'. (Clark 2004 (a), p.62)

The cumulative effect of adopting this approach is to diversify income so that an institution is no longer captive to any one source of funds, releasing the institution to chart its own course. By replacing government funding, thereby reducing its dependence on a single source of funds, an institution increases its operational autonomy and flexibility. Spreading its exposure away from any one single source of funds adds to its potential to chart its own course. "Effective stewardship comes to depend not on the state or on 'the market,' but on university self-guidance and self-determination. The entrepreneurial university does indeed provide a new basis for achievement". (Clark 2005, p.3) The apparent necessity, or desire, for successive cultures and independent states to establish and maintain universities as places of learning, is not sufficient within the context of continuous change, national and international competitiveness and the widespread reduction in public funding for universities. A diversified funding base is required because, "at their best, most sensitive financial instruments are a very effective way of developing and sustaining an academic entrepreneurial culture". (Davies 2001 (a), p.35)

In summarizing observations of the entrepreneurial university, Clark concludes that this attribute, a diversified funding base, is "perhaps the most enabling of all". (Clark 2005, p.3)

iv. The Stimulated Academic Heartland

The stimulated academic heartland is the fourth of what Clark (1998) describes as the five pathways of transformation.

> When an enterprising university evolves a stronger steering core, and develops an outreach structure, and diversifies its income streams, its heartland is still found in the traditional academic departments formed around disciplines, new and old, and some interdisciplinary fields of study. (Clark 1998, p.7)

The stimulated academic heartland is where the whole notion of transformation, and the associated change process, is either accommodated

as an idea worth trying, or is opposed and destined to suffer the consequences of failure. It is where the real academic attitudes are brought to bear on an idea to determine if it is worthy of support. The departments and centres, sometimes quite small cells of academic activity, are where for most universities, with few exceptions, lies the passion and the will to oppose ideas, the process of change and ultimately frustrate the achievement of transformation. For this transformation to occur in an institution, it often requires a shift in values towards a more self perpetuating model. Duke found that "many academic staff still see commercialization and a preoccupation with making money as sullying and demeaning: a betrayal of the social and professional purposes and value of an earlier 'real' university". (Duke 2002, p.56)

Clark had found in the five entrepreneurial universities used as case studies, that in relation to the important area of integrating new managerial concepts and approaches and traditional academic values, "the heartland accepts a modified belief system" (Clark 1998, p.7) and that the heartland departments had significantly "bought into entrepreneurial change". (Clark 1998, p.142) This is of fundamental importance, given the need for any change in support of such integration to be sustainable over time. Davies agrees, seeing sustainability as "ultimately connected with unit and university culture". (Davies 2001 (a), p.32)

But there are major issues to be considered here in what might have alternatively been described as the 'hearts and minds' pathway. In examining inter alia US national research and design (R&D) legislation over the 1980s and 1990s as it affected the competitiveness of academic R&D in universities, especially in the context of academic science and technology, Slaughter and Rhoades found that despite the existence of many interested social groups, "none of these groups is particularly concerned with preserving or reinstating values dear to the hearts of professors, such as the autonomy of the research community or veneration of basic science". (Slaughter and Rhoades 1996, p.333) Warnings of potential problems are raised by Patterson who argues that, in the context of goal settings by universities,

universities "can be viewed as a loose confederation of knowledge-bearing groups, continually cell splitting and mutating, disunited by their disparate loyalties, interests, ideas and approaches to knowledge, each with a high degree of self-control". (Patterson 2001, p.163)

Writing in the context of leadership within universities Bolman and Deal (1994) raise concerns as to how best to reward academic buy in, or to achieve buy in, and reaffirm that getting people engaged in any process of change, such as establishing a vision, is as important as the outcome itself. Lindsay, in quoting Warren Piper in relation to the setting of university mission statements, pointed out the folly of adopting significant changes which are not inclusive of the academic culture and decision making processes. (Lindsay 1994, p.61).

In an important contribution, Slaughter and Leslie, in exploring the emergence of academic capitalism, discussed the significant restructuring that was occurring within the higher education sector. In the context of gaining the support of the academic heartland, they saw this significant change as including:

> ...substantive organizational change and associated changes in internal resource allocations (reduction or closure of departments, expansion or creation of other departments, establishment of interdisciplinary units); substantive change in the division of academic labor with regard to research and teaching; the establishment of new organizational forms (such as arm's length companies and research parks); and the organization of new administrative structures or the streamlining or design of old ones. (Slaughter and Leslie 1997, p.11)

Marginson looked into the issue of management and organization of higher education in Australia, using eight university case studies. Some interesting observations were drawn in relation to the importance of the way in which the academic heartland responds, including a cautionary note that "we need to work on this problem of management and democracy". (Marginson 1996, p.123)

In the US university context, creating the right conditions for technology transfer and resolving issues relating to consulting and patenting in an acceptable way was raised as an issue which must be addressed to achieve

the ownership of new ideas and approaches, and assist the transforming process within the academic heartland. (Etzkowitz 1999) Further, in referring to the resolution of what was described as the "conflict of commitment controversies over the participation of professors in organizing start-up firms while retaining their academic positions", Etzkowitz raised what was described as "the organizational consequences of the entrepreneurial dynamic created within the university". (Etzkowitz 1999, p.89) A willingness to address such issues as these is important, if transition to this fourth pathway, a stimulated academic heartland, is to be achieved.

In Clark's own research, based on the five initial case studies, the following observations were highlighted:

> Stimulated academic departments must find ways to fuse their new administrative capability and outreach mentality with traditional outlooks in their fields...Departmental entrepreneurship that leads to shoddy goods, as defined by other academics, can readily set in motion a vicious circle of declining reputation and less selective recruitment of staff and students. (Clark 1998, p.142)

This is a major challenge. Again drawing upon a major survey of academics in Australian universities in 1999, McInnis addressed the importance of avoiding the need to confirm academic expertise and authority. "If it is true that entrepreneurs in any environment are likely to lose their creative approach to problem solving when their sense of self-determination is threatened, it is doubly true of academics, for whom autonomy is synonymous with their professional and personal identity". (McInnis 2001, p.54) Currie, in a study of globalisation and its impact upon universities, also alludes to this issue in commenting on the demands placed upon academic staff, reaffirming that "the daily work of academics is to fulfil their duty toward students and to continue with quality research". (Currie 1998, p.6)

But Clark was impressed with the extent to which "heartland departments had bought into entrepreneurial change" in the five case study universities and noted that the dichotomy of being "entrepreneurial on one side and traditional on the other", had been rejected by both administrators and faculty". (Clark 1998, p.142)

So, despite the apparent difficulties in obtaining the fourth 'pathway of transformation', Clark concluded that when carried out effectively, 'buy in' to entrepreneurship in a university "strengthens selective substantive growth in its basic units", (Clark 1998, p.142) and is a fundamental component in achieving this process of transformation.

v. The Integrated Entrepreneurial Culture

The integrated entrepreneurial culture is the fifth of what Clark (1998) describes as the five pathways of transformation. Clark admits that this was the most difficult part of the analysis, "to grasp organizational ideas and beliefs and relate them to structures that support processes of change". (Clark 1998, p.143) Nevertheless, Clark stressed its importance to the process of entrepreneurial endeavour in this way:

> An institutional idea that makes headway in a university has to spread among many participants and link up with other ideas. As the related ideas become expressed in numerous structures and processes, and thereby endure, we may see them as institutional beliefs that stress distinctive ways. Successful entrepreneurial beliefs, stressing a will to change, can in time spread to embrace much and even all of an institution, becoming a new culture. What may have started out as a simple or naïve idea becomes a self-asserting shared view of the world offering a unifying identity. A transformed culture that contains a sense of historical struggle can in time even become a saga, an embellished story of successful accomplishment. Our five universities have moved along this ideational road. (Clark 1998, p.143)

It is identified with and characterized by competitiveness, confidence, intensity, striving, the fostering of a belief system, and a will to win which is infectious.

This particular 'pathway' has drawn much comment, either directly in response to Clark (1998), or through the research interests of other scholars.

The environment created by governments is one such issue and resulting power, or lack of power, of institutions to build an integrated entrepreneurial culture. Within the Australian context, Marginson looked at the issues of centrally controlled mechanisms versus devolvement, in the wake of a change in the Federal Government in 1996. It was concluded that some of the initial reforms of the previous government had become institutionalized, that there were signs of movement from a quasi-market to a fully economic

market, but that there were no signs of government control being weakened as a result. Power still resided with the central government, and it was argued that this should be constantly re-examined. (Marginson 1997)

The need for diversification is another issue in regards to an integrated entrepreneurial culture. Shattock comments on the pressure for Universities to diversify, stating that the "growth of the private university in Europe is one indication of this, and a powerful indication of the forces of change; the pressure for universities to play a greater role in stimulating their local and regional economies is perhaps another". (Shattock 2005, p.21)

Shattock also highlights that an "important element of the entrepreneurial character is the willingness to take risks". (Shattock 2005, p.19) Davies (2001 (a)), writing about cultural transformation in European universities and drawing upon earlier work (Davies 1987), concluded that "the entrepreneurial culture is generally characterized not only by the willingness to take risks and to experiment with new things, but by the ability to evaluate those ventures, learn collectively from experience, and transfer the essence of experience across the university". (Davies 2001 (a), pp.27-28) McNay is of the view that "the enterprise culture needs careful management" and is concerned to see that the institution's culture is defined to enable it to both hold and attract like minded staff. (McNay 1999, p.57)

But Clark contends that "significant innovation in the character of a university means that some core tasks and some deep structures are altered to the point where the long-term course of the organisation is changed". (Clark 1998, p.8)

Duderstadt supports this position:

> The most important objective of any broad effort at institutional transformation is not so much to achieve a specific set of goals, but rather to build the capacity, the energy, the excitement, and the commitment to move toward bold visions of the university's future. (Duderstadt 2000, p.270)

Jablecka expresses a similar view, contending that "enterprise and innovation are essential at each stage" of development of an organization.

(Jablecka 2001, p.75) Clark restates the positive aspects of developing the entrepreneurial character within universities, as it "does not stifle the collegial spirit; it does not make universities handmaidens of industry; and it does not commercialize universities and turn them into all-purpose shopping malls. On all three counts it moves in the opposite direction". (Clark 2001, p.10) Shattock is sympathetic to this position, asserting the importance of academic "intrapreneurs" and how "structures and constraints need to be loosened to enable them to flourish". (Shattock 2005, p.23)

McInnis (2001), in a cautionary note, emphasizes the importance of getting the reward systems right within such a transforming culture, arising out of a survey of academic staff carried out in Australia in 1999. But Clark (1998) was much less hesitant on this point, affirming that:

> Enterprising universities, much as firms in the high-tech industry, develop a work culture that embraces change...Strong cultures are rooted in strong practices. As ideas and practices interact, the cultural or symbolic side of the university becomes particularly important in cultivating institutional identity and distinctive reputation. (Clark 1998, p.7)

This positive position is supported by Davies:

> ... the entrepreneurial culture will tend to be marked by more open communication and frankness; the ability to handle internal comparisons and competitiveness transparently; a collective ability to admit to weakness and act accordingly; a preparedness to confront problems; and a readiness to be accountable, academically and financially. (Davies 2001 (a), p.27)

But Fuller is clear that despite successful efforts at the faculty level, damage can occur to the university which does not posses a level of institutional entrepreneurial culture.

> Very often the phrase "entrepreneurial university" is taken to refer to the activities of individual faculty members or teams that are especially good at funding themselves, typically by marketing their knowledge (either research or training) to specific clients in the public and private sector. However, this form of entrepreneurship can be destructive to the university's integrity, if there is not also institutional entrepreneurship of the sort Clark observed. (Fuller 2005, p.40)

This fifth pathway, in Clark's view, is vital to the process of transformation. "When traditional habits are not enough, universities need to develop an entrepreneurial response". (Clark 1998, p.8)

The Entrepreneurial University

The literature seeking to define an entrepreneurial university was also included in the online survey. In examining the question, "How do universities, by means of entrepreneurial action, go about transforming themselves?" Clark summarised the research findings in this way:

> Five elements constitute an irreducible minimum: a strengthened steering core, an expanded developmental periphery; a diversified funding base; a stimulated academic heartland; and an integrated entrepreneurial culture. (Clark 1998, p.5)

But there appears to be a paucity of clear definitions of the term 'entrepreneurial university' as mentioned earlier in the overview, and as Neal observes, an "examination of scholarship on entrepreneurship suggests that the term may be difficult to define". (Clark 1998, p.70) Despite this observation, Neal does make an attempt at defining the term:

> ...an institution of nontraditional students (predominantly adult, part-time), that emphasizes the delivery of instructional services (as opposed to research or community outreach activities) in alternative formats (time, place or technology) at multiple locations (including across state lines and national borders). (Neal 1998, p.72)

But this definition seems far too narrow and at odds with generally accepted and broader views of a university. It also leaves out the entire area of commercialization of technology, including technology transfer, intellectual property (IP) exploitation and company spinouts. In particular, this pioneering activity was the hallmark of great North American universities such as Harvard, Stanford and Massachusetts Institute of Technology (MIT). If that range of activities does not qualify them to some recognition as entrepreneurial universities, then the limitations of the definitions such as that of Neal (1998) seem self-evident. After all, universities are generally accepted to be institutions much more broadly defined, with at least a multiplicity of functions including cultural integration, political socialization, education, patient-care and innovative adaptation to economic and social problems (Braun and Merrien 1999, p.9). These functions do not fit within the apparent narrowness of the Neal (1998) definition.

Etzkowitz is also at odds with the approach taken by Neal (1998) and more appropriately comments upon the nature of entrepreneurialism within

universities being a logical follow on from the shift in focus from teaching to research.

> The university's assumption of an entrepreneurial role is the latest step in the evolution of a medieval institution from its original purpose of conservation of knowledge. As universities become entrepreneurs, they do not give up their previous functions of teaching and disinterested research. (Etzkowitz 2003, p.120)

Pawlowski provides a much more detailed definition of the entrepreneurial university, which builds on this 'label' quite effectively.

> The entrepreneurial university is a multi-dimensional institution operating in many areas, constantly looking for new opportunities, and actively participating in the development of the future. To use a French term, it is an agile, flexible institution that adjusts to changing markets, needs, and new opportunities, and is constantly looking for new competitive advantages. The entrepreneurial university is also an institution which participates in the shaping of its environment (and changes it) and, through its numerous activities, generates a new demand for its products, and at the same time, creates new clients. (Pawlowski 2001, p.432)

This definition is much more in sympathy with Clark's (1998) approach, and does not have the limitations of breadth of application inherent in the definition suggested by Neal (1998). Gibb, although writing on the topic away from the specific university environment, captures the essence of the broader aspects of the activity of entrepreneurship and how it might be applied to organisations, especially universities.

> Despite the growing rhetoric, there would appear to be no common agreement as to what pursuit of entrepreneurship and the enterprise culture means. It can only be inferred from public policy 'initiatives' that it means: the emergence of more small businesses; associated higher rates of small business creation; more fast-growth firms and technology-based businesses; social entrepreneurship, enterprise in public organizations and, increasingly, a basis for tackling social exclusion. (Gibb 2002, p.235)

By way of contrast, but also in support of these findings, Shattock discusses the factors which inhibit, rather than enable, universities from becoming entrepreneurial in spite of the environmental pressures to do so, suggesting that the state itself and its funding mechanisms may be a major inhibiting factor. Four case studies were used to illustrate the assertions and these were then compared with Clark's (1998) case study of Warwick. In the findings, Shattock

> ...identifies four intrinsic inhibiting elements: the state, organizational culture and tradition, the existence of too many layers of authority and the absence of a 'strengthened steering core', that prevent these universities from taking advantage of the entrepreneurial climate that has been stimulated by increased market forces and institutional competition. (Shattock 2003, p.146)

In considering the impact of government policies, which create the environment within which transformation, or the creation of an entrepreneurial university can, or must, take place, Slaughter (1998 (b)) observed that a convergence of higher education policies in Australia, Canada, Great Britain and the United States began to emerge in the 1980s and 1990s.

> The areas of convergence were science and technology policy, curriculum, access and finance, and degree of autonomy. For the most part, these policies are concerned with economic competitiveness: fostering product and process innovation, channeling students and resources into curricula that meet the needs of a global marketplace, preparing more students for the post-industrial workplace at lower costs, and managing faculty and institutional work more effectively and efficiently. (Slaughter 1998, p.64)

McNay (1999) usefully describes an entrepreneurial model, rather than an entrepreneurial university, and summarizes the possible advantages and disadvantages. These advantages include prominence of clients, challenge to academic complacency, stimulation of change, enhanced community links and a concern for costs. However the potential disadvantages are a distorted curriculum, a possible implication of sponsored chairs, downgrading of core business, compromise of standards, restrictions on freedom, loss of continuity, stress and collapse as a product of constant change, and dispersion of control causing a loss of coherence of activity.

Slaughter and Leslie use the term academic capitalism, in preference to terms which embody derivations of entrepreneurial.

> In the end, because no one was able to formulate a more precise term, we decided to employ academic capitalism in part because alternatives – academic entrepreneurism or entrepreneurial activity – seemed to be euphemisms for academic capitalism which failed to capture fully the encroachment of the profit motive into the academy. (Slaughter and Leslie 1997, p.9)

Within that context, Slaughter and Leslie refer to the public research university as "an environment full of contradictions" and possessing academics who are "state-subsidized entrepreneurs". (Slaughter and Leslie 1997, p.9) Within their later work, which expands and elaborates upon the issues of academic capitalism and how it affects universities as organizations, Slaughter and Leslie (2001) refer to 'market-like behaviours' which they describe as

> institutional and faculty competition for monies, whether these are from external grants and contracts, endowment funds, university-industry partnerships, institutional investment in professors' spin-off companies, student tuition and fees, or some other revenue-generating activity. (Slaughter and Leslie 2001, p.154)

Marginson also introduces an alternative descriptor, and contends that "the Enterprise University is global in its scope for action (though largely national in character), and globalised in communications...All Australian universities are to a greater or lesser degree Enterprise Universities". (Marginson 1999, p.11)

It is also interesting to note, even at this early stage of the current EUEREK project, the views being expressed on the role of funding as a motivation or driver of change, or 'forced entrepreneurialism', within the universities chosen as case studies for this major project.

> Our evidence so far, though, suggests that financial stringency is the main driver causing universities to engage in these activities. It seems to us somewhat paradoxical that a lack of money for traditional university functions is causing the university to move into new knowledge domains, producing and disseminating new knowledge: 'forced entrepreneurialism'. We hope to be able to throw more light on these motives, the tensions between them, and whether a change in motivation is taking place. (Temple and Shattock 2005, pp.6-7)

The outcomes of the EUEREK project, particularly the further development of the concept of 'forced entrepreneurialism', may further build on the scholarship in this area of entrepreneurial terminology.

Rhoades and Slaughter looked at the consequences for universities of their preferred term of academic capitalism, and focused in particular upon the way in which professionals work within so called publicly funded institutions, arguing that a return to the separation between what we once knew as public and private is highly unlikely. In their view, there were consequences for the public interest, and these were explored in their research from the viewpoint of 'unrepentant structuralists' as they described themselves. (Rhoades and Slaughter 1997)

With specific reference to the Australian context, Marginson (1999) and Gallagher (2000) have both contributed to this observation through their own research. Marginson observed as follows:

> Certain institutions have attempted to break the mould and in the process lift their individual competitive position within the hierarchy. Three main strategies have been used: Hyper-entrepreneurialism... Globalization... Distance education specialization. (Marginson 1999, p.8)

Gallagher (2000), an influential creator of higher education policy in Australia within the then Federal Ministry of Employment, Training and Youth Affairs, took an even broader position on the issue of entrepreneurialism within Australian universities. The argument presented was that the description of 'entrepreneurial' is equally appropriate when describing the general direction and stage of development of all Australian public institutions and is not restricted to a particular class or type of institution.

> The notion of public universities becoming entrepreneurial is an ambiguous one and presently the subject of debate among academic and public communities in Australia. It is a multi-dimensional concept with some apparently, though not necessarily inherent, yet still arguable, contradictions. Australia's public universities are variously becoming entrepreneurial in inter-related ways... (Gallagher 2000, p.1)

Davies provided insights more broadly based than those arising only from research in the Australian context. For example, in discussing and defining the term 'entrepreneurialism', it was described as being "about financial consciousness, the ability of the institution and its members to exploit commercially the opportunities presented, and to generate surpluses which may be used to invest in further development, or meet deficits incurred by government financial reductions or declining enrolments or other academic business". (Davies 2001 (a), p.29)

These diverse attempts to define entrepreneurial activity within the context of a university still persist. Again with reference to the recent presentation on the major European project EUEREK, difficulties have already emerged with terminology. "Some partners in our project have difficulties with the term 'entrepreneurial', with its possible implications of individualism and short-term profit-seeking: 'innovative' or 'self-reliant' are terms preferred by some to describe what is the essential focus of our interest". (Temple and Shattock 2005, p.3)

So, returning to Clark, entrepreneurial was defined against the stated need for universities to transform themselves: "Entrepreneurial... is a characteristic

of social systems that is, of entire universities and their internal departments, research centres, faculties, and schools". (Clark 1998, p.4)

It is this definitional background, and the expansion of this concept as further outlined by Clark, that formed the basis of general usage throughout this study, and has been applied specifically in the case study of the UOW.

Leadership

Originally, dealing with the literature on leadership within the contextual setting of the section on 'a strengthened steering core', was considered adequate. However, the role of leadership arose more frequently than anticipated in the process of examining the literature on entrepreneurial activity in universities, but especially in relation to the role of the Vice-Chancellor, did it become a recurring theme during the program of semi-structured interviews which formed the qualitative part of the research for this thesis.

Middlehurst (1999) provides a useful outline for this topic of leadership, suggesting that,

> Leadership needs to be understood in three ways:
>
> - as a role which is carried out formally by particular post-holders (Vice Chancellors or Rectors, Deans and Heads of Department, Course Leaders and Research Leaders);
> - as a function that can be – and needs to be – performed at difference levels in an institution in both formal and informal contexts;
> - as a process of social influence that guides individuals and groups towards particular goals...(Middlehurst 1999, p.311)

Interestingly, the first of these three ways, as exercised by the Vice-Chancellor, required specific reference as an outcome of this study, as it received specific reference on several occasions during the program of interviews.

Marginson, in work based on what was termed 'the enterprise university', saw the role of Vice-Chancellor as a kind of new executive power in Australian universities, "characterized by a will to manage and a freedom to act greater than in earlier times...In its stronger forms this executive

leadership, embodied in the person of the Vice-Chancellor, is nearly unstoppable on its own ground". (Marginson 1999, p.5)

McInnis is also forthright about the potential for leadership to both influence and achieve the desired outcome of any attempt at transformation.

> Efforts to transform universities towards entrepreneurial cultures are problematic, if not futile, unless institutional leaders and managers understand the skills, passions and outlooks of academics, and how their performance in their core work is influenced (or not) by reward systems. (McInnis 2001, p.46)

However, Shattock, in relation to entrepreneurial influences in universities, moves further away from the Marginson view expressed above and concludes that "individualized leadership is less critical to success than an organizational culture that encourages a sense of common purpose, welcomes the need for rigorous and disinterested debate and accepts that decisions have to be taken and implemented within an appropriate timescale". (Shattock 2003, p.40) He also supports the idea of a collective leadership. "No central leadership group can deliver university success unless there is leadership elsewhere in the institution, particularly at departmental level and within departments, which can, on occasion, confront the centre with alternative strategies". (Shattock 2003, p.92)

But especially in the fluid times in which universities are now operating, where the need for transformation is being argued by Clark (1998) and others and where change is more rapid than at any time in the history of these unique institutions, institutional leadership is a crucial ingredient in the successful operation of a university. In relation to achieving ownership of the change process required to progress along the pathway of transformation, Bargh, Bocock *et al.* found in relation to leadership style, that it "is a reflection of the big picture of vision of the organization" and that "there is, or at least should be, a clear connection with organizational vision and the steps that are taken to translate it into practical reality". (Bargh, Bocock *et al.* 2000, p.130-131) The impact of leadership is also a necessary factor in the successful development of change and the establishment of appropriate goals and objectives for an institution: there is much to be gained by focussing more closely on the practice of leadership in higher education.

(Middlehurst 1999) Bennis, Benne *et al*, in discussing the crucial role played by people in authority in educational institutions, believe that they must be interventionists. They "must develop the vision and authority to call the shots... must do more than tinker with the machinery and flex their muscles. They must have an entrepreneurial vision..." (Bennis, Benne *et al* 1969)

In the American context, Guskin looked at the impact of presidents on the restructuring of universities, leadership and the change process. A caution was raised that in universities and colleges, "where presidents often remain at the same institution fewer than seven years (and new leadership frequently brings with it a fresh agenda and a different leadership team), this usually means trouble". (Guskin 1996, p.21) While this issue of brevity of tenure for presidents is seen in negative terms by Guskin, McNay, in the European context, indicates that this has to be seen as part of the reality of modern university leadership where the crucial issue is influence. "Some rectors try to run universities with little change – as if it were still an elite system, but under temporary pressure. Others have gone for full-blooded entrepreneurial approaches with the trappings of a business culture". (McNay 1999, p.58)

Shattock appears to take a more diffident position on this matter, observing from research that leadership and management "need to be tailored to their communities" and specifically in reference to universities, is an ambiguous quality. (Shattock 2003, pp.89-91)

But Davies sees it as a significant issue. "Leadership therefore has the difficult task of being creative and inspirational on the one hand, and realistic on the other". (Davies 2001 (b), p.514) Marginson also sees it as significant and finds that the Enterprise University has a number of limitations, the first being that "its leaders are too far detached from that which they lead, while too much is asked of them". (Marginson 1999, p.12) Within Australian universities, observations included "a good deal of diversity in leadership styles, ranging from the free-wheeling entrepreneur to the close checking

rationalizer, to a more pastoral style, but...surprisingly little diversity in purposes". (Marginson 1999, p.5)

In discussing the uncertainties of universities and the role of their chief executives, Bargh, Bocock *et al. (*2000) are firmly of the view that Vice-Chancellors do play a key role in developing the institutional personality.

The issue of leadership therefore is not to be underestimated in its capacity to influence the outcomes of mission translation and interpretation so essential for setting the direction of an institution.

> Superior leadership performance – transformational leadership – occurs when leaders broaden and elevate the interests of their employees, when they generate awareness and acceptance of the purposes and mission of the group, and when they stir their employees to look beyond their own self-interest for the good of the group. (Bass 1990, p.21)

Brunetto also argues strongly for the concept of transformational leaders who are empathetic, entrepreneurial, are able to build positive relationships with employees and can enhance their confidence. (Brunetto 2000, p.52)

But in seeking to relate the literature on both transformational and distributed forms of leadership, Muijs, Harris *et al* observed that

> "they are not necessarily contradictory. The term 'shared transformational leadership' has recently been coined to describe instances in which the two interact. A shared transformational vision is seen as leading to reform and change in a more sustained and sustainable way." (Muijs, Harris et al. 2006, p.90)

Clark had suggested that the university president should serve as mediator, unify the diverse groups on campus, and at the same time maintain the overall objectives of the institution in order to "move the whole enterprise another foot ahead". (Clark 1963) However, much later, Clark observed in each of the five European case studies that "a highly personal form of rectorial leadership can generally serve only for a time as an agency of change in a European university". (Clark 1998, p.90)

The role of the Vice-Chancellor became a recurring theme throughout the program of semi-structured interviews for this Thesis, and forms a significant outcome of the case study component. This is not surprising, given the

prominence of this function in the literature surveyed. Leadership and governance functions are of major importance in interpreting the drivers of change, outlining potential scenarios, developing organisation responses and making change happen.

As Middlehurst and Elton assert, "it is the task of leadership to clarify the direction of changes and to make the members of the organization willing, even enthusiastic partners in the change process...Put epigrammatically: management controls, leadership guides and enthuses, administration serves". (Middlehurst and Elton 1992, p.252) Although the importance of leadership has had much comment, it is interesting to note that:

> "University Vice-Chancellors have figured only at the margins of the academic literature about leadership...There are two main reasons for this marginality. First, until as late as the 1970s universities were not seen as institutions that had to be managed - still less as managerial institutions. The second, and perhaps more significant reason, is that the very limited studies of vice-chancellors that had been undertaken were firmly situated in wider accounts of the formation and development of elites". (Bargh, Bocock et al. 2000, p.18-19)

But the issue of distributed leadership, although not raised during the interview process as a concept for understanding leadership at UOW in the same way as leadership was specifically attributed to the Vice Chancellor, is informative. Ross, Rix *et al.* (2005) provide at least one response to this by referring to its recency as a subject of research: "Recent leadership research distinguishes between leading as a quality of one person, the appointed leader, and leadership as a collective phenomenon, usually referred to as distributed leadership". (Ross, Rix *et al.* 2005, p.130) Gronn (2002) is a strong advocate for this definitional term of 'distributed leadership' as a unit of analysis and summarises the concept as follows:

> Distributed leadership was shown to encompass not merely the structuring influence of numerous individuals, but three forms of concertively patterned and reproduced activity-based conduct, each representing varying degrees of structural solidity: spontaneous collaboration, intuitive working relations, and institutionalized practices." (Gronn 2002, p.447)

Summary

The literature survey was structured around the pathways of transformation which arose out of Clark's major research published in 1998. Clark's work

had been based upon case studies into five European universities: Warwick, Twente, Strathclyde, Chalmers and Joensuu. This structure was specifically chosen, given that the research, both the qualitative and quantitative components which form the basis of this thesis, use these pathways of transformation as the backdrop to the case study of the UOW. The nature of an entrepreneurial university was given separate consideration as was the issue of leadership, especially that of the role of the Vice-Chancellor, and the concept of distributed leadership, as they arose regularly throughout the course of the literature search.

Clark, in commenting on the five pathways, observed as follows:

> We have noted repeatedly throughout this study that the five elements of transformation become just that by means of their interaction. Each by itself can hardly make a significant difference. (Clark 1998, p.145)

In one of the later journal articles, Clark, in reflecting on this original work published in 1998, revisited the ideas of transformation and concluded that if a university can transform itself, it can form the basis of ongoing successful performance (Clark 2003). Again, drawing heavily upon the last chapter of the 1998 book, Clark concluded that "...the future of universities rests in their self-reliance. The study of modern academic entrepreneurialism teaches, and teaches well, that, one by one, as the twenty-first century unfolds, universities will largely get what they deserve. The lucky ones will have built the institutional habits of change". (Clark 2004 (b), p.368) Duderstadt agrees with this need to change, to undergo a process of transformation, noting that

> the choice before us seems clear. We can accept the challenge – and the risk – of transforming our institutions into new forms more appropriate to the age of knowledge. Or we can accept the near certainty of stagnation and decline as the capacity of our traditional universities to serve our changing world erodes. (Duderstadt 2000, p.68)

However, Marginson, in making some early observations arising from a study of eight universities, saw the need for new systems of governance, including accountability and transparency, and systems that encourage openness and debate, among both academic and general staff. Although being generally supportive of Clark's (1998) findings regarding transformation and the process of change, Marginson cautions in an earlier study that copying

another model will not of itself prove useful as a solution in the Australian context. In fact Marginson argues that it can restrict the development of a distinctive institutional response to change. (Marginson 1996)

This theme has already arisen in the initial observations from the EUEREK project, showing from the various case studies that national or state context appears to be an important influence. "Despite (these) pressures for convergence, elements of entrepreneurialism appear differently in different states". (Temple and Shattock 2005, p.10)

> Another way of putting this is to say that the balance between regulation and competition in European higher education is changing. The increased number of actors in teaching, research, and 'third stream' activities has created a more competitive environment, which cannot be ignored by policymakers. What we are seeing in response, across Europe, is the emergence of *regulated* competition in higher education, supported by more entrepreneurial methods in the institutions concerned. (Temple and Shattock 2005, p.9)

Emphasis was ultimately given in the survey to the scholarship of Clark, Davies, Marginson, McNay, Middlehurst, Slaughter and Shattock. Each, in their own way, have made significant contributions to the general topic of entrepreneurial activity in universities, and other themes associated with Clark's 'pathways of transformation'. In particular, Marginson and Considine make a specific case about universities in Australia with specific reference to the context of Clark's pathways.

> All Enterprise Universities in Australia display the first three Clark characteristics, strengthened steering core, expanded development periphery, and somewhat diversified funding base. Universities following one or more of the three reinvention paths display these characteristics to an advanced degree. On the other hand, Clark's last two characteristics are weak or non-existent in Australia. If some Enterprise Universities have created an institutional culture, none seems to be stimulating its academic heartland as Clark describes. Often, centrally driven integration is secured more on the basis of the weakness of academic cultures rather than their strength...Everywhere the 'expanded developmental periphery' seems to side-step academic engagement all too quickly. (Marginson and Considine 2000 (a), p.240)

However, there were gaps in the literature. The inadequacy of definitional support for key terms such as 'entrepreneurial university' was immediately apparent. There is also an urgent need for a theoretical framework to be prepared which could serve the interests of further studies on this topic. The work of Clark (1998) did not seem to give sufficient emphasis to the importance and centrality of leadership, especially that of the role of the Vice-

Chancellor as leader. On the contrary, the role of Departments and other organizational units seemed to be preferred as a necessary structural component in creating and then sustaining the entrepreneurial character and culture of the university.

The key authors covered in the survey have contributed to particular issues of relevance to the survey, such as academic capitalism and market behaviours (Slaughter and Leslie 1997), adaptive universities (Davies 1987), enterprising universities (Clark 1998; Marginson 1999; Clark 2004 (a)), governance and leadership (Middlehurst, 1999) and innovative and responsive universities (Shattock 2003). This supported and informed the review of the literature, which was used as a foundation for the establishment, development and implementation of the investigation, including the construction of the survey instrument, the case study and the semi-structured interviews.

It also helped clarify the key research question which was defined as follows: Using the five headings developed by Clark (1998), which are termed the pathways of transformation, is the UOW an entrepreneurial university? There were also several supporting research questions developed around the themes of the 'pathways of transformation':

- to test the adherence of staff at the UOW to the pathways of transformation;
- to inform future decision making based upon the data analysis; and
- to provide a background for the construction of future policy objectives.

The relevance of the key research question and the supporting research questions to the development, understanding and application of higher education policy and management was also confirmed in relation to the process of transformation leading to an entrepreneurial culture in universities.

Chapter 3: Research Methodology

Overview of the Chapter

This chapter describes the research methodology involved in the qualitative and quantitative aspects of the study. It includes the development, testing and implementation of an online survey instrument to gain the perceptions of a representative sample of the staff at the UOW, document analysis, and a series of semi-structured interviews to gain an understanding of the views of a sample of academic staff and the SEAM of the UOW. It also defines the case study methodology and approach used as the basis of the study.

Research Design

Overview

The study combined qualitative and quantitative investigation. The qualitative aspect of the study included semi-structured interviews and case study research. The quantitative characteristic of the study involved the use of a survey instrument with both Likert style questions and semantic differential questions which produced data that was analyzed.

The primary methodology is best captured by the term 'case study', where the UOW is the case. It will be argued that using the case study approach is the most appropriate for this research task, and as MacPherson and Brooker *et al.* argue, "it is the richness of the detail provided by a well conducted case that develops insights that have resonance in other social sites, thereby allowing theoretical connections to be explored and established".
(MacPherson, Brooker et al. 2000, p.52)

Introduction

In undertaking the data collection, it was intended to follow the three principles outlined by Rowley (2002, p.23), that of:

1. Triangulation which requires corroborating evidence from several sources to support a fact or finding;
2. Case Study Database which increases the ability to repeat the research; and
3. Chain of Evidence, which makes it clear by citation, which parts of the case study database are being drawn upon.

This approach is supported by Yin, who emphasises that "the narrative of the case study report should relate specific interpretations and conclusions to specific data presentations in the report". (Yin 1992, p.133)

It was also important to take heed of the advice of Yin to avoid the possibility of alleged subjectivity. Yin's advice includes remedies to address this:

> First, the data collection process should culminate in the creation of a formal, case study database – whether including organized field notes, archival documents and records in retrievable form, tabular materials, or even the investigator's own narrative responses to the case study protocol...Second, the report should contain formal presentations of the relevant evidence and data from the database - so that the reader can observe, question, and (if necessary) re-interpret the data independent of any reading of the report's narrative portion. (Yin 1992, pp.132-133)

This approach has been carefully followed in an attempt to achieve this ideal outcome.

A program for the fieldwork was developed to ensure that the initial assessments of time and resources were appropriate for the project. This scope of work considered the importance, scale and relevance of such issues as the availability of required data, primary documents, the extent to which secondary documents were needed and available, the necessity for direct observation, the manner in which data should be gathered and recorded, a timetable for the fieldwork, including visits and the associated logistics, preparation for the semi-structured interviews, the construction, transcription and verification of interview notes, and the coding of data.

Again, Yin's ideas were utilized:

> The case study's acceptance of the rules of traditional scientific inquiry means that the data collection should be done with explicitly developed protocols, instruments, and other tools external to the investigator. Development of these data collection instruments may take considerable time and effort. (Yin 1992, p.131)

The Case Study Approach

The decision to use a case study approach was supported by the literature, especially (McDonnell, Lloyd Jones *et al.* 2000; MacPherson, Brooker et al. 2000; Rowley 2002; Sullivan 2000) and (Yin 1992, 1994). The method was also chosen as it can be used in various ways and has gained in importance with the development of research into sociological issues. Yin (1994) has distinguished three types of case study research: exploratory, which investigates a vague problem or new issue; descriptive, which seeks to define accurately a situation or issue; and explanatory, which seeks to explain the causality between observations. Within the terms of this definition, the case study of the UOW could be classified as explanatory in nature.

It is acknowledged that there are inherent dangers for a new researcher in adopting the case study approach. Yin in particular, argues that "...good case studies are very difficult to do. The problem is that we have little way of screening or testing for an investigator's ability to do good case studies". (Yin 1994, p.11)

However, Rowley argues quite strongly for the appropriateness of the case study method for new researchers. This approach to research often emerges as an obvious option for students and other new researchers who are seeking to undertake a modest scale research project based on their workplace, or the comparison of a limited number of organisations. (Rowley 2002) But aside from this issue, one of the most compelling reasons for adopting the case study approach is that argued by Mitchell (1983) and referred to by Yin: "A case study may be characterised as a detailed examination of an event (or series of related events) which the analyst believes exhibits (or exhibit) the operation of some identified general theoretical principle". (Yin 1994, p.99) In this case, the development of an entrepreneurial culture giving rise to entrepreneurial behaviour.

Rowley agrees with this position, and provides supporting comment: "Who, what and where questions can be investigated through documents, archival analysis, surveys and interviews. Case studies are one approach supporting deeper and more detailed investigation of the type that is normally necessary to answer how and why questions". (Rowley 2002, p.17)

Other reasons for adopting the case study method include arguments put forward by Amaratunga and Baldry that "a very important advantage of the case material lies in the richness of its detailed understanding of reality". (Amaratunga and Baldry 2001, p.99) Jensen and Rodgers also assert, in relation to the general body of knowledge which they refer to as public administration, that case studies "satisfy the recognized need for conditional findings and in-depth understanding of cause and effect relationships that other methodologies find difficult to achieve". (Jensen and Rogers 2001, p.235) Rowley, also argues that "...case studies are useful in providing answers to 'How?' and 'Why?' questions, and in this role can be used for exploratory, descriptive or explanatory research". (Rowley 2002, p. 16) Yin (1994) also supports this approach.

MacPherson, Brooker et al., argue against adopting "a pragmatic compromise that features qualitative and quantitative data and fuses them together in a multi-method procedure". Instead, they prefer "to be pro-active in arguing for qualitative case study research in its own right by referring to four key elements: its purpose, its place, its processes and its products". (MacPherson, Brooker et al. 2000, p.53) This support for the case study method is very compelling.

Because the questions being posed in the research proposal are how and why questions, Yin believes that they "are likely to favour the use of case studies, experiments, or histories". (Yin 1994, p.7)

Gaining access to a site, both for the purpose of interviews and to obtain the appropriate range of data, is a major consideration in determining the scope of any research project utilizing case study methodology. Practical

considerations must be given due weight, if the project is to have a chance of meeting the professional requirements for research and to be completed within available resources and within a reasonable time frame. The importance of giving these matters due consideration is supported by McDonnell, Lloyd Jones et al.

> During any research study, investigators have to contend with the sometimes uneasy relationship between theory and the practicality of carrying out research in a real-life setting...The design of any research study is influenced not just by theoretical but by pragmatic considerations. (McDonnell, Lloyd Jones et al. 2000, p.384)

The case study was underpinned by a number of data collection strategies along the lines suggested by McDonnell, Lloyd Jones et al. (2000). These included:

- an online all staff questionnaire;
- a series of semi-structured interviews;
- the collection of audit, financial and statistical data; and
- a review of relevant documents relating to major UOW policy initiatives.

The value in using non-participant observation of meetings was considered, but this technique was thought to be of limited value to this particular study.

The case study method of research also has distinct advantages of design flexibility: "case study research can be based on any mix of quantitative and qualitative approaches. Typically, it uses multiple data sources including two or more of: direct detailed observations, interviews, and documents". (Rowley 2002, p.18) In the proposed study, the latter two will be utilized.

In summary, the case study approach is both appropriate and defensible for this project and again, as Yin confirms, "although case studies and histories can overlap, the case study's unique strength is its ability to deal with a full variety of evidence – documents, artefacts, interviews and observations - beyond what might be available in the conventional historical study". (Yin 1994, p.8) Its applicability to a new researcher is supported by Perry who concludes that "the case study methodology is a rigorous, coherent one

based on justified philosophical positions. It is appropriate for postgraduate researchers, whether they plan to have an academic career or a career outside of academia". (Perry 1998, p.799)

It is also argued that, based upon the literature, the findings of this study using the case study method will be appropriate, robust and a legitimate basis for adding to and informing the existing body of knowledge. It should also provide an ideal basis for further research, especially through ongoing refinement of the survey instrument as a means of measuring the degree to which staff in a given university support the notion of entrepreneurial activity as defined by Clark's 'pathways of transformation'.

Limitations of the Case Study Method

The case study approach is not without its detractors. "Although the case study is a distinctive form of empirical inquiry, many research investigators nevertheless have disdain for the strategy... Perhaps the greatest concern has been over the lack of rigour of case study research". (Yin 1994, p.9) Yin also points out two other common concerns: "that they provide little basis for scientific generalization" and that they "take too long, and they result in massive, unreadable documents". (Yin 1994, p.11) The danger of this occurring on this occasion is minimal as the researcher is both impatient in approach and economic in use of words. But personal discipline and the strong support and direction of the assigned supervisor, will be needed to avoid this potential danger.

Rowley raises a further potential limitation in that "case studies as a research method or strategy have traditionally been viewed as lacking rigour and objectivity when compared with other social research methods" and that "analysing case study evidence is not easy". (Rowley 2000, p.16) Jensen and Rodgers observe that, "case studies do, to some extent, trade detail for generalizability" and also points out that "critics devalue case study evidence because they think only in terms of each case study as an independent

finding. They fail to appreciate each case study's value to the whole network of research and to the final synthesis". (Jensen and Rodgers 2000, p.5)

But the most critical comments about the use of the case study approach are made by Abbott:

> Cases are characterless; they have no qualities other than those hypothesized to determine the dependent variable, and even those qualities act in isolation from one another. The case is constructed, built up parsimoniously out of main effects, rather than deconstructed by simplifying its complexity. (Abbott 1992, p.62)

However, despite these observations, there is ample evidence in the literature as outlined above to support the use of the case study method and it is argued that it is the most appropriate approach for the proposed research topic.

The Case Study Design

Having chosen to use the case study approach, it was necessary to establish the boundaries of the study. This was achieved by determining the key research question, and the supporting research questions.

The UOW had gained a reputation within Australia for being an innovative and entrepreneurial university. Although it aspires to be known as an international research university, it is for its entrepreneurial approach in particular that the UOW has gained its reputation over the past two decades. This achievement has been nationally recognised through winning several Australian awards, and the UOW is the only Australian university to be awarded 'University of the Year' two years in succession. In both years, the awards were in recognition of the university's activity in fields associated with entrepreneurship and innovation.

> The Good Universities Guide award of the title of University of the Year to Wollongong for two years running in 1999-2000 and 2000-01 symbolises the university's outstanding record in research and development partnerships with government agencies and corporate enterprise. This title also acknowledges the university's record of achievement in the international student market. (Markham 2001, p.18665)

Bird (2006) also supports this view, stating that the UOW exemplifies the Wollongong (city) motto 'City of Innovation', having recently won two further

awards: the Prime Minister Employer of the Year award in the higher education category, and the NSW Telstra Business Woman of the Year award for which an academic at the UOW, Professor Julie Steele, was the recipient. The case study approach enables "an investigation into a phenomenon in its context" (Sullivan 2000, p.1) and this was reflected in the overall design of the study.

The case study design was developed to determine the validity of this growing reputation for entrepreneurial activity at the UOW. The key headings which outline Clark's 'pathways of transformation' were chosen as a contemporary and respected set of criteria against which to set and compare the specific case study. By using this approach, supplemented by a survey of all staff, it was hoped that the findings could be used to further develop and refine a set of criteria, which would provide both the basis for further research and be used for assessing the extent to which other universities, not just in Australia but potentially internationally, are considered entrepreneurial.

To ensure that the study met the highest demands for quality, transparency and validity, a protocol was established for the data collection, to guide the case study. The work of Sullivan (2000) was particularly helpful in confirming that such a protocol should include such things as an overview of the case study, field procedures, including the use of different sources of information, access arrangements to these sources and potential case study questions. It was also seen as essential that the research question(s) were designed in such a way as to shape the entire project, a point emphasised for the purpose of successfully addressing the generalizability of case study research. (Jensen and Rodgers 2001)

After many attempts at defining the key question(s) around which to focus the research, it was decided that the key question should be defined as: Using the five headings developed by Clark (1998) which are termed the pathways of transformation, is the UOW an entrepreneurial university?

This was a crucial step in the planning of the study. "Defining the research questions is probably the most important step to be taken in a research study, so patience and sufficient time should be allowed for this task". (Yin 1994, p.7) This was heeded in the initial planning of the research project, and together with determining the supporting research questions, was constantly modified during the course of the initial work up of the study. There was a danger initially that the question so defined would make the task too broad to be completed within a reasonable time frame, and it was for this reason that the supporting research questions were carefully defined in an attempt to avoid the temptation to embrace all aspects associated with the overall theme of entrepreneurship in higher education.

For example, it was initially proposed that an international study of several universities would be undertaken to assess the extent to which entrepreneurship could be developed within the culture of a university, regardless of the national context or legal and educational regulatory environment. However, for reasons of cost of site visits, the time commitment involved, and the availability and access to data, satisfying the ability to replicate the research into the extent of entrepreneurship in other universities and across national boundaries has been left for future research projects.

This has not impacted upon the validity of the study, and the key research question was supported by the following research investigations:

- to test the adherence of staff at the UOW to the pathways of transformation;
- to inform future decision making based upon the data analysis; and
- to provide a background for the construction of future policy objectives.

In defining the key question, the general boundaries of the study were established. The research question needed to be descriptive, exploratory and explanatory in nature and it is argued that the question as defined meets

this criteria. It was designed early in the research exercise but needed ongoing refinement so that the research problem could be structured to achieve maximum validity and insight for further research. Platt is of the view that the development of such questions is not an essential element in the approach to a case study, and that "it is evident that the kind of case a whole work is may change over time". (Platt 1992, p.41) In a contrary view to this approach, it is argued that "it is not sufficient to undertake a case study without a particular purpose in mind nor is it acceptable to impose a secondary purpose on the study after it has begun". (MacPherson, Brooker et al. 2000, p.55)

It is this latter view that was found to be the most compelling and therefore was the approach taken for the research project. As for emphasis, the position taken by Yin was adopted in which he contends that "explanatory rather than merely descriptive case studies are desired". (Yin 1994, p.129)

"As a research endeavour, the case study contributes uniquely to our knowledge of individual, organizational, social, and political phenomena" and is useful "when the investigator has little control over events and when the focus is on a contemporary phenomenon within some real-life context". (Yin 1994, p.2)

The Mixed Mode Approach

Despite the strength of the case study approach it was decided to strengthen the research methodology by adopting a mixed mode approach aimed at minimizing error and maximizing research outcomes. This included the use of an online survey and a program of semi-structured interviews together with the case study approach. Patton (2002) supports the use of a mixed mode approach suggesting that studies which use only one method of enquiry are more vulnerable to errors linked to that particular method.

The online attitudinal survey was designed to acquire the perceptions of a representative sample of staff at the UOW. The online survey, as a

technique, has no interviewer bias, but introduces a need in the respondents for literacy and access to a computer. (Glastonbury and MacKean 1991) In this study at the UOW, literacy among staff is assumed, and the number of people without access to a computer was found to be low. This reduced the potential for this type of error to occur.

A program of semi-structured interviews of staff was undertaken to explore further the views and perceptions expressed through the survey. Two groups were established as part of the program. The first group comprised a sample of the leadership (SEAM) of the UOW and the second, a sample of academic staff. Interviewing offers the flexibility of measuring reaction, and allows the researcher to probe for more detail and seek more reflective responses. (Glastonbury and MacKean 1991) Additionally, interviewing a large sample of staff at the UOW to garner perception would have been time consuming and costly. For this reason, a sample of staff members who were thought to have a high level of information were chosen for the semi-structured interview program. This method of interviewing has proven to be the best approach when seeking a high quality detailed response. (Glastonbury and MacKean 1991) The semi-structured interview program was also supplemented with staff members from the 'academic heartland'. Together these two groups, along with the online survey, provided both a broad view and a detailed view of perceptions from the University staff.

In choosing a mixed mode approach, it was recognised that one of the principal advantages provided by the application of a case study approach was the ability to analyze key historical data and operations within the UOW. But while a case study on its own is very important for examining the 'how' and 'why' questions (Yin 1994), a mixed mode approach was undertaken to investigate if the UOW is entrepreneurial, including an analysis of issues such as 'how much', 'how' and 'why'. Yin (1994) also supports the use of case study and survey methodologies simultaneously to investigate 'how much' questions, such as the question investigated in this study.

Issue of Sample Size

In assessing, for the purposes of this study, whether it is adequate and sufficient to use one case study, that of the UOW, it was observed that there is much in the literature on this topic. There is strong support in the literature for the validity of research when the number of cases is small, as will be the situation in this research. While Lieberson expresses the concern that "the impact of error or imprecision is even greater when the number of cases is small" (Lieberson 1992, p.115), Platt supports the notion of the "unimportance of numbers of cases to theoretical explanation" (Platt 1992, p.24) and Perry observes that "there are no precise guides to the number of cases to be included...". (Perry 1998, p.793) This general position is also supported by Rowley, who is of the view that "case studies can involve single or multiple cases" (Rowley 2002, p.18) and Yin, who asserts that "single and multiple case studies are in reality but two variants of case study designs". (Yin 1994, p.14)

It was concluded from the literature that given the existence of Clark's case study findings as a major reference 'backdrop' against which to both analyze and evaluate the UOW, the use of the UOW as a case study will be adequate and sufficient "to understand and articulate patterns and linkages of theoretical importance". (Amaratunga and Baldry 2001, p.100)

Threats to Validity

While it may be argued that the UOW has a distinctive set of characteristics, especially in relation to its commercial arm, the ITC, it was not a key aim of the study to argue that the case chosen has any specific virtue. Rather, it has been chosen for reasons of access to documents, data and staff for the purposes of survey and semi-structured interviews, and the general contention that it is worthy of consideration in the context of Clark's 'pathways of transformation'. (Clark 1998) In effect, it will be seen as a further step in understanding the nature of entrepreneurial activity within a university, testing the UOW against Clark's criteria, and enriching the study of

this area of knowledge as it relates to policy and management within Higher Education.

The rigour with which the research design was prepared and implemented will enable the study to be replicated. This is a non-negotiable element of the proposed research methodology, supported by researchers such as Fox-Wolfgramm: "... an appropriate case research design should be logical, systematic, and easy to replicate". (Fox-Wolfgramm 1997, p.440) This replication should be possible not only at the UOW, but at multiple sites. The ability to replicate the case study at other places is also seen as vital to its validity as it enables the exploration of "the successful application of a set of ideas/insights/propositions developed from a single site". (MacPherson, Brooker et al. 2000, p.56) The advice of Rowley in this important area of validity is particularly compelling, and spells out the absolute necessity for validity to be appropriately dealt with to ensure that the findings of the case study are viewed as legitimate additions to knowledge by other researchers.

> Generalisation, validity and reliability...these three concepts establish the basis on which other researchers should regard a piece of research as knowledge that can be assimilated into the knowledge base of a field of study. It is therefore important to demonstrate that these issues have been fully considered. (Rowley 2002, p.20)

Yin also supports this view by emphasising that the rigour of case studies should be judged by the same criteria as other empirical scientific methods, "internal validity, external validity, construct validity, and reliability". (Yin 1992, pp.123-124)

Jensen and Rodgers (2001) point out another potential danger in the design of a case study, which has the ability to draw criticism: that of the "snapshot" involving a single case study at a given point in time. This issue will be addressed by undertaking a survey which will not be restricted by time, and supported by a sample of both the staff leadership, and academic staff, undertaking semi-structured interviews to inform the survey. It is also addressed by the fact that, prima facie, the UOW is an entrepreneurial university which makes it valid to consider.

A further potential threat to the validity of the results arises from the author of this thesis, who has played a management role in the case study university. "One of two responses may resolve a conflict of interest, namely avoidance and due disclosure when avoidance is not necessary or not possible". (Dickens and Cook 2006, p.196) In this case, as it was not possible to avoid the conflict due to the author's joint appointment at the University of Wollongong and the Illawarra Technology Corporation, disclosure is made within this document.

But this employment was used as a positive to enhance the depth of the study by using the technique of participant-observation, as the author of this thesis had long held an appointment at the UOW. "Insiderness can facilitate access to, and knowledge of, key entry points that may be unavailable to the outside participant observer, at least in the beginning of the research endeavour". (Labaree 2002, p.111) Bruyn (1966) suggests that the accuracy of participant-observation can be assessed by six criteria: time, place, circumstance, language, intimacy and consensus. In the case of the author the following are highlighted:

1. **Time**: the observer has been employed at the UOW and ITC in a joint appointment since 1990.
2. **Place**: the observer has participated in many levels of operation within the case study at hand and has intimate knowledge of the UOW.
3. **Circumstance**: as a member of the senior executive team the observer belongs to the social groups within the UOW and understands the personal.
4. **Language**: the observer has been employed in the education industry for more than 30 years and is well versed in the language used.
5. **Intimacy**: The researcher has been a resident of the regional area of Wollongong and therefore understands well the social context within which the UOW has developed. However, this criterion is not really seen as relevant to this research project.
6. **Consensus**: Again a deep knowledge of the education sector, a long employment history within the case study and triangulation of data

were all methods used to demonstrate knowledge of the culture at UOW.

Participant observation studies are not without their critics, who note that they are often "...subjective...biased, impressionistic, idiosyncratic and lacking in the precise quantifiable measures...of survey research". These critics go on to ask how "do we know that observers to not lose their perspective and become blind to the peculiarities that they are supposed to be investigating?" (Cohen, Manion et al. 2000, p.313-4).

There are several specific tools a researcher can use to minimise the potential bias that may result from being an insider in the case study university. The approach adopted here included triangulation of the data using case study material, survey data and semi-structured interviews. The formation of a case study database and production of chain of evidence documentation were other methods employed by the author to reduce the potential for personal bias. In addition, the research agenda was clearly communicated to all participants, a point emphasised by Labaree: "must be clear in my research agenda and unambiguous about my long term purpose". (Labaree 2002, p.110)

Design Phases and Procedures

The study was divided into seven phases; the outline of each task provides a detailed account of each phase.

Phase One: Literature Review and Document Analysis

Peer reviewed journals and other relevant sources were searched applying the following keywords:

- Entrepreneurial
- Innovative
- Adaptive
- Transformation
- Case Study

- Change
- Leadership
- Vice-Chancellor

The documents were collected as part of the case study of the UOW, provided they met a minimum standard of relevance:

- Acts of Parliament and other supporting legislation
- Government policies, at both state and national level
- Ministry regulations and planning documents

University documents outlining policies and practices were collected and evaluated to assess their role as influences on such issues as:

- Values
- Structures
- Functions
- Policies
- Organisational flexibility
- Workplace culture

Although there is an argument to be made that university documents are, in turn, subject to the very influences they may be found to have influenced, this has not been the subject of this research project.

In undertaking the detailed analysis, evidence was sought of documents contributing to the development or promotion of 'entrepreneurial or innovative' factors, such as:

- Reward systems (pay and promotion)
- Course access, such as distance learning, regional study centres, access centres, franchise arrangements and other modes of delivery
- Resource initiatives such as challenge grants
- Incubators
- Company structures
- Innovation centres

- Science parks
- Joint ventures or other partnerships with industry
- Student innovations such as credit accumulation, credit transfer and joint delivery initiatives
- Personnel policies such as industrial placements and workplace flexibility
- Other initiatives such as overseas practicum and Faculty Visiting Committees

Key revenue data was also collected and analysed for the years 2000–2004 covering the following items:

- Course fees, including domestic undergraduate, domestic post graduate, international undergraduate, international postgraduate, non award, professional development, customised and short courses
- Sponsored research, both public and private
- Consultancies, domestic and international
- IP exploitation, including licence fees, royalties, access fees and sale of IP
- Fund raising, including bequests, scholarships, sponsored chairs, donations (cash) and donations of equipment
- Other revenue, which might include parking fees and other service fees

Phase Two: The Survey

This phase involved the design, development and validation of a major survey instrument. The survey was constructed for the purpose of providing quantitative information to answer research questions with regard to the entrepreneurial nature of the university. Clark's (1998) paradigm of an entrepreneurial university was the scaffolding for the instrument. The five characteristics of entrepreneurial universities, or to use Clark's (1998) term, 'pathways of transformation', form the basis of this paradigm.

As a survey involves investigating both what is to be measured and the idea of its existence, the option of a response of 'unable to answer' was included. This option allowed for those with no attitudes to respond accordingly. (Converse and Presser 1986) The 'unable to answer' option also established the relevance of the question to the respondents. (Foddy 1993)

Three experienced academics and/or administrators (Table 3) within the Higher Education Sector in Australia were provided with Clark's (1998) five 'Pathways of Transformation' and asked to respond to two questions, outlined below.

Table 3 Survey design: Academic and Administrator Panel

Name	Position	Sector
Development panel member 1	Chief Executive Officer	Lobbying body in Higher Education sector
Development panel member 2	Pro Vice-Chancellor (International)	Australian university
Development panel member 3	Managing Director	Controlled entity of an Australian university

Question 1:

Within the context of describing any university, what do the following terms mean to you?

- A strengthened steering core
- An expanded developmental periphery
- A diversified funding base
- A stimulated academic heartland
- An integrated entrepreneurial culture

Question 2:

What other words would you use to convey the meaning of the terms?

For example, if a university was described as Entrepreneurial what would this mean to you and is there any other term that could be used to describe it?

On the basis of the responses from the three higher education professionals, and other in depth work, 36 questions using Likert type format, and 8 descriptors using the Semantic Differential, were developed using an iterative process of development and consideration.

Validity

The validity of the survey instrument was established using face validity techniques. An expert panel was established to consider the validity of the survey questions. The panel was comprised of three university Vice-Chancellors, all with international awareness and experience in the higher education sector.

The panel was provided with an outline of the research topic, an abstract emphasising the five characteristics of an entrepreneurial university as suggested by Clark (1998) and access to a copy of Clark's text.

The panel was asked to review and comment on the survey instrument to the extent that responses to the statements would provide a true indication of the entrepreneurial nature of an institution, as viewed by its staff.

Following initial advice and reworking, the survey was accepted as having face validity.

Although not tested quantitatively the expert panel considered the statements underpinning the five major elements of an entrepreneurial university met the underlying constructs of the elements.

Both face and construct validity were claimed for the instrument.

The final survey instrument, included in full at Appendix 1, consisted of three parts:

1. Likert style format (36 questions)

2. Semantic Differential (8 descriptors)

3. Demographic data (7 questions)

The attributes of each part are summarised in Table 4.

Table 4 Attributes of the survey instrument

Scale	Attributes
Likert Style	A strengthened steering core An expanded developmental periphery A diversified funding base A stimulated academic heartland An integrated entrepreneurial culture
Semantic Differential	Entrepreneurial <–> Conservative Innovative <–> Conventional Adaptive <–> Inflexible Flexible <–> Rigid Supportive <–>Unsupportive Values driven <–> Expedient Strongly led <–> Laissez faire Community engaged <–> Self-focused
Demographic Data	Member of General or Academic staff Employment status Age Gender Years employed at university Faculty/Division/Area employed

Reliability: Pilot Study

A pilot study was undertaken to establish reliability of the instrument. Two approaches were used to establish the reliability of the instrument, test retest reliability and intra item reliability. A random sample (N=20) was chosen and the subjects were provided with a paper copy of the instrument and asked to complete it. Ten days later the same subjects were provided with another copy of it and were asked to complete it again. Respondents were asked to put an identifier, known only to them, on each completed paper so that they could be matched. The response rate was 100%.

Papers were scored and for each statement a mean score and standard deviation was calculated for time 1 and time 2.

A correlation coefficient was calculated for each statement. Given the ordinal nature of the data, a Spearmans Rho was calculated.

A correlation coefficient of .3 to .49 is considered a medium indicator of test/re-test reliability, while a coefficient of .5 to 1.00 is considered a large indicator. (Pallant 2002, p.120)

The five Likert style questions were constructed around themes or concepts identified in the literature as elements of Clark's 'pathways of transformation'.

Table 5 indicates the concepts, the relevant questions and the intra-test reliability and the test re-test correlation.

Table 6 indicates the results for the test/re-test mean and standard deviation for each Likert item question.

For each scale using test 1 data, a Cronbach's Alpha was calculated as an index of intra scale reliability.

The scales for a strengthened steering core, an expanded development periphery, a diversified funding base, a stimulated academic heartland and an integrated entrepreneurial culture have a Cronbach's Alpha of .7 or above. Cronbach's Alpha of .7 or above is considered a positive indicator of intra item reliability. (Pallant 2002, p.92) Although the scale Integrated Entrepreneurial Culture did not achieve a Cronbach's Alpha of .7 the achieved value of .64 is considered adequate.

On the basis of obtained results, intra item reliability and coherence of all scales was accepted.

Using a Pearson Product Moment calculation, a correlation co-efficient was developed for each scale on the basis of the relationship between test 1 and test 2. This correlation coefficient was used as an expression of test/re-test reliability of the scale.

The scales of a strengthened steering core, an expanded development periphery, a diversified funding base, a stimulated academic heartland and an integrated entrepreneurial culture had a test/re-test reliability of .48 or above. A correlation coefficient of .3 to .49 is considered a medium indicator of test/re-test reliability, while a coefficient of .5 to 1.00 is considered a large indicator (Pallant 2002, p.120).

On the basis of obtained results, a test/re-test reliability of the scale was established.

For questions that were not embedded in constructed scales, mean and standard deviations for test 1 and test 2 are reported in Table 7.

Table 5 Pilot study: test/re-test Intra-test reliability and correlation

Concept	Question	Intra Test Reliability (Cronbach's Alpha)	Test Re-test Correlation (ρ)
Strengthened Steering Core	1a - j	.93	.64
Expanded Development Periphery	2a - e	.83	.86
Diversified Funding Base	3a - g	.84	.79
Stimulated Academic Heartland	4a - f	.88	.48
Integrated Entrepreneurial Culture	5a - h	.64	.51

Survey method

A web-based survey was employed as these have been found to have a higher, quicker and cheaper response rate whilst supporting the same conclusions. (Griffis, Goldsby et al. 2003)

Upon determination of face validity, internal reliability and validity of the instrument the web-based survey was loaded onto the staff section of the UOW homepage. This survey remained online 24 hours a day for 6 weeks.

Table 6 Pilot study: test/re-test mean and standard deviation

Question	Test		Re-test	
	$\overline{X}_1$	s.d.	$\overline{X}_2$	s.d.
1a	2.71	1.4	2.74	1.15
1b	2.68	1.7	3.16	0.96
1c	2.53	1.5	2.61	1.19
1d	3.11	1.52	3.05	1.26
1e	3.42	1.35	2.86	1.41
1f	2.89	1.20	2.74	1.19
1g	3.47	1.17	3.12	1.14
1h	2.58	1.50	2.42	1.22
1i	3.21	1.36	3.12	1.32
1j	3.21	1.72	3.16	1.26
2a	3.68	0.90	2.93	0.84
2b	2.84	1.71	2.68	1.34
2c	3.21	1.40	3.05	1.27
2d	3.26	0.87	3.04	1.20
2e	2.11	0.76	2.89	1.41
3a	2.09	1.84	2.58	1.64
3b	2.26	1.73	2.79	1.58
3c	2.00	1.7	2.37	1.54
3d	2.28	1.56	2.39	1.38
3e	3.42	1.35	3.32	1.29
3f	2.79	1.40	3.05	1.31
3g	2.00	1.83	2.54	0.21
4a	3.53	1.02	3.15	1.22
4b	3.42	0.92	2.99	1.10
4c	3.74	0.93	3.16	1.07
4d	3.26	1.15	3.38	1.16
4e	3.21	1.27	3.53	1.17
4f	3.17	1.29	2.74	1.09
5a	2.58	1.50	3.07	1.69
5b	2.74	1.28	2.37	1.21
5c	3.42	0.84	3.21	1.08
5d	3.58	0.69	3.32	1.00
5e	3.37	1.01	2.97	1.21
5f	3.00	0.94	2.74	1.09
5g	3.05	0.78	2.74	0.99
5h	3.26	0.56	2.95	1.02

Table 7 Pilot study Q6: mean and standard deviations for test and re-test

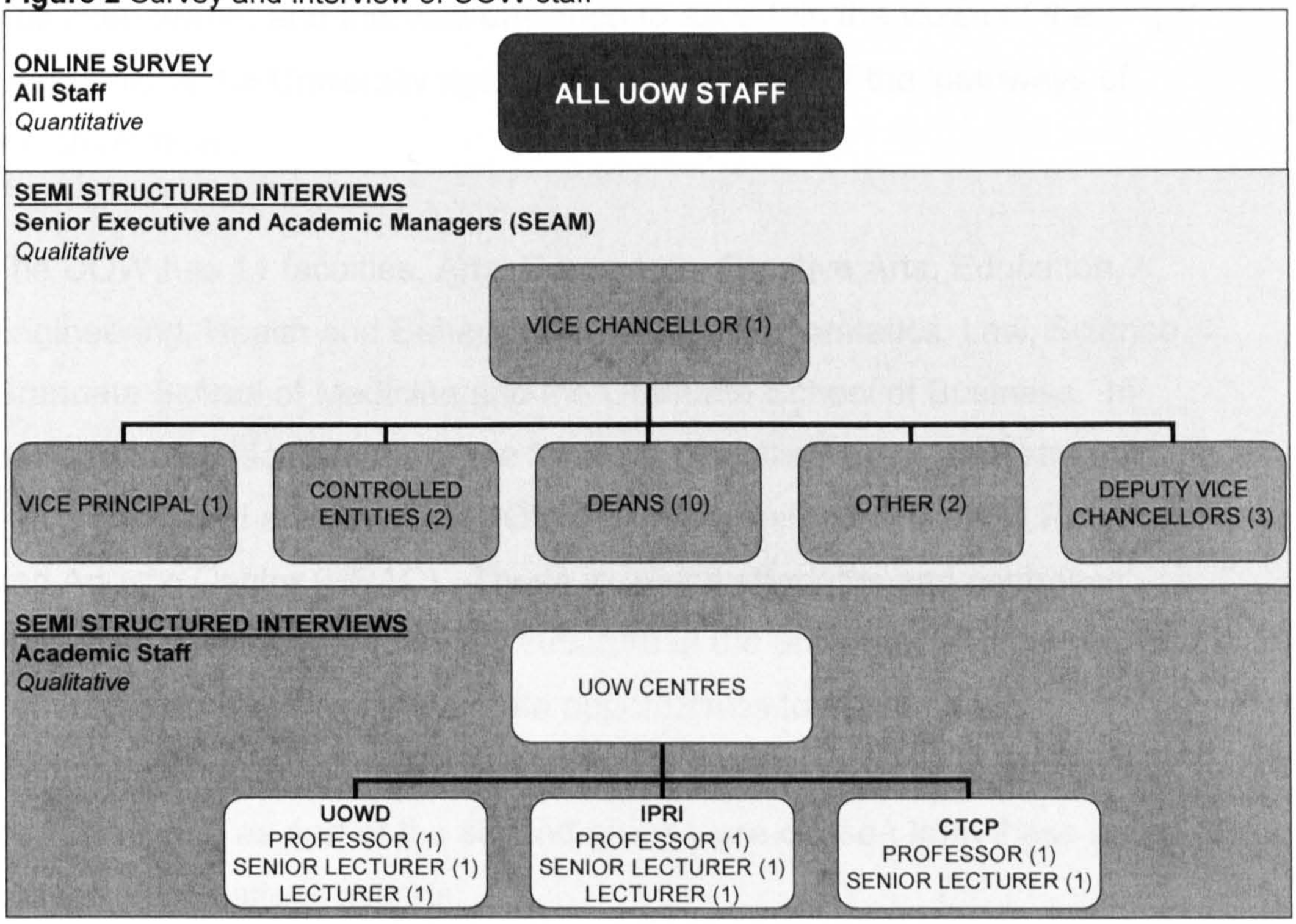
Question	Test		Re-test	
	$\overline{X}_1$	s.d.	$\overline{X}_2$	s.d.
6a	3.74	.93	3.47	.96
6b	4.42	.84	3.84	.86
6c	4.28	.69	3.82	.86
6d	3.89	.66	3.07	1.01
6e	4.21	.79	3.62	1.37
6f	4.16	.91	3.87	1.07
6g	4.11	.81	3.47	1.17
6h	4.21	.93	3.88	1.07

Phase Three: Sample Determination

Permission was sought and obtained from the Vice-Chancellor and Principal of the UOW, Professor Gerard Sutton, to use the instrument to survey all staff.

Permission was also granted to approach a sample of the leadership and academic staff within key areas of the UOW to seek their agreement to be interviewed.

Figure 2 Survey and interview of UOW staff



Staff were surveyed and interviewed according to Figure 2.

The online survey was distributed to the entire staff population at the UOW, achieving a response rate of 16% of all staff (excluding casual staff). This represented 323 usable responses. The survey generated data that was quantitative in nature and this was analyzed. This response rate was slightly lower than the traditional benchmark of a 20% response, however it has been

highlighted that the reported benchmark is lower every year and research published has exhibited a full range of response rates from a low of 4.32% to a high of 100%. (Griffis, Goldsby et al. 2003)

The qualitative aspect of the study focused on the UOW as an entrepreneurial university. This was achieved using qualitative techniques through the lens of two groups, the leadership and the entrepreneurial academic staff. Within the leadership of the University, 25 staff are classified as Senior Executives or Academic Managers (SEAM), and a sample of 19 was interviewed. (see Appendix 4) A critical sample of this leadership group was interviewed, and this was designed to ascertain the views of the leadership at the University against the key themes of the 'pathways of transformation'.

The UOW has 11 faculties, Arts, Commerce, Creative Arts, Education, Engineering, Health and Behavioural Sciences, Informatics, Law, Science, Graduate School of Medicine and the Graduate School of Business. In addition to the faculties there are 15 cross disciplinary research strengths and 3 controlled entities, ITC (UOWD), UniCentre and University Recreation and Aquatic Centre (URAC). These research strengths and controlled entities sit outside the traditional structure of the university and their activity is generated from decisions to create opportunities to enhance the entrepreneurial development of the UOW. For this reason, academic staff to be interviewed as part of the second group were chosen from these areas of activity. As Shattock asserts:

> Academic and financial entrepreneurialism usually go hand in hand and successful universities find ways of harnessing the two sides of the activity in new specially created organizational forms such as centres, groups, institutes, or programmes that lie outside the standard constitutional arrangements. (Shattock, 2003 p.50-51)

A Professor, Senior Lecturer and Lecturer were randomly selected from each of the following areas:

- A part of the controlled entity, ITC - University of Wollongong in Dubai (UOWD);
- The ARC funded research strength - Intelligent Polymer Research Institute (IPRI); and

- A centre within the research strength Oceans and Transnational Security - the Centre for Transnational Crime Prevention (CTCP)

A total of 8 interviews were undertaken as a Senior Lecturer was not available from the CTCP.

Phase Four: Administering the Survey

All staff were advised by email of the opportunity to complete an online survey, and a follow up email was sent to staff. The email schedule is outlined in Table 8. The survey remained open and online for a period of 6 weeks (27/10/05 to 9/12/05). The email sent to UOWD staff on November 16 2005 was necessary after it had been identified that some UOWD staff had not received the original emails.

Table 8 Email communication to UOW staff

Date	Email subject	Staff included
27/10/05	I need your help	All General; All Academic
7/11/05	Thank you	ITC Group
7/11/05	Thank you	All General; All Academic
16/11/05	Jim Langridge needs your help	All UOWD staff

An issue arose during the survey regarding appropriate access by some staff to computer terminals and therefore email and the internet facilities. This matter was the subject of some consideration but after appropriate consultations, it was decided that due to the small number of staff in this category, a paper copy would not be distributed.

Phase Five: Data Collection and Management

As the survey was administered online, data was automatically generated and coded into an Excel file. Questions 1a to 5h were questions using a Likert style form organised into scales, and involved the collection of ordinal data. The data was treated at the interval level (Labovitz, 1970) and as such, means and standard deviations were calculated. Additionally some of the 36 Likert style questions (Questions 1a to 5h) were forced negative questions, and these questions were reversed for the purpose of analysis in

the final data file so that all Likert responses could be scored with the following values: strongly agree=5, agree=4, neither agree nor disagree=3, disagree=2 and strongly disagree=1.

Part of the questionnaire included a section with a respondent profile. These questions were demographic in nature and as such involved data gathered at the nominal level. Table 9 and Table 10 outline the coding that was applied to the questions and the demographic data on the survey.

Table 9 Likert and Semantic Differential coding scales

Questions	**Details**	**Coding**
1a-5h	36 questions according to the Likert scale	0-5
6	8 questions according to a semantic differential	1-10

Table 10 Demographic data coding

Questions	***Details***	***Coding***
Rp_1	*Academic staff*	*1*
	General staff	2
Rp_2	Permanent/continuing	1
	Fixed term	2
	Casual	3
Rp_3	Full time	1
	Part time	2
Rp_4	Female	1
	Male	2
Rp_5	Under 25 years of age	1
	25 to 35 years of age	2
	36 to 45 years of age	3
	46 to 55 years of age	4
	56 to 65 years of age	5
	over 65 years of age	6
Rp_6	Employed fewer than 1 year	1
	Employed 1 to 5 years	2
	Employed 6 to 10 years	3
	Employed 11 to 20 years	4
	Employed 21 to 30 years	5
	Employed Greater than 30 years	6
Rp_7	Arts	1
	Creative Arts	2
	Commerce	3
	Education	4
	Engineering	5
	Graduate School of Business	6
	Graduate School of Medicine	7
	Health and Behavioural Sciences	8
	Informatics	9
	Law	10
	Science	11
	Central Administration	12
	Research Office	13
	Library	14
	Student Services/CEDIR	15
	Buildings and Grounds	16
	UOW in Dubai	17
	UniAdvice	18
	ITC International Projects	19
	WUC Auckland	20
	WUC Sydney	21
	WUC Wollongong	22
	ITC Corporate Services	23
	UniCentre Ltd	24
	URAC Ltd	25

Phase Six: Semi-structured Interviews

The aim of the interviews was to ascertain the attitudes of two groups: academic staff and the core leadership group (SEAM) at the UOW. Additionally, the interviews sought to explain and clarify the major findings of the all staff survey.

<u>Stage One: Sample</u>

The qualitative aspect of the study drew on the semi-structured interview technique. The semi-structured interviews were conducted to support the data collected from the survey which was designed to understand the perception of all staff at the UOW.

Leadership

The semi-structured interview technique was applied to a critical sample of the leadership at the UOW, including the senior executive and academic managers (SEAM). A total of 18 key members of the leadership at the UOW were interviewed which covered 19 areas of the University; 9 of these staff were general staff and 10 were academic staff. This was designed to ascertain their views, as the leadership group, of the university as an entrepreneurial university, and against the key themes of Clark's (1998) 'pathways of transformation'.

Academic

The semi-structured interview technique was applied to a sample of academic staff from 3 entrepreneurial areas within the University; these areas sit outside the traditional structures of the university. A total of 8 academic staff were interviewed according to Table 11.

Table 11 Academic semi-structured interviewees

	Professor	**Senior Lecturer**	**Lecturer**
CTCP	✓	×	✓
UOWD	✓	✓	✓
IPRI	✓	✓	✓

This was designed to understand the views and motivations of entrepreneurial academic staff within the University and against the key themes of Clark's (1998) 'pathways of transformation'.

Stage Two: Conduct Interviews

Each interview was conducted according to a semi-structured interview guide with the following 5 key questions as a framework for the interview:

Table 12 Semi-structured interview questions

No.	Question
1	What is your perception of the university's ability to steer itself?
2	How would you describe the UOW's approach to interaction with its broader communities and by broader communities I mean industry, professional groups, community groups, and other external stakeholders?
3	What are your comments on the UOW's ability to diversify its funding sources?
4	In thinking about the UOW's academic heartland, how well and in what ways are the staff engaged, consulted and rewarded?
5	Do you view the UOW's institutional culture as entrepreneurial and if so why?

As the interviews progressed, it became clear that the leadership was considered to be an integral part of the transformation process. Therefore, all respondents were given the opportunity to discuss separately, the theme of leadership. Additionally, at the end of the interview, each respondent was given the option to add further views which had not been covered by the interview questions.

Interviewees were informed by email of the key questions and the intention to tape the interview (Appendix 3: Sample Email: Semi-structured interviews). Permission was sought for the interview to be taped, prior to the interview commencing. In all cases, agreement was given. All interviews were then recorded onto tape and double transcribed by two different transcribers.

Interviews ranged from 30 to 60 minutes and were conducted in person. A sample of 19 was selected for semi-structured interviews within the leadership core. Only 18 interviews were conducted as the DVC (Operations) was also acting Dean of Commerce at the time of the interviews and as such, represented both the discipline and a position within the Senior

Executive. In addition, a further sample of 8 academic staff was selected from each of the levels of Professor, Senior Lecturer and Lecturer.

In total, 26 separate interviews were conducted over the period from 15 February 2006 to 13 November 2006.

Phase Seven: Analysis of the Dataset

Demographic Data

For the purposes of analysis, comparison and understanding, respondents were asked a series of questions which provided demographic information on:

- Staff category
- Employment status
- Gender
- Age
- Number of years with UOW
- Faculty/Unit/Division

Answers to demographic questions were coded to indicate a category of response, for example: in response to the question on gender, males were scored as 1 and females 2, thereby providing a nominal data set for further analysis.

Likert Data

Using the 'pathways of transformation' from Clark (1998) and responses from the three sector respondents, statements were written to elicit responses from survey subjects. Questions were developed under the following five themes:

- characteristics within the University structure;
- the University's approach to interaction with broader communities;
- the financial environment within which the University operates;
- the University workforce; and

- the University's institutional culture.

Respondents were asked to consider each statement and indicate their position against the themes on a Likert scale (1 to 5). Answers were required to be placed on a scale 'strongly agree', 'strongly disagree' and 'unable to answer' according to their reaction to the statement.

In general, statements were framed such that a response of 'strongly agree' would be the sought after response. However, several questions were framed in the negative where 'strongly disagree' would be the desired response. The data generated from these 'negatively framed' questions was then reverse coded for the purposes of analysis, i.e. a response of 5 became 1, etc.

An examination of staff perception was carried out against Likert responses 4 and 5, termed 'moderately agree' and 'strongly agree'. Analysis was undertaken in 5 groups; all staff, staff by gender (female and male), staff by category (academic and general), staff by gender and category (female academic, male academic, female general and male general) and staff by Discipline Area (Eng+Inf, Science, Social Science, Admin and Entities). The 'all staff grouping' was analyzed in two ways: inclusive of all responses; and with the "unable to answer" group removed.

A calculation of means and standard deviations was carried out, with a mean score of greater than 3.5 being considered a positive indication of the presence of a particular characteristic at the UOW. Analysis in this group was undertaken in 4 groups: all staff, staff by gender (female and male), staff by category (academic and general), and staff by gender and category (female academic, male academic, female general and male general). All 'unable to answer' responses were removed before analysis.

Subscales

Further analysis was performed by grouping each set of questions into a subscale around the 'pathways of transformation'. In total, 5 subscales were calculated, and Cronbach's Alpha was calculated as evidence of intra-scale reliability with a Cronbach's Alpha of .7 or above being considered a positive indicator of intra item reliability. (Pallant, 2002, p.92) As for the other questions, the perceptions against Likert responses 4 and 5 were measured, and means and standard deviations were calculated for each subscale. All non responses and 'unable to answer' responses were removed from subscale calculations. This analysis was only performed for the all staff, staff by gender (female and male) and category (academic and general).

Table 13 Subscales calculated for analysis

Pathway to transformation	Questions	Subscale
Strengthened Steering Core	1a - j	1
Expanded Development Periphery	2a - e	2
Diversified Funding Base	3a - g	3
Stimulated Academic Heartland	4a - f	4
Integrated Entrepreneurial Culture	5a - h	5

Semantic Differential Analysis

Quantitative data was obtained by asking staff to respond to questions on a semantic differential scale. In the web based survey, a set of 10 possible but unnumbered response points was provided against which staff could score their responses. These responses were coded from 1 to 10, where the left hand side of the differential was a positive indicator.

Analysis was undertaken which examined the percentage of staff responses on the 1-4 positive of the semantic differential scale. Analysis in this group was undertaken in 5 groups: all staff, staff by gender (female and male), staff by category (academic and general), staff by gender and category (female academic, male academic, female general and male general) and staff by Discipline Area (Eng+Inf, Science, Social Science, Admin and Entities).

A further analysis was used where a mean score of less than 4.5 was considered a positive indication of the presence of a particular characteristic

at the left hand continuum of the scale at the UOW. Analysis in this group was undertaken in 4 groups: all staff, staff by gender (female and male), staff by category (academic and general) and staff by gender and category (female academic, male academic, female general and male general).

Semi-structured Interviews

The process of content analysis was used to analyze the qualitative data from the semi-structured interviews. Content analysis involved identifying consistent and key examples, themes and patterns in the data by combining a full data set that addressed a particular research question (Patton 1990) on the basis of hypothesis and related literature. (Marshall and Rossman 1999) In this study, the literature review formed the foundation for the focus, largely the 'pathways of transformation' (Clark 1998), but also including the theme of leadership.

The purpose in utilizing content analysis was to organise and simplify data into meaningful themes or categories, with the aim of generality. (Weber 1990) An examination of the key themes that were discussed in each of the interviews was conducted, and content was classified against these themes with a calculation of absolute frequencies. (Marshall and Rossman 1999) Absolute frequency word counts were calculated for the responses around each of the pathways for both general themes and specific words.

Supplementary to the content analysis, key quotes were identified to support the themes that emerged from the staff survey.

Summary

This chapter described the research methodology employed as the basis of this study. A summary of the research questions, variables, analyses and findings is set out in Table 14.

A detailed outline of the development and implementation of an online survey instrument, used to gain the views of a sample of the staff at the UOW, was provided. The use of document analysis, and the implementation of a program of semi-structured interviews to establish the views of the SEAM and academic staff, was also outlined.

The application of these qualitative and quantitative methods was supported by the case study discussed in detail in Chapter 4.

Table 14 A summary of the research questions, variables and analyses

	Questions	Variables	Analyses
1	Does the University of Wollongong have a strengthened steering core?	Survey: Questions 1a-j	% of staff agree; descriptive means and standard deviations
2	Does the University of Wollongong have an expanded development periphery?	Survey: Questions 2a-e	% of staff agree; descriptive means and standard deviations
3	Does the University of Wollongong have a diversified funding base?	Survey: Questions 3a-g	% of staff agree; descriptive means and standard deviations
4	Does the University of Wollongong have a stimulated academic heartland?	Survey: Questions 4a-f	% of staff agree; descriptive means and standard deviations
5	Does the University of Wollongong have an integrated entrepreneurial culture?	Survey: Questions 5a-h	% of staff agree; descriptive means and standard deviations
6	Does the University of Wollongong exhibit entrepreneurial characteristics?	Survey: Questions 6a-f; Case study documents	% of staff agree; descriptive means, standard deviations and supporting documents

Chapter 4: Case Study – The University of Wollongong

Overview of the Chapter

This chapter uses the structure and approach of a case study to examine the key documents of the University, and in particular, to explore the goals of the University within the context of Clark's (1998) 'pathways of transformation'.

Introduction

The UOW has developed a reputation for entrepreneurship within the Australian Higher Education Sector. This has been formally acknowledged recently by the Australian Universities Quality Agency. (AUQA 2006) Achieving successive awards as University of the Year in 1999-2000 and 2000-2001, and becoming the first university to do so, has also assisted in creating this reputation. (UOW 2002, p.5) In both cases, the award recognized the innovative nature of the University and its desire to constantly adapt and evolve in response to the needs of its stakeholders and its ever changing environment. The first award was under the general heading of 'Industry Partnerships' and the second, for 'Preparing Students for the e-World'. Additionally, in 2006, UOW won the inaugural Commonwealth University of the Year Award for Community Engagement from The Times Higher Education Supplement and the Association of Commonwealth Universities. The National University of Singapore was the runner up.

The UOW has also been developing its third-stream income, largely through the recruitment of international full fee paying students, which make up 25% of its student enrolment, the fifth highest percentage among Australian universities. However, this has not been at the expense of its 'research intensive' agenda, which saw the UOW, in the period 2000-2, as the most research intensive university in Australia (Figures 3-5). The establishment of the Illawarra Technology Corporation Ltd (ITC) as the commercial arm of the UOW in 1981, discussed at some length later in this chapter, has also been a

significant part of the 'third-stream' agenda. These examples are indicators of the existence at the UOW of aspects of Clark's (1998) 'pathways of transformation'.

But the UOW has not always exhibited these pathways of transformation. In its formative years as a college of the University of NSW (UNSW) it struggled for recognition in the expanding Higher Education Sector. Located within the industrial city of Wollongong, about one hour's drive south of Sydney (Australia's largest city and the capital of the state of New South Wales), the college was originally established to service the needs of the steel mill, the largest of its kind in the southern hemisphere, for science and engineering graduates. Originally established in 1951, the college fought a long and protracted battle with successive governments and administrations in order to gain its autonomy (Castle 1991), and its charter was not granted until 1975. Until that point in its history, it had continued to exist as a small regional college campus of a large capital city university.

The journey from those early days as a small college, when it lacked student numbers to achieve critical mass, resources, infrastructure and the reputation required of a modern entrepreneurial and intensive research university is significant. Neal captures the essence of that journey as it applies to UOW:

> In the multicolored tapestry of academia a new colored strand has appeared – different but not yet distinct enough to permit clear identification – the 'entrepreneurial' university. Over the past twenty-five years, a number of these institutions have evolved, shifted, or stumbled into an organizational structure that is more strategic and businesslike than the traditional academy of scholars. This movement has produced a variety of unique institutions, yet they speak, act, and react in very similar ways. Descriptions of how these universities operate sound like descriptions of Fortune 500 companies: they build strategic visions based on scans of the competitive environment; they refer to market niches, client profiles, and delivery systems, while insisting on curricula integrity and relevance, instructional quality, and student satisfaction. (Neal 1998, p.69)

For the UOW, it has not needed to go through the process of reinvention which Marginson (1999) describes as Hyper-entrepreneurialism, Globalisation and Distance Education specialisation. Being established as part of the expansion of higher education in Australia in the early years after World War II, gaining its autonomy in the early 1970s, and having had only

two Chancellors and three Vice-Chancellors since autonomy, has provided a stable basis of leadership on which to build a strong and forward looking strategic purpose. It has provided the ideal backdrop and stability for a new fledgling university to grow, develop and mature in an orderly manner. Clark best summarises this aspect of the evolving UOW experience in observing that

> the creation of an entrepreneurial university is not a stage that can be passed through once and forever. It is a process without end. Its creation is likely to happen not as a big bang, but in an incremental, evolutionary fashion, as a flexible organisational character that can adjust and readjust with better responses to rapidly changing demands. (Clark 2001, p.17)

Clark would also observe that the size of UOW has aided the achievement of its developing entrepreneurial reputation.

> It does seem that the development of entrepreneurial character is somewhat easier on the average in small universities (15,000 students or less) than in mega universities (50,000 students and over). Specialized universities are likely to find such change easier than comprehensive ones. (Clark 2001, p.17)

Although not a specialist university, this would seem an appropriate comment for the UOW, with a student population of 16,000.

But use of the term 'entrepreneurial university' with reference to the UOW needs more than a superficial glance at contemporary selected statistics. It requires a thorough analysis, assisted by a well structured case study.

Part of this analysis needs to look at the institutional character of the UOW, which was shaped and influenced by its origins. As with most universities, the UOW has to achieve multiple goals within its vision and mission statements. In developing the case study, this has been useful in assessing the context of Clark's (1998) 'pathways of transformation'.

Goal 1: Research Intensive

The first of these specific ideals was the desire to be research intensive. Following a focused period of research management, which included the reorganization of the entire research effort into specific themes, the UOW had become the most research intensive university, of the 38 public universities in Australia, in the period 2000-02. In 2003, the UOW was

ranked number 9 when ARC grants were normalized against FTE staff, which included the staff categories of Research Only, and Teaching and Research. The UOW was able to respond quickly to this drop in ranking and a year later, in 2004, improved its research performance, returning to number 2 in the rankings (see

Figure 7).

This is an important issue, as a continuing decline in the area of research intensity could have led to a questioning of the benefits of pursuing entrepreneurialism as an institutional strategy, at the expense of the research intensive agenda. That this has not happened, is both beneficial and encouraging for the future, and is supported by the views of Etzkowitz (2003), that the entrepreneurial university encompasses and extends the research university.

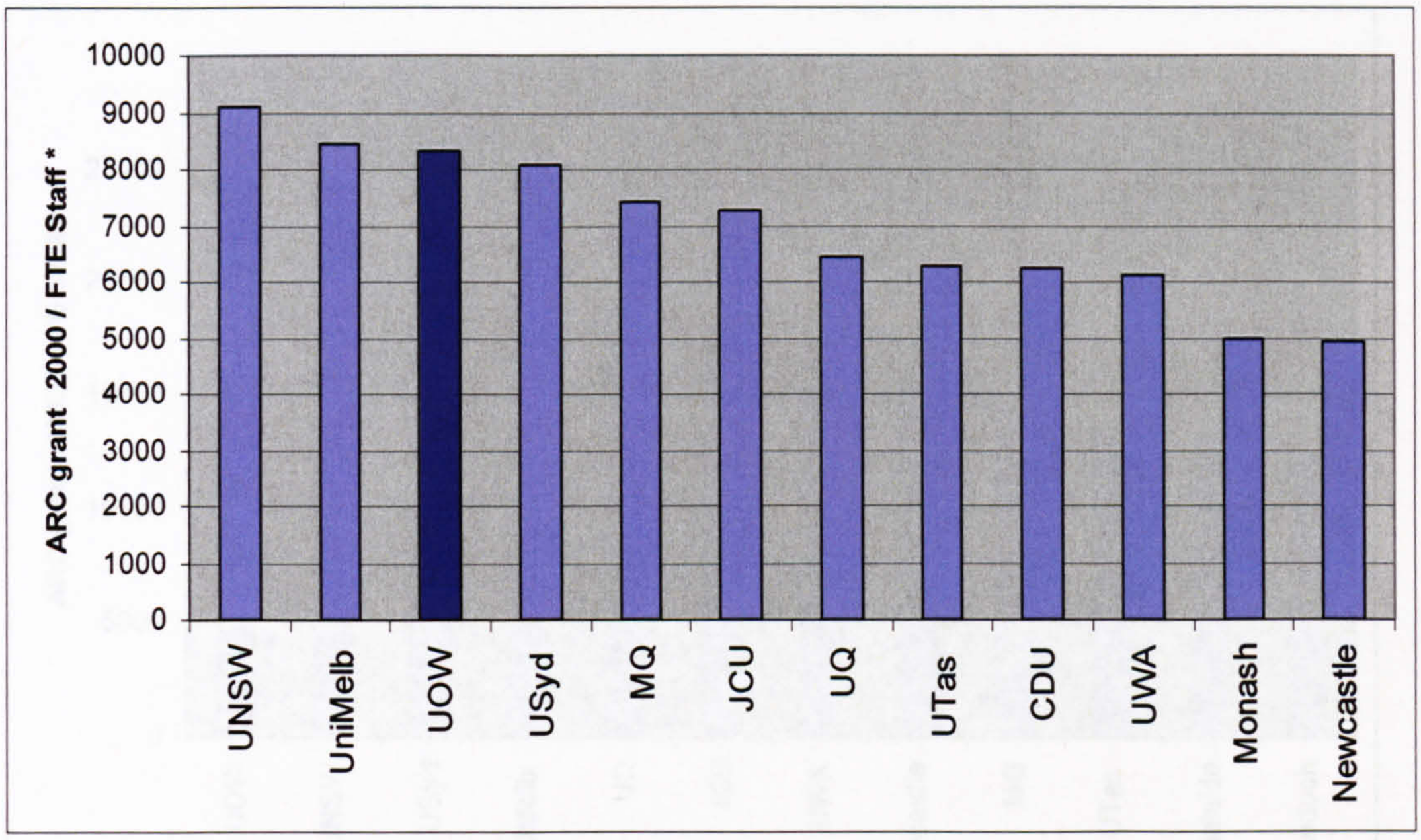
Another underpinning strategic goal of the UOW is to increase the diversification of its funding sources. This was achieved, over the same period 2000-2004, and is set out in Table 15. At the time of writing, the ARC grant rounds for 2005 had not been announced.

Table 15 UOW: Research income by type, ($M) 2000-04

Source ($M)	**2000**	**2001**	**2002**	**2003**	**2004**
National Competitive Grants	8.4	8.9	8.8	11.0	13.0
Other Public Sector Grants	3.3	2.3	2.5	3.0	2.8
Industry Grants	5.3	5.6	5.5	6.2	4.8
Cooperative Research Centres	-	1.0	1.8	2.7	2.5
Total	**17.0**	**17.8**	**18.6**	**22.9**	**23.1**

Source: UniFocus, AVCC, DEST, NHMRC and ARC

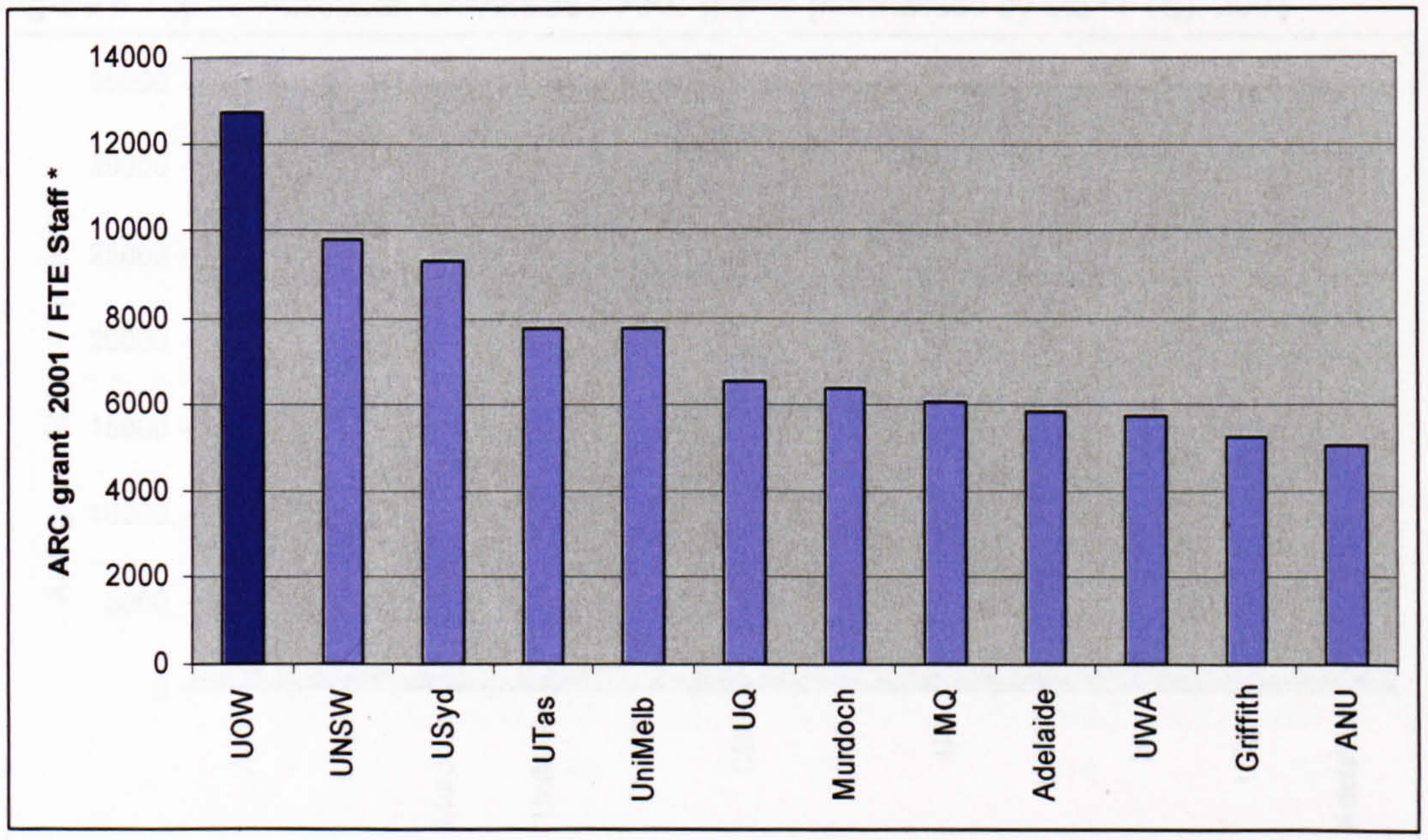
Figure 3 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2000



** ARC = Australian Research Council, Staff FTE = Academic staff*

Source: UniFocus, AVCC, DEST, NHMRC and ARC

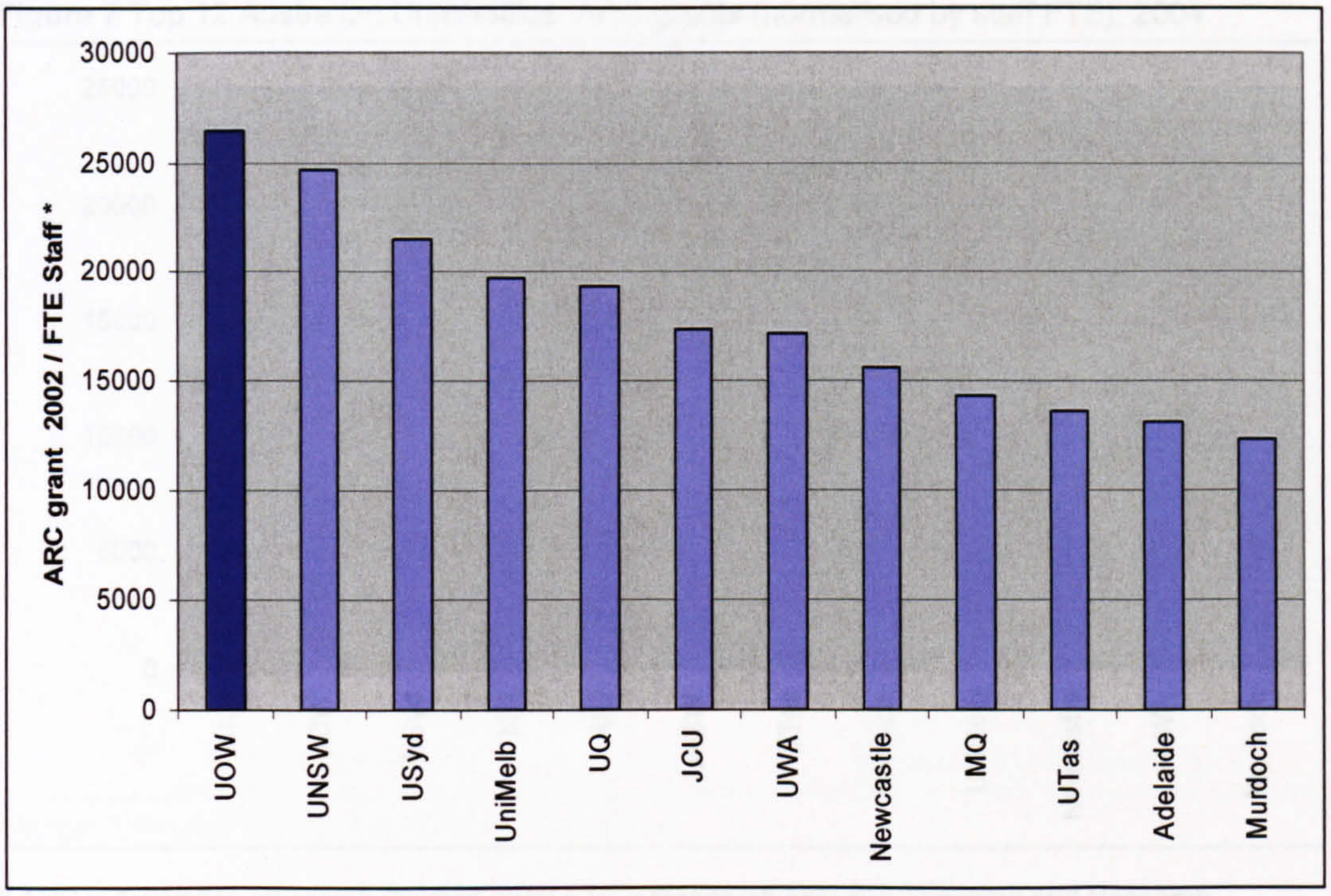
Figure 4 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2001



** ARC = Australian Research Council, Staff FTE = Academic staff*

Source: UniFocus, AVCC, DEST, NHMRC and ARC

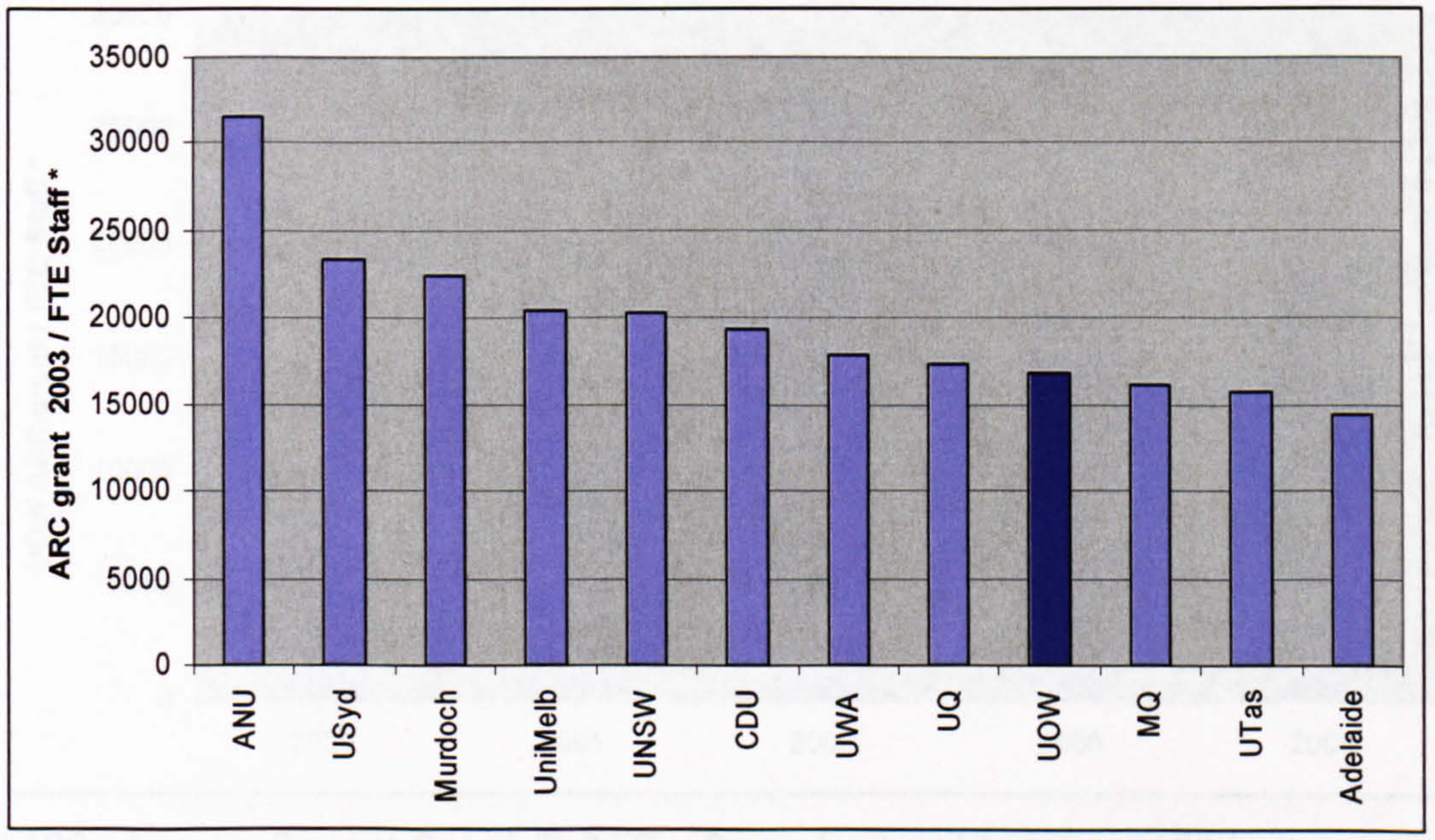
Figure 5 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2002



** ARC = Australian Research Council, Staff FTE = Academic staff*

Source: UniFocus, AVCC, DEST, NHMRC and ARC

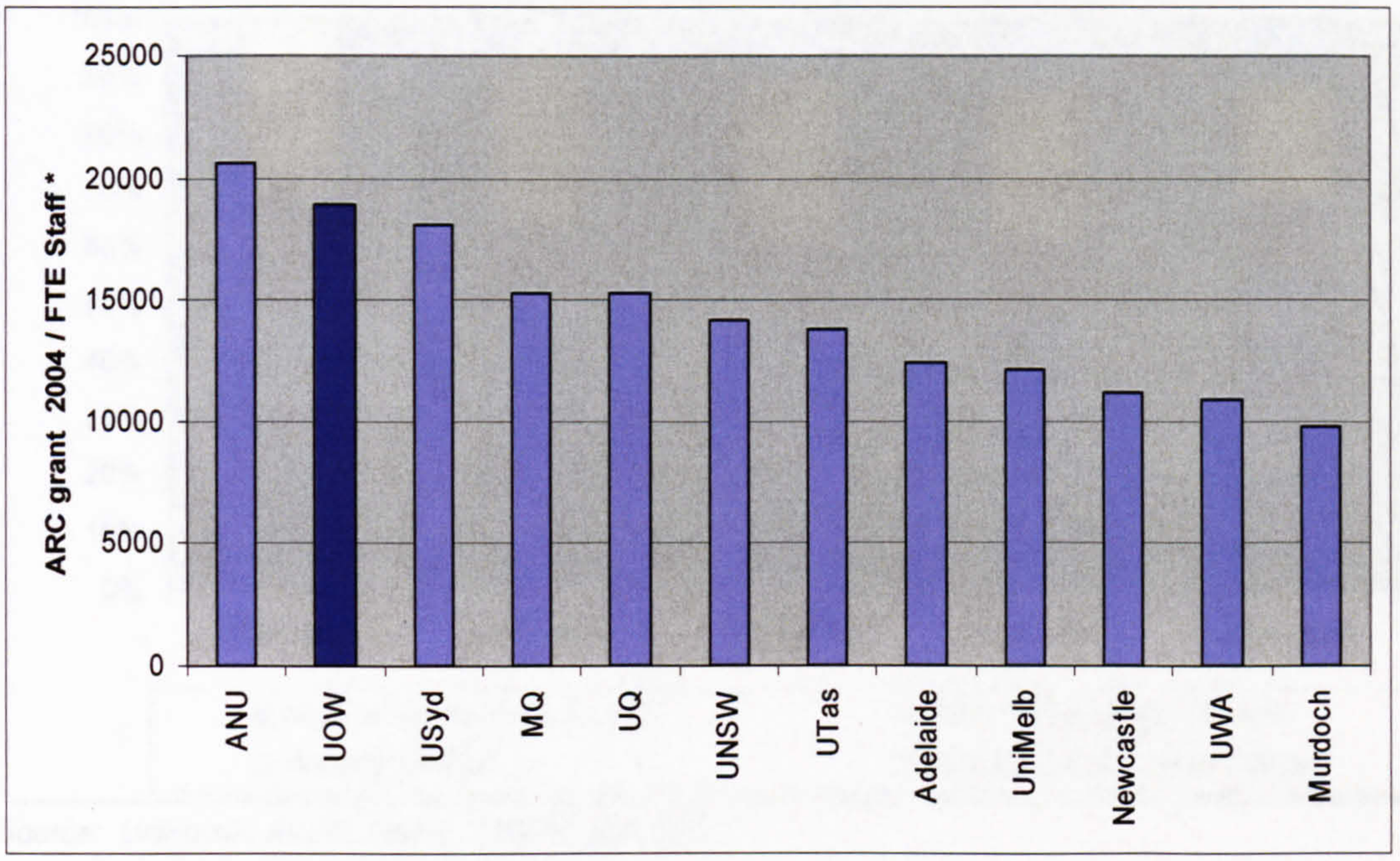
Figure 6 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2003



** ARC = Australian Research Council, Staff FTE = Academic staff*

Source: UniFocus, AVCC, DEST, NHMRC and ARC

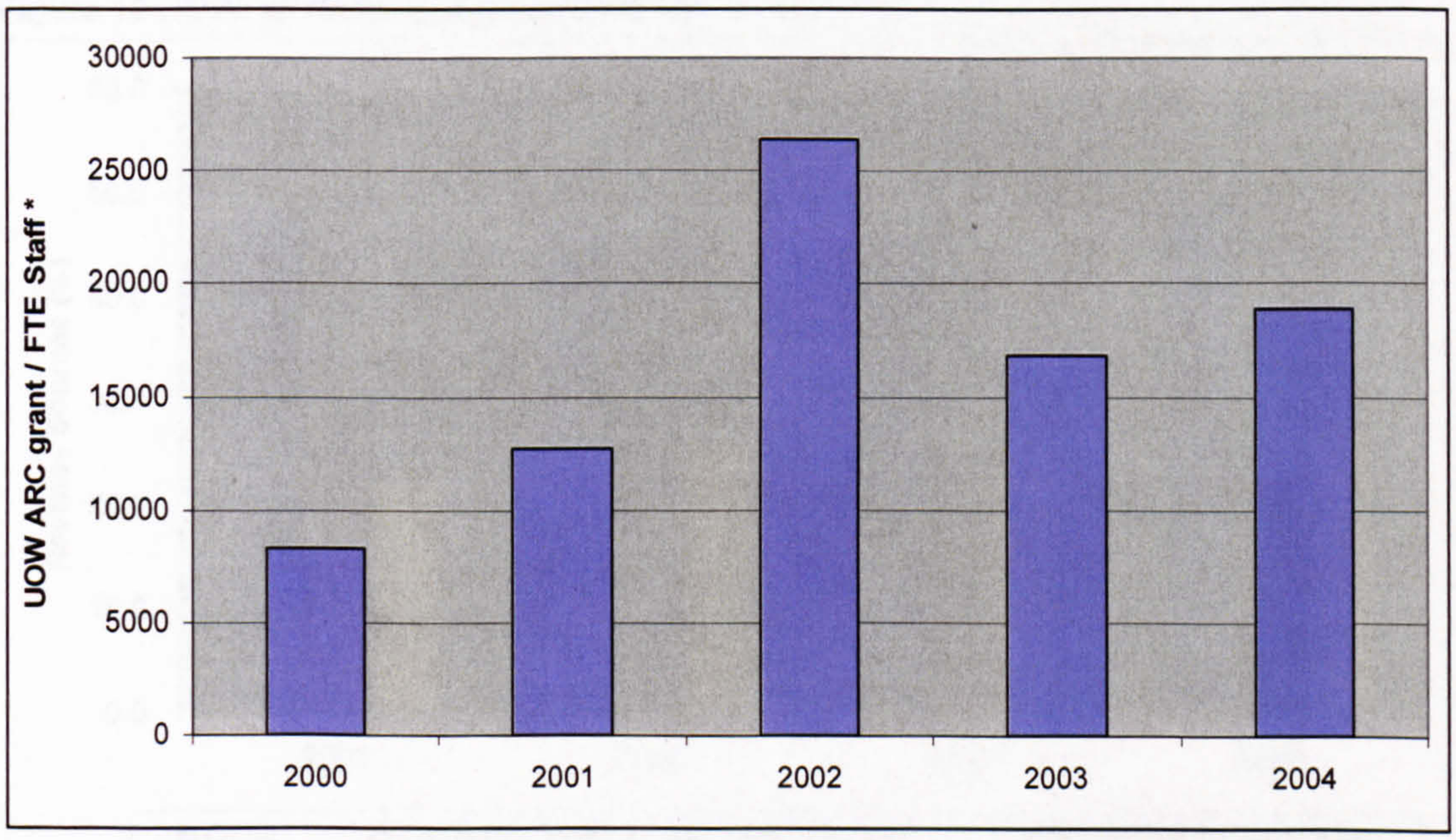
Figure 7 Top 12 Australian Universities: ARC grants (normalised by staff FTE), 2004



** ARC = Australian Research Council, Staff FTE = Research only and Teaching and Research*

Source: UniFocus, AVCC, DEST, NHMRC and ARC

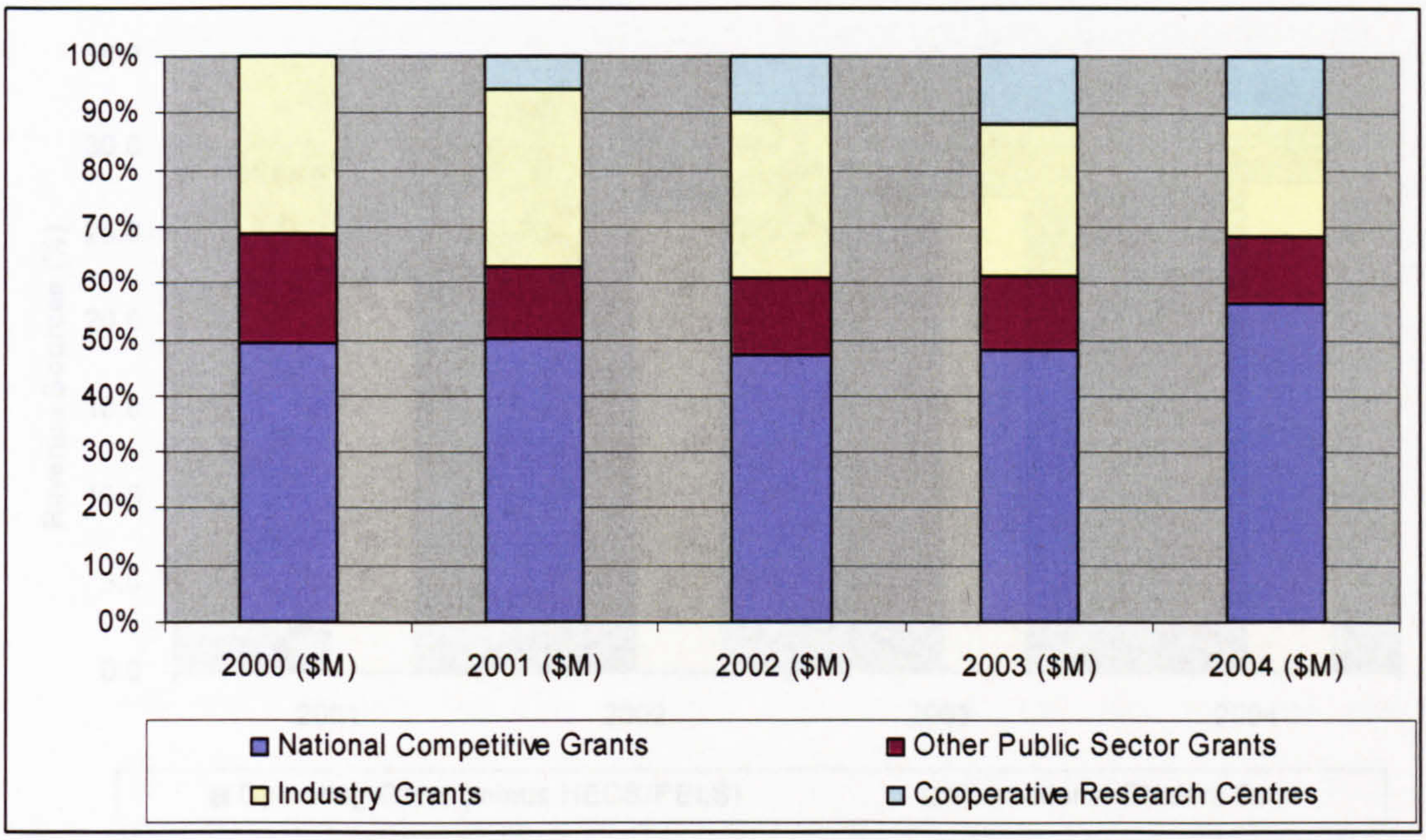
Figure 8 UOW: ARC grants (normalised by staff FTE), 2000-04



** ARC = Australian Research Council, Staff FTE = Research only and Teaching and Research*

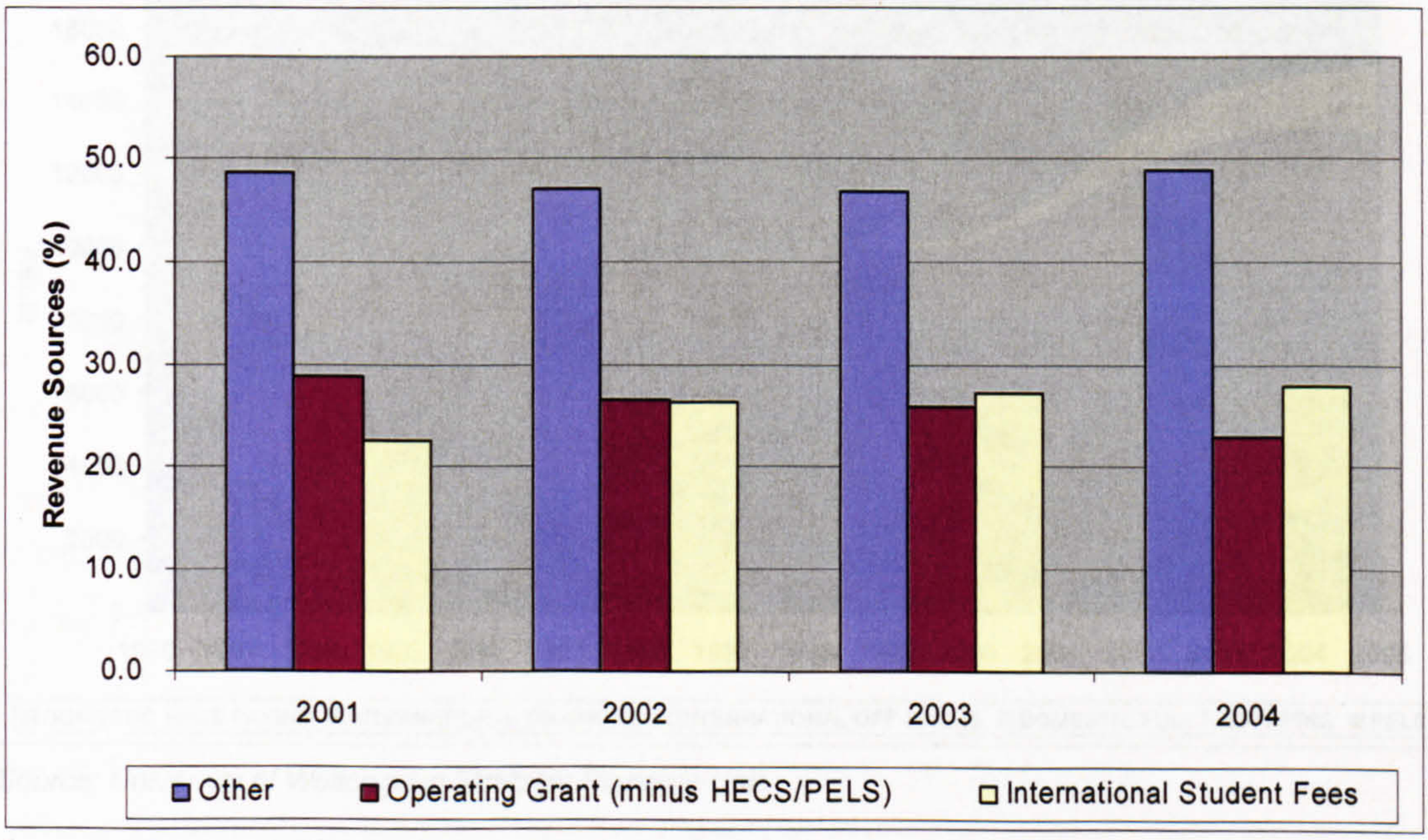
Source: UniFocus, AVCC, DEST, NHMRC and ARC

Figure 9 UOW: Research income by type (% of total), 2000-04



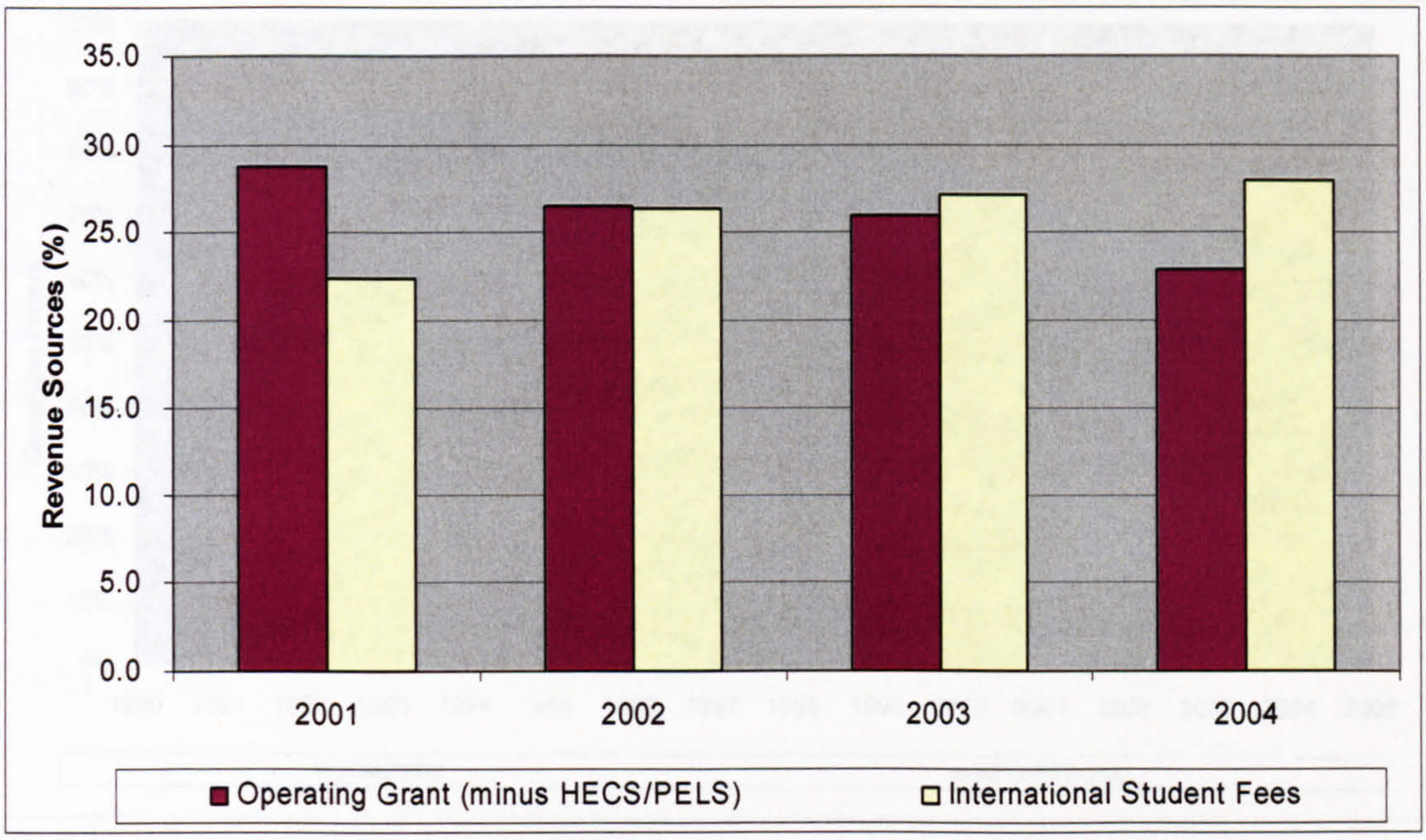
Source: UniFocus, AVCC, DEST, NHMRC and ARC

Figure 10 UOW: all revenue sources 2001-04



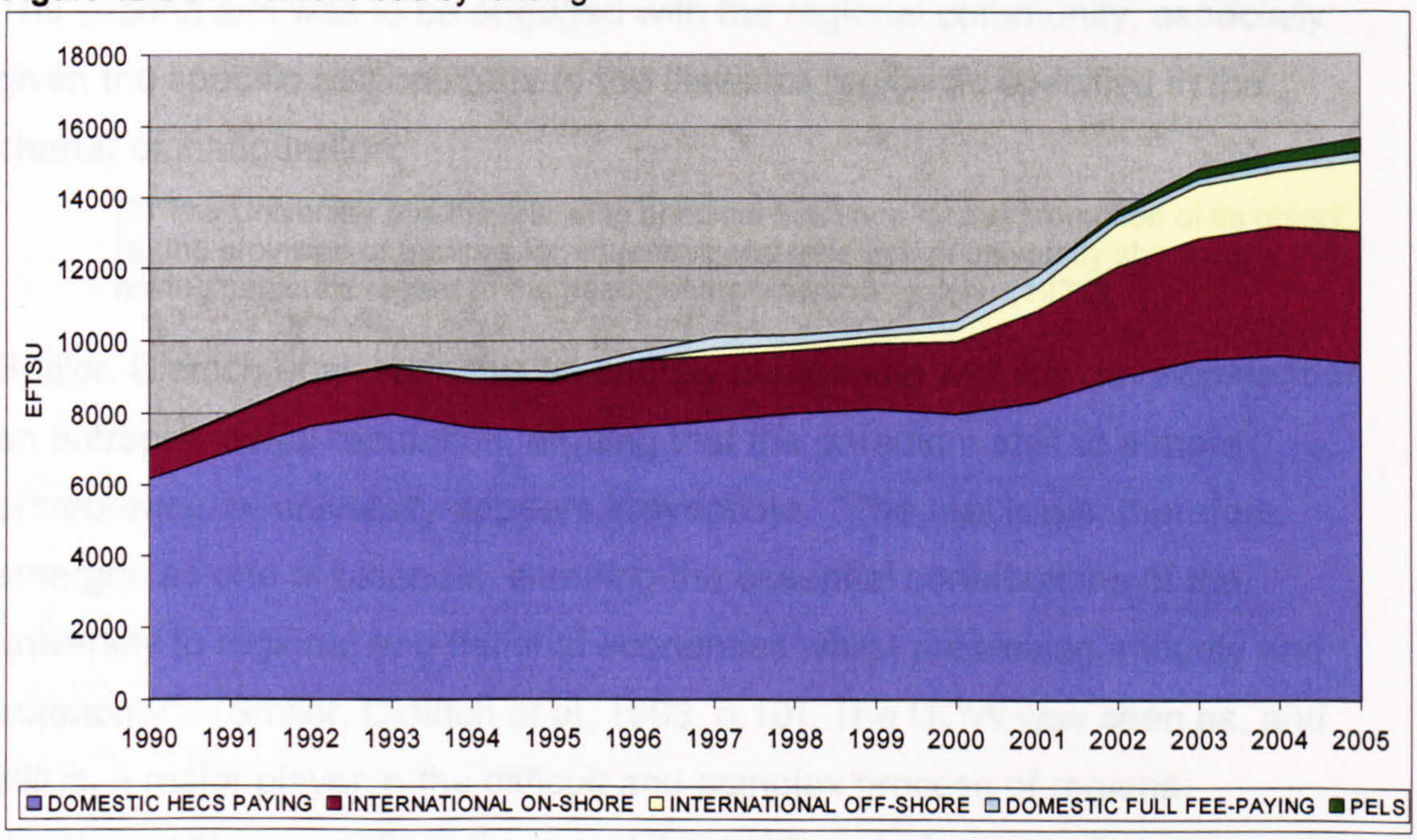
Source : UOW Annual Reports 2000-04

Figure 11 UOW: operating grant and international student fee revenue (2001-04)



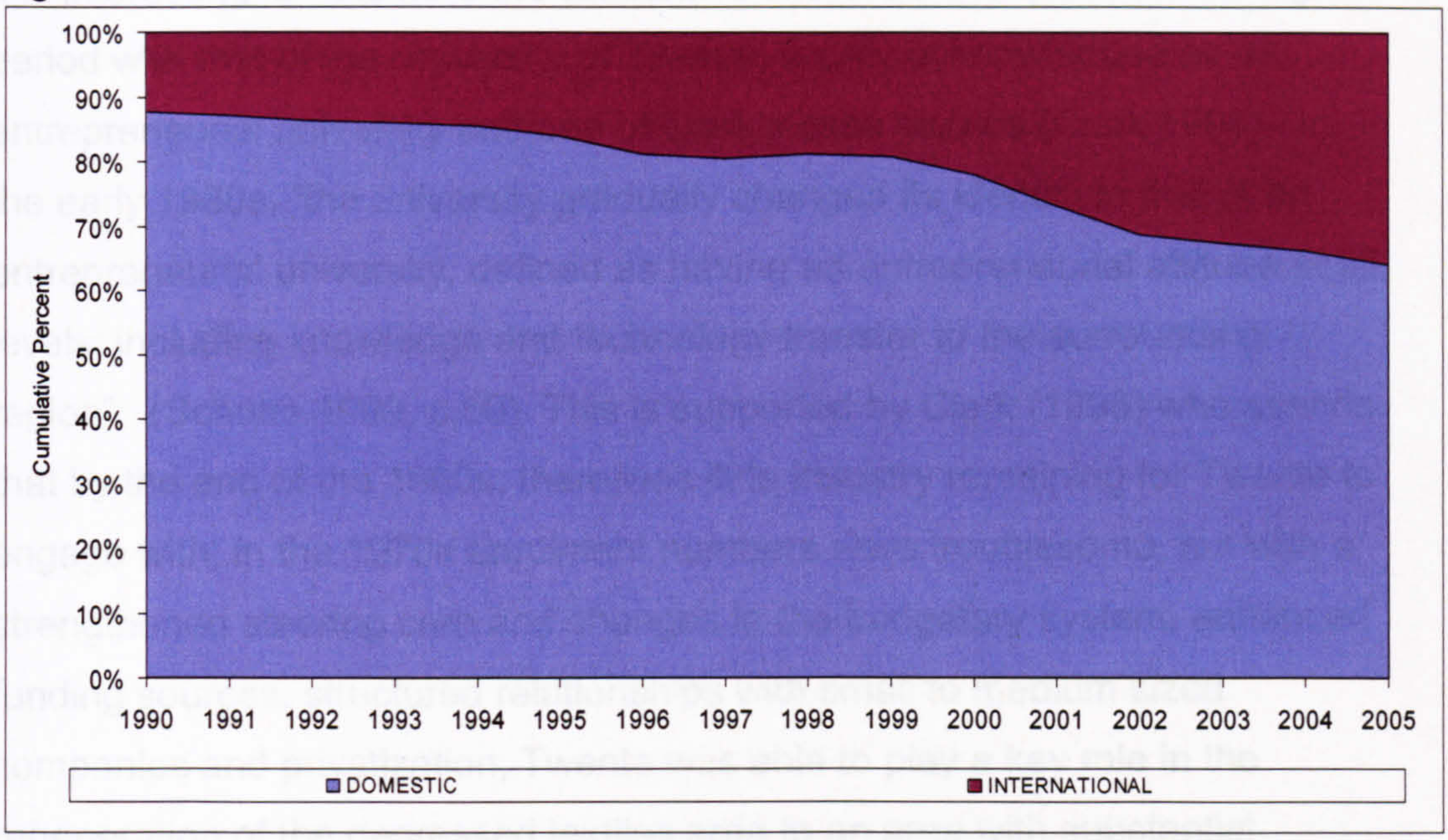
Source : UOW Annual Reports 2000-04

Figure 12 UOW student load by funding



Source: University of Wollongong Strategic Planning Unit

Figure 13 UOW student tuition fee income



Source: University of Wollongong Strategic Planning Unit
Domestic: HECS PAYING, FULL FEE-PAYING, PELS and International: ON-SHORE / OFF-SHORE

Goal 2: Engaged with Regional Community

The second aim was to be engaged with the regional community, especially given the specific responsibility to the Illawarra region as specified in the charter of inauguration:

> (2) The University has the following principal functions for the promotion of its object:
> (a) the provision of facilities for education and research of university standard, having particular regard to the needs of the Illawarra region...(1972).

Smilor, Dietrich et al. sees this as entirely compatible with the development of an entrepreneurial reputation, arguing that the paradigm shift to a more entrepreneurial university appears irreversible. "The real issue, therefore, emerges as one of balance: ensuring the essential contributions of the university to regional and national economies whilst preserving integrity and autonomy". (Smilor, Dietrich et al. 1993, p.10) The UOW was seen as, and still is, a major player in the difficult and complex process of regional development, especially in the era of the 1980s, which saw major rationalization of the steel industry world wide, the major industry employer within the regional context of the UOW.

It is interesting to note here the similarities of the UOW experience during this period with that of the University of Twente, widely acknowledged as an entrepreneurial university and one of Clark's case studies (Clark 1998). In the early 1980s, "the university gradually changed its identity to that of an entrepreneurial university, defined as having an entrepreneurial attitude at all levels; including knowledge and technology transfer to the surrounding region". (Schutte 1999, p.50) This is supported by Clark (1998) who asserts that by the end of the 1960s, there was little industry remaining for Twente to engage with, in the 1970s enrolment numbers were troublesome, but with a strengthened steering core and changes in the budgetary system, enhanced funding sources, structured relationships with small to medium sized companies and privatization, Twente was able to play a key role in the regeneration of the depressed textiles area to an area with substantial amounts of high tech industry.

The UOW has taken its regional responsibilities seriously, engaging with its local community at various levels and with increasing commitment. This commitment to engagement has been evidenced by the recent award for UOW of Commonwealth University of the Year Award for Community Engagement. At the same time, it has applied itself to building its international and research reputation, in harmony with its regional obligations. It was, and is, linked inextricably to the interests of its region and to its academic heritage as a college of one of Australia's largest science/engineering based universities, the University of New South Wales.

In seeking to achieve these ideals, the UOW is conscious of the growing opportunity afforded by its creation at a particular time in the development of the national system of higher education in post World War II Australia. "Entrepreneurial activities are undertaken with the objective of improving regional or national economic performance as well as the university's financial advantage and that of its faculty". (Etzkowitz, Webster et al. 2000, p.313) As such, this opportunity to move with the entrepreneurial spirit of the times was seen by the UOW as compatible with its underlying vision and mission. The creation of the ITC is discussed at some length, given that, as

previously mentioned, it was partly established with a mandate to assist in the creation of replacement industries to assist the region, following the demise of the steel mill as a labour intensive activity in the early 1980s.

However the UOW was anxious not to move away from the key elements of its mission statement: to be research intensive, to be regionally engaged, to be a national leader in the higher education sector and to be internationally known and respected for its scholarship, research and academic excellence. In fact, as such is the complexity of the stakeholder interests of any university, it was essential that these features be seen to be given equal value and priority.

It is interesting to note that Shattock (2005) suggests that goals 1 and 2 are at odds with each other, and that the "research intensive university will find a conflict between its interest in national and international research, and the needs of its region". (Shattock 2005, p.20) This may require the UOW to review its goals over time to ensure that this conflict does not materialize.

Goal 3: National Leader in Higher Education

The third aim was to be a national leader within the Higher Education Sector. The key question for the UOW regarding entrepreneurialism was whether this emerging flow of activity, seen most clearly in the exercise of its regional responsibilities, was also in the national interest and whether this would assist in developing its national reputation. During this period, the discussion on the appropriateness of an entrepreneurial agenda was raised with the Vice-Chancellor, requiring renewed mandates, particularly for the ITC, from the University Council, the governing body. In particular, the University Council resolved as follows:

> that Council:
>
> (i) receive the report on the Illawarra Technology Corporation, as presented at the meeting and reaffirm the current ITC mandate;
> (ii) note the forecast of a small trading surplus for year end 1999;
> (iii) note the contribution, both financial and non-financial, made by the ITC in support of the goals and objectives of the University;
> (iv) note the inability of ITC to continue as an investor in technology commercialisation until improvement in profitability can be achieved;

(v) note the continued investment in technology commercialisation may require some capital restructuring, that the Board of ITC will be considering that issue in the New year and, following that consideration, a further paper may be presented to Council; and

(vi) note the need for additional cash-flow support, and approve an amendment to the terms of trading between UoW and ITC to 120 days until the end of 2000. (UOW 1999, Resolution 1999/90)

However, Clark argues against the notion that all universities need to be entrepreneurial, observing that:

> ...interests inside and outside of government strongly resist a much-needed differentiation; instead they want a national system to remain a system of ostensibly common universities...In short, national systems are blunt instruments for reform. The state or other main sponsors cannot do the job of reform for the universities. Only universities themselves can take the essential actions. (Clark 2001, p.11)

For the UOW, the course to reform itself and to seek a more entrepreneurial approach was not only appropriate, but consistent with its own 'national agenda'.

Goal 4: Develop an International Reputation

The fourth aim was to develop its international reputation. Although it continues to develop this more broadly, it is through the establishment of international partnerships for student exchange and the pioneering of the USA, South Asian and Middle East markets to attract international students that it has earned a reputation for innovative teaching, attractive programs and overall attractiveness to international students. With approximately 4000 full fee paying international students, it has the fifth largest proportion of any Australian university.

In the six year period 2000-05 international enrolments have grown by 22% at the UOW, 9% in NSW and 6% nationally. The largest growth in international students at UOW occurred in 2002 where the UOW exhibited a growth of 27%, compared with a 9% national average.

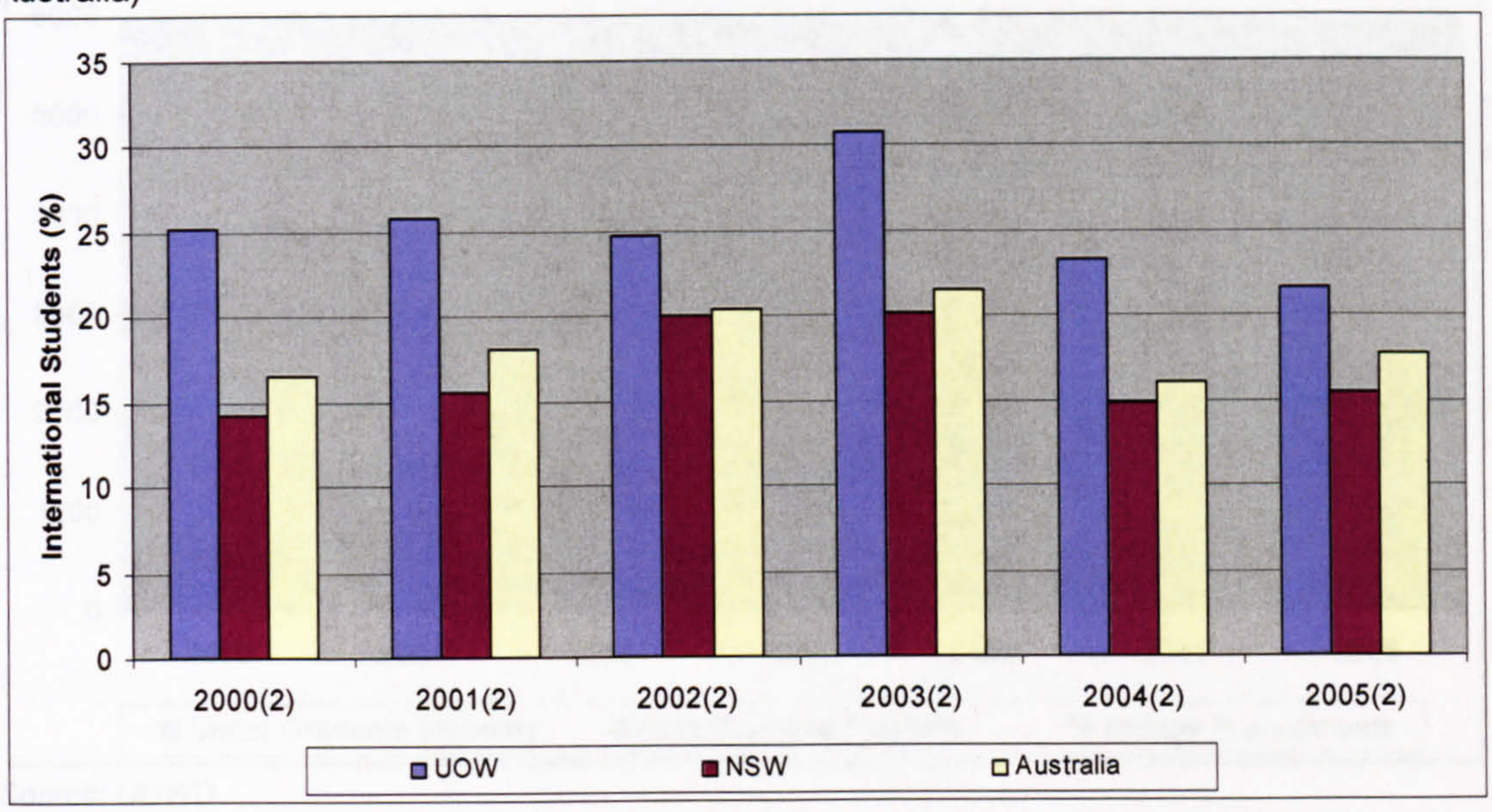
Additionally, the international reputation of the UOW is strengthening, through the operation and expansion of the University of Wollongong in Dubai (UOWD). The ITC, a controlled entity of the UOW, owns and operates

the UOWD. Initially established in 1993, the UOWD is now known as one of the UAE's oldest and most prestigious universities, and was in fact, the first Australian university to be awarded a Federal license to operate in the UAE, by the UAE Ministry of Higher Education & Scientific Research. UOWD's popularity amongst students has developed quickly in the past few years. (Al-Bawaba 2005) A number of preparation and bridging, undergraduate and postgraduate courses are now offered at the UOWD, and enrolment growth has been very strong over recent years, with post graduate enrolments increasing in proportion.

The UOW also established the University Internationalisation Committee to oversee and recommend the establishment of policy on such matters as student exchange programs, offshore study programs, scholarship programs, marketing and recruitment activities and student support and learning assistance programs.

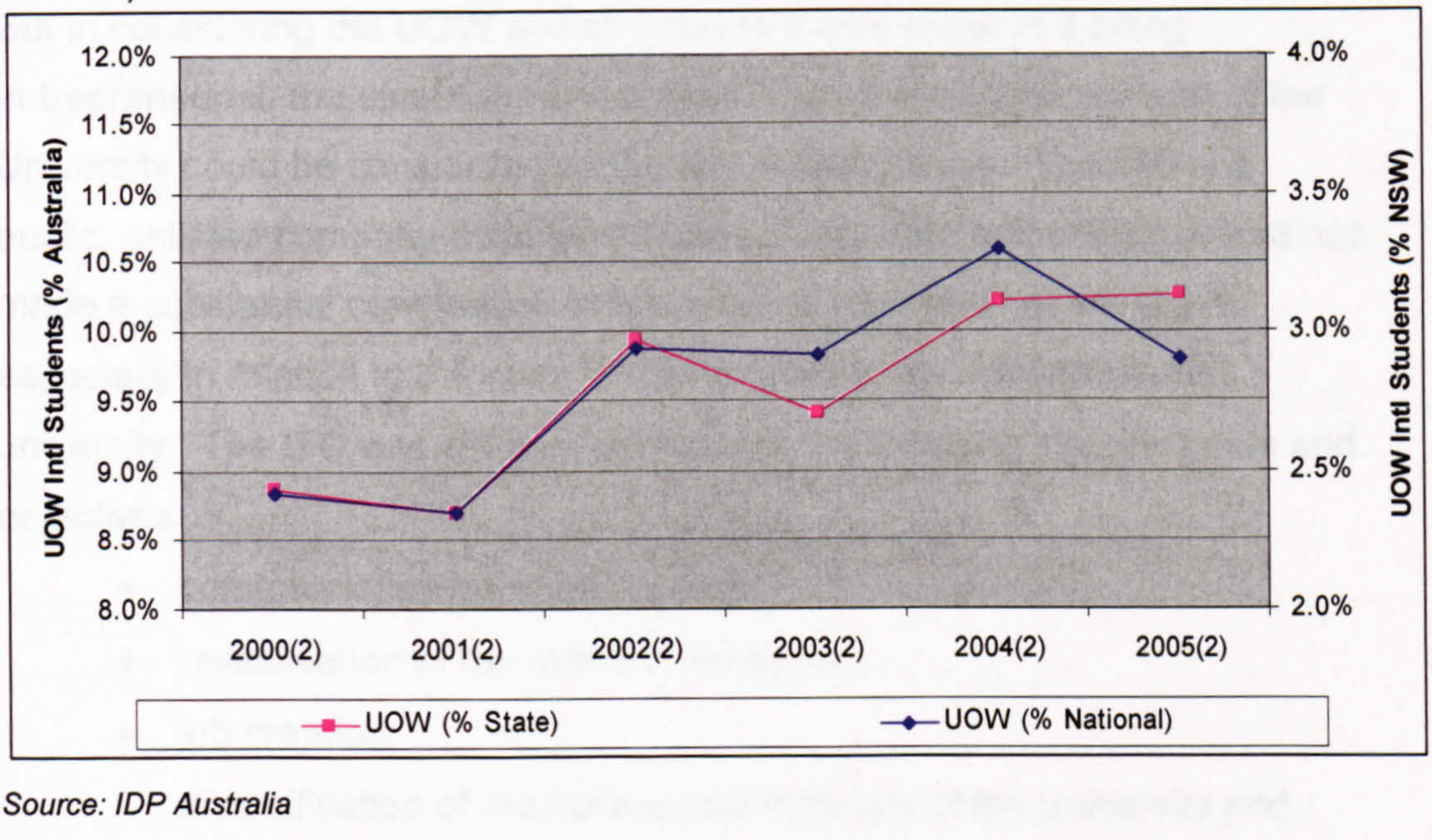
The UOW has also developed I-week, a widely publicized week set aside each year to focus on and raise awareness in international matters. This involves not only students and staff, but community groups. An international alumni network has also been developing over the years, with formal groups now established in Bangladesh, Canada, Dubai, Hong Kong, Malaysia, Papua New Guinea, Singapore, and Thailand.

Figure 14 International students as a percentage of all students at UOW (NSW and Australia)



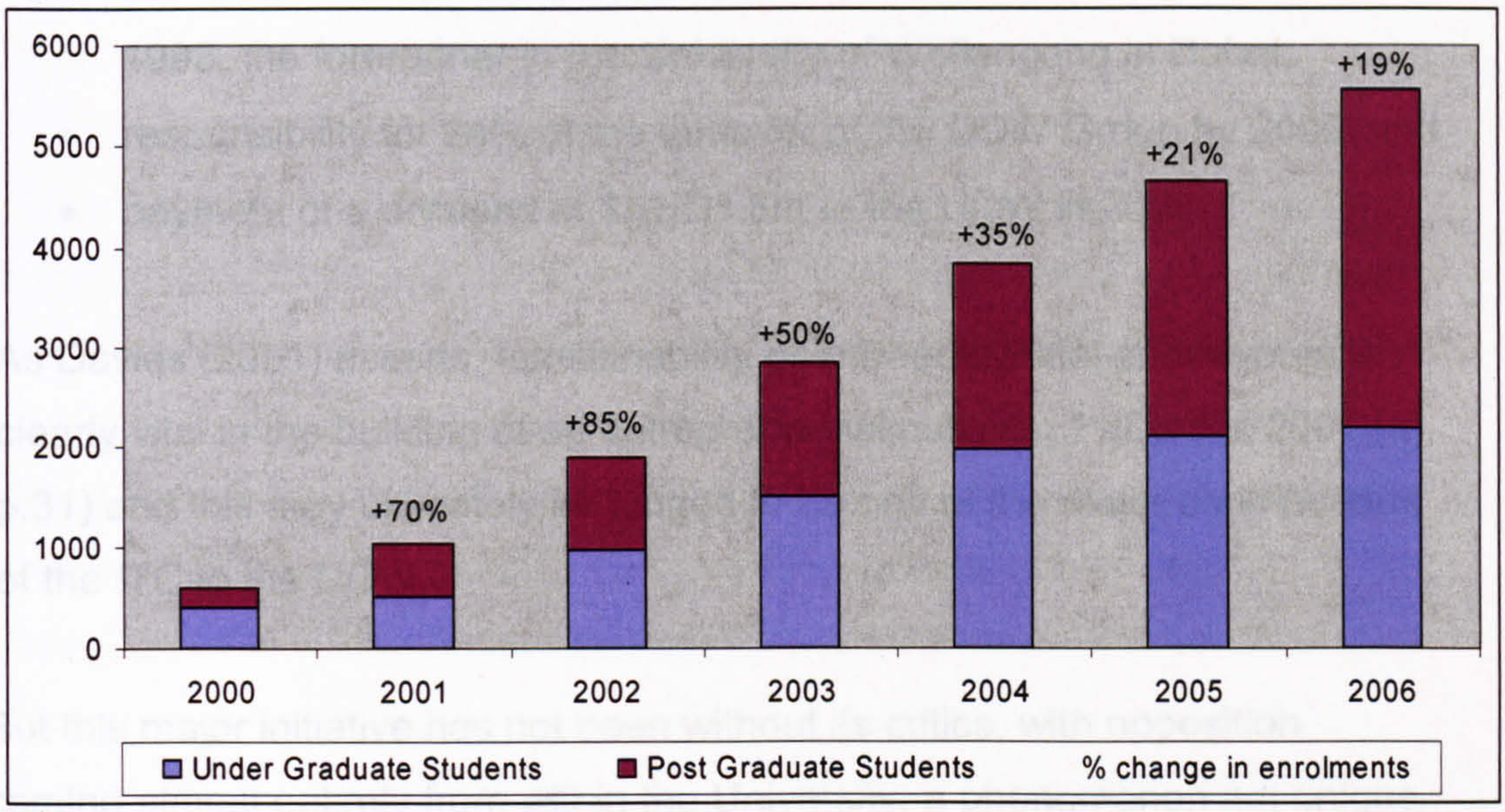
Source: IDP Australia

Figure 15 International students as a percentage of all students at UOW (NSW and Australia)



Source: IDP Australia

Figure 16 UOWD: total annual enrolment trends, 2000-06



Source: UOWD

Illawarra Technology Corporation Ltd

But in considering the UOW and any claims it may make to it being entrepreneurial, the establishment of the ITC as the commercial arm of the University could be considered as the key defining issue. The ITC is a public, unlisted company established under Australian corporate law and has made a substantial contribution to the growing reputation of the UOW, especially in relation to the case for being labelled an entrepreneurial university. The ITC was established to have the following specific goals and objectives:

- commercialisation of technology;
- revitalisation of the regional economy;
- job creation;
- diversification of the commercial interests of the university and local industries; and
- development of a new income source for the University.

Significant contributions made to the UOW arising out of its establishment include:

- the creation of an incubator facility for spinout companies in 1983;

- the establishment of the Institute for Australian Studies in Dubai in 1993, the forerunner to the University of Wollongong in Dubai;
- responsibility for 24% of the turnover of the UOW Group by 2005; and
- payment of a dividend of $AUD1.6m to the UOW in 2005.

As Davies (2001) asserts, "sustainability of entrepreneurial endeavours is clearly vital in the building of an entrepreneurial culture..." (Davies 2001 (a), p.31) and this may ultimately be judged to be one of the major contributions of the ITC to the UOW.

But this major initiative has not been without its critics, with opposition coming almost entirely from within the University, a phenomenon not unique to the UOW. As Mount and Belanger (2001) comment in their work on the views of Presidents of Canadian Universities,

> ...the new economic imperative that links higher education and research with work-related training and national economic competitiveness has engendered a clash between opposing and competing ideologies and interests. Critics within the universities contend that these institutions are selling their prestige and knowledge-creation capability for very little monetary return. (Mount and Belanger 2001, p.141)

The ITC was established in its initial form in 1981 in the context of an impending regional economic recession. The Illawarra region had traditionally relied upon the steel and coal industries for employment and economic growth but between 1982 and 1984 the region was hit by its worst recession since the Great Depression of 1929. As part of a worldwide downturn in these industries, production costs and job shedding became necessary for the industries to survive. As these industries began to decline in importance to the region's economy a need developed to diversify the Illawarra's regional economic base. It was recognized at that time, that the development of technology based enterprises had the potential to encourage investment and reduce dependence on older industries, thereby offsetting job losses and boosting the economy. So it was to the UOW that the state and federal governments turned to take a lead in rejuvenating the regional economy. This sat uncomfortably upon the University, which was still in its early formative years as an independent university. But it was an obvious next step in the growth and development of the UOW. It was also an

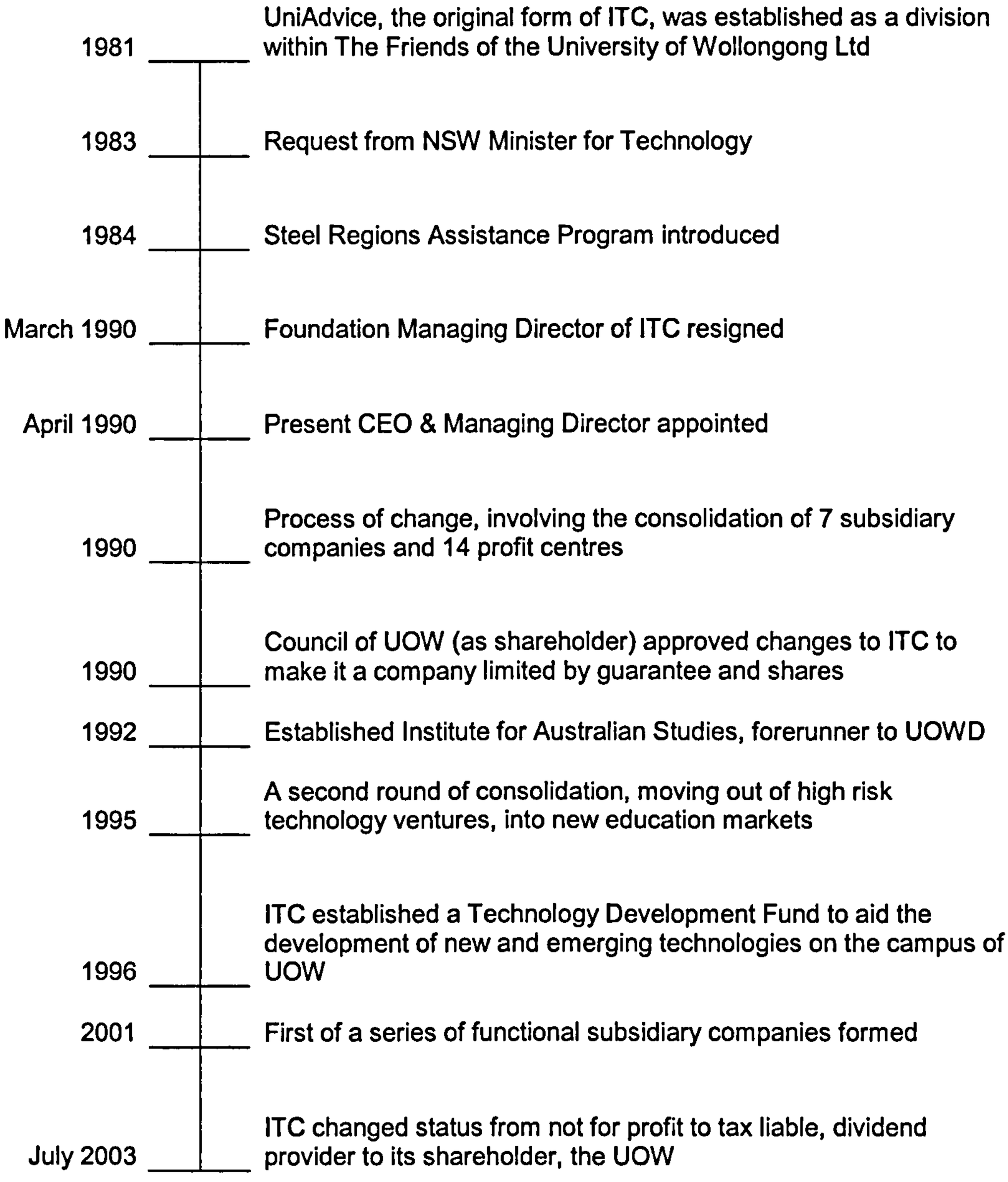
appropriate request given the specific mandate within its charter to be engaged with its region. (1972)

Interestingly, as a continuation of this regional role, the Premier on behalf of the NSW Government, announced early in 2003 the transfer of 44 acres of land in a prime coastal strip, 3 kilometres from the main UOW Campus, for the purposes of establishing an Innovation Campus. This included the provision by the NSW Government of $16 million in infrastructure funding as part of a $28.7 million contribution to the Innovation Campus project. (Hartgerink 2003) The initial communiqué was couched in the terminology of employment growth, economic development, regional planning and those other traditional terms which go to the heart of community concerns within regions outside of major cities. Again there were expectations associated with this announcement, which UOW, on this occasion as opposed to the previous announcement of the early 1980s, felt quite capable of achieving. The very existence of ITC over the course of the past 25 years, as well as its financial success, has enabled the UOW to accept that such exercises of regional responsibility are 'core' mission activities and are in keeping with its entrepreneurial spirit.

> An entrepreneurial attitude does not necessarily mean that a public university should aim at behaving in all senses like an enterprise. Profit making is not clearly an objective compatible with some of the objectives of universities. They have a social mission that cannot be disregarded. (Soares and Amaral 1999, p.19)

An overview of the development of the ITC as the commercial arm of the UOW is illustrated in Figure 17, and is followed by a brief history which is sufficient for the purposes of illustrating the scope, dimension and scale of its activities in relation to the overall activities of the University.

Figure 17 Overview of ITC timeline



The following detail is provided to further outline the historical development of the ITC as a significant contributor to the introduction of entrepreneurial endeavour at the UOW:

- In 1981, UniAdvice, the original form of the ITC, was established as a division within The Friends of the University of Wollongong Ltd, a not for profit company created to raise funds in support of the University and, to make available on commercial terms the academic expertise of UOW in consulting, testing and expert witness activities.

- In a letter to the Vice-Chancellor, dated 21 October, 1983, Hon P.D. Hills, NSW Minister for Technology, requested the UOW to "identify ways in which research and educational resources can more effectively stimulate regional industrial exploitation of technological opportunities". (Hills 1983)
- In 1984, a Steel Regions Assistance Program was introduced by the Australian Government to assist in the restructuring of alternative industries in the major steel centres of Australia. One of these was the Illawarra region in which the principal city is Wollongong. Significantly, within the amount of $100 million made available to the Illawarra Region to develop a new regional infrastructure and training programs, encourage diversification and develop tourism as a major industry, $5 million was earmarked for the establishment of an Illawarra Technology Centre. This was a crucial step in the beginnings of the entrepreneurial journey for the UOW, and was a good fit for a fledgling university with intensive research aspirations. Several studies provide evidence that the nucleus in the development of a technology centre is a research university. Smilor, Dietrich *et al.* for example, contend that "if such a research university is not in place, and has not attained an acceptable level of overall excellence, then a technology centre is not likely to develop very rapidly". (Smilor, Dietrich *et al.* 1993, p.2)
- In early 1990, the foundation Managing Director of ITC resigned and, in April 1990, the present CEO & Managing Director (the author of this Thesis), who at that time, held the post of Vice-Principal of the UOW, was appointed to hold both posts conjointly. The task was an enormous challenge, given the financial position of the Centre and the demanding set of expectations being articulated by a diverse array of stakeholders. These ranged from the three arms of government, to the regional development bodies, to the University and specifically the Vice-Chancellor who had 'chanced his arm' in suggesting that the UOW would take on this task as a central feature of a regional recovery package. But the appointment proved a crucial turning point

in the development of the ITC, for as Burt observes, "the conclusion is that individuals with relation to otherwise disconnected social groups are positioned for entrepreneurial action, building bridges between groups where it is valuable to do so". (Burt 1997, pp.355-356)

- With the appointment in 1990 of the new CEO, the process began of winding up all subsidiary companies and establishing a single 'umbrella' company, 'The Illawarra Technology Corporation Ltd', to consolidate the technology transfer, commercialisation and training activities of the University. This involved the consolidation of 7 subsidiary companies and 14 profit centres, to establish the UOW as the sole shareholder and to significantly improve the approach to risk management created by 'start up' companies.
- The Council of the UOW (as shareholder) approved changes to the ITC to make it a company limited by guarantee and shares under Australian Corporations Law, to reflect the desire on the part of the UOW to remain as the sole shareholder and to reinforce the 'commercial nature' of ITC as a public unlisted company.
- During 1992, as part of a program of expansion internationally, the ITC established the Institute for Australian Studies, the forerunner to the University of Wollongong, Dubai Campus, to support the internationalization strategy of the UOW and to take responsibility for managing the associated risk.
- In 1995, as part of a second round of consolidation, ITC moved out of high risk technology ventures, moving its focus instead to new markets in international education.
- In 1996, the ITC established a Technology Development Fund to aid the development of new and emerging technologies on the campus of the UOW.
- In 2001, ITC formed the first of a series of functional subsidiaries, ITC Europe Ltd in 2001, followed by ITC New Zealand Ltd in 2002 and ITC Education Ltd in 2003, both to position it for further expansion into new markets, and to comply with the legal requirements of the particular legal jurisdiction.

At the time of the appointment of the new CEO in 1990, ITC had recorded a substantial trading loss for the 1989-1990 financial year, on a reported revenue of $3.24m. (ITC 1990) By the financial year ending 31 December 2003, ITC was able to report a net profit of $1.30m on revenue of $53.11m and in addition, achieved a turnover of $43m under the terms of a service contract with the UOW. Over the decade of the 1990s, the ITC had increased its contribution to the reported turnover of the UOW from 5% in 1990 to 32% in 2003 and had begun to achieve an acceptable commercial return. (ITC 2004)

It is also significant that from 1 July, 2003, midway through the 2003 financial year, the ITC became tax liable and had restructured the company, changing its 'not for profit' status to that of a tax liable, profit earning, dividend provider to its shareholder, the UOW. This was a natural progression in the development of the ITC as a public unlisted company operating under Australian Company Law.

It has also created, through expansion, subsidiary companies: Europe in 2001 specifically to be eligible to bid for EU funded projects and New Zealand in 2002 to 'house' specific educational initiatives. It has also operated project offices in Dili in East Timor, Batam and Jakarta in Indonesia, Vientianne in Laos, Tonga and The Solomon Islands. It is in the process of establishing an office in Beirut in Lebanon to manage Middle East projects. It operates pre university colleges in Wollongong, Sydney, Auckland (New Zealand) and Dubai (United Arab Emirates), in addition to the university (UOWD) it owns and project manages in Dubai. It has established a K-12 School in Qatar, of which the CEO of ITC is a member of the Board of Directors. With approximately 96% of its income in export dollars, it has now become a global services company, far from the original concept outlined by the government in the early 1980s when it was established to foster regional development.

ITC has also agreed to support the University in the implementation of a new Innovation Strategy. This means that involvement in downstream activities

such as spin off companies to commercialise new technology could be an emerging role for the Corporation in the coming years. This new focus on commercialization is viewed as an entirely appropriate development and in keeping with the core values of a modern university.

> One of the ways to transfer knowledge and technology to the community is to enable the inventor as an entrepreneur to transfer his or her knowledge to a newly founded company. Such transfers also increase the application and market orientation of the university. (Schutte 1999, p.52)

Although the ITC has moved on from its original mission, it is argued that it now operates much more in the interests of the University as its shareholder, especially in its new tax liable, profit-generating dividend-providing form. With over 500 employees, its contribution to the Illawarra region is substantial, and its support of the entrepreneurial reputation of the UOW is of immense value. It is in no small way because of the commercial success of ITC that the UOW is regularly referred to as an entrepreneurial university.

Culture of the UOW

The establishment of major initiatives such as the UOWD in Dubai in early 1993, the Innovation Campus three kilometers from the Wollongong Campus in 2004, and the Graduate Medical School (due to open in early 2007), are both evidence of, and have contributed to, the entrepreneurial approach and culture within the University. These activities have also been significant in establishing within the University, a shared sense of momentum through the creation and implementation of enterprising ideas, and their transformation into action, for as McInnis points out,

> the nature of academic work roles and their shared motives and values are the driving force behind the university culture on which ambitions for collegial entrepreneurialism are built, or dashed. (McInnis 2001, p.46)

This view is also supported by Clark.

> Institutional insufficiency can be overcome, but a capacity to cope depends on the willingness of universities to become more entrepreneurial. And for that willingness to endure and be effective, it must call on good old-fashioned collegiality. (Clark 2000, p.10)

Much debate has occurred across the campus of the UOW on the merits of pursuing an entrepreneurial culture. The National Tertiary Education Union (NTEU) had challenged the whole notion of entrepreneurialism within the

University and its impact upon core values. As Davies (2001) observed, "Entrepreneurialism is frequently asserted to have its 'seamy side', the distasteful consequences of a financially driven institutional system". (Davies 2001 (a), p.35) The ideological debate has continued over recent years with no sign that some members of the National Tertiary Education Union (NTEU) are giving up on the idea that entrepreneurship is fundamentally bad, or at least in the way it is practiced at the UOW. An academic at the UOW, Associate Professor Ted Steele, was a constant critic.

> One of his [Steele's] hobby horses was the appointment of what he called 'Mickey mouse professors'. He claimed that poorly qualified candidates were being appointed to professorships, and that senior management was choosing entrepreneurs and insiders over those who had better scholarly records... Although Steele was a thorn in the side of the administration, he was by no means the only one: there were several other staff who made frequent and passionate contributions on university policies via the email system. (Martin 2002, p.10)

McBriety comments specifically on efforts to foster innovation in terms of the requirement to:

> ...deal with clearly divergent postures reflecting dichotomy...between academic freedom directed towards the general pursuit of scholarship on the one hand and, on the other, mission-oriented industrial research where timescales are often very different and the driving force is predominantly profit and commercial viability. (McBrierty 1992, p.4)

But notwithstanding this continuing opposition from a minority of faculty members, entrepreneurship is now a fundamental part of the UOW and it has attracted many likeminded individuals to the institution. "Whether entrepreneurship is considered good or bad, it is clearly not evenly distributed: some institutions and individuals demonstrate it more than others". (Louis, Blumenthal *et al.* 1989, p.111) The survey of all staff and the series of semi-structured interviews provided an ideal basis for determining the appropriateness of this general observation about the UOW.

The vision and mission of the UOW is constantly being articulated by the Vice-Chancellor, and members of the senior executive team. It cannot be assumed that there is, and will be, general ongoing support for continuing down the path of entrepreneurialism. Such support cannot be mandated nor can it be assumed. Neal's rejoinder is a very appropriate contribution to the debate: "the process of building credibility within the traditional higher

education community will be difficult for entrepreneurial institutions". (Neal 1998, p.77) The issue of leadership is crucial in establishing an entrepreneurial culture and sustaining it over time. This became a recurring theme during the semi-structured interview program, and is reported in detail in the analysis section.

The issue of quality has come to the fore in recent years and is now an ever present matter to be dealt with, especially within an entrepreneurial university such as the UOW.

> Quality assurance in the entrepreneurial university requires an openness on the part of all participants. Those within nontraditional institutions must accept more vulnerability within this highly competitive sector by revealing strengths, weaknesses, and processes to various public constituencies. Rather than fearing the loss of competitive advantage, entrepreneurial universities should welcome the opportunity to lead and participate in broader discussions of quality to build credibility, influence, and acceptance within the broader sphere of higher education policy both nationally and internationally. (Neal 1998, p.83)

With the establishment of the Australian Universities Quality Agency (AUQA), focus is now shifting much more to the processes of each Australian university. There is growing evidence that for those universities such as the UOW which have sought to develop and nurture an entrepreneurial spirit within the institution, criticism will be leveled for not taking the more cautious – and some would argue more appropriate – action of paying attention to the documentation of processes, and to ensuring that feedback loops are in place to inform future decisions. AUQA seems particularly concerned about the entrepreneurial activities of universities, especially in the area of offshore quality and, in particular, has criticized Macquarie University for "unacceptable practice" in a relationship with an offshore partner. This was rejected by Macquarie International General Manager, Professor Tony Adams, who called the criticism "basically absurd". (Matchett 2003)

However, there is the inherent danger in this more conservative approach, of an over emphasis on committees and the documentation of decisions, preferred by some to what they see as the 'loose and free' approach by those universities engaged in entrepreneurial activities. Davies (2001 (a)) cautions that quality regimes can be so deeply bureaucratic and inward looking that they tend to stifle the necessary flexibility for entrepreneurial activity. It is an

issue to be thought through, given that the consequences of over regulation could lead to the flame of entrepreneurialism being 'snuffed out', a point well made by Neal (1998). "As entrepreneurial universities strive for acceptance and for their own sense of excellence and success, progressive regulatory bodies struggle for ways to enforce necessary controls without stifling individuality and innovation". (Neal 1998, p.79)

The UOW took a very positive approach to the encouragement of a culture of academic entrepreneurship. In addition to the establishment of ITC and its own initiatives, Challenge Grants were introduced in the 1980s and had a significant impact. Created for the purpose of fostering bright ideas and innovations, they were established for the specific purpose of 'seeding' new ventures with a view to their self-sufficiency being achieved after a relatively short time of 1 to 3 years. This signal sent to the academic community was more important than the grants themselves, which were modest by any measure. It was a deliberate intention to create a strong culture, one where the staff "share beliefs, myths and practices so as to feel invested in, and part of, one another". (Burt, Guilarte *et al.* 2002, p.168)

Failure of an innovative idea was not to be feared, rather, the lack of desire to trial new initiatives was discouraged to enable a more entrepreneurial culture to be progressed. This approach is supported by Davies (2001) and (McInnis 2001) who both emphasize the need to take risks, experiment with new things, create entrepreneurial entities, learn from the entire process, and affirm that "academics are crucial to the transformation process". (McInnis 2001, p.48)

Risk, at the UOW, was an aspect of the University culture. Shattock examined this notion of risk in relation to entrepreneurial activity.

> An important element of the entrepreneurial character is the willingness to take risks...In universities risks may be academic or reputational as well as financial...Of course universities may also be engaged in real business risks in deciding to invest in patents or in spin out companies based on academic work carried out within the institution, or in technology transfer companies or incubators or science parks. The risk element is inherent in university entrepreneurialism ..... (Shattock 2005, p.19)

The ITC, discussed previously in considerable detail in its role as the commercial vehicle of the UOW, was and continues to be, an example of each of these: academic, reputational, financial and business risks. (ITC 2004)

Another initiative at the UOW was the astute use of capital funds to provide buildings and facilities to support innovation, especially interdisciplinary research and joint degrees. These initiatives do not occur naturally, given the tendency for universities to operate as a series of 'silos', keeping within the safe havens of academic tribes. They must be actively encouraged and nurtured as part of a supportive entrepreneurial culture. For this reason, Faculties and interdisciplinary research groups or Centres are seen as central to creating an entrepreneurial culture at the UOW, rather than relying upon departmental based groupings established on traditional academic disciplines.

The creation of the ITC and its supporting services was a major contributor to the shift in culture, encouraging the UOW to take further initiatives such as the establishment of additional 'controlled entities'. The creation of UniCentre Ltd, to own, manage and operate the student services previously operating under a separate student run Student Union, and URAC Ltd, to own, manage and operate the student recreation facilities such as the Aquatic Centre and other recreational facilities, are further examples of the sense of confidence the University Council had in taking the governance of such activities to the next step of the process by establishing activities on a strong commercial footing. As Grigg points out, such significant institutional initiatives are essential if the desired change in culture is to be achieved.

> Policies to address these particular issues and to encourage academic entrepreneurship require institutional adjustments designed to give would be entrepreneurs the necessary technical and commercial support. (Grigg 1994, p.296)

But despite the obvious success of the ITC and its assistance in helping to create a positive culture of entrepreneurship within the UOW, there is no guarantee, as Davies cautions, that this positive cultural change will endure.

After all, "the development of a sustainable entrepreneurial culture is a complex and difficult business...". (Davies 2001 (a), p.41)

The Art of Management at the UOW

As part of the process of becoming an entrepreneurial university, changes were introduced to the management structure at the UOW. A major shift towards more accountability was implemented. The power of committees was gradually eroded in favour of personal accountability, and an elevation of the notion of risk taking. Miller (1999) advocates a novel approach in support of this important point: "Every search announcement for administrative leadership positions could do well to include the spirit of this thought: Wanted: administrators who are risk-takers, with hope". (Miller 1999, p.214)

Chairs of Faculties, with limited authority other than to chair meetings of faculty members in 'formal session', were replaced, initially by elected Deans with some increased authority over budgets and the development of academic directions, and then by appointed full time Deans with increased executive authority. Academic staff were required, inter alia, to be active researchers as a pre-condition of appointment to the role of Dean, and were only appointed for one 4 year term. The possibility of a second term of appointment exists, but at the end of the second term, the academic staff member must then step down, and either return to a position within the faculty or seek an appointment elsewhere. This was a central component of the process of devolution of responsibility, which in particular, placed financial responsibility for the achievement of budgets, both top line and bottom line, on the shoulders of those appointed academic staff members appointed to these positions. This shift in management practice to support the development of an entrepreneurial management style was essential, a position supported by Marginson (1999).

New appointments were also made to the Vice-Chancellor's Senior Executive Team to strengthen the management structure. This led to the criticism, especially by members of the NTEU executive, that too much

'managerialism' was being introduced at the expense of 'collegialism'. But the changing funding climate for universities was a powerful endorsement of this need for greater financial accountability and increased entrepreneurship in securing alternative sources of funds. Despite the apparent contradiction between devolution and managerialism, it forms an essential part of the transformation process involving the strengthened steering core and the diversification of funding sources.

> Entrepreneurialism is also about financial consciousness, the ability of the institution and its members to exploit commercially the opportunities presented, and to generate surpluses which may be used to invest in further development, or meet deficits incurred by government financial reductions or declining enrolments or other academic business. (Davies 2001 (a), p.29)

But this shift in power and the strengthening of senior management was also an essential and necessary step in reshaping the organization to be more flexible and ready to respond to the increasing pace of change in the external environment, a point well noted by Soares and Amaral (1999).

The process of change at the UOW had to affect every layer of the organization. It was foreshadowed in many and varied interactions between the Vice-Chancellor and the academic community that this process would have to affect all areas of the University. Opting out was not an option, unless of course the consequences of merger or closure of the particular under performing Unit, Department or Faculty was the desired outcome. The University had to change and quickly if it was not to be overrun by the bigger and wealthier universities in the major capital cities. As Clark observed:

> Organizational sleepiness becomes more costly: snooze away for a decade and you become an outmoded institution. Entrepreneurial universities know this, and do not allow it to happen. They make the changes, department by department... (Clark 2001, p.20)

The Vice-Chancellor, Professor Ken McKinnon, also took every opportunity to ensure that the challenge was constantly and vigorously put before the university. "The university is thereby 'put on notice' that it will need to make an alliance with business or be annihilated. In fact, in order to become efficient, universities will have to be like businesses; the public form will disappear". (Buchbinder 1993, p.337) The achievement by the University of

the Award in 1999-2000 under the general heading of 'Industry Partnerships' was evidence that this particular challenge had by that time been met.

It would appear then that changes to the management structure have been a significant factor in the development of an entrepreneurial university reputation at the UOW. No apologies were made for what Burt describes as, "a centralized, authoritarian infrastructure to support the more 'flexible' academic entrepreneurialism which develops" to ensure that every support was given to the emerging entrepreneurial spirit at the UOW. (Burt 1997, p.345)

The UOW Approach to Human Resources

Mossberg (1997) would argue that universities generally have not been successful entrepreneurs, and a study by Louis, Blumenthal *et al. (*1989) suggests that university policies and structures have little impact on faculty entrepreneurship. However, since that study in 1989, the pace of entrepreneurialism has quickened and it would be interesting to observe any differences in findings if the study was to be repeated now. The UOW in particular has achieved much since that time in response to changes in policies and structures. For instance the Research Office has been restructured and new policies introduced to encourage the development of entrepreneurship within the Faculties. This has seen a rise in third-stream income, a source of funds Clark (2001) describes as having no limit.

Professors with an 'entrepreneurial bent' and in particular, who had a sympathy for the pursuit of entrepreneurship within the UOW, such as a willingness to develop short courses for which fees were charged or an ability to raise funds considered 'third-stream', were recruited. Centres were established in a number of academic departments with the express aim of generating alternate sources of funds. Matching funds from the centre for specific academic initiatives have also added to the attraction for potential appointees, even when competing offers to older and more financially robust institutions had been available.

An entrepreneurial university is normally said to have a very clear mission, but also allows staff considerable freedom to pursue their own ideas within this mission. Thus, it differs from a more corporate university, which has a clear mission but tends to control its activities more tightly. This freedom is important. In one case, an entire research team was enticed to move from a large metropolitan university in Sydney, attracted by the opportunity to develop a different and more innovative way of advancing its particular academic discipline. Attraction and retention allowances, post graduate scholarships attached to specific professorial appointments, new laboratories, changes to the compensation arrangements for consultancy activities and a more generous allocation of proceeds from the exploitation of intellectual property to the inventors, have all assisted in the creation of a climate much more conducive to the attraction, retention and development of human resources at UOW. In particular, the decision to alter the percentage of proceeds from the sale of IP given to the academic staff member, indicates a willingness to seek buy in from the academic staff and the inventors. As Buchbinder observes, "without the academic staff there would be no academic enterprise. Hence the structure of the academic workplace needs to support the centrality of academic workers". (Buchbinder 1993, p.333)

Changes have also been made to the processes of selection and recruitment of new staff. The Vice-Chancellor chairs all professorial selection committees and external members are a compulsory component of the selection process. The practice of 'no appointment' has become an acceptable outcome rather than just appointing the best candidate. Thresholds have been established. To retain the best staff, a process of appointment to full professorship as a 'career' position was introduced, again chaired by the Vice-Chancellor, with members of the Senior Executive on the selection committee, not just disciplinary representation. The UOW has institutionalized a number of important lessons learnt. Although entrepreneurship is not specifically measured and rewarded directly, regular reviews of policy are undertaken in areas such as attraction and retention allowances, promotion criteria, and the attraction of third-stream income, to

ensure that equitable arrangements are in place to encourage the entrepreneurial culture. In particular, referring to the work of Louis, Blumenthal *et al,*

> since having a productive faculty appears to be so critical, the traditional strategy of continually supporting the recruitment of the best people in the field is a precondition to the effectiveness of other policies that may stimulate (or control) entrepreneurship. (Louis, Blumenthal *et al.* 1989, p.129)

Leadership at the UOW

No examination of entrepreneurship at the UOW would be complete without looking at the issue of leadership. The work of Bennis, Benne et al. is ageless in its relevance to this discussion.

> People in authority... must develop the vision and authority to call the shots...; must do more than tinker with the machinery and flex their muscles. They must have an entrepreneurial vision, a sense of perspective...; must be educators...; (and) must be social architects studying and shaping what we call 'the culture of work', examining the values and norms of organizations and the ways they are transmitted to the individual, and, wherever necessary, altering them. (Bennis, Benne *et al.* 1969)

Clark comments that it is clear

> that extremely personalized forms of leadership – the dictator, the tyrant, the authoritarian figure – do not endure in universities and cannot be a permanent feature in entrepreneurial universities. (Clark 2001, p.15)

He continues by asserting that "Universities need autonomy but they also need to develop entrepreneurial leadership to put that autonomy to effective use". (Clark 2001, p.19)

The two Vice-Chancellors at UOW over the past 25 years, Professor Ken McKinnon (1981-1994) and Professor Gerard Sutton (1995-present) have been exemplars in striving to balance such issues as institutional autonomy with entrepreneurial leadership. Their contributions, though made through quite different leadership styles, have been immense, and it is to be hoped that those who reflect upon the history of the UOW will give adequate attribution to their profound impact upon the University. McKinnon was an establisher of the entrepreneurial culture at the UOW, while Sutton has been the sustainer. But this is too simplistic as a statement of their style and impact.

Their approach has been different in significant ways. For example, McKinnon made astute appointments into the Senior Executive from outside of the UOW, such as Professor Ian Chubb as Deputy Vice-Chancellor, Sutton himself as Deputy Vice-Chancellor and Mr Ken Baumber as Vice-Principal (Administration). This was in keeping with his role as establisher of entrepreneurial activity. He used key external appointments to assist in bringing about the required change. Sutton, by contrast, made a number of significant appointments from inside the UOW, such as Professor Rob Castle, Professor John Patterson and Professor Margaret Sheil as Deputy Vice-Chancellors, and Mr Chris Grange as Vice- Principal (Administration). This gave both continuity of purpose and significant institutional commitment, thereby assisting Sutton to maintain the entrepreneurial culture. This latter approach is supported by Shattock, who notes that "universities that grow their own talent, whether in academic or administrative life (providing the growing takes place in an atmosphere of excellence, competition and ambition) build a sense of institutional coherence and an institutional culture which can be very valuable in confronting external challenges". (Shattock 2003, p.180)

But despite their different approaches, both McKinnon and Sutton succeeded in creating strong, robust and loyal teams, dedicated to the achievement of common goals in the interests of the UOW. In the semi-structured interviews, the majority of senior managers identified both Vice-Chancellors by their entrepreneurial leadership. However, Taylor and Machado (2006) observed, in the context of strategic management in higher education institutions, that "....the growing complexity of the institution necessitates that the leadership delegate more responsibilities and empower more individuals.....to contribute to the collective process of distributed leadership". (Taylor and Machado 2006, p.155) This may require a shift over time at the UOW, both in response to its growth and to its increasing complexity as an institution of higher education, to the adoption of a distributed leadership approach as a means of analysing and describing institutional leadership and its effectiveness at the UOW.

Davies asserts that "the role of the university leadership in culture change is important...Personal leadership style is clearly relevant involving elements of self-criticism, trust and openness and a strong problem-solving focus". (Davies 2001 (a), p.41) This has been characteristic of the leadership at the UOW. But the real underlying success for both McKinnon and Sutton as Vice-Chancellors has been their capacity to astutely judge and select teams of Senior Executives to support them. As Lundin, Lancaster *et al.* found through their research on leadership, "the success of great leaders depends on their ability to establish a base of loyal, capable, and knowledgeable followers". (Lundin, Lancaster *et al.* 1990, p.18)

Some argue that McKinnon had the benefit of a more expansive period of funding during the 1980s, when successive Federal Labor Governments were still able to provide some growth funds to the higher education sector. A separate capital works program was also in place to provide for buildings and major equipment. Sutton on the other hand came to office just prior to the change in government. A conservative Federal Liberal/National Government has now been in power in Australia since 1996 paralleling this term of office, and has introduced funding cuts to force institutions to seek alternative sources of funds. This point was observed in the study of Presidents of universities across the USA: "the departure of universities from a relatively sheltered, if not government-privileged, environment has forced their presidents and senior administrative officers to look outward for new collaborative arrangements to offset the effects". (Mount and Belanger 2001, p.138)

This Sutton has done very effectively, using the external 'force' of declining government funding to increase the pace of entrepreneurial endeavour, 'privatizing' or outsourcing under performing activities against benchmarking exercises of best practice.

> The success of an organization can be analyzed by identifying the characteristics of its founder/strategists as an entrepreneur, leader, and manager. In the creation process and during the first years of the life cycle of an organization, the leadership qualities of its founder are particularly important. When the institution matures, managerial skills become crucial. Enterprise and innovation are essential at each stage. (Jablecka 2001, p.375)

The UOW has been well served for leaders in both McKinnon and Sutton, with both having "gone for full-blooded entrepreneurial approaches with the trappings of a business culture". (McNay 1998, p.58) But they have also combined vision with an astute ability to measure and take risks in the development of a truly entrepreneurial spirit at the UOW.

Marginson has written much on this point.

> Vice-Chancellors draw much of their self-definition from their command over territories and their external functions, particularly international operations and liaison with industry. There is a good deal of diversity in leadership styles, ranging from the free-wheeling entrepreneur to the close checking rationaliser, to a more pastoral style, but there is a common dependence on highly individualised models of leadership, and surprisingly little diversity in purposes. All strive for the maximum room to move in relation to internal constituencies and pressures, all want to be 'free to deal' with the new environment of threats and opportunities, all see university priorities, structures and personnel as almost infinitely malleable. (Marginson 1999, p.5)

Summary

The analysis of the UOW: its leadership, its structures, its culture, its policies, and its relationships with industry suggest that it meets the criteria as an entrepreneurial university. It is flexible, responsive and has well developed 'third-stream income'. It has been aggressive in seeking commercial relationships, and in seeking financial returns through its commercial company, the ITC. It has pursued in parallel, a research intensive strategy that has placed it among the leading Australian intensive research universities.

The case study identified the defining factors that led to the UOW's current position in the higher education sector in Australia, and examined the current goals of the UOW. A further analysis, through the application of a survey of all staff and a series of semi-structured interviews, was undertaken, and the results are examined in Chapter 5.

Despite its apparent likeness to other 'models' or 'types', the UOW is unique, and it will frustrate those who would seek to classify individual universities

into specific groups or stereotypes. In particular, Marginson and Considine make the following claim:

> "...Clark's last two characteristics are weak or non-existent in Australia. If some Enterprise Universities have created an institutional culture, none seems to be stimulating its academic heartland as Clark describes. Often, centrally driven integration is secured more on the basis of the weakness of academic cultures rather than their strength...Everywhere the 'expanded developmental periphery' seems to side-step academic engagement all too quickly." (Marginson and Considine 2000 (a), p.240)

- But while the responses to the survey questions on the stimulated academic heartland (pathway four) were the weakest for all pathways, 55% of staff still responded that the University *created a supportive working environment,* and 49% indicated that *staff received the opportunity for engagement with the University*. For the integrated entrepreneurial culture (fifth pathway), more than 50% of all staff members viewed the UOW to be *entrepreneurial*, *innovative*, *adaptive*, *flexible*, *supportive*, *strongly led* and *community engaged*. This would appear to put UOW at odds with the findings of Marginson and Considine, and raise the question as to whether the Australian context gives rise to a different mode. But that initial observation needs the benefit of much more reflective consideration, analysis and research than is given here and is outside the scope of this current study.

But ultimately, in bringing this case study chapter to a close, Clark is right on a very crucial concluding point. "Case study narratives additionally, weave uniqueness around common elements and their amplifying variations. There is, finally, only one MIT, one Twente, one Monash". (Clark 2005, p.2) There is only one University of Wollongong.

Chapter 5: Results & Analysis

Overview

This chapter provides the results of the analysis of the qualitative and quantitative data generated around the investigation of each of the 'pathways of transformation'. (Clark 1998) Additionally, an examination of the importance of leadership, arising from the semi-structured interviews, was undertaken.

Introduction

This study was undertaken to evaluate the UOW in the context of Clark's (1998) 'pathways of transformation' as the key contextual setting. The study attempted to describe the characteristics through the use of a survey instrument, specifically designed and developed for the purposes of this study. All staff at the UOW were given the opportunity to complete an online survey instrument to explore their views and attitudes, as they related to the UOW. The question sets were grouped around the key themes of *a strengthened steering core, an expanded development periphery, a diversified funding base, a stimulated academic heartland, and an integrated entrepreneurial culture*. (Clark 1998) Additionally the survey instrument invited staff to respond to a set of semantic differential questions on an entrepreneurial scale.

Data from the instrument was collected and reported for each of the relevant research questions.

Data was analyzed by gender and staff category, according to academic discipline areas, administrative functional areas and university controlled entities. However, due to the small number of responses for some Faculties, a grouping of Faculties was applied, and this is referred to as a Discipline Area; these are outlined in Table 16.

Table 16 Discipline area for faculty survey responses for analysis

Discipline Area	UOW faculty included
Eng + Inf	Informatics Engineering
Science	Health and Behavioural Sciences Graduate School of Medicine Science
Social Science	Arts Creative Arts Commerce Education Graduate School of Business Law
Admin	Administration Buildings and Grounds Library Research Office Student Services/CEDIR/ITS
Entities	ITC Corporate Services ITC International Projects UniAdvice UniCentre UOW in Dubai WC Auckland WUC Sydney WUC Wollongong URAC

The survey was supported by the use of semi-structured interviews with two samples, the SEAM and academic staff from 3 areas classified as research strengths.

The Samples

Three sample populations were used in the conduct of this study. The first was a sample population for the quantitative or survey aspect of the study. The second and third were from the qualitative or semi-structured interviews for the study, the SEAM, and the academic staff.

The Quantitative Sample

An email with a link to a web-based survey was sent to all academic and general staff at the UOW. A total of 2024 staff were sent the survey and 323 usable responses were received, which represents a response rate of 16% of all staff (excluding casual staff). The overall sample of 323 useable

responses was examined according to area of employment, academic or general staff grouping and gender. (see Tables 17-20)

The Academic and General staff responded in line with staff composition. There was no difference between the gender composition at the UOW and the survey response composition by gender.

Analyses showed that 20% of staff from the controlled entities had responded to the survey and 14% of staff from the University. The Faculty and Admin staff were slightly underrepresented recording a total response of 72% while comprising 79% of staff at the UOW. Conversely the Controlled Entities were overrepresented at 26% of the total responses compared to their proportion of staff at the UOW of 21%.

Table 17 Responses by staff category and gender and UOW staff composition

%	General		Academic		Total
	F	M	F	M	
UOW Staff composition	31	26	16	27	100
Response composition	33	22	16	28	99

Table 18 Responses by staff category, gender and UOW staff composition

%	General	Academic	Total
UOW Staff composition	57	43	100
Response composition	55	44	99

Table 19 Response by UOW controlled entity

	Number of UOW staff	Actual proportion of staff (%)	Response		
			Number of responses	as a % of staff	as a % of response
Controlled Entities					
UniCentre	103	5%	9	9%	3%
ITC Corporate	22	1%	7	32%	2%
ITCI	8	0%	1	13%	0%
WCA	26	1%	3	12%	1%
WUCS	26	1%	4	15%	1%
WUCW	68	3%	12	18%	4%
UOWD	107	5%	34	32%	11%
UniAdvice	52	3%	14	27%	4%
Controlled Entity: Subtotal	*426*	*21%*	*85*	*20%*	*26%*
No Faculty	0	0%	7	NA	2%
All Total	**2024**	**100%**	**323**	**16%**	**100%**

Table 20 Response by UOW faculty

	Number of UOW staff	Actual proportion of staff (%)	Response		
			Number of responses	as a % of staff	as a % of response
UOW Faculties and Admin					
Faculty of Arts	89	4%	15	17%	5%
Faculty of Creative Arts	48	2%	5	10%	2%
Faculty of Commerce	181	9%	22	12%	7%
Faculty of Education	74	4%	15	20%	5%
Faculty of Engineering	142	7%	15	11%	5%
Graduate School of Medicine	0	0%	0	0%	0%
Faculty of H&BS	145	7%	17	12%	5%
Faculty of Informatics	162	8%	20	12%	6%
Faculty of Law	45	2%	4	9%	1%
Faculty of Science	170	8%	22	13%	7%
Administration	210	10%	51	24%	16%
Research	28	1%	5	18%	2%
Library	74	4%	13	18%	4%
Student Services/CEDIR/ITS	104	5%	22	21%	7%
B&G	61	3%	5	8%	2%
UOW: Subtotal	*1598*	*79%*	*231*	*14%*	*72%*

Both the UOWD and the ITC Corporate exhibited the highest response rates with 32% of staff responding in each category; UOWD was overrepresented (11% of response) compared to its proportion of staff at the UOW (5%). Another area of staff that was overrepresented (16% of response) was the Administration Group (10% of staff); 24% of the staff members in Administration responded to the survey. Student Services (21%) and the Faculty of Education (20%) both had high response rates as a percentage of staff within their Groups; both contributed to the survey in line with their percentage of the staff composition.

The lowest response rates were generated from URAC (9%) and Buildings and Grounds (8%); this may be explained by the number of employees who do not have regular access to the web, computer facilities or an email account as a function of their roles. Buildings and Grounds, for example, currently employs 6 gardeners and grounds staff (9% of their workforce), who do not access their email. Removing these employees from the total number of employees has no effect on the overall response rate.

Respondents who did not indicate in which area of the University they were mainly employed constituted 2%.

Unable to Answer – "0"

'Unable to Answer' responses indicate the total percentage of respondents who were unable to answer a question; that is, they indicated a zero on the scale. Those that did not answer a question are referred to as those who did not respond. Together, these two groups are referred to as non responders or non responses. All non responses were removed before analysis.

For research question 1, the *strengthened steering core* scale, the highest non response was generated at Q1b: The ability to respond to threat (9.9%). Q1a: collegiality of decision making, had an unusually high proportion of staff who did not respond (6.5%).

For research question 2, the *expanded development periphery* scale, non responses were high for questions: Q2b *Unable to develop and refine structures which support outreach activity* (13.9%), and Q2e *UOW resources adequately community outreach efforts* (19.8%).

Non responders for research question 3, the *diversified funding base* scale, were unusually high. With the exception of Q3e *Sees diversification as critical to its future* (11.1%), all other non responses in this question were above 18%, with Q3d: *Places sufficient importance on discretionary sources* exhibiting the highest percentage of non response at 33.4%.

For research question 4, the *stimulated academic heartland* scale, a fairly low non response rate was exhibited, with all questions having a non response rate below 7%.

For research question 5, the *integrated entrepreneurial culture* scale, the non response rate was below 8.5%. Q5a: *Adopts an entrepreneurial approach to its initiatives*, had the highest non response (8.3%).

For research question 6, the *semantic differential question,* respondents were asked to respond between two options on an unnumbered scale that had a possibility of 10 answers. There was no option to respond with no opinion on these questions. This question set provided the lowest non response rate of all the question groupings. The non responses did not rise above 1.5%, with the exception of Q1a, which was in line with the level of staff who did not respond to other questions in the survey.

Table 21 Survey responses: semantic differential questions

Category	Qn	Unable to answer "0"	Unable to answer "0" (%)	Did not respond	Did not respond (%)	Total Question Response Rate (%)
Semantic Differential Questions	Q6a	NA	NA	1	0.3	99.7
	Q6b	NA	NA	0	0.0	100.0
	Q6c	NA	NA	1	0.3	99.7
	Q6d	NA	NA	0	0.0	100.0
	Q6e	NA	NA	0	0.0	100.0
	Q6f	NA	NA	4	1.2	98.8
	Q6g	NA	NA	1	0.3	99.7
	Q6h	NA	NA	1	0.3	99.7

Table 22 Survey responses: likert questions

Category	Qn	Unable to answer "0"	Unable to answer "0" (%)	Did not respond	Did not respond (%)	Total Question Response Rate (%)
A strengthened steering core	Q1a	0	0.0	21	6.5	93.5
	Q1b	31	9.6	1	0.3	90.1
	Q1c	15	4.6	0	0.0	95.4
	Q1d	12	3.7	3	0.9	95.4
	Q1e	5	1.5	1	0.3	98.1
	Q1f	15	4.6	2	0.6	94.7
	Q1g	13	4.0	0	0.0	96.0
	Q1h	28	8.7	3	0.9	90.4
	Q1i	9	2.8	1	0.3	96.9
	Q1j	16	5.0	0	0.0	95.0
An expanded development periphery	Q2a	16	5.0	1	0.3	94.7
	Q2b	43	13.3	2	0.6	86.1
	Q2c	18	5.6	1	0.3	94.1
	Q2d	26	8.0	1	0.3	91.6
	Q2e	63	19.5	1	0.3	80.2
A diversified funding base	Q3a	67	20.7	0	0.0	79.3
	Q3b	69	21.4	0	0.0	78.6
	Q3c	72	22.3	2	0.6	77.1
	Q3d	107	33.1	1	0.3	66.6
	Q3e	34	10.5	2	0.6	88.9
	Q3f	57	17.6	1	0.3	82.0
	Q3g	90	27.9	1	0.3	71.8
A stimulated academic heartland	Q4a	1	0.3	1	0.3	99.4
	Q4b	5	1.5	1	0.3	98.1
	Q4c	5	1.5	2	0.6	97.8
	Q4d	8	2.5	2	0.6	96.9

Category	Qn	Unable to answer "0"	Unable to answer "0" (%)	Did not respond	Did not respond (%)	Total Question Response Rate (%)
	Q4e	20	6.2	2	0.6	93.2
	Q4f	11	3.4	1	0.3	96.3
An integrated entrepreneurial culture	Q5a	26	8.0	1	0.3	91.6
	Q5b	22	6.8	1	0.3	92.9
	Q5c	14	4.3	2	0.6	95.0
	Q5d	14	4.3	2	0.6	95.0
	Q5e	21	6.5	2	0.6	92.9
	Q5f	25	7.7	1	0.3	92.0
	Q5g	8	2.5	0	0.0	97.5
	Q5h	24	7.4	0	0.0	92.6

The Qualitative Sample

A content analysis approach was applied to the transcripts of semi-structured interviews.

Semi-structured Interviews – Senior Executive and Academic Managers (SEAM)

The five most commonly mentioned terms that arose during the interviews were faculty, or a derivation of the word faculty (N=144), research (N=127), Dean/Deans (N=105), a derivation of the word entrepreneurial which was used positively 79 times, and leadership (N=74).

The terms were grouped into key word groupings and the five most commonly mentioned keyword groups were leadership (N=458), faculties (N=144), research (N=127), entrepreneurial (N=97) and engaged (N=94).

As the role of leadership, specifically that of the Vice-Chancellor, arose more frequently than anticipated, all interviewees were given the opportunity to discuss leadership in addition to answering questions around each of the 'pathways of transformation'. Many of the pathways included discussions of leadership when answering the question, but when given a clear opportunity to discuss leadership, those who were interviewed discussed the issue of leadership with a similar number of words devoted to each of the pathways (8,149 words, Average = 8,225).

For the SEAM interviews, Pathway 4: the stimulated academic heartland scored the highest word count averaging 559 words per interview. This was followed by Pathway 2: the expanded development periphery with 522 words per interview. The leadership group spoke the least about Pathway 5: the integrated entrepreneurial culture (N=268).

Table 23 Semi-structured interviews: top 10 word grouping frequencies

		Pathway							
Rank	**Word Grouping**	**1**	**2**	**3**	**4**	**5**	**Leadership**	**End**	**Total**
1	Leadership	132	27	14	69	27	175	14	458
2	Faculties	29	21	16	50	5	18	5	144
3	Research	23	24	24	35	11	10	0	127
4	Entrepreneurial	4	0	7	10	68	7	1	97
5	Engaged	3	4	8	76	2	1	0	94
6	Rewarded	2	0	0	67	0	2	0	71
7	Funding	16	7	39	1	3	0	0	66
8	Culture	7	4	4	18	13	12	2	60
9	International	15	6	30	1	3	0	0	55
10	Steer	47	0	3	0	0	0	1	51

Table 24 Semi-structured interviews: top 20 word frequencies

		Pathway							
Rank	**Word**	**1**	**2**	**3**	**4**	**5**	**Leadership**	**End**	**Total**
1	Facult*	29	21	16	50	5	18	5	144
2	Research	23	24	24	35	11	10	0	127
3	Dean*	29	10	7	36	3	16	4	105
4	Entrepren* (+)	4	0	4	7	57	7	0	79
5	Leadership	8	3	1	3	2	55	2	74
6	Engaged (+)	2	4	4	54	1	1	0	66
7	Culture	7	4	4	18	13	12	2	60
8	VC, Vice-Chancellor	24	2	0	2	1	27	1	57
9	International	15	6	30	1	3	0	0	55
10	Steer*	47	0	3	0	0	0	1	51
11	Senior Exec* /Senior Mgmt	15	1	2	6	5	15	2	46
12	Reward* (+)	2	0	0	37	0	0	0	39
13	Gerard	7	7	2	4	1	13	2	36
14	Reward*	0	0	0	21	0	2	0	23
15	Diversification	0	0	17	1	0	1	0	19
16	McKinnon	4	0	0	0	7	6	0	17
=17	Diversify	1	0	14	0	1	0	0	16
=17	Medical School	2	6	1	2	4	1	0	16
=19	Entrepren* (-)	0	0	1	3	10	0	1	15
=19	Patchy	3	6	1	5	0	0	0	15

** Used truncation when searching for terms*

Table 25 Semi-structured interviews: word count for each pathway

	Word Count	**Average per interview**
Pathway 1: A strengthening steering core	8,362	465
Pathway 2: The expanded development periphery	9,402	522
Pathway 3: The diversified funding base	8,222	457
Pathway 4: The stimulated academic heartland	10,067	559
Pathway 5: The integrated entrepreneurial culture	5,148	286
Average word count for all pathways	8,225	458
Leadership	8,149	453
End of Interview comments	2,147	119

Semi-structured Interviews – Academic staff

The five most commonly mentioned terms that arose during the interviews were research (N=110), entrepreneur* (positively, N=37), leadership (N=36), support (positively, N=24), and funding (positively, N=22).

The terms were grouped into key word groupings and the five most commonly mentioned keyword groups were research (N=130), leadership (N=116), entrepreneur* (N=37), funding (N=29) and rewarded (N=26).

The academic staff interviewees had fewer words to say on average than the core group of leadership interviewed (Academic staff N=362 Leadership N=458). Both groups gave the greatest attention in words to Pathway Four: the stimulated academic heartland. The second highest word count for academic staff was Pathway 5: the integrated entrepreneurial culture (N=441). The academic staff group spoke the least about Pathway 1, a strengthened steering core (N=268) and Pathway 3, a diversified funding base (N=263).

Table 26 Semi-structured interviews: word count for each pathway

	Word Count	**Average per interview**
Pathway 1: A strengthening steering core	2,140	268
Pathway 2: The expanded development periphery	2,750	344
Pathway 3: The diversified funding base	2,104	263
Pathway 4: The stimulated academic heartland	3,969	496
Pathway 5: The integrated entrepreneurial culture	3,525	441
Average word count for all pathways	2,898	362
Leadership	2,770	346
End of Interview comments	544	68

Table 27 Semi-structured interviews: top 5 word grouping frequencies

		Pathway					Leader-		
Rank	Word Grouping	1	2	3	4	5	ship	End	Total
1	Research	14	17	28	54	5	12	0	130
2	Leadership	15	13	14	12	11	51	0	116
3	Entrepreneurial	1	2	0	0	25	9	0	37
4	Funding	4	6	14	0	5	0	0	29
5	Rewarded	0	0	0	26	0	0	0	26

Table 28 Semi-structured interviews: top 10 word frequencies

		Pathway					Leader-		
Rank	Word	1	2	3	4	5	ship	End	Total
1	Research	14	15	19	50	0	12	0	110
2	Entrepreneur* (+)	1	2	0	0	25	9	0	37
3	Leadership	0	0	0	0	0	25	0	25
4	Support (+)	4	3	3	6	1	7	0	24
5	Funding (+)	3	3	13	0	3	0	0	22
6	ARC	0	2	9	4	5	0	0	20
7	Senior Exec*, Senior Mgmt	2	2	6	0	3	3	0	16
8	Culture	1	2	0	2	6	4	0	15
9	Reward*	0	0	0	14	0	0	0	14
10	Facult*	3	6	0	1	1	2	0	13

** Used truncation when searching for terms*

Research Question One: A strengthened steering core

Online survey

Research question one investigated the presence of a strengthened steering core at the UOW, employing 10 questions within this 'pathway of transformation' (Table 29). Question 1g was framed in the negative; all responses to this question were reversed before analysis.

Table 29 Research question one

1a: Collegiality of decision making
1b: The ability to respond to threat
1c: Flexible management systems
1d: Clear institutional competencies it wishes to attain
1e: Strong, effective leadership
1f: Inclusiveness in decision making
1g: Failure to clearly state organisational objectives *
1h: Strengthened managerial processes
1i: The capacity to respond to competition
1j: The ability to withstand emerging competitive pressures

* Responses to 1g were reversed before analysis

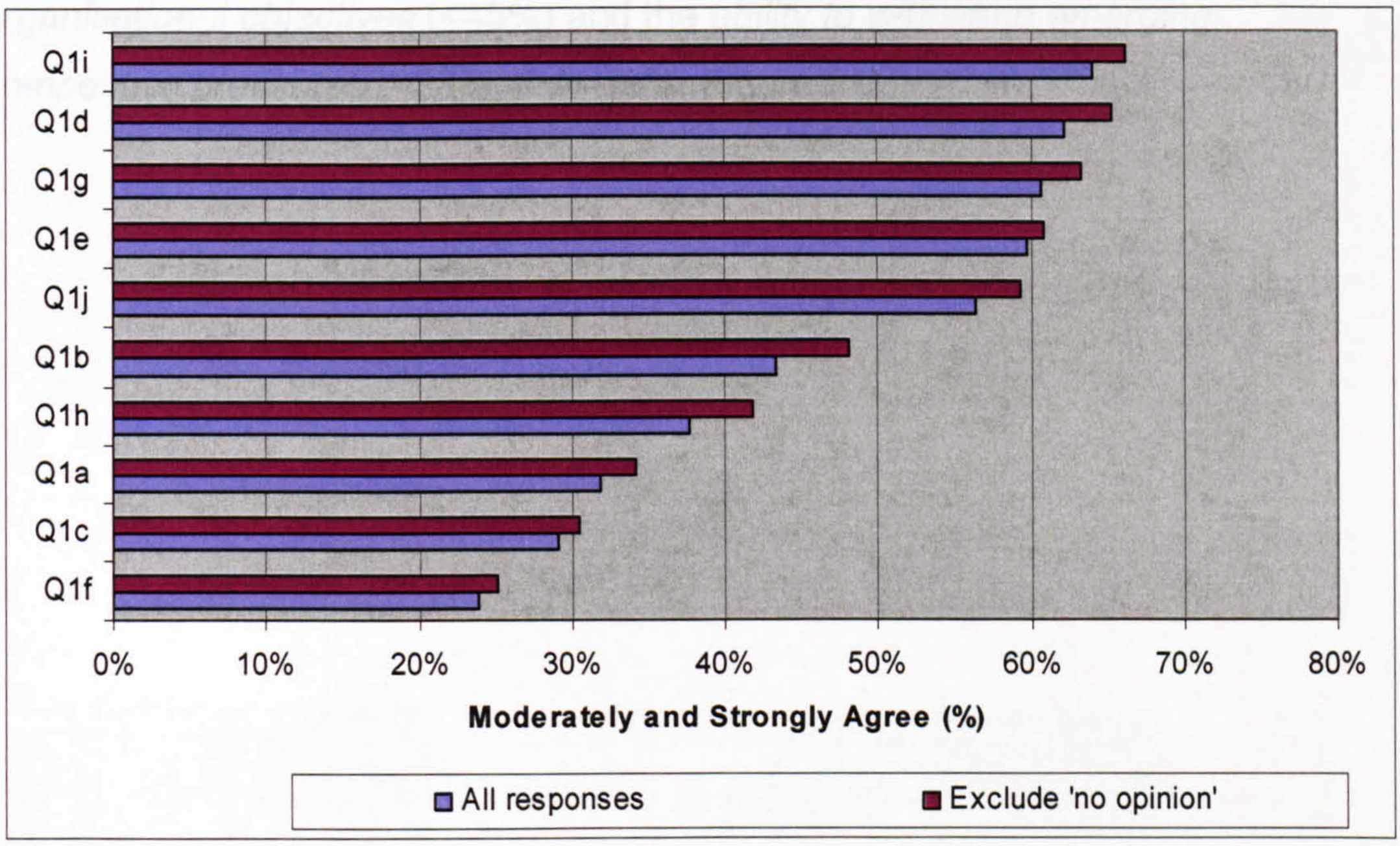
More than 50% of staff members responded positively for the presence at the UOW, of a *capacity to respond to competition* (66%); *clear institutional competencies it wishes to attain* (65%); *clearly stated organizational objectives* (63%); *strong, effective leadership* (61%) and the *ability to withstand emerging competitive pressures* (59%). More than 40% of staff agreed that the UOW was able to *respond to threat* (48%) and the presence of *strengthened managerial processes* (42%).

Less than 40% of staff perceived that the UOW was *collegial* (34%) and *inclusive in decision making* (25%), and *flexible with management systems* (31%).

A clear staff grouping difference existed, where general staff was more positive for the presence of *clear institutional competencies the UOW wishes to attain* (G=70%, A=60%), *strengthened managerial processes* (G=71%, A=59%) and *the capacity to respond to competition* (G=64%, A=53%). Other

differences were also evident, with general staff more positive for *inclusiveness in decision making* at the UOW (G=39%, A=29%) and the *ability of the UOW to withstand emerging competitive pressures* (G=29%, A=20%). However, responses for both groups were below 40%. This negative perception was also evident for the UOW's *clearly stated organizational objectives* (G=32%, A=29%), however there was no difference in opinion for staff groupings.

Figure 18 Question one: % staff moderately and strongly agree



A gender difference was evident, with females more positive for the presence at UOW of *flexible management systems* (F=64%, M=55%), *clear institutional competencies it wishes to attain* (F=71%, M=62%), *the capacity to respond to competition* (F=64%, M=55%) and *strengthened managerial processes* (F=68%, M=62%). There was no gender difference for *strong, effective leadership* (F=62%, M=63%) although both groups were positive (Figure 20). Less than 40% of staff were positive for the other questions in scale one, and there were other small differences with female staff more positive for *the ability to respond to threat* (F=76%, M=58%), *inclusiveness in decision making* (F=35%, M=32%), *clearly stated organizational objectives* (F=43%,

M=40%) and the *ability to withstand emerging competitive pressures* (F=27%, M=22%).

Academic males were consistently more negative than the other staff groupings. Female Academics were markedly more positive than the other groups for the presence of *flexible management systems* (FA=69%). Negative responses were recorded for most groups, either 40% or less than 40%, on questions Q1a, Q1f, Q1g and Q1j; *collegiality of decision making* (<35%), *inclusiveness in decision making* (<40%), *clearly stated organisational objectives* (<45%) and the *ability to withstand emerging competitive pressures* (<33%, F A=16%, Figure 21).

Figure 19 Question one: General and Academic staff

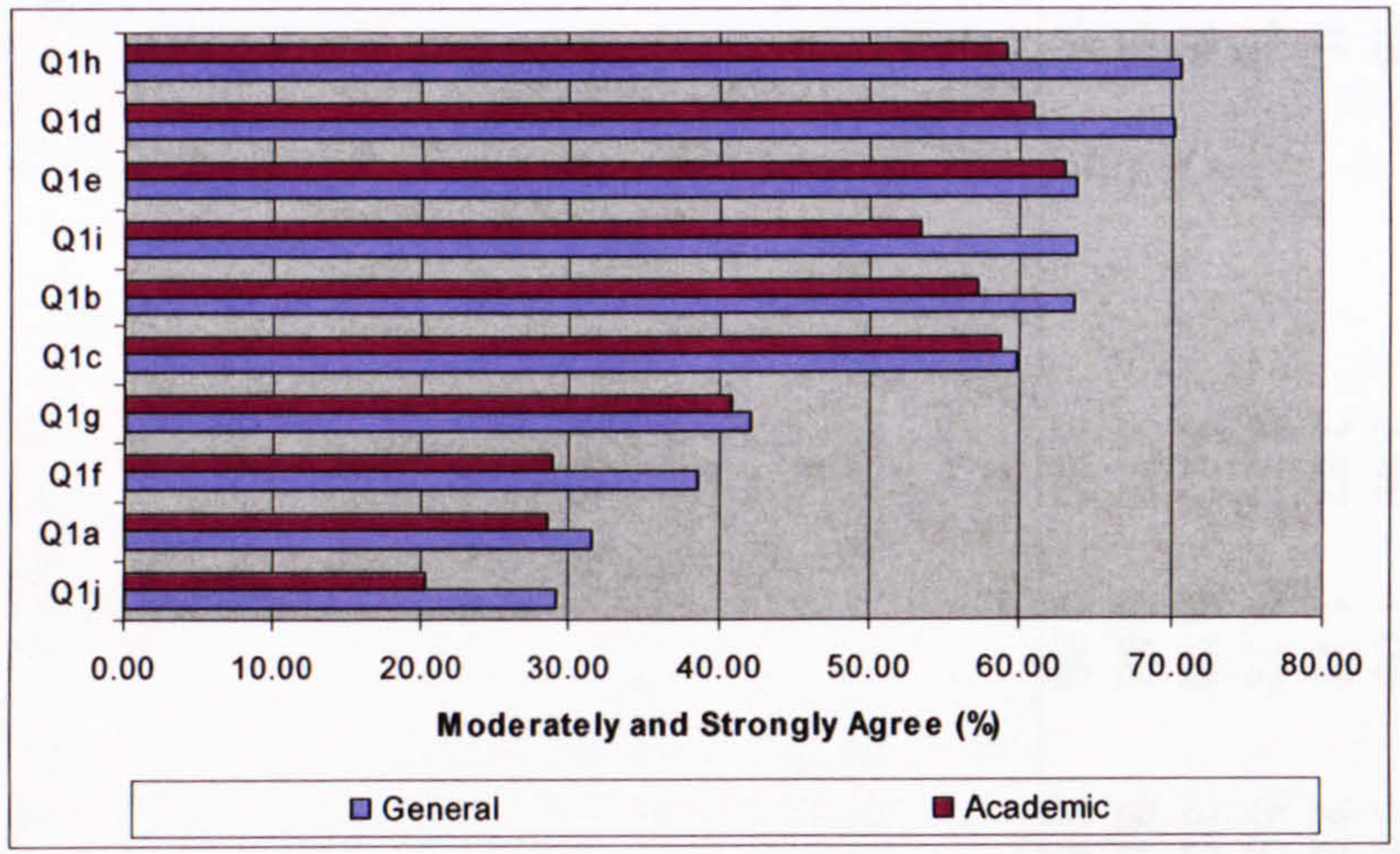


Figure 20 Question one: Female and Male staff

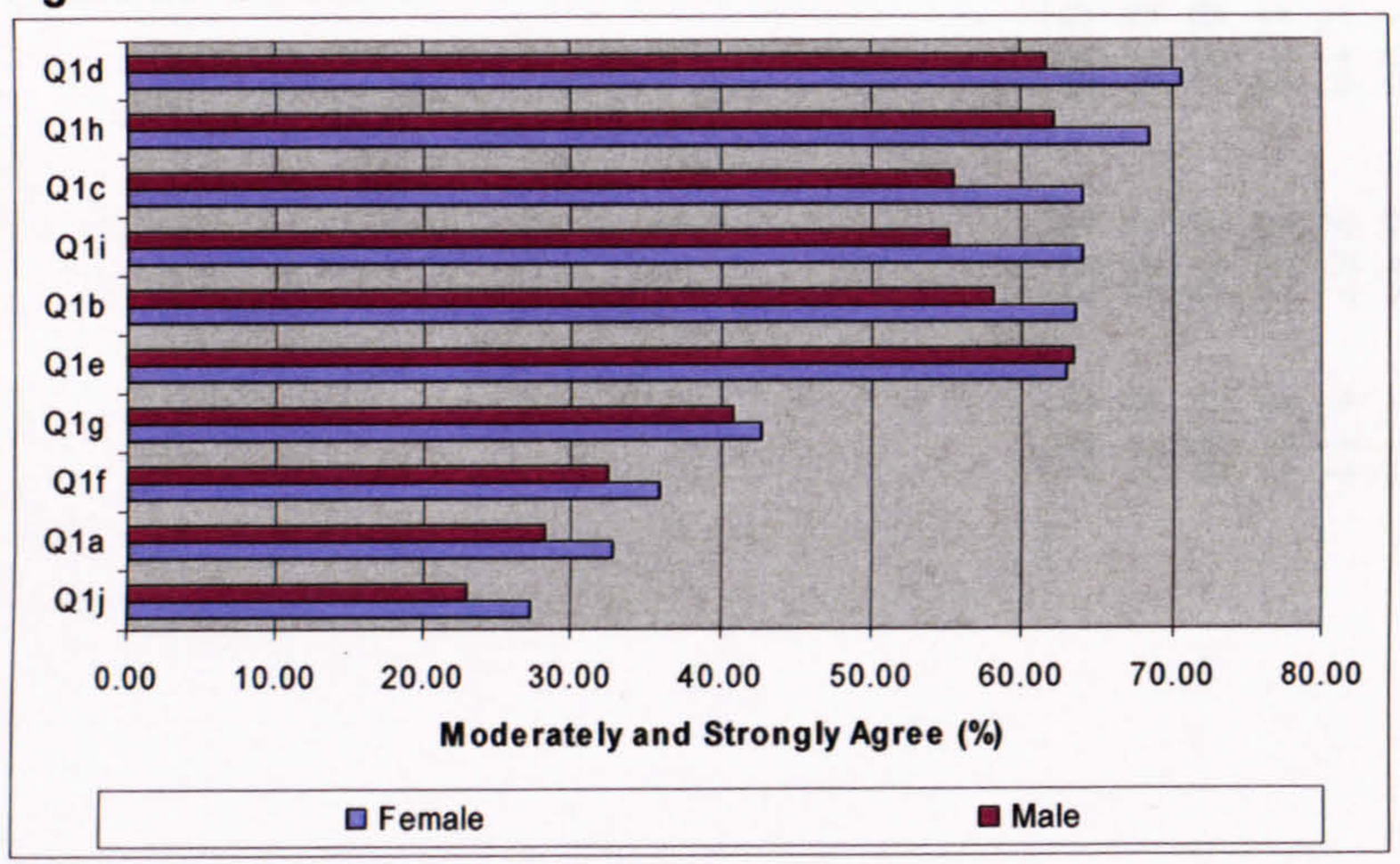


Figure 21 Question one: General and Academic staff by gender

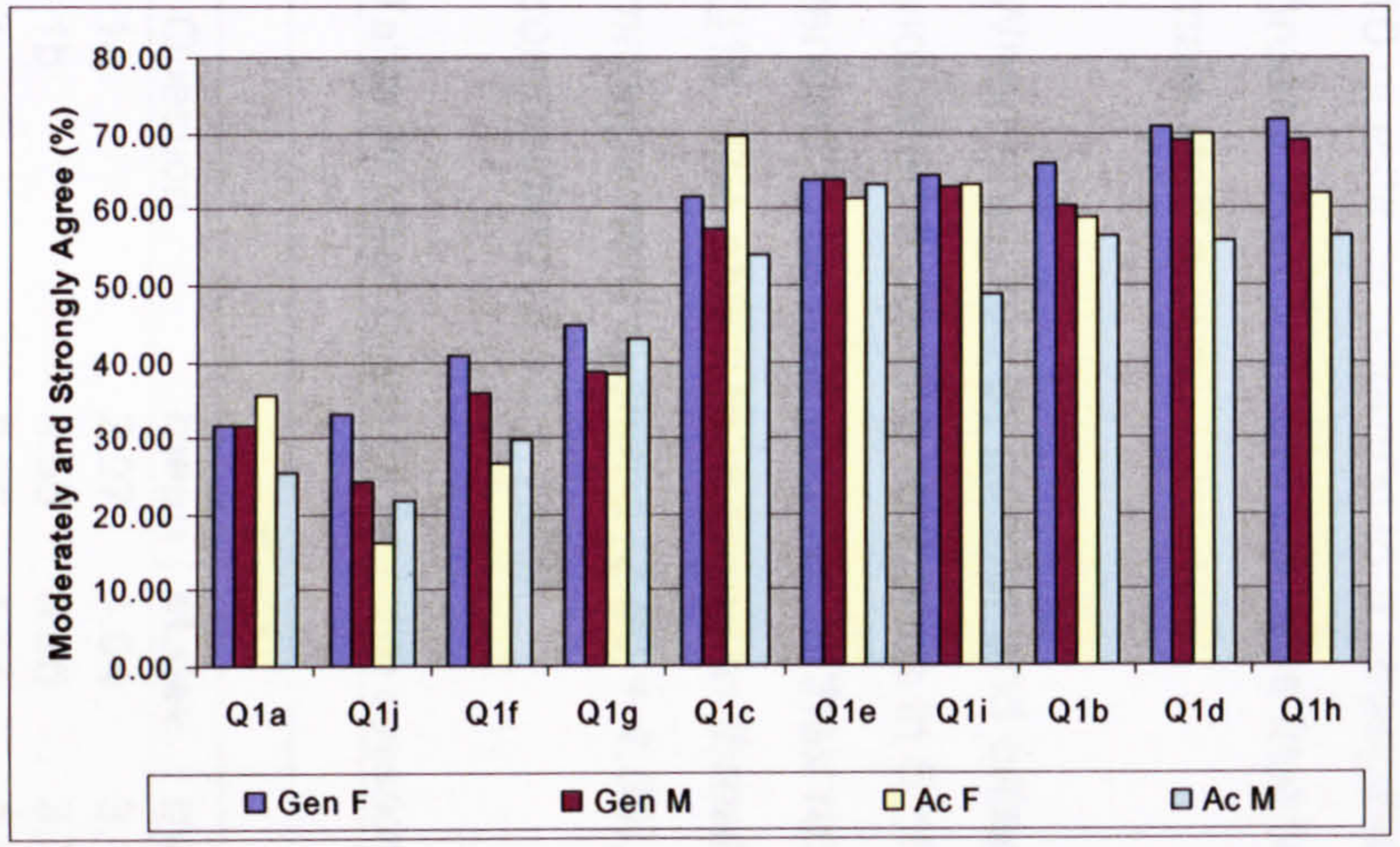
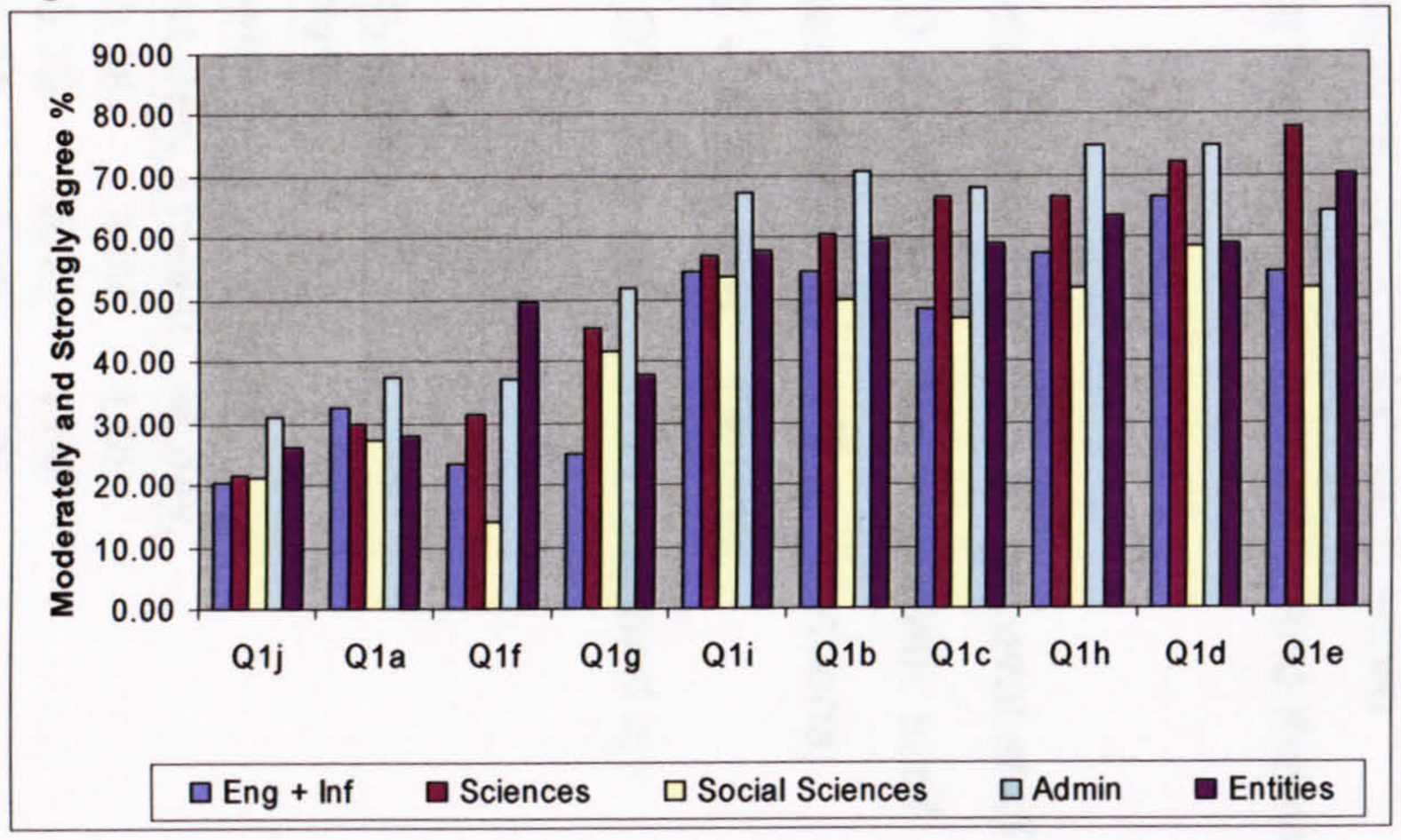


Figure 22 Question one: by staff groupings



The results of the analysis of Research Question One indicated that staff perceive there to be *a strengthened steering core* at the UOW. In all, 6 of the 10 questions referring to *a strengthened steering core* obtained a score greater than 3.5, and this was true for both the total staff grouping and the all male staff group.

When analyzed by gender and category, all female staff and all general staff indicated a positive response in 6 of the 10 questions. Male academic staff tended to be less positive in their responses, especially for the questions Q1b: *The ability to respond to threat (3.36 + 1.12)*, Q1c: *Flexible management systems (2.80 + 1.09)*, and *Q1i: The capacity to respond to competition (3.52 + 1.03).*

Table 30 Mean (+ sd) for research question one, by gender

	All Staff					
	Total		**Female**		**Male**	
Question	**mean**	**st.dev.**	**mean**	**st.dev.**	**mean**	**st.dev.**
1a	2.97	1.04	3.10	0.98	2.84	1.08
1b	3.55	0.95	3.70	0.79	3.43	1.06
1c	2.95	1.01	3.04	0.96	2.88	1.05
1d	3.69	0.91	3.76	0.85	3.62	0.97
1e	3.59	1.08	3.69	1.00	3.49	1.15
1f	2.67	1.11	2.77	1.10	2.57	1.11
1g	3.73	1.12	3.75	1.13	3.71	1.11
1h	3.23	0.93	3.30	0.86	3.16	0.98
1i	3.73	0.88	3.82	0.78	3.65	0.96
1j	3.60	0.89	3.68	0.80	3.53	0.97

Table 31 Mean (+ sd) for research question one, by staff category and gender

	General Staff						Academic Staff					
	All		Female		Male		All		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.
1a	3.17	0.93	3.06	0.95	3.06	0.95	2.72	1.11	2.82	1.05	2.67	1.15
1b	3.59	0.86	3.51	1.00	3.51	1.00	3.51	1.06	3.80	0.88	3.36	1.12
1c	3.02	0.96	2.97	0.99	2.97	0.99	2.86	1.06	3.00	1.01	2.80	1.09
1d	3.79	0.82	3.73	0.83	3.73	0.83	3.55	1.00	3.60	0.90	3.52	1.06
1e	3.65	1.00	3.52	1.11	3.52	1.11	3.51	1.17	3.59	1.15	3.47	1.19
1f	2.83	1.10	2.67	1.14	2.67	1.14	2.47	1.09	2.43	1.10	2.48	1.09
1g	3.72	1.12	3.67	1.13	3.67	1.13	3.74	1.12	3.71	1.15	3.74	1.11
1h	3.25	0.87	3.13	0.88	3.13	0.88	3.20	1.00	3.23	0.89	3.18	1.07
1i	3.84	0.79	3.80	0.86	3.80	0.86	3.60	0.96	3.74	0.85	3.52	1.03
1j	3.70	0.78	3.66	0.87	3.66	0.87	3.47	1.00	3.59	0.93	3.42	1.04
Subgroup 1	*3.46*	*0.99*	*3.52*	*0.95*	*3.38*	*1.04*	*3.26*	*1.14*	*3.35*	*1.09*	*3.21*	*1.16*

Semi-structured interviews

A sample of the UOW's SEAM and academic staff were asked: What is your perception of the university's ability to steer itself? The following four comments best captured what the leadership described as a strong ability to steer at the UOW:

> Well I would think that the kind of general perception from within the University, the part of the university community, is that the University has a relatively good ability, heightened ability, possibly even a unique ability to steer itself. I say that keeping well in mind that steering depends really on knowing what all the obstacles are and it also depends to some extent on what the possible course through all those obstacles are. (Interview 17)

> I think it does pretty well in being able to steer itself…I think that's more to do with size and I think it's more to do with the top end structure. There may be weaknesses elsewhere, sometimes in communicating that, but I think our ability to react centrally to changes is strong. (Interview 7)

> I think based on this Senior Executive, the Vice-Chancellor and the Chancellor, my observations are basically that the group has been empowered to steer us and they are not frightened to make those strategic, some may say courageous, decisions. (Interview 16)

> I think for its size and diversity, I think we have an extraordinary ability to steer ourselves. It, the University, has an extraordinary ability to steer itself in a way that constantly surprises me. (Interview 2)

The following two comments best describe what the academic staff perceived as a strong steering ability:

> As far as steering itself, it's certainly coming out that it's a leader in various aspects of research… I've only been here since '96, so in the length of the University it's not a great length of time, but I've certainly seen it come quite a long way in that time, so I think as far as steering itself in a positive direction, I think it's definitely doing that under the current Vice-Chancellor. (Interview 20)

> Actually my perception of that is that it [UOW] is very good at that…my sense is that… the university has kind of looked at the market and has tried to decide where it wants to position itself in the market and has gotten there its…the results of that seems to be quite good, the standing it has had in the Australian rankings and The Times rankings that came out in the last few weeks I think…it seems to have set a goal and followed that up quite single minded. (Interview 21)

Several staff members used the Law School and the Medical School as examples of this ability:

> I think probably the Law School and the Medical School are the two biggest examples in my experience and becoming international, the internationalisation, is another area where we have just done it, and really we could have muddled along and been an okay, more mediocre university and probably still got all of that central funding. But I think those are areas where we have really pushed ourselves. (Interview 3)

This ability has been evident in recent times and in the history of the UOW, a view that supports the notion of McKinnon as the establisher, and Sutton as the sustainer:

> Overall I should say that the University of Wollongong does that probably better than most, maybe better than all universities in Australia. It has a history of having done so. Actually it has been perceived as of course being the challengers, starting with McKinnon and continuing with Sutton as Vice-Chancellor. (Interview 15)

Additionally this has been achieved in the face of many challenges and when measured against their peers UOW is even stronger:

> What's always striking is that while other institutions or their representatives are lamenting always the environment they work in and making it clear that they can't do things or they're constrained from doing things...I come away feeling both relieved and sometimes a bit smug that we're not caught up in that same problem. (Interview 17)

However, the following two comments reflect a concern that despite the UOW's ability to steer itself, external factors will continue to present major challenges.

> So I think internally we have a significant ability to steer ourselves but we are limited by external regulation which means that we've got to find a way around the external regulations which we are generally able to do, so it's a balancing act we have between the heavy handed government and the universities, and this particular University having a governance structure and an attitude which finds ways around obtrusive regulations. (Interview 12)

> I mean in the last twenty years I think here at UOW we have very much determined our own future... But as I say the next twenty years will be interesting, will it determine its own future in the next twenty because we are a very different beast now than we were twenty years ago. (Interview 25)

Key findings: Research Question One – A strengthened steering core

- UOW was seen as having a strong ability to steer itself with the role of Vice Chancellor seen as critical;
- A mean score greater than 3.5 was achieved in 6 of the 10 questions;
- Male Academic staff were consistently more negative than the other staff groupings, with Female Academic staff markedly more positive for the presence of *flexible management systems* (F=64%, M=55%), *clear institutional competencies it wishes to attain* (F=71%, M=62%), *the capacity to respond to competition* (F=64%, M=55%) and *strengthened managerial processes* (F=68%, M=62%);

- General Staff were more positive for the presence of *clear institutional competencies the UOW wishes to attain* (G=70%, A=60%), *strengthened managerial processes* (G=71%, A=59%) and *the capacity to respond to competition* (G=64%, A=53%)*; and*
- In the semi-structured interviews, both the SEAM and the academic staff perceived the UOW to possess a strong ability to steer itself.

Research Question Two: An expanded developmental periphery

Online survey

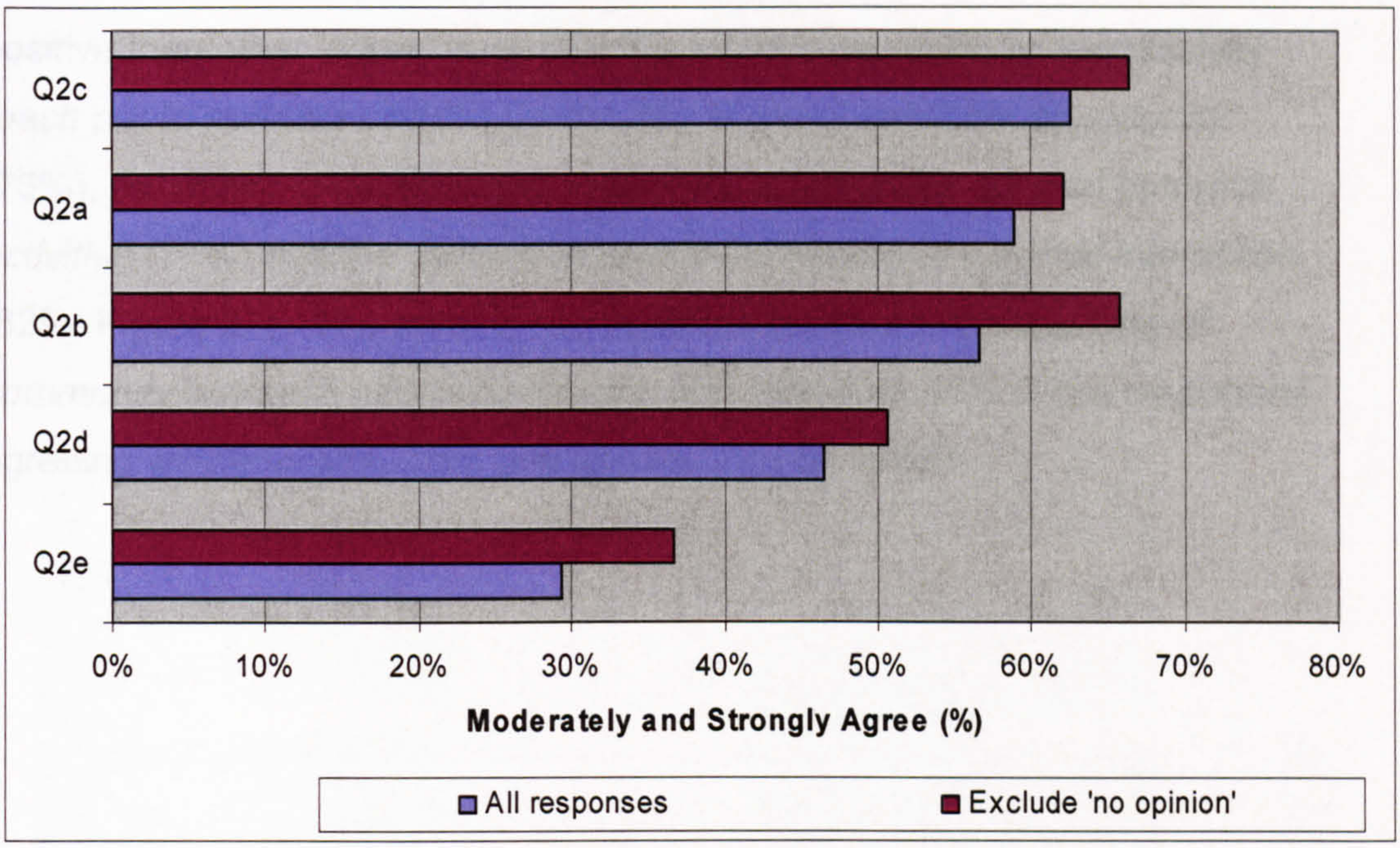
Research question two investigated the presence of *an expanded developmental periphery* at the UOW, employing 5 questions within this pathway of transformation (Table 32). Data was obtained by asking staff to respond to questions on a Likert scale of 1 to 5, where 5 usually referred to a response of 'strongly agree'. Question 2b was framed in the negative; all responses to this question were reversed before analysis.

Table 32 Research question two

2a: Successful in reaching out to partners and the community at every available opportunity
2b: Unable to develop and refine structures which support outreach activities*
2c: UOW supports objectives related to external interaction
2d: It provides sufficient access points for communities to engage with it
2e: UOW resources adequately community outreach efforts

* Responses to 2b were reversed before analysis

Figure 23 Question two: % staff moderately and strongly agree



More than 50% of staff members showed a positive view to the presence at the UOW of *success in reaching out to partners and the community at every available opportunity* (62%), *ability to develop and refine structures which support outreach activities* (66%), *supportive of objectives related to external interaction* (66%) and in the *provision of sufficient access points for communities to engage* (51%).

Less than 40% of staff perceived that the UOW was *adequately resourced for community outreach efforts* (37%). It is important to note that there was a high non response rate for this question (20%). In addition to the perception being poor at UOW, staff also seemed to feel that they were not able to answer the question.

General staff was more positive on all questions compared to academic staff. There were also clear gender differences, with females more positive than males. Most of this could be attributed to the perceptions of academic males. The most negative responses were for the presence of *adequately resourced community outreach efforts* (A M=29%).

The results indicated that the admin functional area was considerably more positive than other 'areas' regarding the UOW's capability to successfully *reach out to partners and the community at every available opportunity* (75%), the ability to *develop and refine structures which support outreach activities* (77%) and the *support of objectives related to external interaction* (82%, Figure 27). The trend for a negative response on *resourcing of community outreach efforts* continued, with less than 45% of the responses agreeing with this term. This was apparent for all 'areas'.

Figure 24 Question two: General and Academic staff

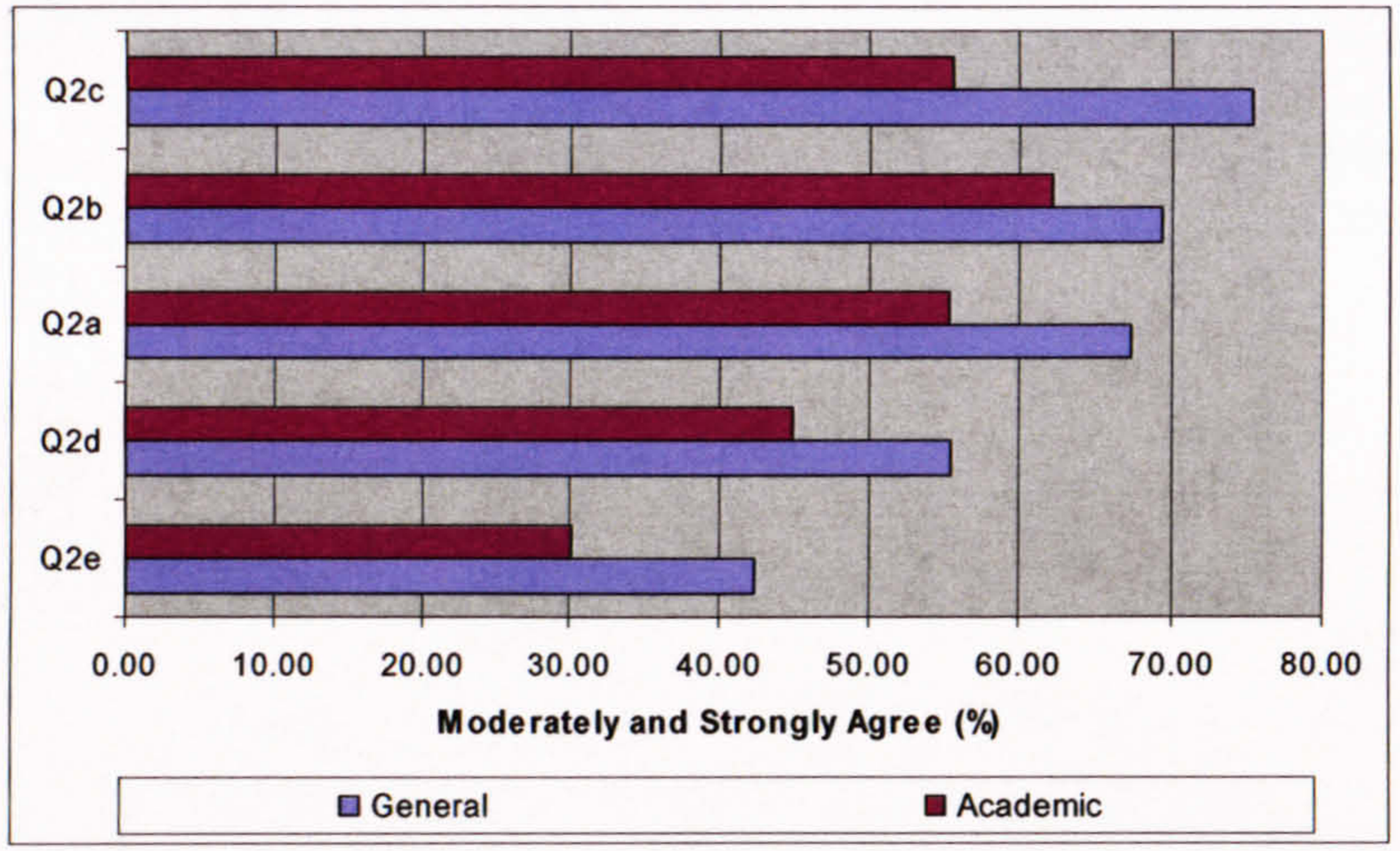


Figure 25 Question two: Female and Male staff

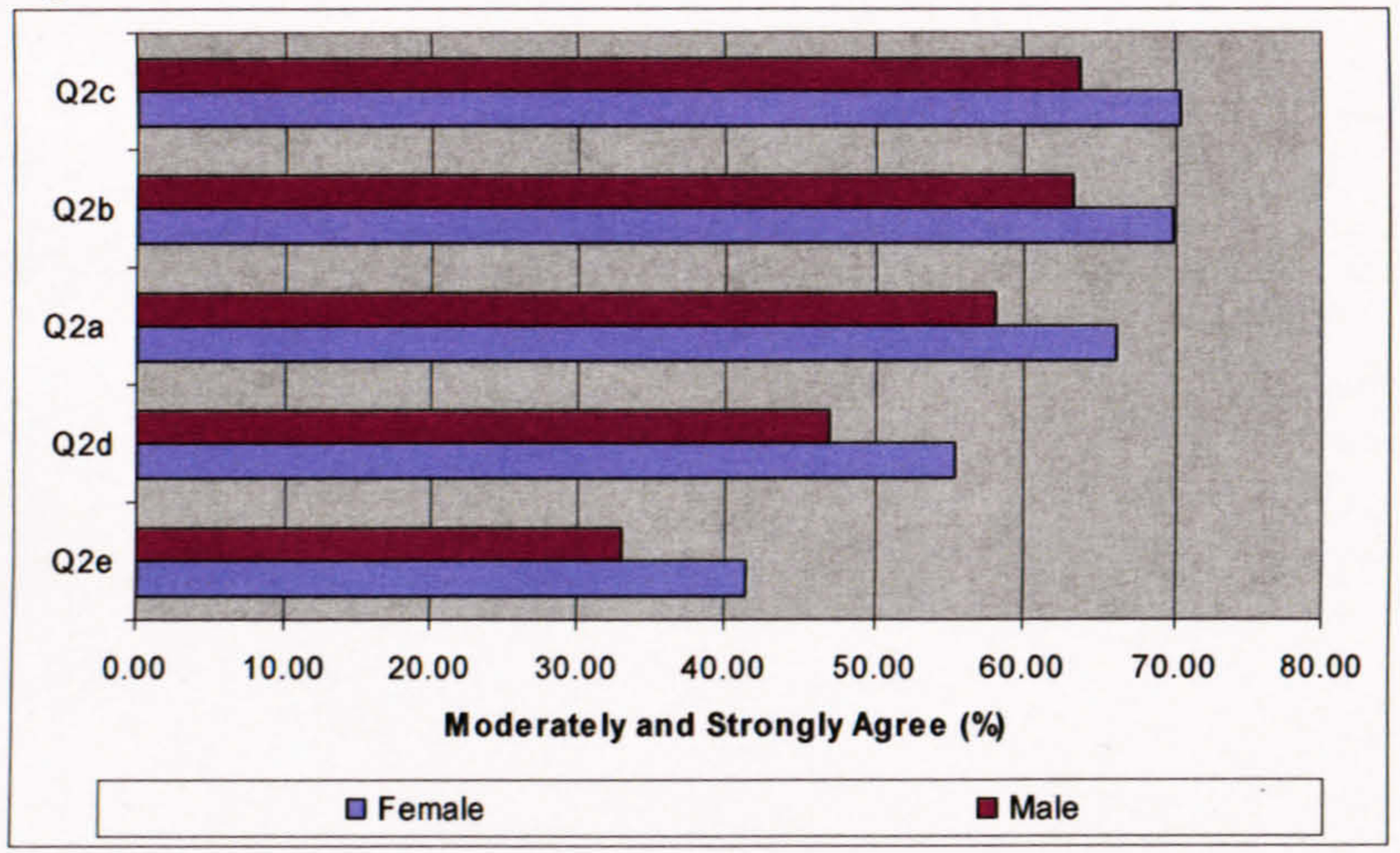


Figure 26 Question two: General and Academic staff by gender

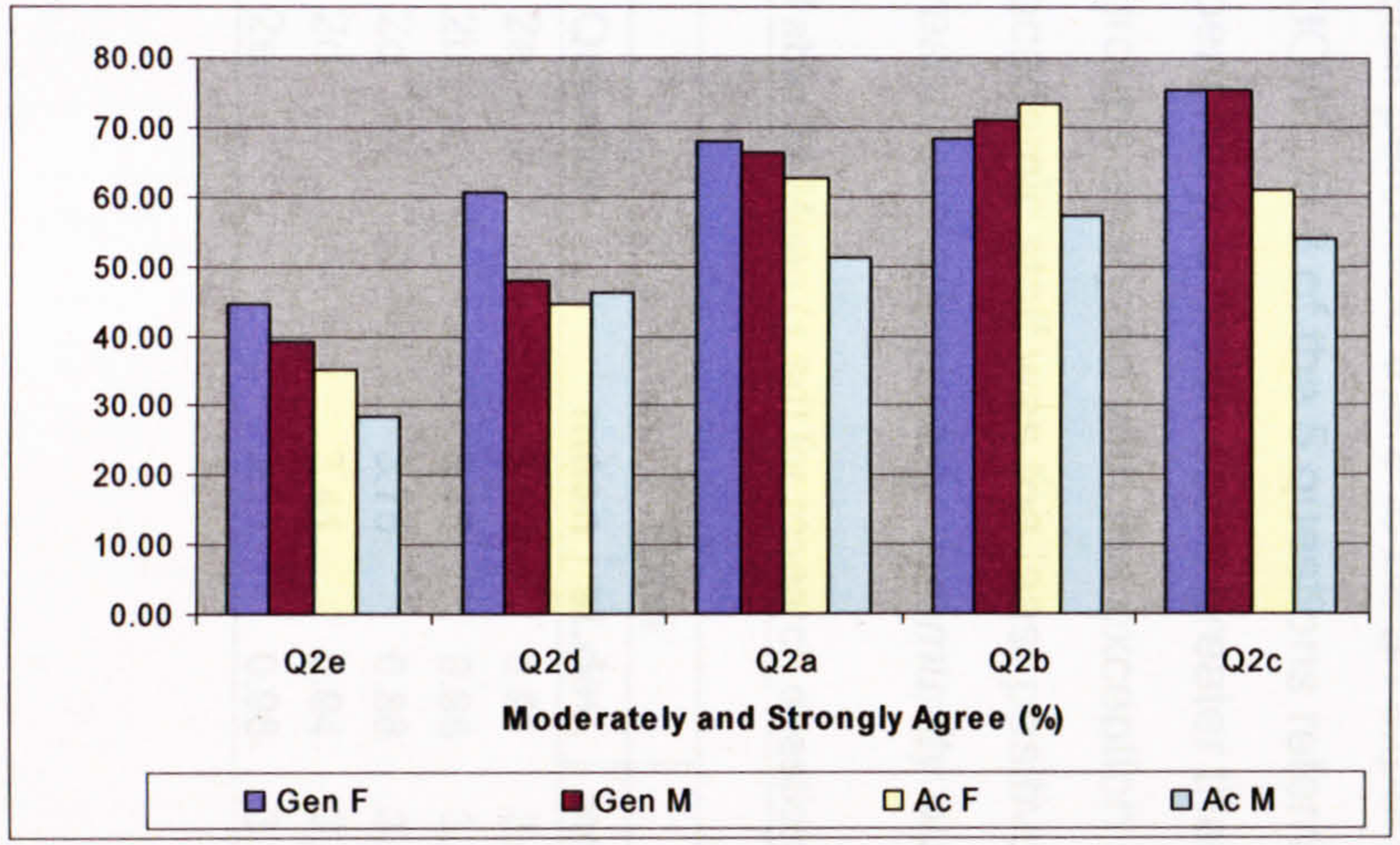
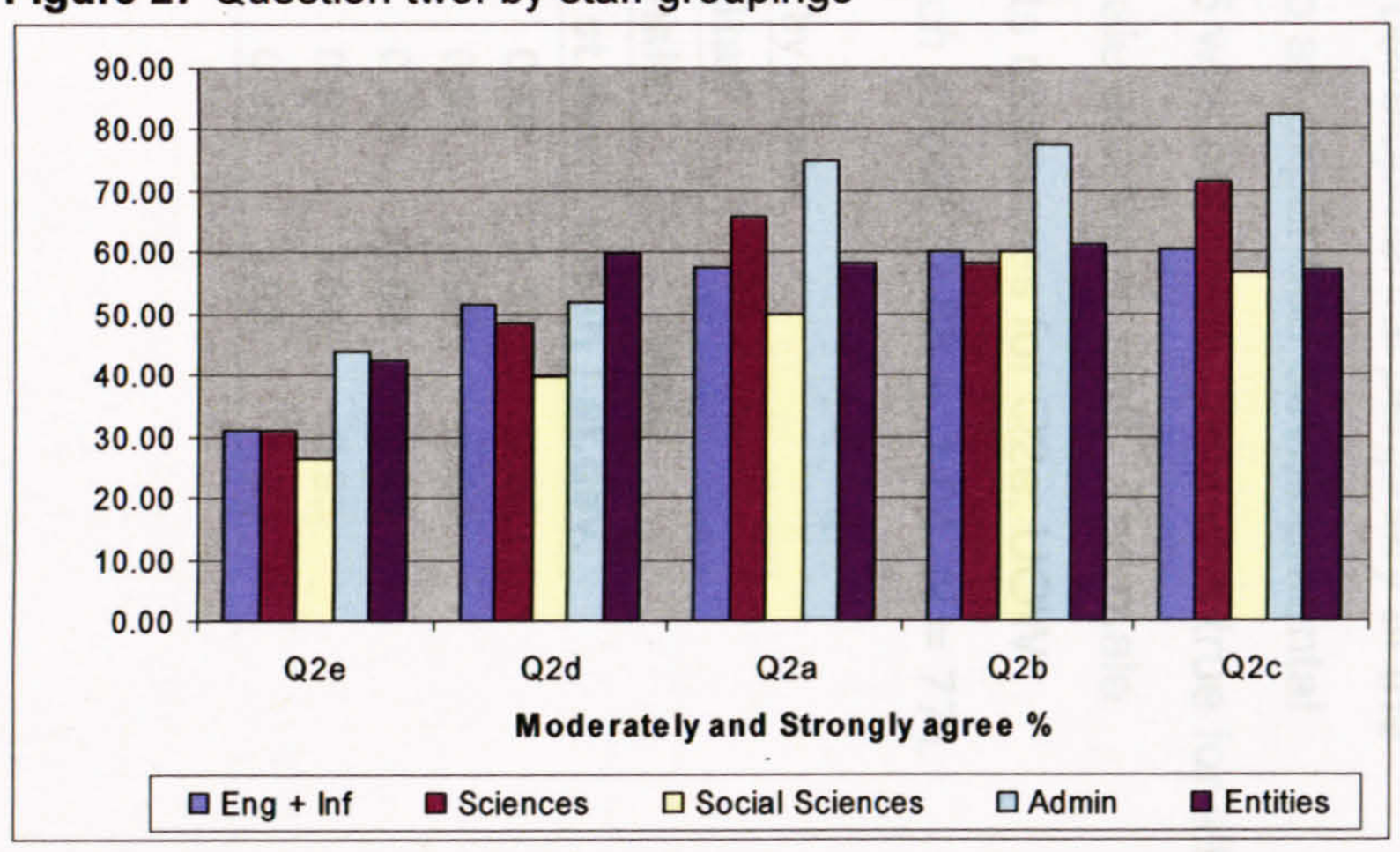


Figure 27 Question two: by staff groupings



The results of the analysis of research question two supported the notion that staff perceived there to be *an expanded developmental periphery* at the UOW. In 3 of the 5 questions referring to an expanded developmental periphery, a mean score greater than 3.5 was obtained. This was true for all groups analyzed with the exception of male academic staff. The male academic staff was the least positive in its responses for Q2e: UOW *resources adequately community outreach efforts* (2.88 ± 1.04, N = 77).

Table 33 Mean (± sd) for research question two, by gender

	All Staff					
	Total		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.
2a	3.62	0.91	3.75	0.89	3.51	0.92
2b	3.75	0.98	3.84	0.95	3.68	1.00
2c	3.75	0.88	3.84	0.80	3.68	0.95
2d	3.41	0.94	3.49	0.93	3.34	0.95
2e	3.11	0.98	3.22	0.96	3.02	1.00

Table 34 Mean (± sd) for research question two, by staff category

	General Staff						Academic Staff					
	All		Female		Male		All		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.
2a	3.71	0.86	3.76	0.90	3.63	0.81	3.51	0.97	3.71	0.89	3.40	1.00
2b	3.83	0.97	3.79	1.03	3.89	0.87	3.66	0.98	3.93	0.74	3.52	1.07
2c	3.89	0.79	3.89	0.79	3.90	0.79	3.57	0.96	3.73	0.82	3.50	1.03
2d	3.53	0.90	3.57	0.93	3.46	0.84	3.25	0.98	3.33	0.91	3.24	1.02
2e	3.26	0.94	3.29	0.96	3.21	0.91	2.93	1.01	3.07	0.96	2.88	1.04

Semi-structured interviews

The SEAM and academic staff were asked to describe the UOW's approach to interaction with its broader communities and by broader communities I mean industry, professional groups, community groups, and other stakeholders.

When consulted on engagement with the expanded development periphery, foremost among the concerns of the leadership was the patchy nature of engagement. This supported the idea that was developed in the responses to the survey where staff perceived the UOW to be under-resourced for outreach activities:

> Extremely patchy. At a broad level and intellectual level there is a commitment to engaging with communities in our regional area. Actually in doing it there are some things that we do well and that's not to say we do industry well or link with community groups well. There's some industry partners we do...well. With some community groups we are wonderful but...in my view it is extremely patchy ...And even the ones who do it well...they also recognize that it is patchy. (Interview 13)

> I think it's [engagement] been very variable across the university...I think then where we do well, we do really well...So when people show initiative and start doing that interaction the University's good at supporting it... Community groups, I think it is very patchy across the University. (Interview 15)

> The University is here and it is part of the community but there is no big push to engage the community as I really see it. (Interview 1)

> I think as an organization we're pretty much out there, or open and communicating with those external bodies, organizations, all of the groups within the list. I think that off the top of my head I can think of 30 or 40 individuals who are really good at being out there and talking to people and getting feedback from different groupings and thinking about the role of the University and stuff like that. How would I describe our approach to that interaction – well I think it's still a bit fragmented. (Interview 14)

> From a Faculty point of view it is fairly ad hoc and it absolutely relies on individual effort. It is not supported in a specific um way, there's no funding particularly to support that and there is no particular strategy to support that so we are relying on integrity of professionals in our staff. Which is not to say we don't value it and particularly that the Executive and Vice-Chancellor do value it when we tell them about it, but it is not er um, it is not coordinated. (Interview 3)

In contrast, when engagement was achieved there was a general perception that it was done well and this is supported by the following two comments:

> The University is...highly thought of in its regional environment and I take it with great pride that I work at the University of Wollongong and take constant, very positive feedback about the regional impact that this university has had. (Interview 16)

> I think the university and all of the individuals that I know particularly in the research front have been proactive in that regard [engagement] and have been encouraged to be proactive and obviously on the research front without that interaction and not just with industry but at all sorts of levels. Without that you don't have the support base that you need to do the research. (Interview 25)

Although the engagement was viewed as patchy the interviews revealed that there was an effort to improve:

> When I came to the University 8 years ago I was astonished by a place that was not a corporation but was 9 individual divisions that would occasionally decide they might tilt at the centre if it suited them. So that it was a loose conglomeration of 9 systems rather than an organization that had 9 divisions. I think in many areas of the University that's shifted. (Interview 4)

Key findings: Research Question Two – An expanded developmental periphery

- Both the leadership team and the staff view this area as under resourced, but when engagement occurs, believe it is well done. A mean score greater than 3.5 was achieved in 3 of the 5 questions, supporting this view;
- More than 50% of staff members showed a positive view to *success in reaching out to partners and the community at every available opportunity* (62%), *ability to develop and refine structures which support outreach activities* (66%), *supportive of objectives related to external interaction* (66%) and in the *provision of sufficient access points for communities to engage* (51%);
- Interestingly, the General Staff response was more positive on all questions compared to that of the Academic Staff. There was also a clear gender difference, the most negative response being that of Academic Male staff for the presence of *adequately resourced community outreach efforts* (A M=29%).

Research Question Three: A diversified funding base

Online survey

Research question three investigated the presence of *a diversified funding base* at the UOW, employing 7 questions within this 'pathway of transformation' (Table 35). Question 3g was framed in the negative; all responses to this question were reversed before analysis.

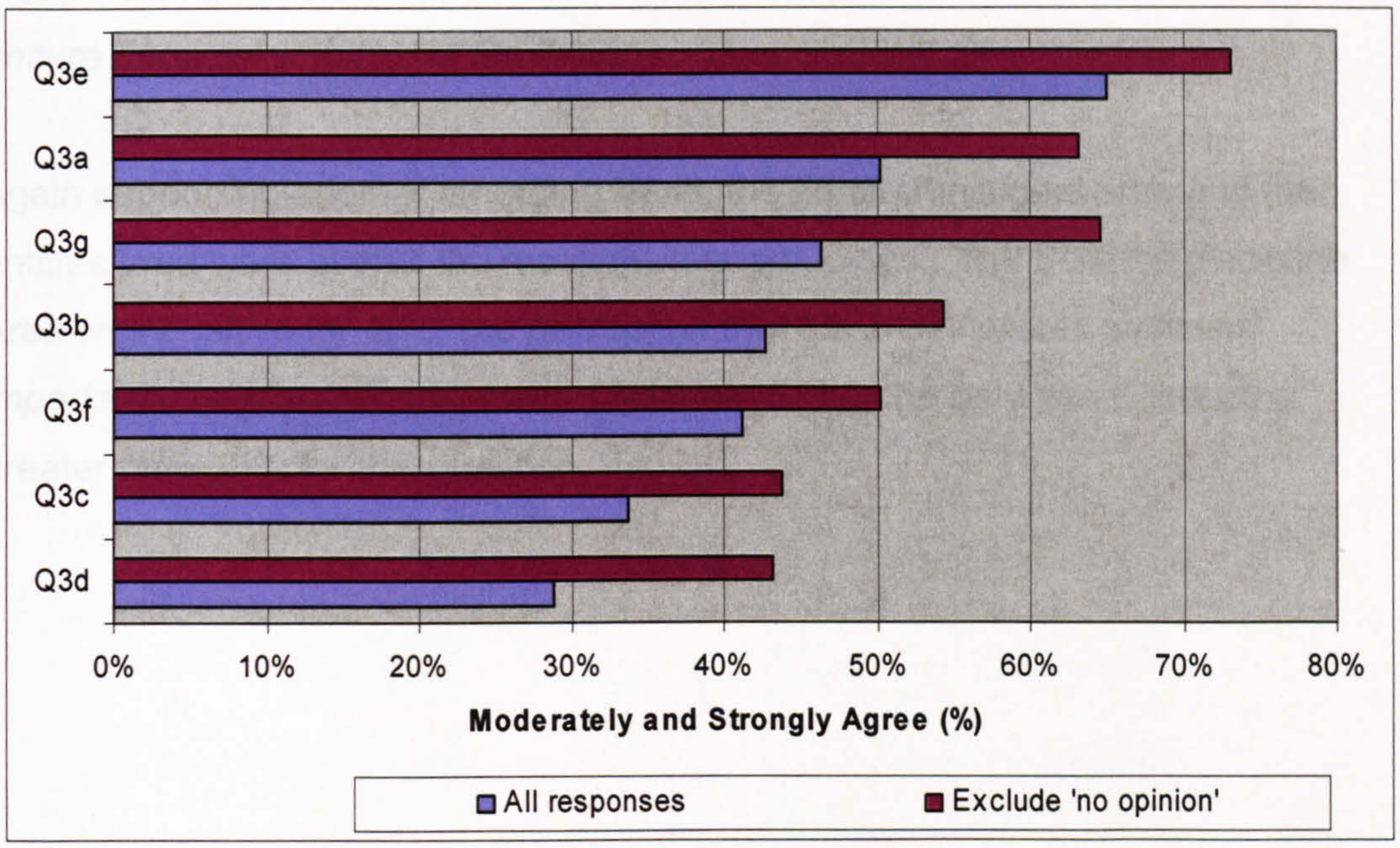
Table 35 Research question three

3a: Moves more quickly than other universities to ensure financial viability
3b: Develops new and alternative funding sources
3c: Turns declining government support into opportunities
3d: Places sufficient importance on discretionary sources
3e: Sees diversification as critical to its future
3f: Gives sufficient support to developing alternatives
3g: Fails to identify financial diversification*

** Responses to 3g were reversed before analysis*

Results showed that more than 50% of staff members thought that the *UOW sees diversification as critical to its future* (73%), *identifies financial diversification* (65%), *moves more quickly than other universities to ensure financial viability* (63%), *develops new and alternative funding sources* (54%), and *gives sufficient support to developing alternatives* (50%).

Figure 28 Question three: % staff moderately and strongly agree



Less than 40% of staff perceived that the UOW had *turned declining government support into opportunities* (44%) and *placed sufficient importance on discretionary sources of funds* (43%).

The general staff group was more positive than academic staff on all questions except for the question referring to the UOW *placing sufficient importance on discretionary sources*, where academic staff was more positive (G=40%, A=47%). However, the response was less than 50% of staff agreeing to this for both groups. This was also evident for the perception of general and academic staff which believed that the UOW is *able to turn declining government support into opportunities* (G=49%, A=37%).

Clear gender differences were shown for pathway three; females were more positive than males for three questions under this category, the exception being the perception that the *UOW moves more quickly than other universities to ensure financial viability*, where males were more positive (F=58%, M=69%). Male general staff could account for this positive view, with over 70% of this

group holding the view that the UOW *responds quicker than other universities to ensure financial viability* (M G=78%).

Again supporting another emerging trend, the admin functional area and the entities area were overall the most positive groupings. The Science discipline Area was positive for *Q3d, the perception that the UOW places sufficient importance on discretionary funds* (Science=57%), the only 'area' grouping greater than 50% for this question.

Figure 29 Question three: General and Academic staff

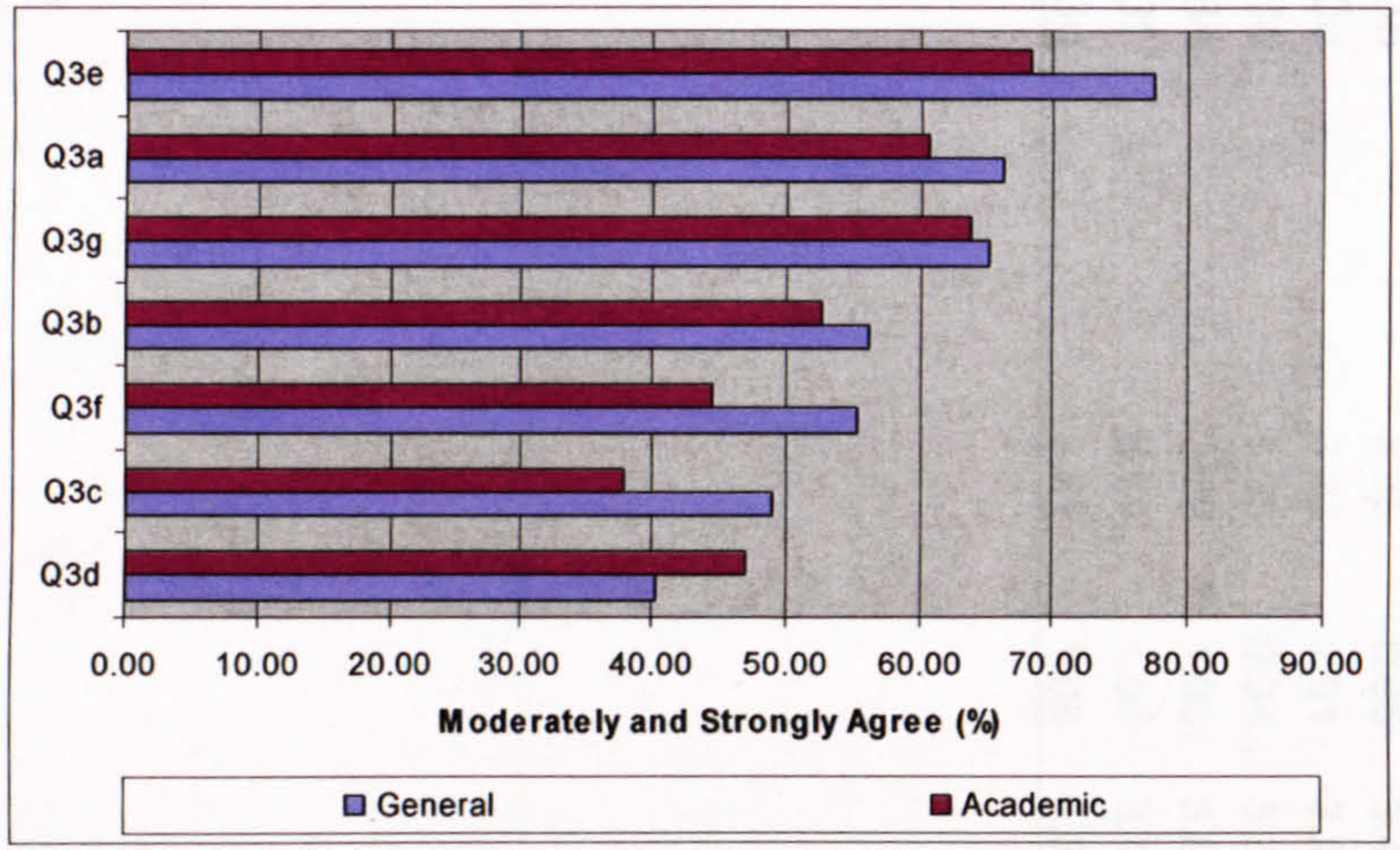


Figure 30 Question three: Female and Male staff

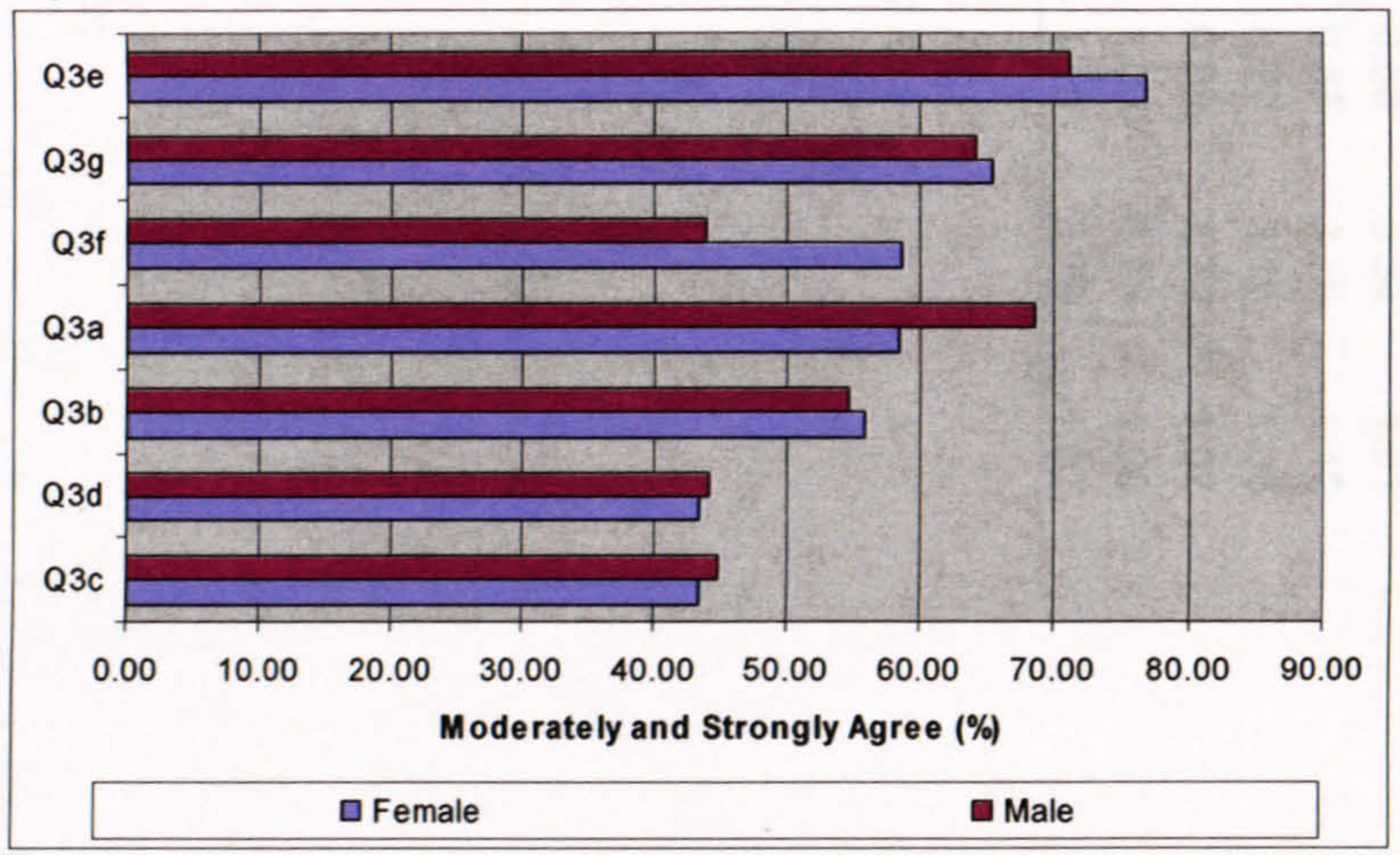


Figure 31 Question three: General and Academic staff by gender

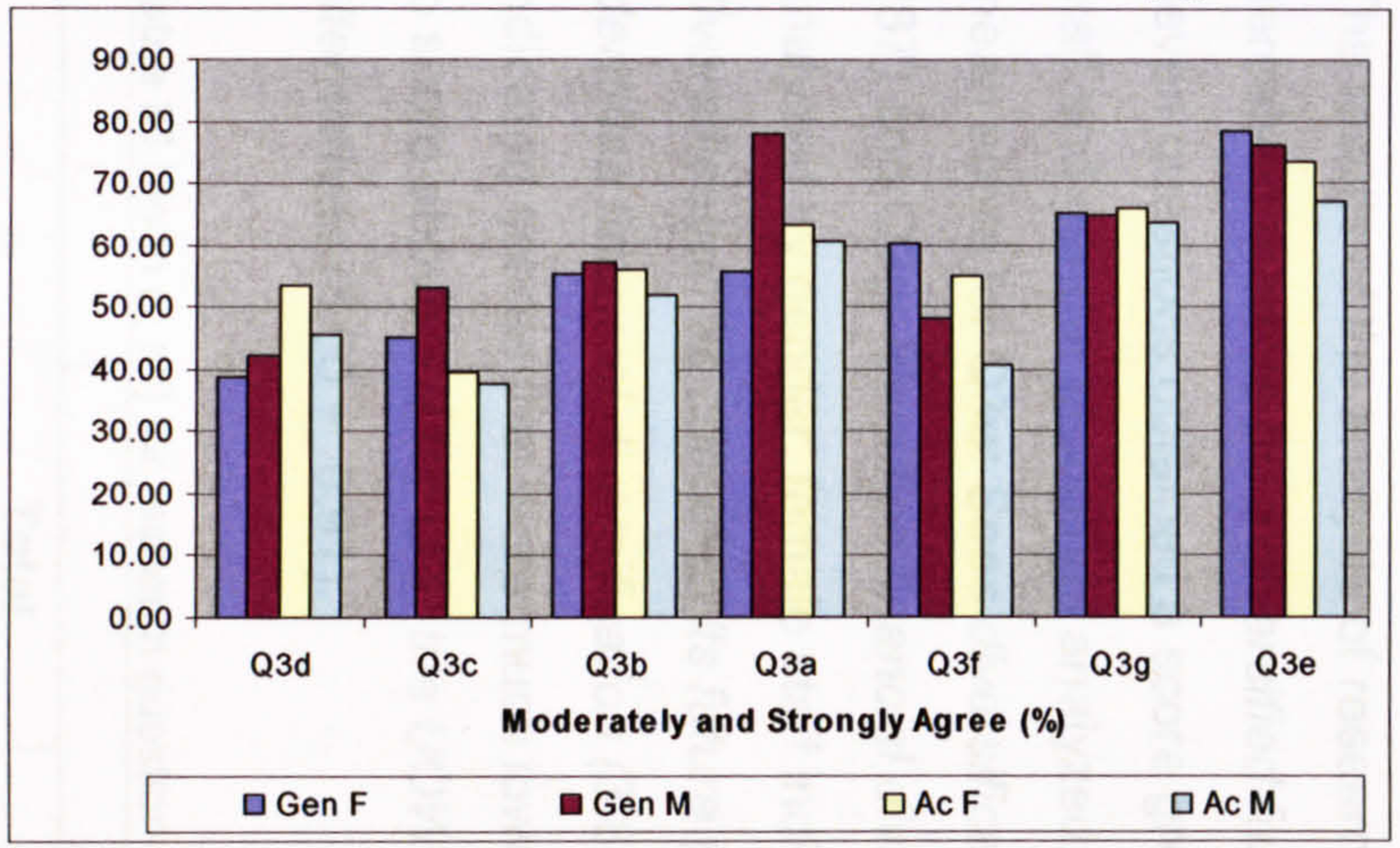
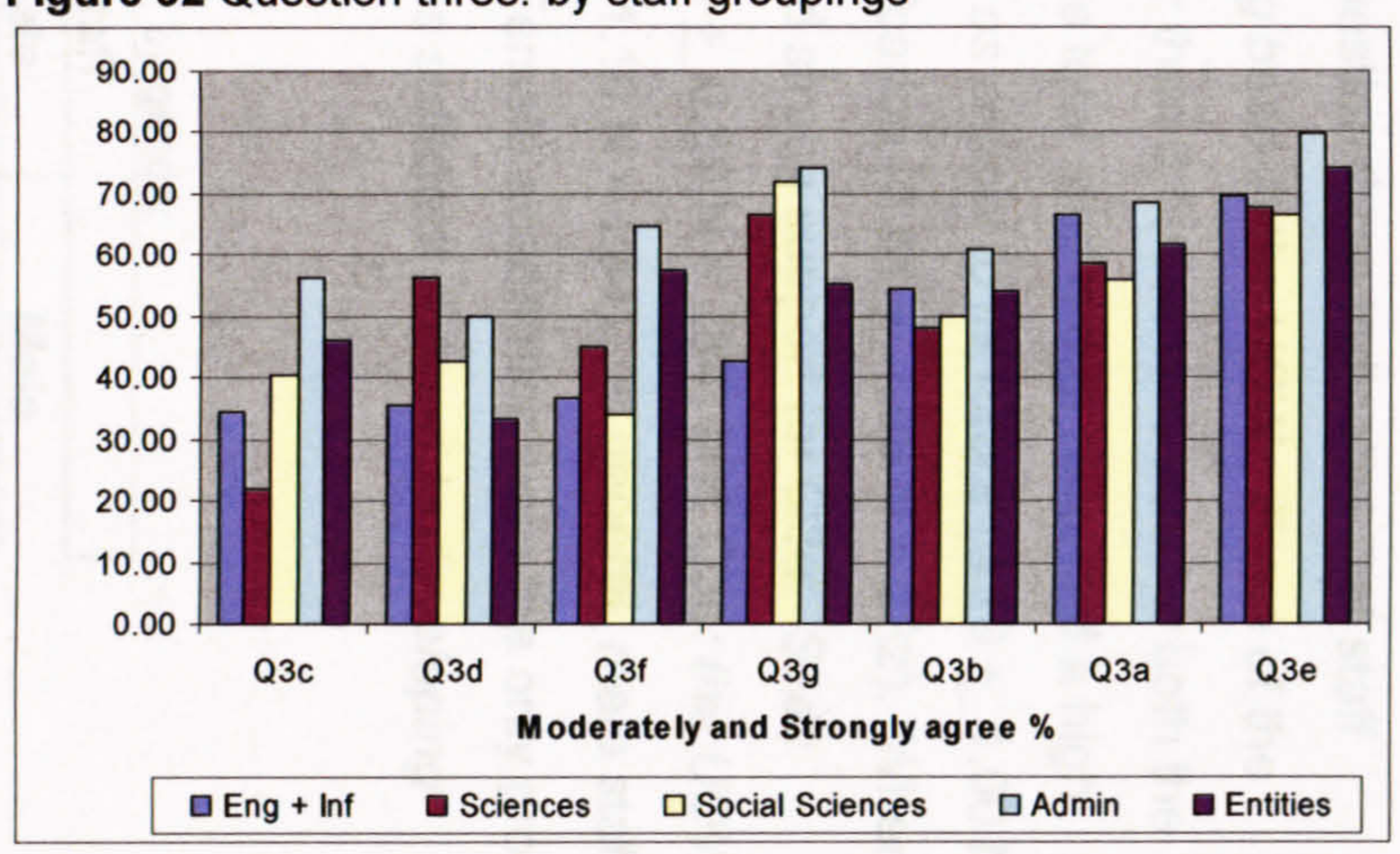


Figure 32 Question three: by staff groupings



The results of the analysis of research question three indicated that staff perceived there to be a *diversified funding base* at the UOW. Three of the seven questions obtained a score greater than 3.5; this was true for both the staff and gender groupings analyzed. The total staff group recorded a high mean score for Q3e: *Sees diversification as critical to its future* (3.79 ± 1.00 N = 287) and Q3g: *Identifies financial diversification* (3.81 ± 1.08 N = 232). When analyzed by gender, female staff indicated strong support for Q3e: *Sees diversification as critical to its future (*3.89 ± 0.89 N = 284) and *Q3g: the UOW identifies financial diversification (*3.85 ± 1.10 N = 284). In general, male staff indicated scores that were much lower. Female academics were the only group to score above 3.5 for *Q3f: the UOW gives sufficient support to developing alternatives (*3.50 ± 0.91).

Table 36 Mean (± sd) for research question three, by gender

	All Staff					
	Total		Female		Male	
Question	**mean**	**st.dev.**	**mean**	**st.dev.**	**mean**	**st.dev.**
3a	3.63	1.02	3.59	0.92	3.68	1.10
3b	3.38	0.95	3.44	0.88	3.34	1.01
3c	3.22	1.01	3.28	0.87	3.19	1.12
3d	3.26	0.94	3.37	0.77	3.19	1.06
3e	3.79	1.00	3.89	0.89	3.72	1.07
3f	3.29	1.05	3.49	1.00	3.13	1.06
3g	3.81	1.08	3.85	1.10	3.78	1.07

Table 37 Mean (± sd) for research question three, by staff category

	General Staff						Academic Staff					
	All		Female		Male		All		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.
3a	3.73	0.91	3.61	0.91	3.86	0.91	3.53	1.13	3.56	0.95	3.53	1.23
3b	3.46	0.84	3.45	0.86	3.48	0.82	3.28	1.07	3.44	0.92	3.22	1.15
3c	3.35	0.91	3.31	0.85	3.40	0.98	3.07	1.11	3.24	0.91	3.00	1.20
3d	3.29	0.80	3.29	0.73	3.29	0.87	3.23	1.09	3.53	0.82	3.12	1.18
3e	3.88	0.91	3.92	0.91	3.82	0.90	3.67	1.10	3.82	0.83	3.63	1.20
3f	3.41	1.00	3.48	1.05	3.32	0.93	3.15	1.09	3.50	0.91	2.99	1.14
3g	3.86	1.07	3.88	1.09	3.82	1.05	3.75	1.09	3.79	1.12	3.74	1.09

Semi-structured interviews

Following on from the external engagement was the question regarding the ability of UOW to *diversify its funding sources*. There was a prevailing view that the funding base was diverse, and that the ITC had strongly contributed to the ability to diversify funding sources:

> The ITC operation has been hugely successful and has contributed to the diversification of the University in a very, very positive way. (Interview 12)

> I mean my views for example, with ITC, is that it is a great example of trying to diversify the funding sources. The relationship with the University of Wollongong in Dubai, that has been a long hard road, but I think that's been a great example. (Interview 15)

> Well obviously we have had...to look for funding from all sorts of different sources just to survive and particularly to build a research activity...If you think twenty years ago we didn't have a research base so you can't rely on traditional research funding because we've got no research record...once you have done that you continue to do it, you don't rely on one source of funding... I think if you looked at other research groups at the same calibre or level...I don't think their research funding base would be as diverse as ours is. (Interview 25)

Interestingly, and by way of contrast, international student fee income, an area previously highlighted in which the UOW had performed strongly, was now not seen as being a part of the diversification of funding:

> I don't see international funding now as diversification. Years ago, it was diversification. But now it's part of funding. Diversification is now finding the next stream, right? (Interview 1)

An area of potential was that of research and the commercialization of research. Additionally, garnering the support of the alumni was an area that both the leadership group and academic staff felt could be improved:

> One of the things that struck me about this university is the innovation I suppose in exploiting different funding sources in research...nevertheless I don't think we're very good at commercializing, we have not been very good at commercializing. I don't think we've ever really attracted many bequests or support funding from philanthropic agencies. But we've been surprisingly good in broadening across the research sector and Government funding for core activity. (Interview 15)

> Well, we've got a long way to go with capturing our alumni support, but we've had a lot of chopping and changing with foundations and interaction with companies and people who might be wanting to donate scholarships and other things to the University. I think that's starting to get better. (Interview 10)

> ...I still think we should be looking harder at the American legislation to find out how we can do that to encourage people [to donate]...there are demographic shifts... (Interview 4)

> Wollongong, I think, is too new and too small to get bequests and stuff like that...its more likely to get additional funding through its staff developing innovative approaches with new technologies or new concepts...the other thing is we just go directly to these companies and just ask for them for money. (Interview 21)

One academic staff member supported the opinion expressed in the survey, of having no knowledge of how the university is able to diversify its funding sources:

> I don't know. I mean I have, I just have no real knowledge of how that all works, I don't think I could make a contribution on that. (Interview 26)

Key findings: Research Question Three – A diversified funding base

- Both Staff and Gender groupings perceived UOW to have a *diversified funding base*, with the total Staff Group recording a high mean score for both *Sees diversification as critical to its future* (3.79) and *The UOW Identifies financial diversification* (3.81);
- The General Staff group was more positive than the Academic Staff on all questions except for the question referring to the UOW *placing sufficient importance on discretionary sources*, where the Academic Staff was more positive (G=40%, A=47); and
- Again, clear gender differences were shown, with females being more positive than males for three questions, the exception being the perception that the *UOW moves more quickly than other universities to ensure financial viability*, where males were more positive (F=58%, M=69%).

Research Question Four: A stimulated academic heartland

Online survey

Research question four investigated the presence of *a stimulated academic heartland* at the UOW, employing 6 questions within this pathway of transformation (Table 38). Question 4e was framed in the negative; all responses to this question were reversed before analysis.

Table 38 Research question four

4a: The University creates a supportive working environment
4b: UOW attempts to get staff to understand and "buy into" the vision
4c: Staff receive opportunity for engagement in University
4d: Staff could be considered to have a high level of morale
4e: Promotion and reward structures provided by UOW are not adequate*
4f: Leaders attempt to "carry" the staff with them in achieving the vision

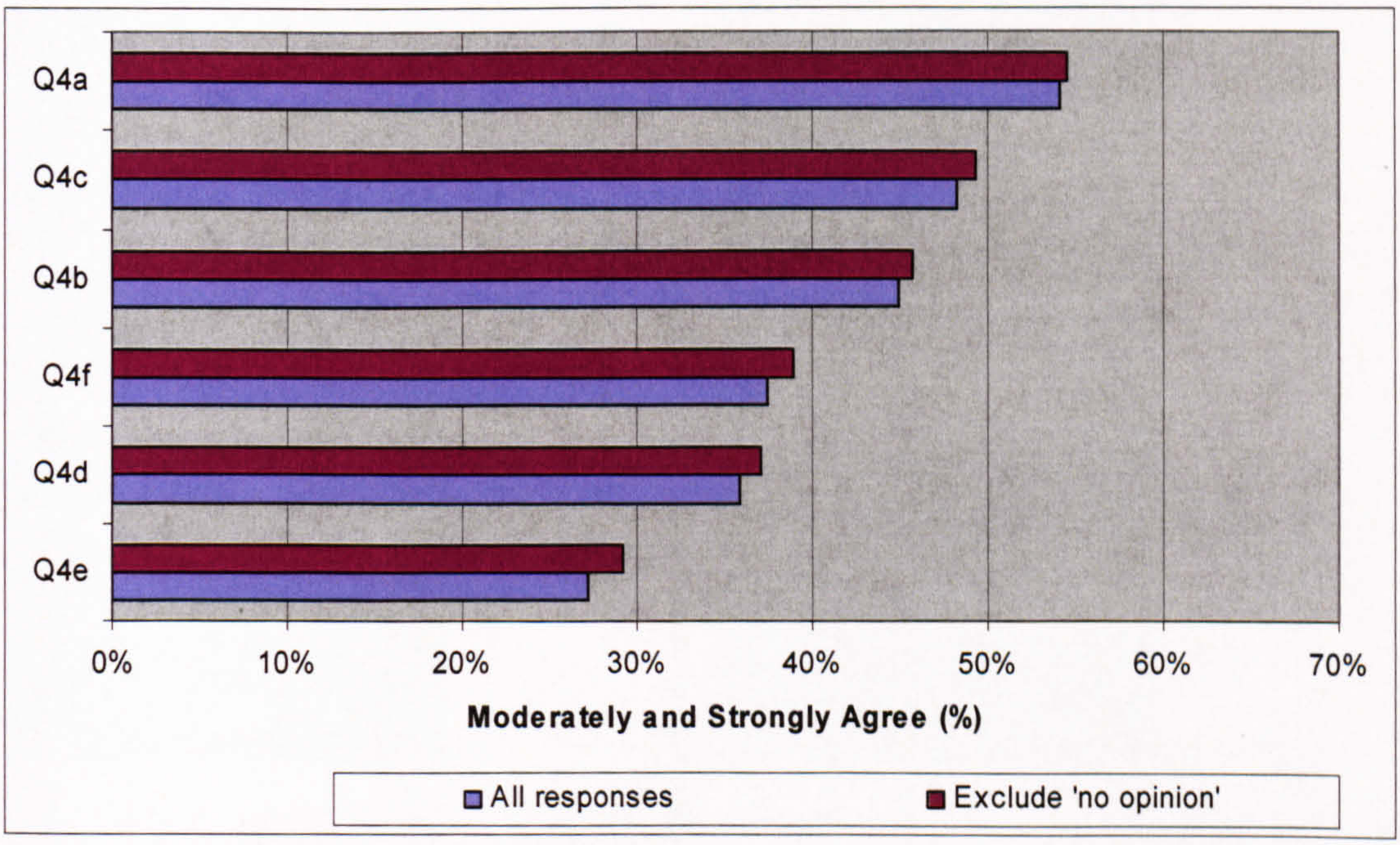
* Responses to 4e were reversed before analysis

Responses to this pathway were the weakest for all pathways, but more than 50% of staff members responded that the University *created a supportive working environment* (55%).

More than 40% of staff agreed that the UOW *attempted to get staff to understand and buy into the vision* (46%), and that *staff receive the opportunity for engagement with the University* (49%).

Less than 40% of staff perceived that the UOW *staff could be considered to have a high level of morale* (37%), *that promotion and reward structures provided by the UOW are adequate* (29%), and that *the leaders attempted to carry the staff with them in achieving the vision* (39%).

Figure 33 Question four: % staff moderately and strongly agree



General staff was more positive for questions 4a-d which referred to the University *creating a supportive working environment* (G=60%, A=49%), *attempting to get staff to understand and buy into the vision* (G=52%, A=38%), *engaging staff* (G=51%, A=46%) and the *staff having a high level of morale* (G=39%, A=33%). Academic staff was more positive for the *adequacy of promotion and reward structures* provided by the UOW (G=25%, A=34%), and the *leaders attempt to carry the staff with them in achieving the vision* (G=37%, A=42%), however both categories still fell below 50% of staff.

According to (Figure 36), 20% of general female staff held the view that the UOW has *adequate promotion and reward structures* (F G=20%).. Continuing this trend, all 'area' groups were negative for this category, with the Science discipline area holding the most positive view (46%). A trend exhibited in the previous questions continued, where Admin and Entities were consistently more positive in the majority of questions.

Figure 34 Question four: General and Academic staff

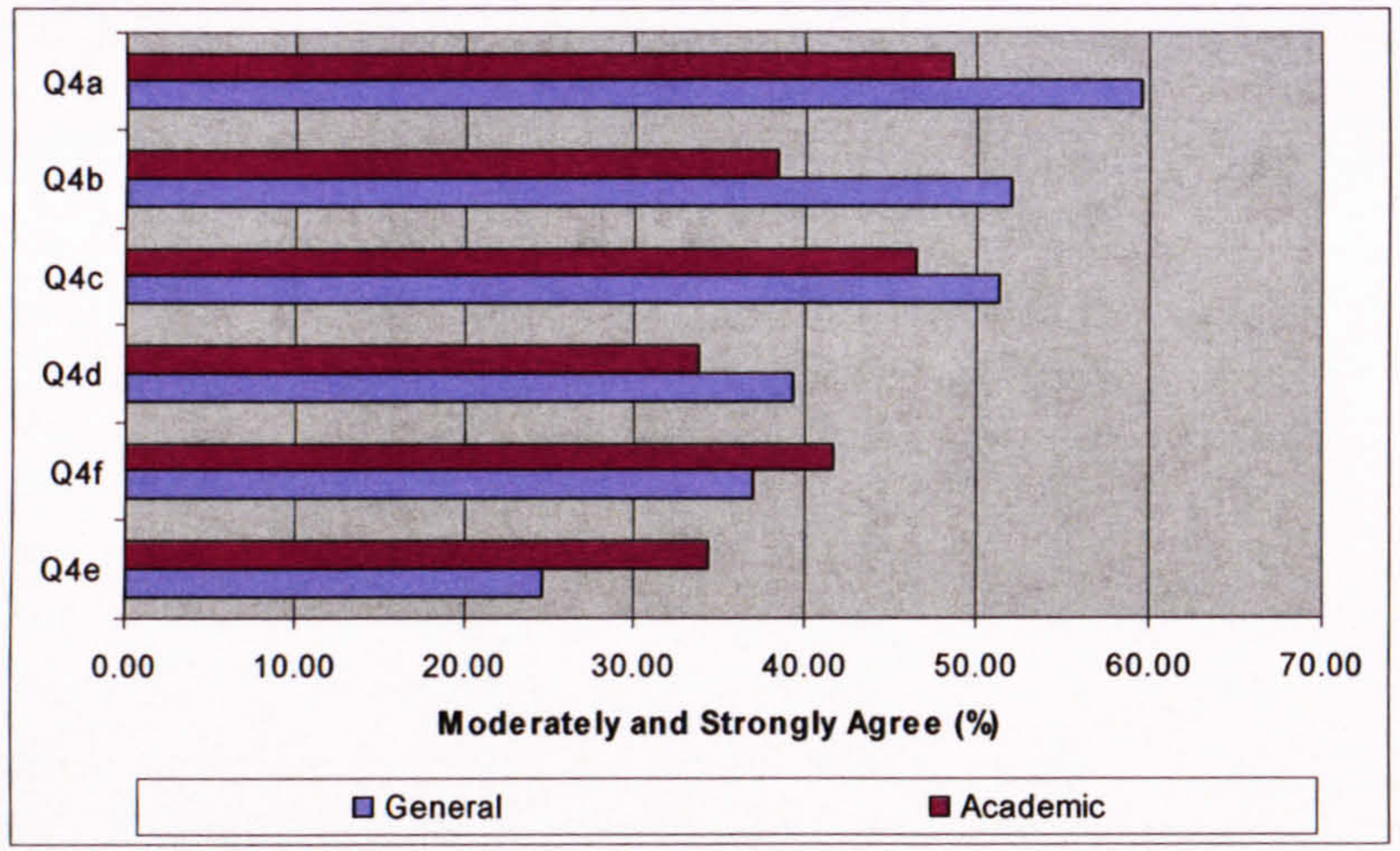


Figure 35 Question four: Female and Male staff

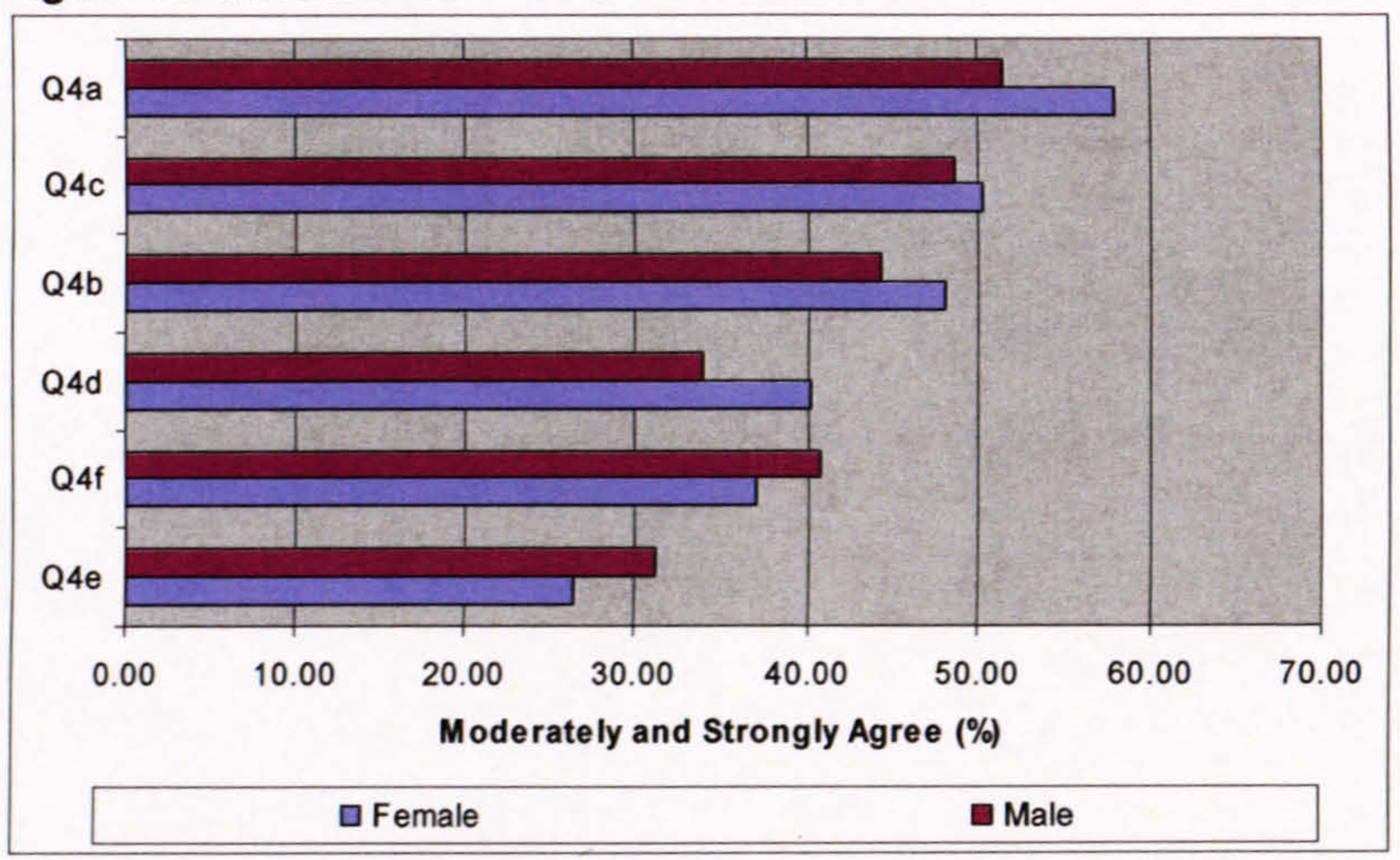


Figure 36 Question four: General and Academic staff by gender

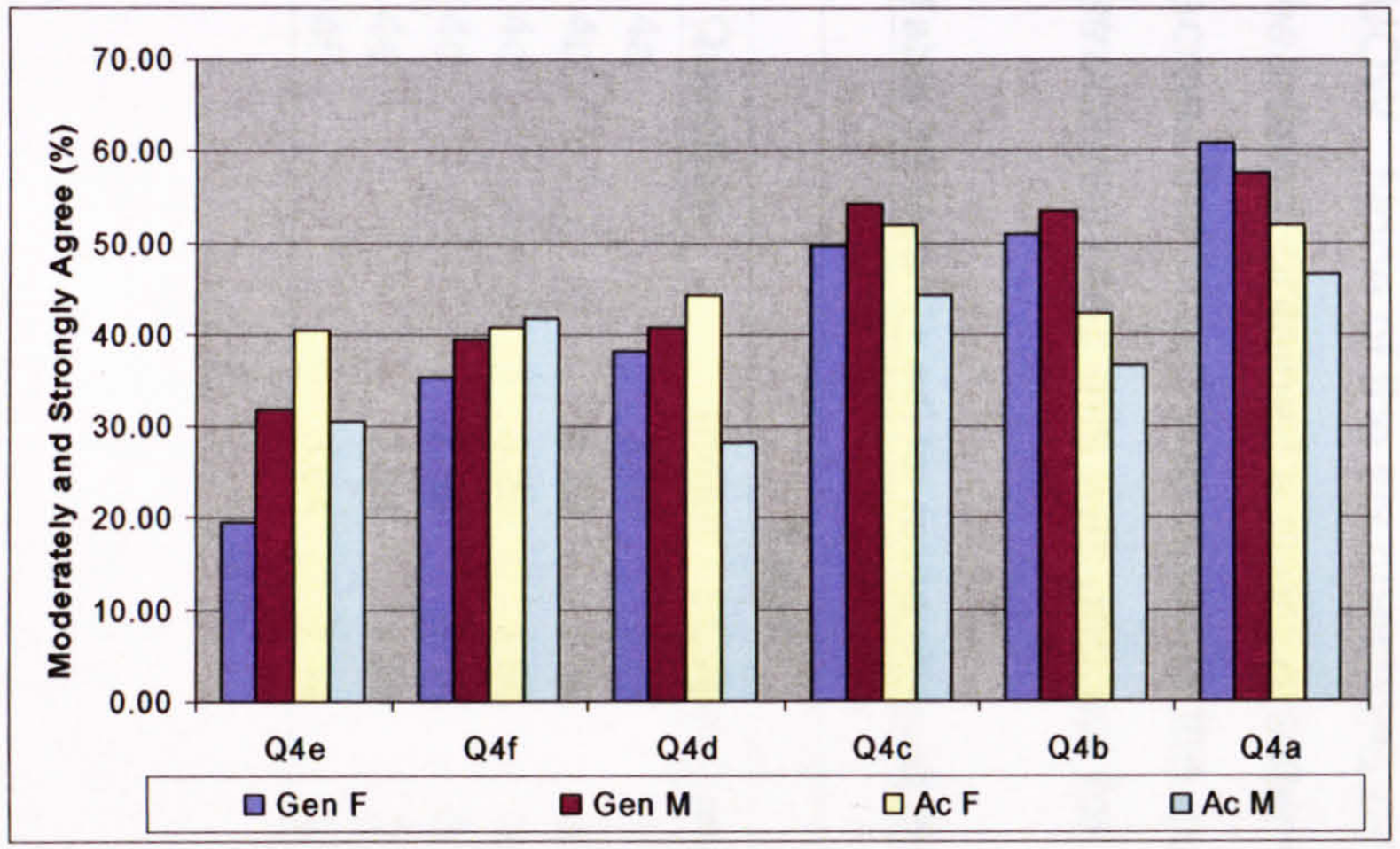
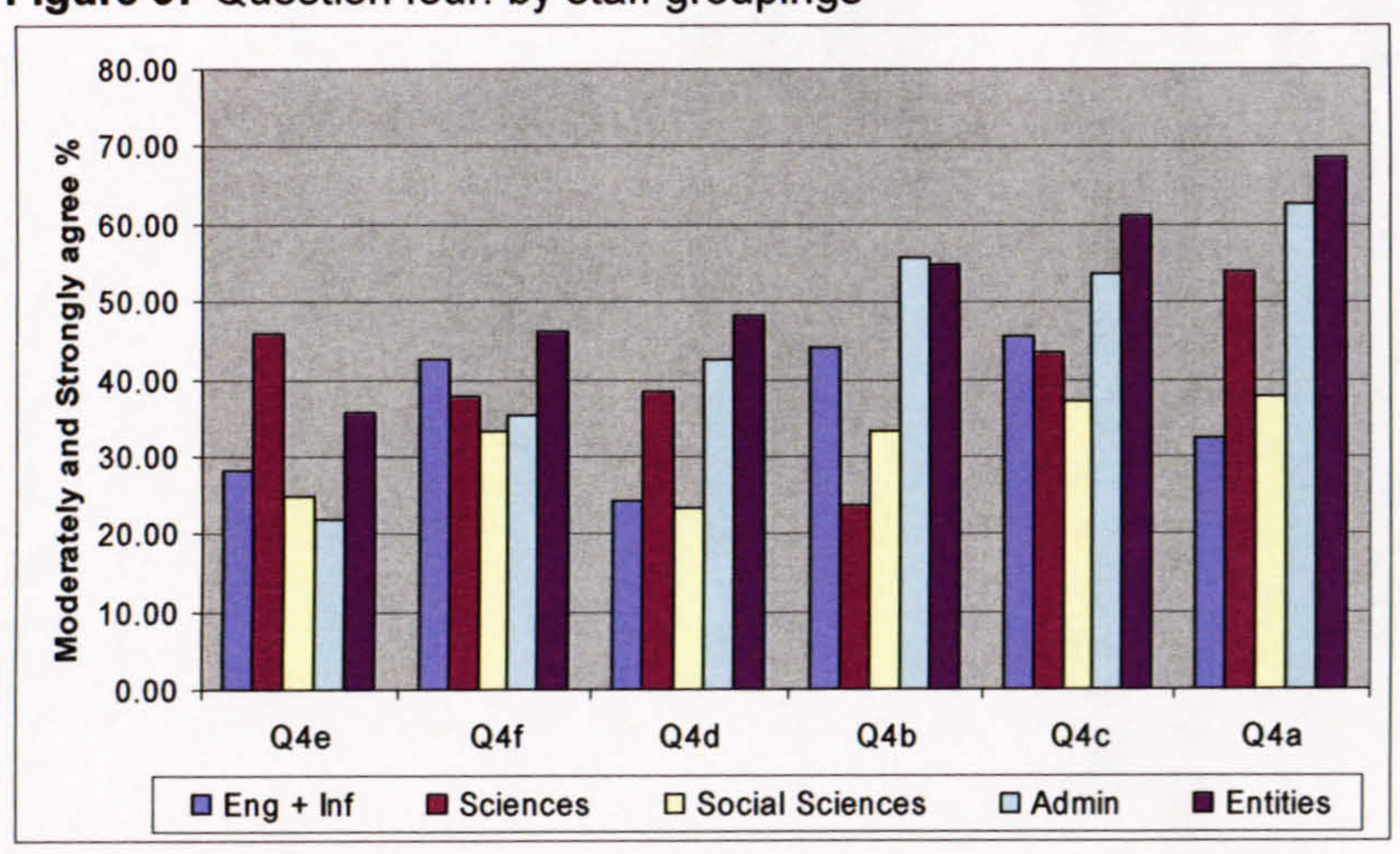


Figure 37 Question four: by staff groupings



The results of the analysis of research question four indicated that staff had a poor perception of the *presence of a stimulated academic heartland* at the UOW. None of the six questions referring to a *stimulated academic heartland*, obtained a score greater than 3.5. The poorest mean score across the board was against the question referring to *promotion and reward structures* (4e); this was poorest for female general staff (F G 2.50 ± 1.16).

Table 39 Mean (± sd) for research question four, by gender

All Staff						
	Total		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.
4a	3.46	1.11	3.57	1.06	3.35	1.15
4b	3.22	1.14	3.25	1.09	3.22	1.20
4c	3.28	1.08	3.34	1.03	3.23	1.14
4d	2.98	1.14	3.06	1.11	2.90	1.18
4e	2.65	1.29	2.65	1.24	2.64	1.33
4f	3.04	1.14	3.07	1.04	3.02	1.24

Table 40 Mean (± sd) for research question four, split by staff category

	General Staff						Academic Staff					
	All		Female		Male		All		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.
4a	3.59	1.06	3.65	1.02	3.51	1.12	3.30	1.15	3.42	1.14	3.23	1.16
4b	3.34	1.11	3.25	1.10	3.46	1.11	3.09	1.18	3.25	1.08	3.01	1.23
4c	3.31	1.04	3.32	1.04	3.29	1.05	3.24	1.14	3.36	1.01	3.19	1.21
4d	3.03	1.13	3.07	1.10	2.97	1.18	2.92	1.16	3.06	1.13	2.85	1.18
4e	2.56	1.21	2.52	1.16	2.62	1.28	2.75	1.37	2.91	1.36	2.66	1.38
4f	3.04	1.11	3.02	1.06	3.07	1.18	3.04	1.19	3.16	1.01	2.98	1.29

Semi-structured interviews

Respondents were asked, *think about the UOW's academic heartland, how well and in what ways are the staff engaged, consulted and rewarded?* The interviews revealed that:

> Compared to peer universities, as I walk around peer universities, listen to everyone from cleaners to the VC, I have to say our staff I judge are quite engaged, quite engaged. But the dependency on Unit leaders and group leaders or whatever is great, which maybe it should be, and in part says something about organisational leadership. (Interview 3)

> I think our size facilitates this type of responsive and consultative culture. We are small enough to know each other well and draw on each other's strengths, but also big enough to get things done. (Interview 23)

A more flexible reward structure was suggested and there was a view that the recent changes to the Industrial Relations (IR) laws would help achieve this tailoring of rewards:

> So I think that the reward structure is something which is still languishing a little bit more than the previous idea of public institutions, that it, it is not quite in accord with more entrepreneurial activities and it's compounded when I try and encourage staff from, to keep my metaphor going, from the older style university to work to the more entrepreneurial activities and how confusing their responses are. (Interview 17)

> The rewards issue – I think I mentioned this earlier, I think we need to finesse the issue of tailoring the rewards to the values of the individual. (Interview 15)

> I think that is where we are not doing a good job. Um, the AWA hopefully will help us with that. In the past we were pretty much locked in by the collective bargaining agreement. But now, if you get an individual who has done a stellar job whilst they are in teaching or developing a new course, or in research, you need to reward that person and I think you have to look at rewards being beyond just giving them an increase in salary. (Interview 8)

The leadership group was mixed in their views as to the perception of whether staff were consulted, and some were negative:

> Are they consulted? Not really. It depends on what you're trying to do and where you're trying to do it but we're certainly not great in terms of consultation in any way. (Interview 13)

> ...it's patchy because our model is so dependent on the quality of the Dean...so that you very much are dependent on the ability of the Dean to communicate up and down and to get the message out there...And unless the Dean then works with the Heads...and there is this downward flow, with information – it doesn't work very well so they don't feel consulted. There's a feeling out there that they're not overly consulted. (Interview 2)

And in contrast, others in the leadership group perceived the consultation in a more positive manner:

> I genuinely believe that at the moment the staff are generally consulted. I believe that they are rewarded in keeping with sector expectations and sector benchmarks and indeed in many ways particularly in the academic side of things, I think they are rewarded quite well and in fact many of them too well. (Interview 1)

Despite the view of the leadership group that morale was high, staff responded in the survey that the promotion and reward structures were not adequate, especially the general female staff grouping.

An academic staff member crossing over from the corporate sector felt the reward structure was not balanced:

> I come from the corporate part of the world…I'm still getting used to [university life]…you know you get good reviews from students but at the end of the day that's not what you get promoted on, its on your research contribution – but the way you balance your contributions and expectations are not very well defined... But from what I understood…it's the university culture thing and I believe it's the same across universities across the world... (Interview 24)

Key findings: Research Question Four – A stimulated academic heartland

- There were marked differences between the positive views of the leadership team and, at times, negative views of other staff, with none of the six questions referring to a *stimulated academic heartland* obtaining a mean score greater than 3.5;
- Although responses to this pathway were the weakest for all pathways, more than 50% of staff members still responded that the University *created a supportive working environment* (55%), *the* UOW *attempted to get staff to understand and buy into the vision* (46%), and that *staff receive the opportunity for engagement with the University* (49%);
- General Staff was more positive than Academic Staff to *creating a supportive working environment* (G=60%, A=49%), *attempting to get staff to understand and buy into the vision* (G=52%, A=38%), *engaging staff* (G=51%, A=46%) and the *staff having a high level of morale* (G=39%, A=33%); and
- A trend exhibited in the previous questions continued, where the categories Admin and Entities were consistently more positive in the majority of questions.

Research Question Five: An integrated entrepreneurial culture

Online survey

Research question five investigated the *presence of an integrated entrepreneurial culture* at the UOW, employing 8 questions within this pathway of transformation (Table 41).. Question 5c was framed in the negative; all responses to this question were reversed before analysis.

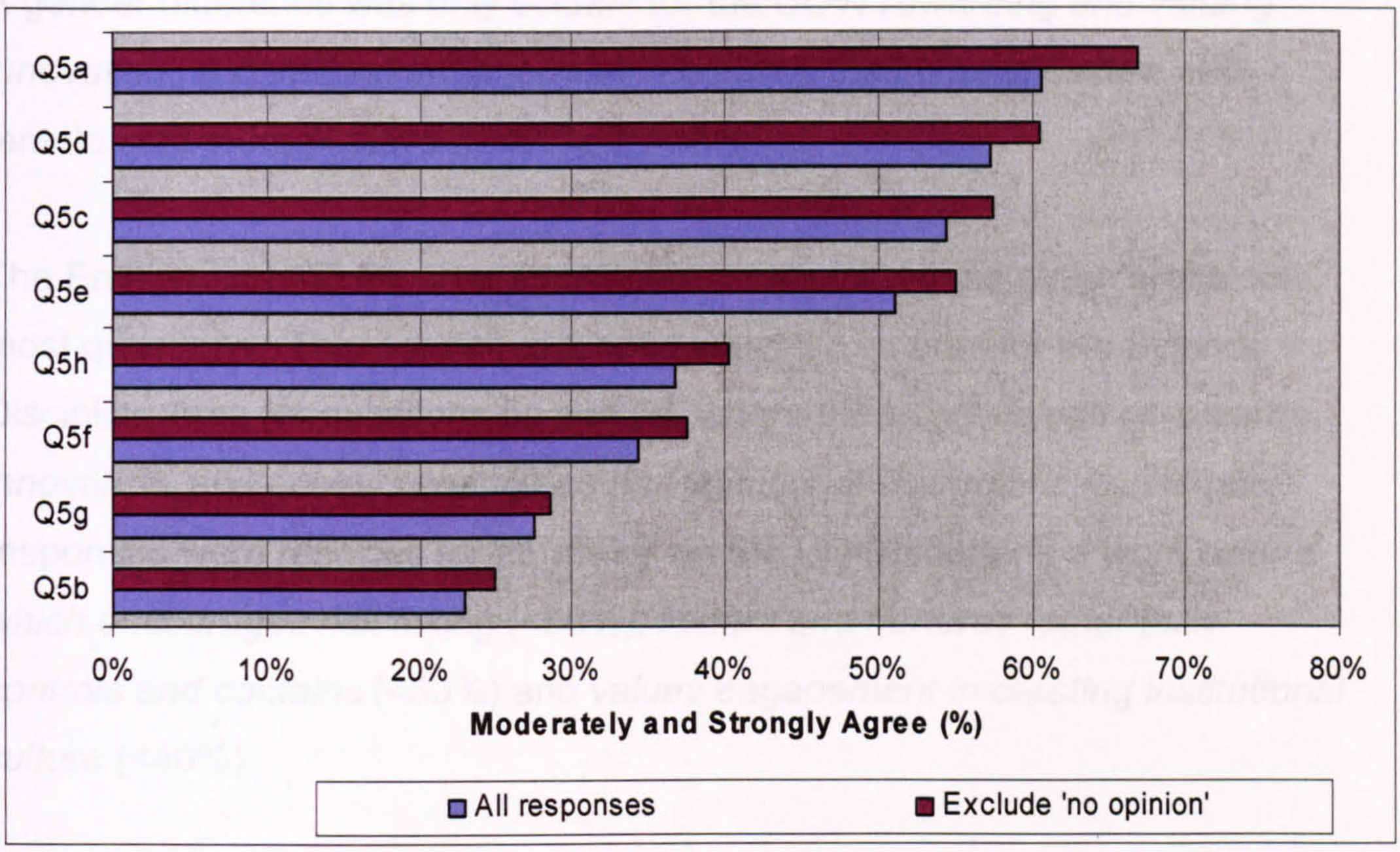
Table 41 Research question five

5a: Adopts an entrepreneurial approach to its initiatives
5b: Supports a work culture which encourages risk taking
5c: Does not value or reward innovation*
5d: Accepts change as an institutional characteristic
5e: Actively cultivates a distinctive institutional culture
5f: Embeds its values through appropriate structures
5g: Fosters and nurtures rather than controls and contains
5h: Values engagement in creating institutional culture

* Responses to 5c were reversed before analysis

More than 50% of staff members responded positively for the ability of the UOW to *adopt an entrepreneurial approach to its initiatives* (67%), *value or reward innovation* (58%), *accept change as an institutional characteristic* (60%) and *actively cultivate a distinctive institutional culture* (55%).

Figure 38 Question five: % staff moderately and strongly agree



40% of staff agreed that the UOW was able to *value engagement in creating institutional culture*.

Less than 40% of staff perceive that the UOW was able to *embed its values through appropriate structures* (38%).

Less than 30% of staff views the UOW as being *supportive of a work culture which encourages risk taking* (25%), *fostering and nurturing rather than controlling and containing* (29%).

General staff was more positive for the UOW having *adopted an entrepreneurial approach to its initiatives* (G=70%, A=64%), *valuing or rewarding innovation* (G=60%, A=54%), *actively cultivating a distinctive institutional culture* (G=62%, A=47%) and *valuing engagement in creating institutional culture* (G=43%, A=37%). There were no observed differences for the other questions between academic and general staff, with the exception of the UOW *supporting a work culture which encourages risk taking,* where academic staff was more positive (G=46%, A=62%).

A gender difference was only evident for the UOW *rewarding and valuing innovation*, and *valuing engagement in creating institutional culture*, with female staff more positive (F=61%, M=53%).

The Entities and Admin were again more positive than the other 'areas' for most questions. This positive response was also evident for the Science Discipline Area for questions 5c and 5d, where the UOW *values or rewards innovation*, and *accepts change as an institutional characteristic*. Negative responses were reported for all 'areas' on the UOW *supports a work culture which encourages risk taking* (<50%), *fosters and nurtures rather than controls and contains* (<30%) and *values engagement in creating institutional culture* (<40%).

Figure 39 Question five: General and Academic staff

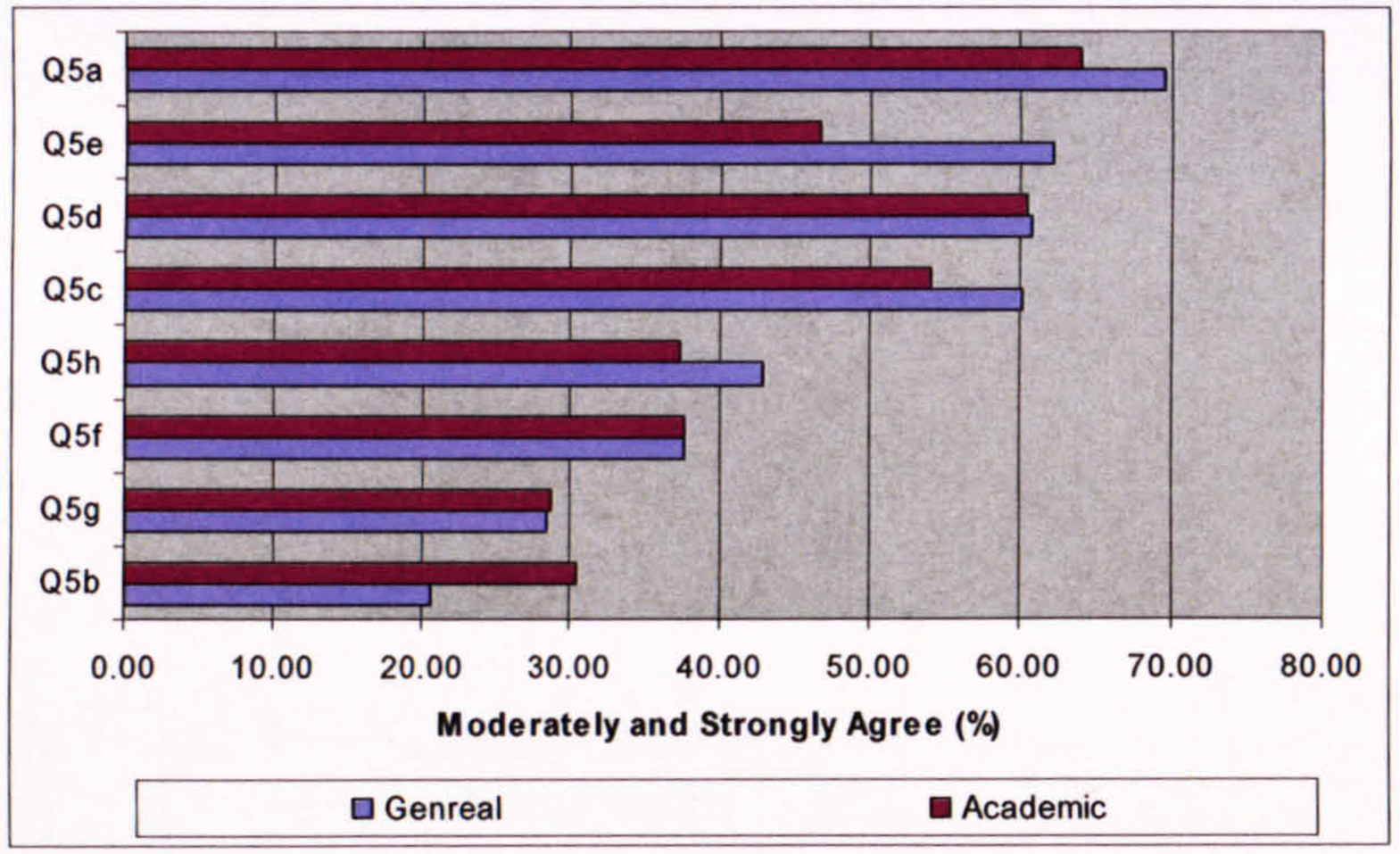


Figure 40 Question five: Female and Male staff

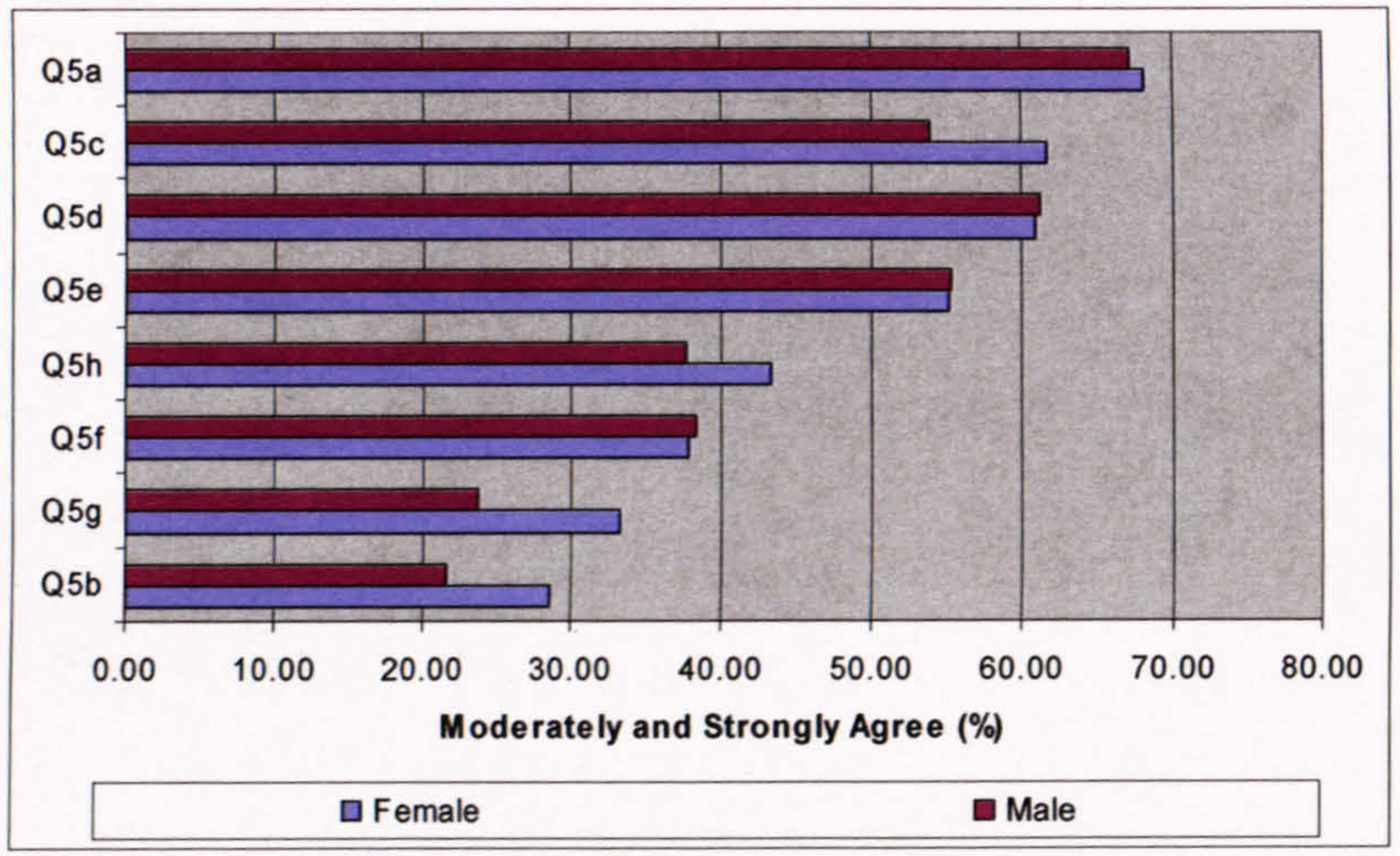


Figure 41 Question five: General and Academic staff by gender

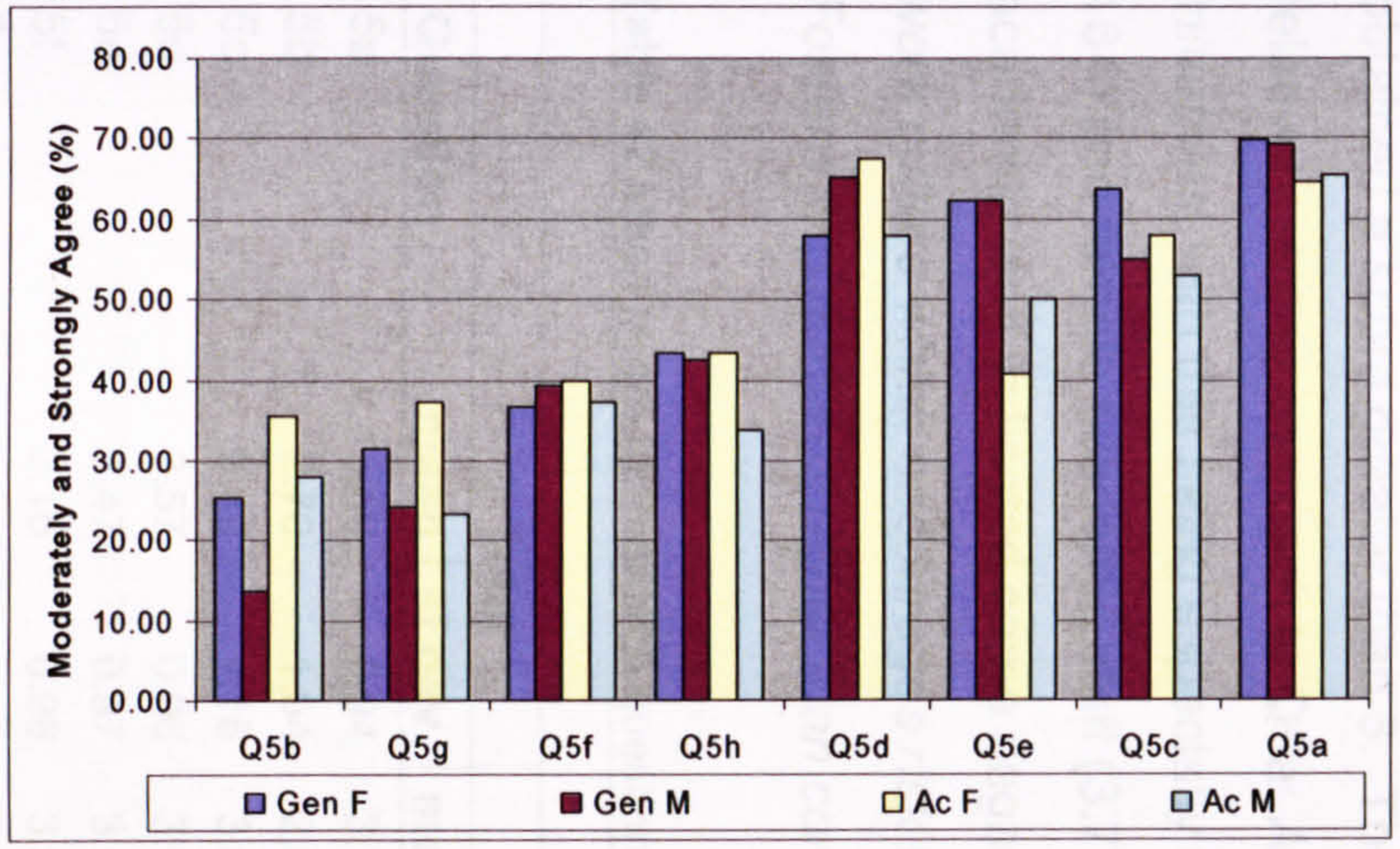
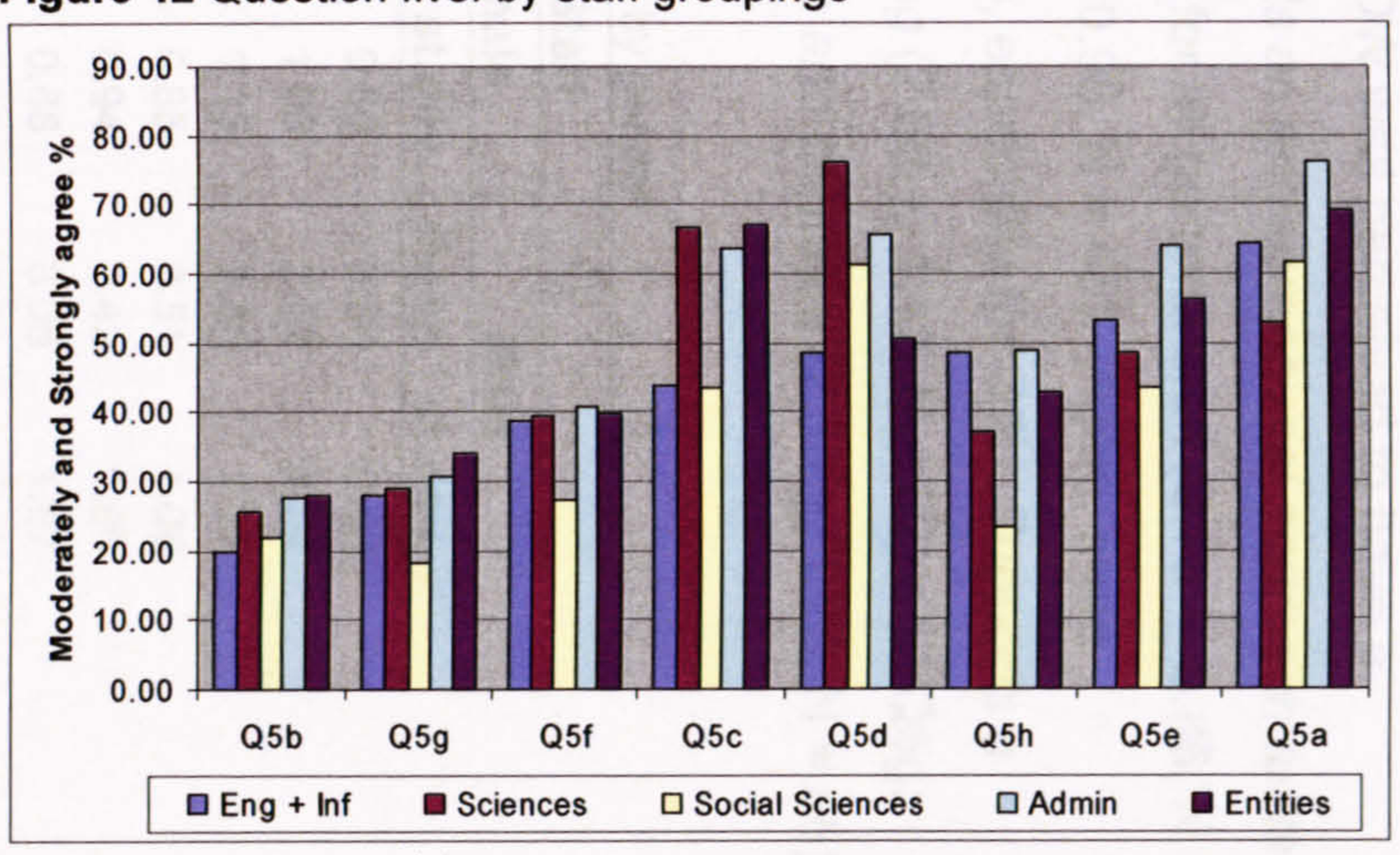


Figure 42 Question five: by staff groupings



Of the 8 questions referring to *an integrated entrepreneurial culture*, two obtained a score greater than 3. The UOW was perceived to have a relatively strong approach to Q5a: *Adopts an entrepreneurial approach to its initiatives*, with this being especially true for all general staff (3.76 ± 0.86, N = 164) and female academic staff (3.73 ± 0.96, N = 45). Again, male academic staff indicated some negativity, especially for Q5b: *Supports a work culture which encourages risk taking* (2.66 ± 1.12, N = 82) and Q5g: *Fosters and nurtures rather than controls and contains* (2.56 ± 1.23, N = 86).

Table 42 Mean (± sd) for research question five, by gender

	All Staff					
	Total		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.
5a	3.69	0.94	3.76	0.89	3.64	0.99
5b	2.70	1.04	2.84	1.03	2.57	1.04
5c	3.49	1.16	3.64	1.15	3.36	1.17
5d	3.57	0.96	3.64	0.85	3.51	1.06
5e	3.47	0.97	3.52	0.94	3.42	1.00
5f	3.15	0.98	3.25	0.88	3.05	1.07
5g	2.74	1.16	2.88	1.13	2.61	1.19
5h	3.14	1.05	3.31	0.97	2.97	1.10

Table 43 Mean (± sd) for research question five, by staff category

	General Staff						Academic Staff					
	All		Female		Male		All		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.
5a	3.76	0.86	3.77	0.85	3.75	0.87	3.60	1.04	3.73	0.96	3.56	1.07
5b	2.68	0.96	2.83	0.97	2.45	0.91	2.73	1.13	2.85	1.15	2.66	1.12
5c	3.58	1.06	3.67	1.08	3.46	1.04	3.38	1.27	3.58	1.28	3.28	1.27
5d	3.62	0.85	3.61	0.81	3.64	0.91	3.51	1.09	3.69	0.94	3.41	1.17
5e	3.63	0.85	3.65	0.85	3.61	0.86	3.27	1.06	3.27	1.06	3.27	1.08
5f	3.25	0.86	3.30	0.83	3.18	0.91	3.02	1.11	3.16	1.00	2.95	1.18
5g	2.83	1.09	2.93	1.06	2.67	1.14	2.65	1.24	2.78	1.27	2.56	1.23
5h	3.28	0.94	3.34	0.95	3.18	0.93	2.96	1.16	3.26	1.04	2.80	1.20

Semi-structured interviews

The final question around the 'pathways of transformation' asked if interviewees viewed the *UOW's institutional culture as entrepreneurial* and if so why? When measured against its peers, the UOW was always viewed as entrepreneurial:

> As a whole I think that we have a history, and its continuance of being entrepreneurial, in the sense that we're prepared as an institution to take risks that are calculated to position us well for the future. So rather than simply being reactive for the next thing that is on the forecast um, in general we take, we make decisions about what we ought to be doing with a position, that we perceive what the company perceives is going to happen to us in 5 years' time. (Interview 15)
>
> When I came here there was an entrepreneurial culture and that had been generated by McKinnon with support from...people...I think that remains...I do think we try things, step out more quickly, we're more decisive than other institutions, I think it is because of the streamlined decision-making processes within the university and our readiness to take risks involved...that was McKinnon's natural tendency, your natural tendency and you drove it in the early days. I think then it was proven to be successful...I think there's a culture now at this University that is a good thing. (Interview 12)
>
> ...I think that at least externally we're viewed that way also, from any valuations that the University's had from press reports and so on, there seems to be a prevailing view that this University is change oriented, quick to rise to challenges and to turn things around when necessary, the flexibility is there. In terms of the staff, they're encouraged to become entrepreneurial, in different ways the research staff are encouraged to find different partners that they can possibly work with in many ways but there are also those things that affect through business statements, that we want people to be innovative and creative, and those aspects are entrepreneurial and that phrase, work smarter, is something that people are familiar with around the University. (Interview 9)
>
> Overall and surrounding ...is the culture of the university, a very traditional university. Here I use an example of Canterbury University in New Zealand. The members of the staff of that University I don't think would fit very well with the University of Wollongong, which is both a very high standard both academically but very commercially aware of the broader environment. (Interview 6)
>
> I have the perception that its [UOW] entrepreneurial, there is a fairly high profile of things like ITC and um the innovation campus...a lot of areas where the university seems to be really pushing to create new markets and to get sources of funding and so forth...even the Law Faculty through the Centre for Transnational Crime Prevention; that centre has been extraordinarily entrepreneurial...I have seen the way or at least I have perceived the university hierarchy has been extremely supportive of that and has fostered that culture and certainly I get a very strong sense that that culture is being fostered by the university. I think it is just necessary that the university be entrepreneurial given the changes in government funding dropping off in the last ten years or so, it's the only way a university and especially a university of our size can survive. (Interview 26)

Likewise, UOWD was seen as having an entrepreneurial culture when speaking about UOWD in the context of UOW:

> UOWD is, in my view, one of the most entrepreneurial universities in the Middle East region...once a decision is made to pursue a particular goal...There is very little

> bureaucracy internally that would prevent this from happening. So, we are definitely entrepreneurial and really, in this part of the world, you have no other option in order to survive (unless you are government funded). (Interview 23)

Despite the view of the leadership that the UOW encourages risk taking and is nurturing of ideas, the survey population did not reflect this opinion. Some of the leadership staff supported this, holding to the view that the entrepreneurial nature of the University was somewhat patchy:

> I mean large chunks of the University could be regarded as entrepreneurial...but in other parts they are extremely conservative academically...it is not something that makes you an outcast that is what you are doing, but there are a lot of areas where if you try something that tends to be entrepreneurial, there is enough room to manoeuvre. (Interview 13)

The academic staff highlighted improvements that could be made:

> Well, when I see entrepreneurial, I always think of, the first thing I think of is intellectual property, and I don't think the University really has a strong stand on intellectual property. (Interview 20)

> I think we are always trying to get it right and maybe you have always got to be trying to get it right and maybe there is no fixed formula ...you know the spirit is there and the intent is there and everybody at all levels I think encourages entrepreneurship but I think we [have] still got to get the mechanics sort of fine tuned to do it properly. (Interview 25)

Key findings: Research Question Five – An integrated entrepreneurial culture

- There was a strong positive view of the UOW adopting entrepreneurial approaches to its initiatives: *adopt an entrepreneurial approach to its initiatives* (67%), *value or reward innovation* (58%), *accept change as an institutional characteristic* (60%) and *actively cultivate a distinctive institutional culture* (55%);
- General Staff was more positive for the UOW having *adopted an entrepreneurial approach to its initiatives* (G=70%, A=64%), *valuing or rewarding innovation* (G=60%, A=54%), *actively cultivating a distinctive institutional culture* (G=62%, A=47%) and *valuing engagement in creating institutional culture* (G=43%, A=37%). The exception was *supporting a work culture which encourages risk taking,* where Academic Staff was more positive (G=46%, A=62%);

- Interestingly, the Entities and Admin were again more positive than the other 'areas' for most questions: this positive response also being evident for the Science Discipline Area for the questions *UOW values or rewards innovation*, and *accepts change as an institutional characteristic*; and
- When measured against its peers, the UOW was always viewed by both the Leadership and the Academic Staff as entrepreneurial.

Research Question Six: The Entrepreneurial Scale

Online survey

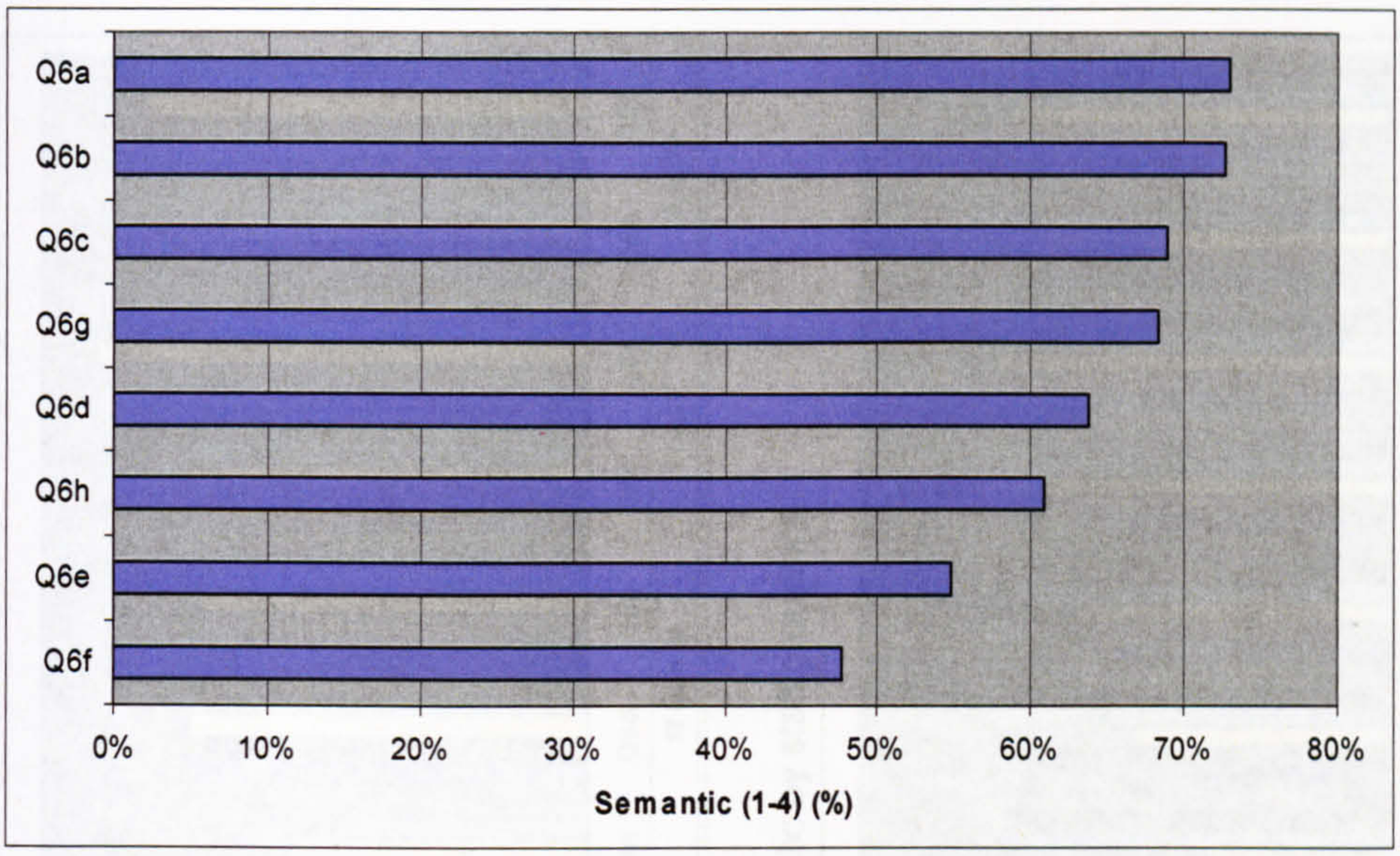
In addition to the five key research questions based upon Clark's (1998) pathways of transformation, a further question was developed to assess, inter alia, *the potential to develop an entrepreneurial scale which might form the basis of future studies.*

Themes in the context of an entrepreneurial scale were investigated by Research Question six. In all, 8 aspects of the UOW were investigated; *entrepreneurial*, *innovative*, *adaptive*, *flexible*, *supportive*, *values driven*, strongly *lead* and *community engaged*.

Table 44 Research question six: Semantic Differential Scale

6a : Entrepreneurial to Conservative
6b : Innovative to Conventional
6c : Adaptive to Inflexible
6d : Flexible to Rigid
6e: Supportive to Unsupportive
6f: Values driven to Expedient
6g: Strongly led to Laissez faire
6h: Community engaged to Self-focused

Figure 43 Question six: % staff moderately and strongly agree



More than 50% of staff members viewed the UOW to be *entrepreneurial*, *innovative*, *adaptive*, *flexible*, *supportive*, *strongly led* and *community engaged*.

More than 40% of staff agree that the UOW was values driven.

Both staff groupings were positive (>50%) for the presence at UOW of *entrepreneurial*, *innovative*, *adaptive*, *flexible* and *values driven*. There were clear differences between academic and general staff with more than 50% of general staff agreeing that the UOW is *supportive*, *strongly led* and *community engaged*.

The negative views of the male academic staff were the most likely explanation for poor results, with marked negative responses for *entrepreneurial*, *supportive*, *values driven* and *community engaged* (<50%). The Discipline Area Eng+Inf, was consistently more negative than other areas in responses along the entrepreneurial scale.

Figure 44 Question six: General and Academic staff

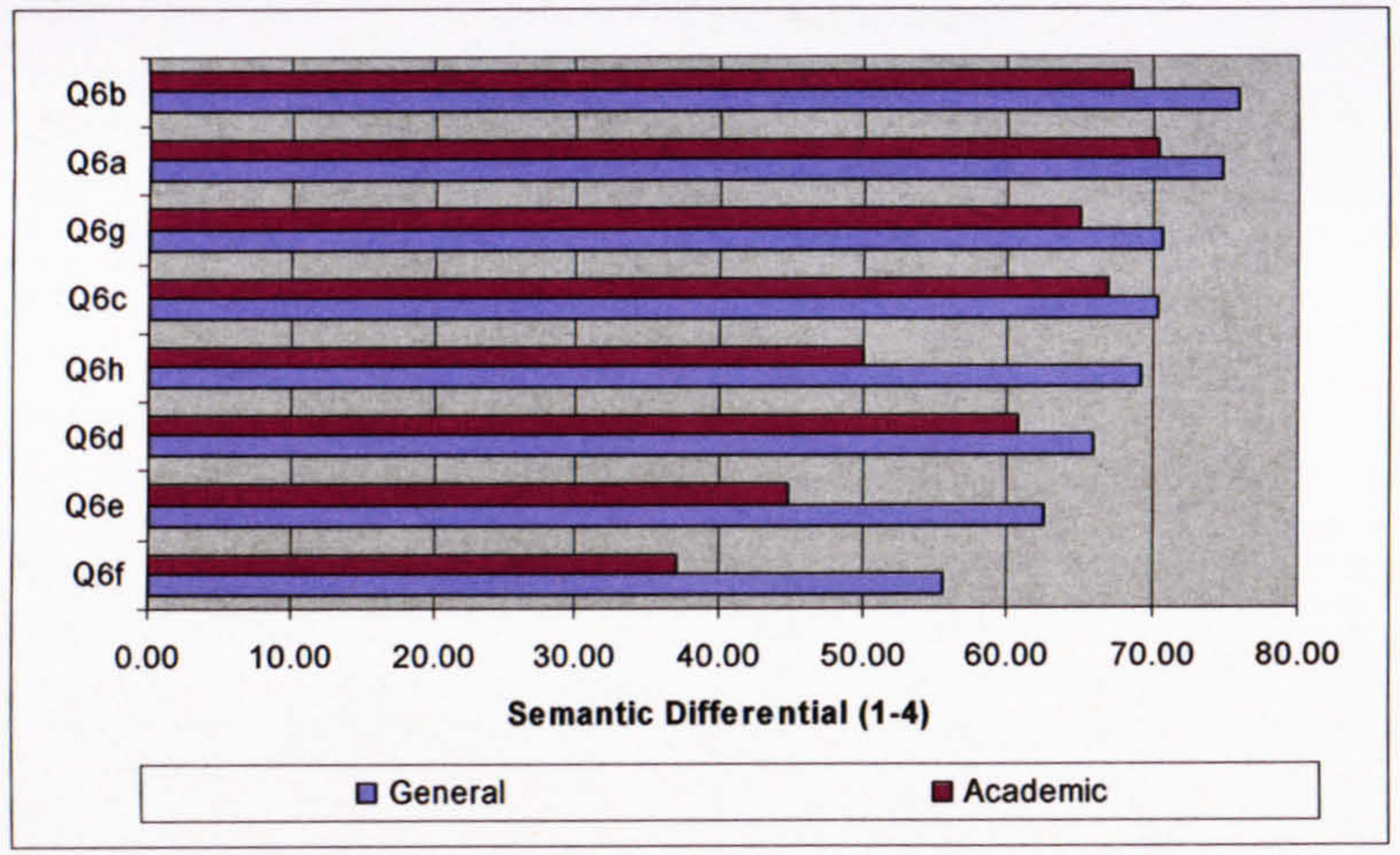


Figure 45 Question six: Female and Male staff

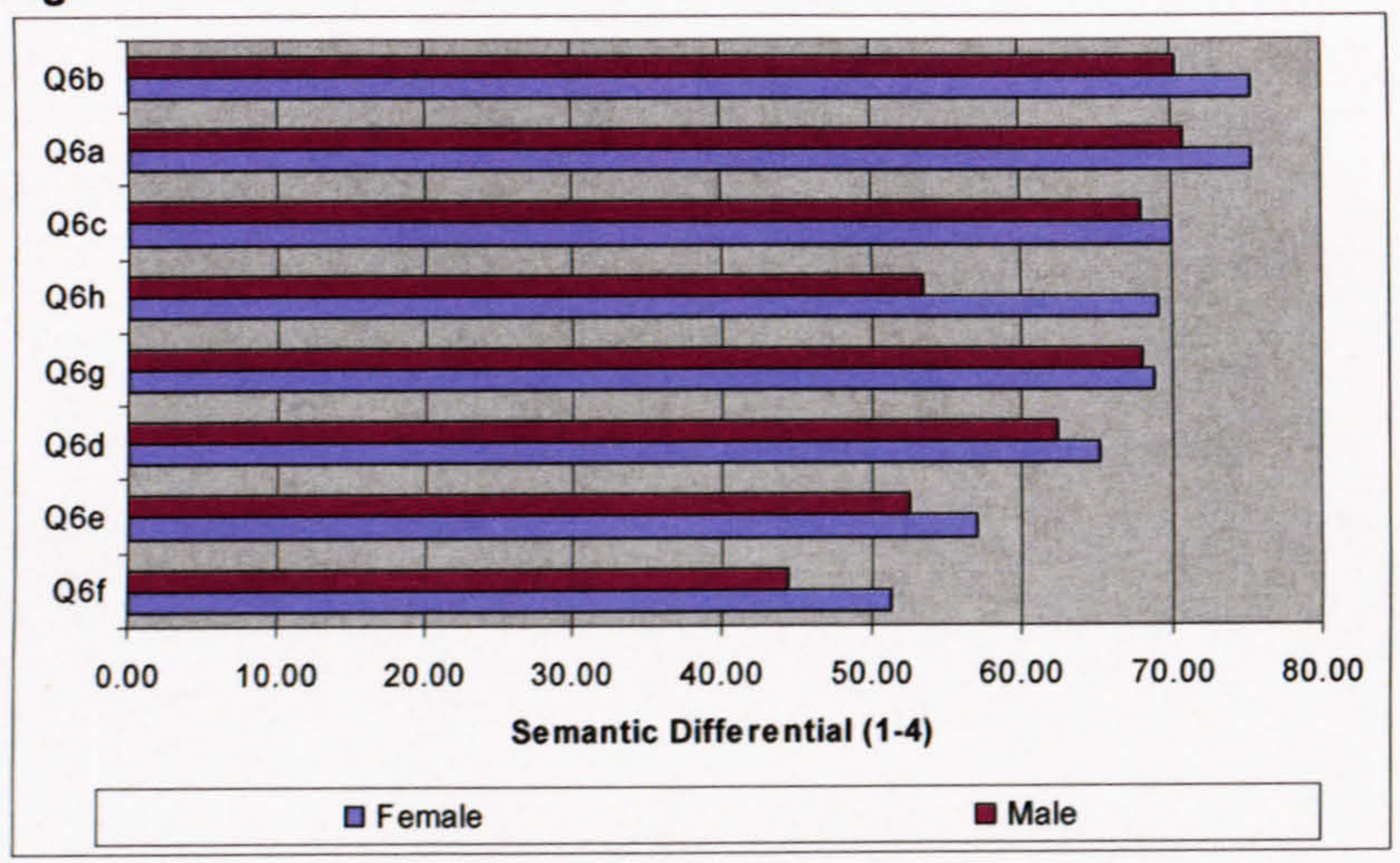


Figure 46 Question six: General and Academic staff by gender

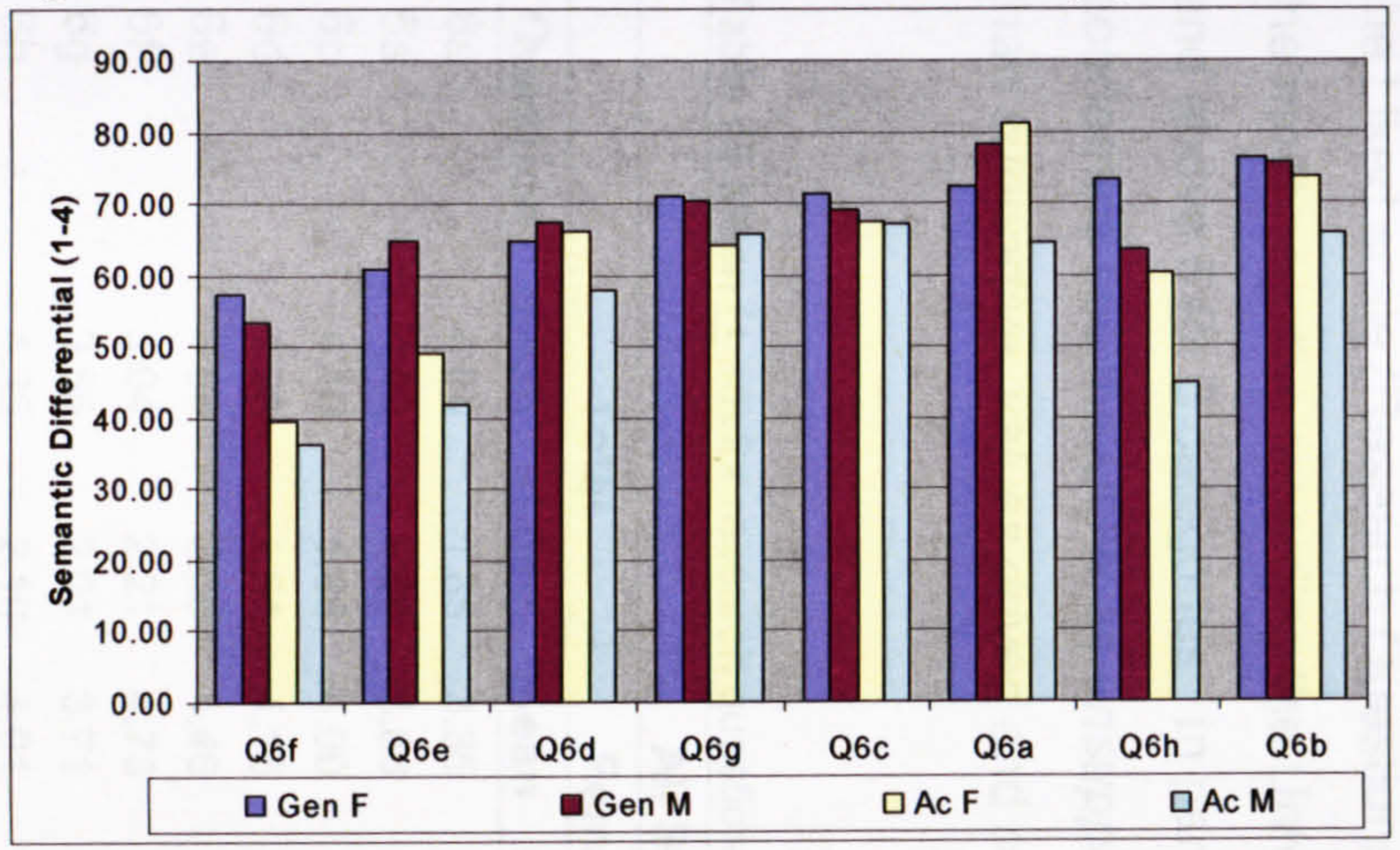
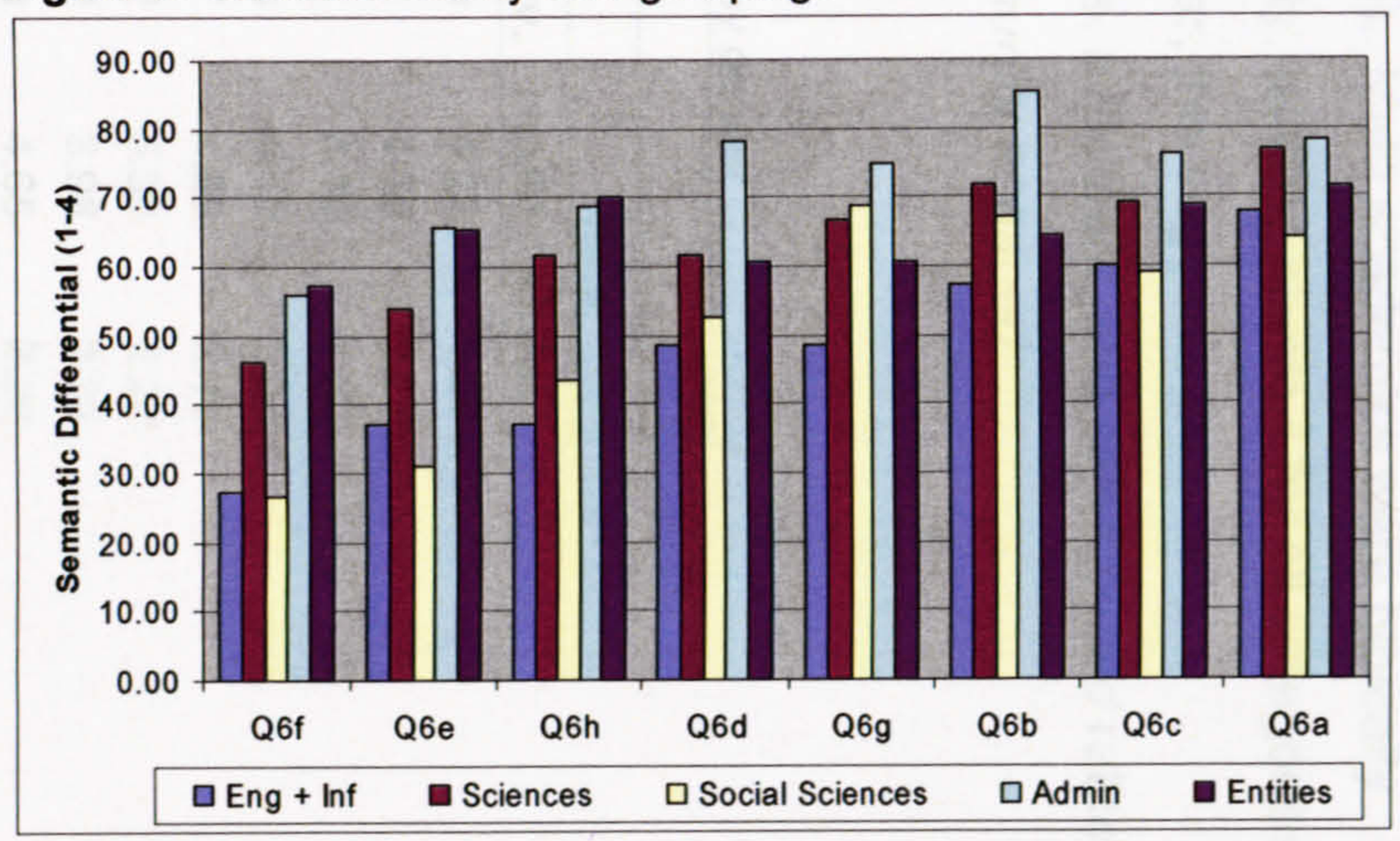


Figure 47 Question six: by staff groupings



The variance (standard deviation) in the responses along the semantic differential was typically higher than for those generated from questions on the Likert scale (Research Questions 1-5). Male academics were typically the most negative regarding the University, scoring above 4 for all categories and above 5 for 3 categories. In particular, this suggests that male academics see the UOW as *unsupportive*, *expedient*, and *self-focused* rather than *supportive*, *values driven* and *community engaged*.

Table 45 Mean (± sd) for research question six, by gender

	All Staff					
	Total		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.
6a	4.04	1.85	3.85	1.69	4.22	1.97
6a	4.03	1.89	3.86	1.71	4.19	2.03
6c	4.10	1.86	4.00	1.71	4.19	1.99
6d	4.29	1.91	4.15	1.78	4.42	2.02
6e	4.66	2.09	4.46	1.97	4.85	2.19
6f	5.04	2.21	4.73	2.12	5.30	2.22
6g	3.85	2.01	3.71	1.72	3.98	2.23
6h	4.35	2.10	4.01	1.93	4.65	2.20

Table 46 Mean (+ sd) for research question six, by staff category

	General Staff						Academic Staff					
	All		Female		Male		All		Female		Male	
Question	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.
6a	3.92	1.72	3.90	1.74	3.96	1.69	4.20	2.01	3.75	1.60	4.44	2.17
6a	3.83	1.63	3.75	1.59	3.95	1.69	4.28	2.16	4.08	1.94	4.39	2.27
6c	3.98	1.59	3.97	1.63	3.99	1.53	4.25	2.16	4.06	1.87	4.35	2.31
6d	4.20	1.69	4.12	1.64	4.30	1.77	4.41	2.16	4.19	2.06	4.52	2.21
6e	4.28	1.82	4.27	1.77	4.30	1.90	5.15	2.31	4.83	2.29	5.32	2.32
6f	4.53	2.01	4.37	1.99	4.75	2.05	5.70	2.28	5.45	2.22	5.76	2.28
6g	3.72	1.81	3.63	1.70	3.84	1.95	4.02	2.23	3.87	1.78	4.09	2.45
6h	3.96	1.93	3.80	1.97	4.19	1.86	4.84	2.20	4.42	1.78	5.03	2.39

Key findings: Research Question Six – The Entrepreneurial Scale

- More than 50% of all staff members viewed the UOW to be *entrepreneurial*, *innovative*, *adaptive*, *flexible*, *supportive*, *strongly led* and *community engaged*;
- However, the Discipline Area Eng+Inf, was consistently more negative than other areas in responses along the entrepreneurial scale; and
- Despite the strength of the positive consensus, there were clear differences between Academic Staff and General Staff, with the negative views of the Male Academic staff group the most likely explanation, given its marked negative responses for *entrepreneurial*, *supportive*, *values driven* and *community engaged* (<50%).

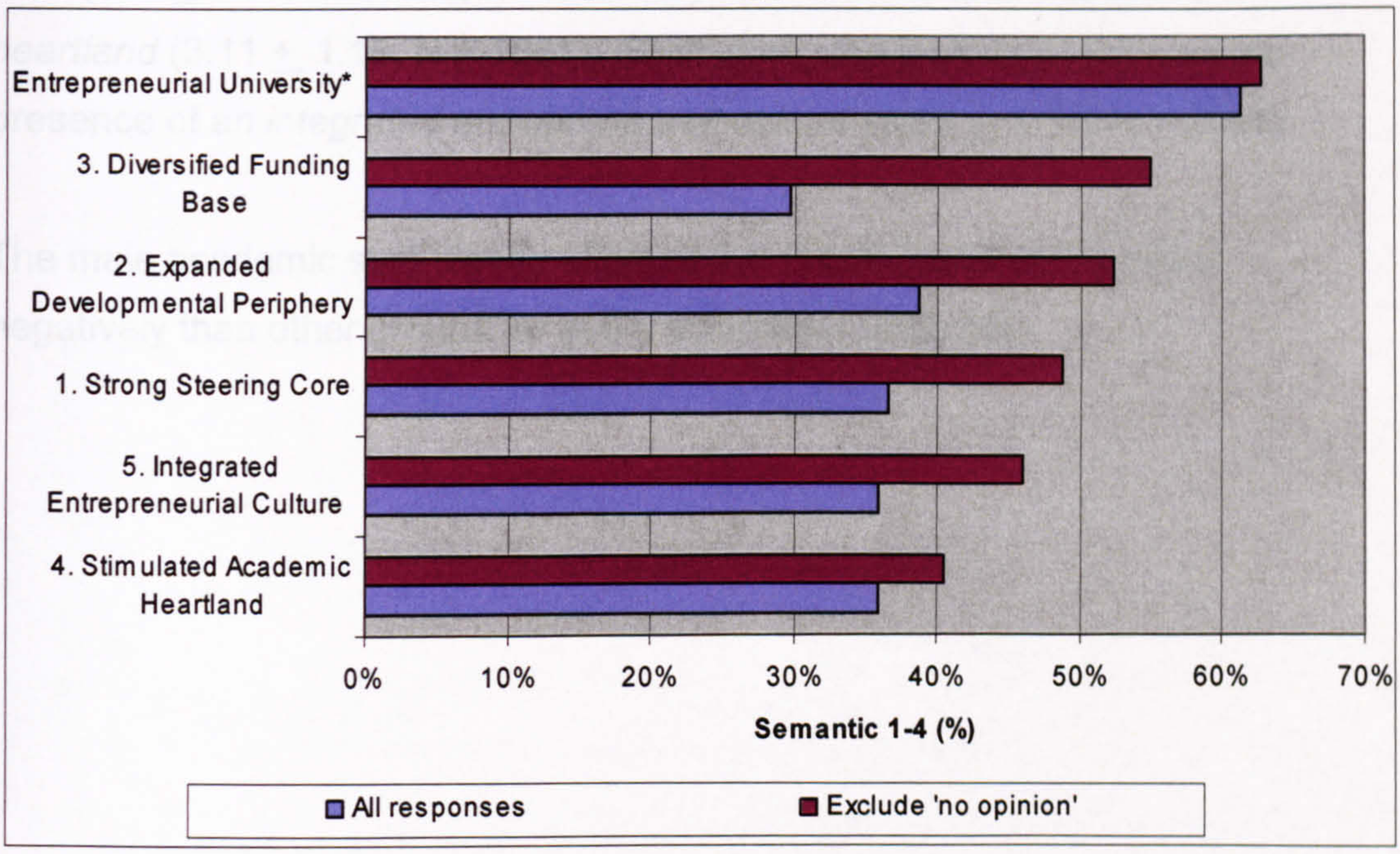
Entrepreneurial Subscales

Subscales were created to investigate the presence of Clark's pathways of transformation at the UOW. All non responses were removed (either unable to answer or did not respond to question). Cronbach's Apha was calculated as evidence of intra-scale reliability. A Cronbach's Alpha of .7 or above is considered a positive indicator of intra item reliability. (Pallant 2002, p.92) All values were above 0.8 which indicated that they were appropriate for calculation of a subscale.

Table 47 Cronbach's Alpha scores for subscale calculations

Subscale	Cronbach's Alpha
A strengthened steering core	0.90
An expanded development periphery	0.83
A diversified funding base	0.90
A stimulated academic heartland	0.87
An integrated entrepreneurial culture	0.87
Entrepreneurial University (semantic differential)	0.91

Figure 48 Subscales: % staff moderately and strongly agree



** Calculated from semantic differential questions, response 1-4*

More than 50% of staff members responded positively for the *presence of an entrepreneurial university* (63%), *a diversified funding base* (55%) and an *expanded development periphery* (52%), according to the semantic differential option 1-4.

More than 40% of staff agreed that the UOW had *a strong steering core* (49%), *an integrated entrepreneurial culture* (46%) and *a stimulated academic heartland* (40%).

Table 48 Mean (± sd) for research subscales

	All staff	
	mean	**st.dev.**
1. Steering Core	3.37	1.06
2. Developmental	3.55	0.95
3. Funding	3.50	1.03
4. Academic	3.11	1.18
5. Culture	3.25	1.10

Staff were positive for the subscales a*n expanded developmental periphery* (3.55 ± 0.95 N = 1428) and a *diversified funding base* (3.50 ± 1.03, N = 1739). Staff responses were also positive, although not as strongly for pathway one, a *strengthened steering core,* which indicated a slightly positive

view (3.37± 1.06, N=3025), and pathway four, *a stimulated academic heartland* (3.11 ± 1.18, N = 1861). Staff were also weakly positive on the presence of a*n integrated entrepreneurial culture* (3.25 ± 1.10, N = 2584).

The male academic staff clearly affected the results, responding more negatively than other groups for every subscale (Table 49).

Table 49 Mean (± sd) for subscales, by staff category and gender

	General Staff						Academic Staff					
	All		Female		Male		All		Female		Male	
	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.
Steering Core	3.49	0.61	3.54	0.57	3.42	0.67	3.28	0.84	3.39	0.74	3.22	0.89
Developmental	3.64	0.61	3.66	0.62	3.60	0.61	3.35	0.82	3.58	0.64	3.26	0.88
Funding	3.54	0.75	3.51	0.75	3.58	0.75	3.41	0.90	3.69	0.60	3.30	0.98
Academic	3.13	0.85	3.13	0.83	3.13	0.89	3.06	0.97	3.20	0.89	3.00	1.02
Culture	3.35	0.62	3.40	0.61	3.28	0.63	3.15	0.89	3.32	0.83	3.06	0.92
Entrepreneurial	4.05	1.36	3.99	1.36	4.13	1.38	4.62	1.74	4.38	1.34	4.74	1.92

Online Survey – Academic Staff

At the UOW, 43% of the staff are academic staff; 38% are female and 62% are male. The academic staff represented 44% of the survey response.

The academic staff had similar response rates to the entire staff grouping; the overall response rate differed by no more than 3% on any question. Unlike the General staff group, Academic staff did not leave any question unanswered, rather they selected "0" on the question to indicate that they were unable to answer the question.

Question 3, developed around Clark's Pathway 3 – *The Diversified Funding Base* – had a comparatively low response rate for all staff groups (all staff=78%, academic staff=80%). Further analysis demonstrated that female academics were possibly affecting the results. On every question developed around pathway 3 the non response rate was higher for female academic staff when compared to male academic staff. Although there were marked differences for all questions in pathway three, this difference was particularly evident for 3d: *Places sufficient importance on discretionary sources* and 3f: *Gives sufficient support to developing alternatives.*

Table 50 Academic staff: responses and staff composition

	Academic		
%	All	F	M
UOW Staff composition	43	16	27
Overall response composition by staff category	44	16	28

Table 51 Question 3: Academic staff non response rate by gender

	Academic Female	Academic Male
3A	23%	13%
3B	23%	17%
3C	28%	19%
3D	43%	22%
3E	15%	10%
3F	25%	10%
3G	28%	26%

Table 52 Response rate for academic staff and all staff, by question

	Academic Staff			All Staff
Question	"0"	"0" (%)	Total response rate per question (%)	Total response rate per question (%)
Q1a	5	3%	97%	93%
Q1b	17	12%	88%	90%
Q1c	7	5%	95%	95%
Q1d	6	4%	96%	95%
Q1e	3	2%	98%	98%
Q1f	5	3%	97%	95%
Q1g	8	6%	94%	96%
Q1h	18	13%	87%	90%
Q1i	5	3%	97%	97%
Q1j	8	6%	94%	95%
Q2a	9	6%	94%	95%
Q2b	19	13%	87%	86%
Q2c	10	7%	93%	94%
Q2d	14	10%	90%	92%
Q2e	24	17%	83%	80%
Q3a	24	17%	83%	79%
Q3b	27	19%	81%	79%
Q3c	32	22%	78%	77%
Q3d	43	30%	70%	67%
Q3e	17	12%	88%	89%
Q3f	22	15%	85%	82%
Q3g	38	27%	73%	72%
Q4a	1	1%	99%	99%
Q4b	2	1%	99%	98%
Q4c	5	3%	97%	98%
Q4d	2	1%	99%	97%
Q4e	9	6%	94%	93%
Q4f	6	4%	96%	96%
Q5a	15	10%	90%	92%
Q5b	12	8%	92%	93%
Q5c	6	4%	96%	95%
Q5d	9	6%	94%	95%
Q5e	8	6%	94%	93%
Q5f	12	8%	92%	92%
Q5g	4	3%	97%	98%
Q5h	11	8%	92%	93%
Q6a	NA	NA	100%	100%
Q6b	NA	NA	100%	100%
Q6c	NA	NA	100%	100%
Q6d	NA	NA	100%	100%
Q6e	NA	NA	100%	100%
Q6f	NA	NA	100%	99%
Q6g	NA	NA	100%	100%
Q6h	NA	NA	100%	100%

Figure 49 Question one: academic staff

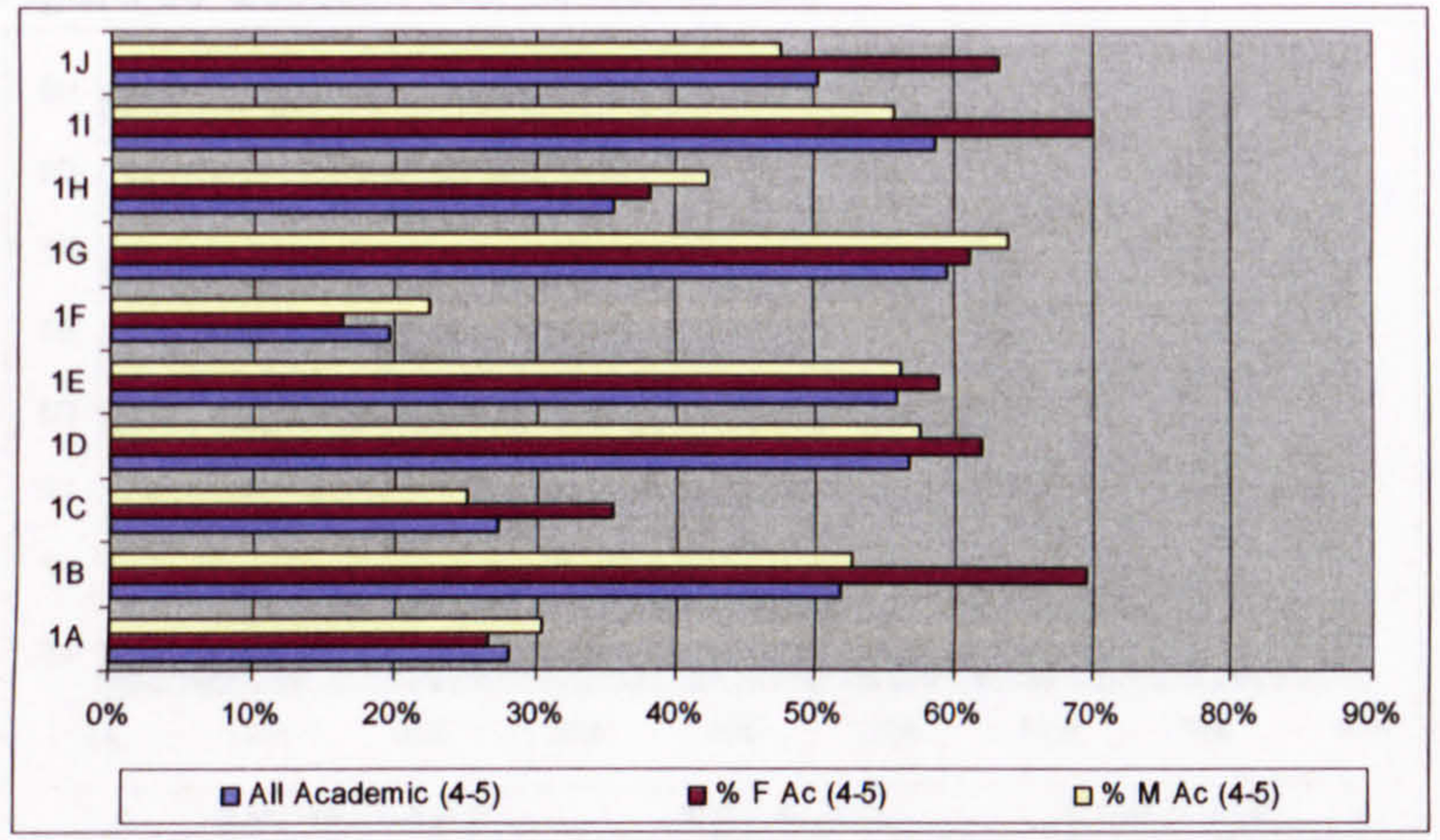


Figure 50 Question two: academic staff

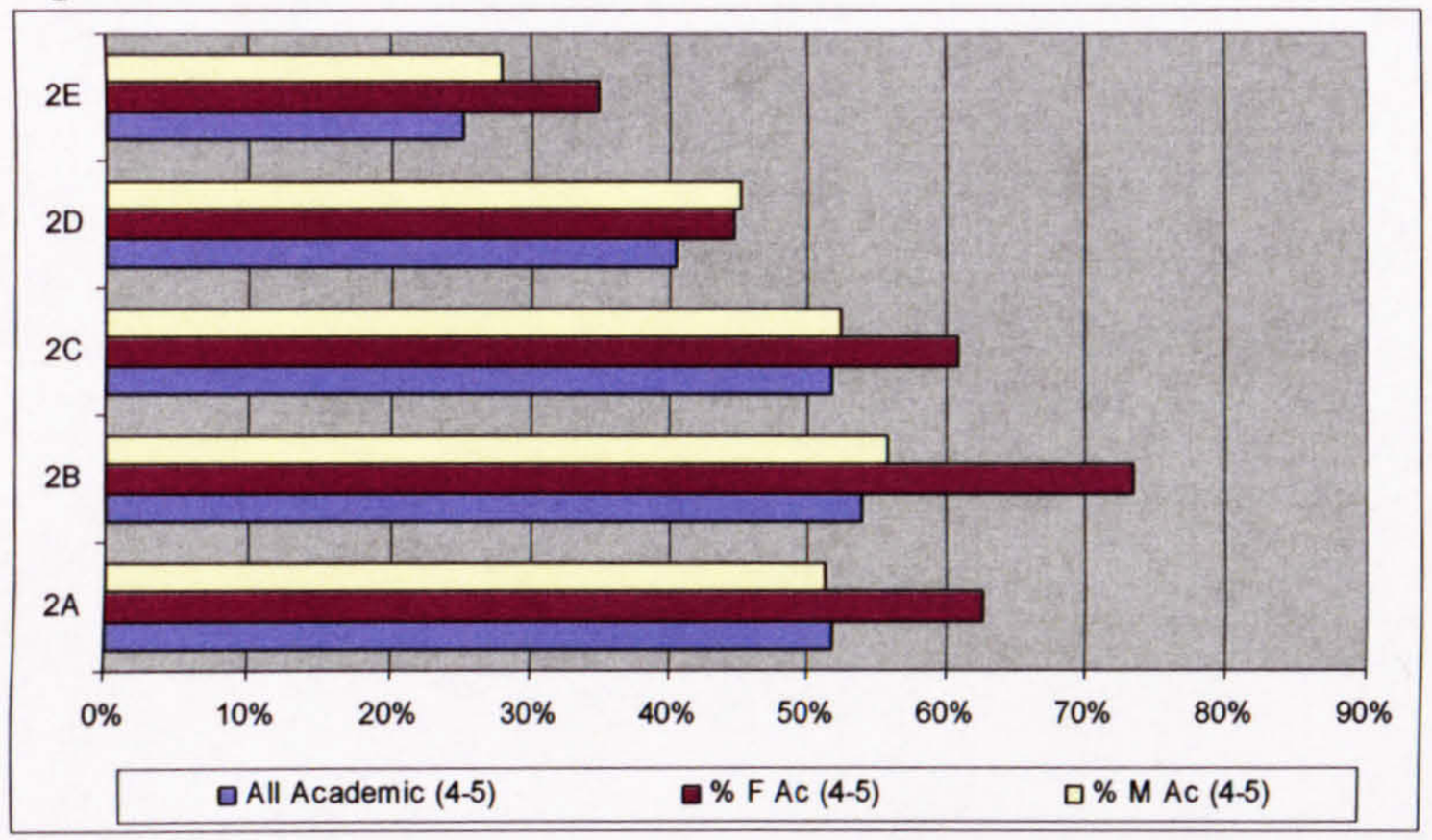


Figure 51 Question three: academic staff

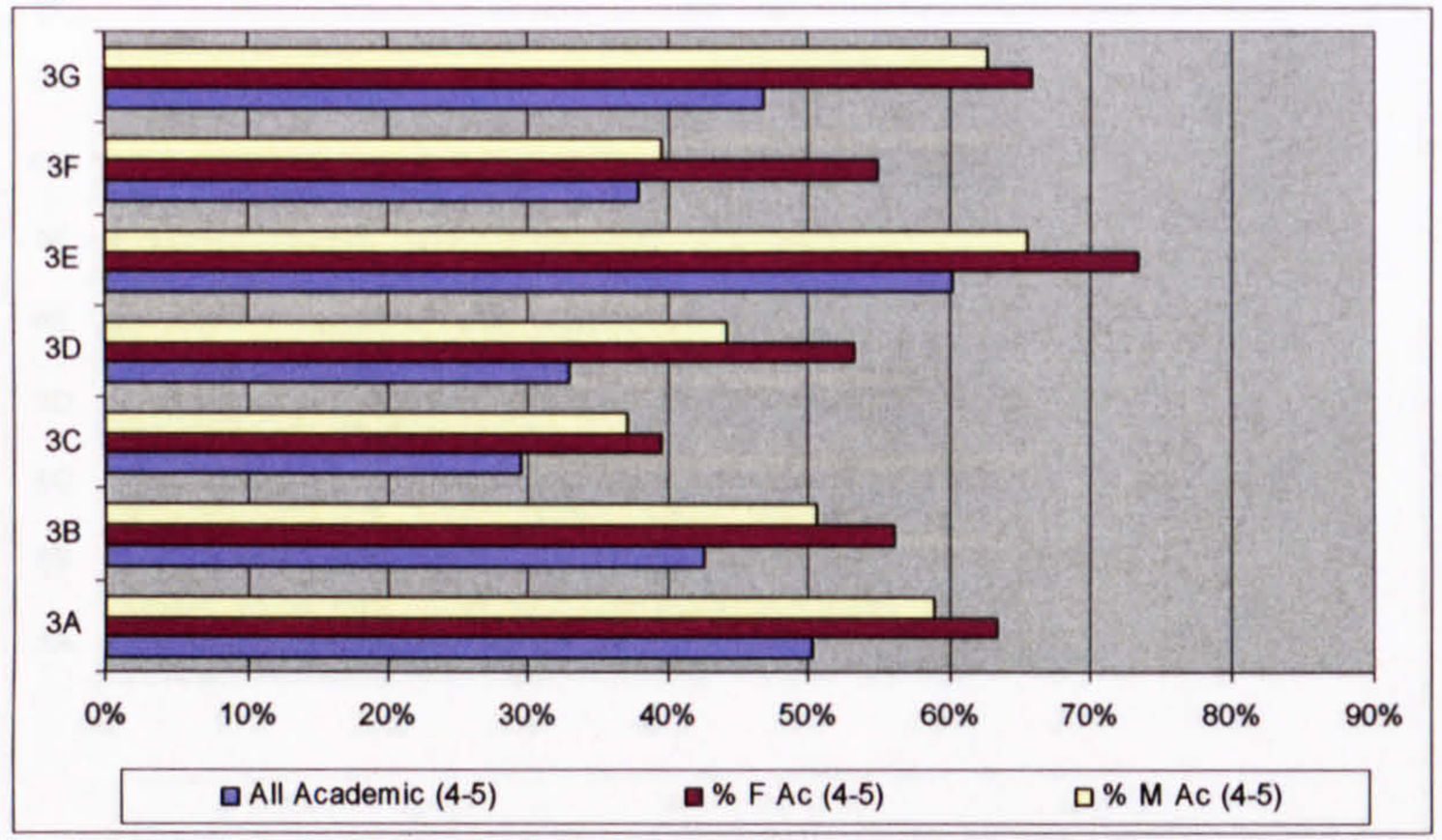


Figure 52 Question four: academic staff

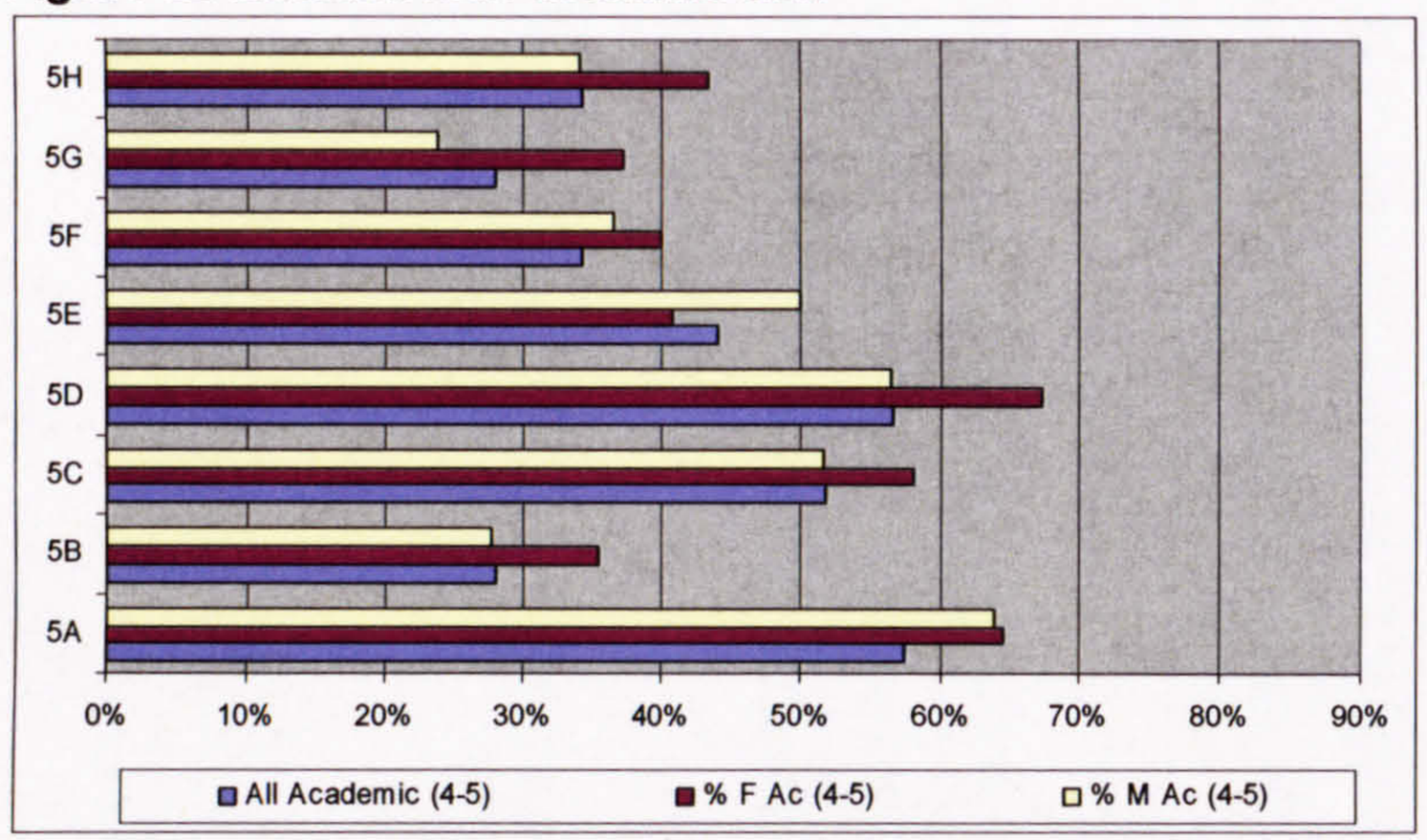


Figure 53 Question five: academic staff

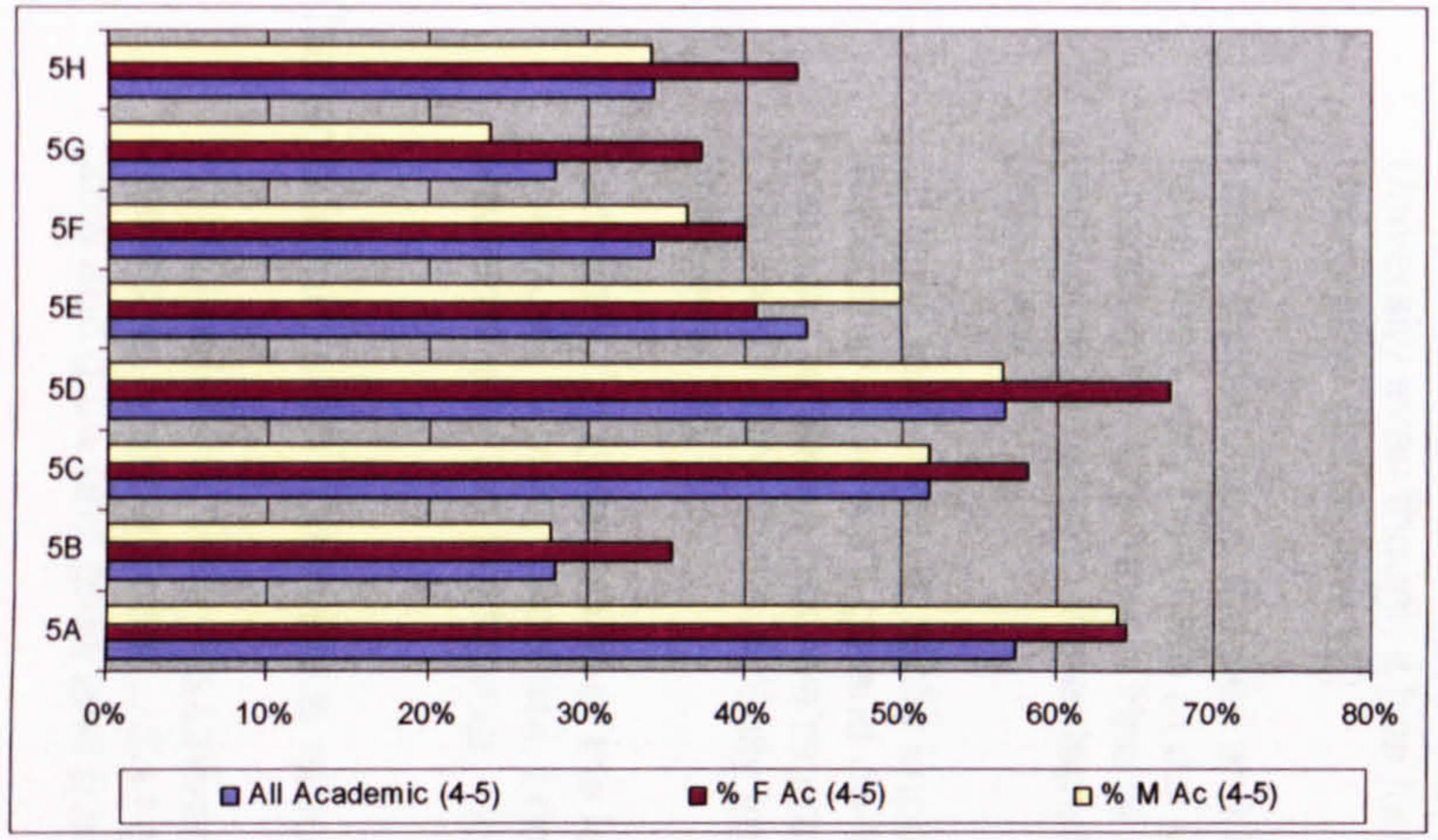
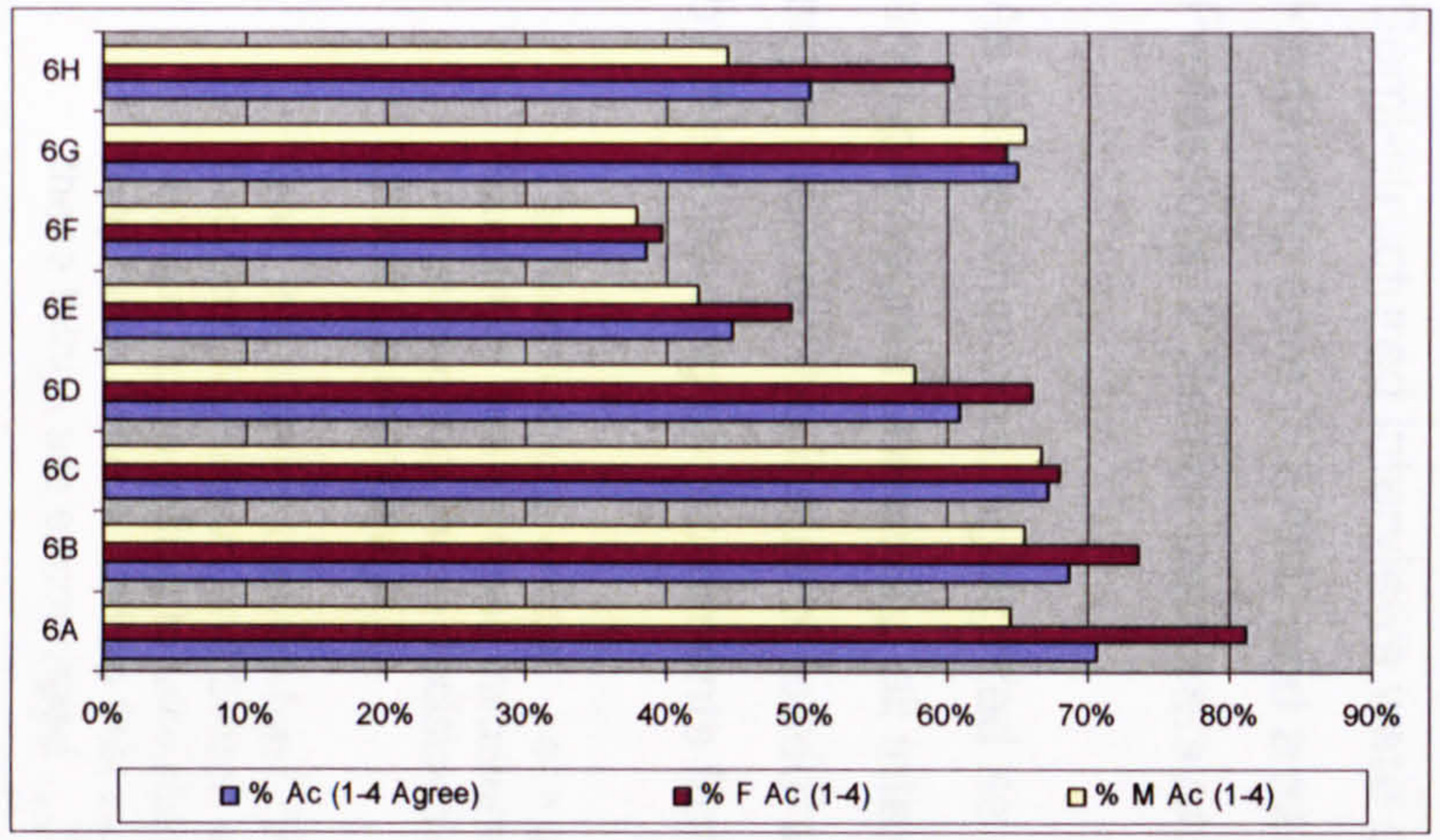


Figure 54 Question six: academic staff



Semi-structured interviews – SEAM and Academic Staff

Semi-structured interviews were conducted with a sample of 19 of the leadership core (SEAM) and a sample of 8 academic staff members, 3 Professors, 2 Senior Lecturers and 3 Lecturers.

As leadership was highlighted as a potential area of importance for the entrepreneurial university, all interview respondents were asked to comment separately on the issue of leadership at the UOW. The finding is supported by the following six comments from the leadership group:

> The leadership is critical. I can see that the role of the Executive and the Senior Executive and its close involvement in decision making and their close involvement in ensuring that those decisions are followed through and are delivered...so it is critical... (Interview 16)
>
> One, the stability that we have had in leadership at the time is...unusual and you've had both McKinnon and Sutton very much committed to diversification of funding sources, to be willing to take risks on the entrepreneurial side and often through ITC, they have done it, and so that certainly from the top, there has been a message that these things are encouraged... (Interview 13)
>
> The Senior Executive have had leadership written all over them, they've pushed and focused in a way that I don't see, in a unity sense, that I don't see at all other universities. I do see it at some, but the strength of the Senior Executive of this University even though it has turned over, has been critical to the success of this University. (Interview 12)
>
> I think leadership is the key and I think the system is extremely important. I think we have been very fortunate at the University to effectively only have had 3 Vice-Chancellors. We have a kind of direction, it doesn't mean that we haven't always been able to react to the external demands, but it's been consistent in the direction. (Interview 11)
>
> ...I think leadership is really important in the scheme of things...[not]... because the leadership says we'll go and do this but more because leadership says we're prepared to take a risk, we're prepared to try this, we're prepared to let you try this. Culturally I think that's a really important part of the University of Wollongong. (Interview 14)
>
> I am very I'm quite proud of the leadership we have here. I think the character of the individuals is really excellent. I don't think there is anything that causes any problems with the leadership. (Interview 10)

The academic staff interviews also supported the importance of leadership:

> I think leadership from the University from Gerard down, my perception is that the leadership is exceptional....So I grew up in Wollongong ...so I've seen the place grow and grow and grow and that's obviously been through a few Vice-Chancellors,

but more specifically since I've been here, the University's gone from strength to strength and that's obviously got to come from the top down. (Interview 20)

Leadership is absolutely critical to sustaining an entrepreneurial culture...So a strong leader is absolutely critical, even in organizations which are built on responsiveness, flexibility, and a "can do" attitude! (Interview 23)

Leadership was viewed as very critical, with one staff member stating that:

It is an incredible place to work...but one bad appointment as leader can change all this. (Interview 5).

And another reiterated:

It's critical, get the wrong person and you'll kill the morale of the university. (Interview 21)

The support from the leadership of the UOW to pursue opportunities was also seen as crucial to an entrepreneurial university at UOW:

...the Leadership is very supportive of bright ideas and the bright, the more the ideas can be threaded into what is identified as the fabric and the mission of the University – no matter how diffuse that is in people's eyes. As long as it can be loosely threaded, or the more it can be threaded in, the more it will be supported. If it can't be threaded in whatsoever and it's a bright idea people will still be interested to see if they can work with it. (Interview 1)

I think the University leadership is extraordinary in a quite positive sense...I've found them extraordinarily supportive, not only on campus but obviously off-campus as well. (Interview 19)

...some people have been wanting to run a lot faster than others and that's been quite a balancing act to decide how fast and how far but it's clear that the leadership we have is very strong and that that although they may not always agree, they always present a very clear and unified path ahead for University and I think it has been more a case of the leadership dragging the rest of the University along to that way of thinking. (Interview 9)

I think leadership is very important in any organisation, you start from the top and I think the top actually dictates the culture...those are the values that will make it down the line that will actually encourage people to lets say take new avenues of research or collaborate with somebody or find a new investing partner. (Interview 24)

I think that what leadership does is sends I guess a message as to what's important and what will be supported. And so in order for things like entrepreneurship to be sustained it has to be supported by that leadership...so yes leaders do come and go but you can only sustain something like entrepreneurship if the leaders that come and go have the same set of priorities... and you can only have a long term project if the leaders either stay for a long period of time or are replaced with the same priorities ...So, what they do is they send messages, they create a culture...they indicate the sort of things that are considered important and that flows through the lower levels I think. (Interview 26)

UOW has plenty of entrepreneurial traits and we can see that in some of the recent initiatives such as the Innovation Campus and the Graduate School of Medicine. I think that is a testament to the Vice Chancellor and the Executive team, and the staff who make it possible. (Interview 23)

Summary

A summary of the research questions, variables, analyses and findings are at Table 53. These arise out of the implementation of a survey instrument, the implementation of a program of semi-structured interviews and the case study.

Table 53 A summary of the research questions, variables, analyses and findings

	Questions	Variables	Analyses	Findings
1	Does the University of Wollongong have a strengthened steering core?	Survey: Questions 1a-j	% of staff agree; descriptive means and standard deviations	Strong ability to steer with role of VC seen as critical
2	Does the University of Wollongong have an expanded development periphery?	Survey: Questions 2a-e	% of staff agree; descriptive means and standard deviations	Patchy engagement; leadership and staff view that this area is under resourced but when engagement occurs it is well done
3	Does the University of Wollongong have a diversified funding base?	Survey: Questions 3a-g	% of staff agree; descriptive means and standard deviations	Strong ability to respond to change but mixed staff perceptions. Academic staff were not well informed on this pathway
4	Does the University of Wollongong have a stimulated academic heartland?	Survey: Questions 4a-f	% of staff agree; descriptive means and standard deviations	Poor perception of this pathway, with a marked difference between positive views of the leadership and, at times, negative views of other staff with a mixed view from the academic staff
5	Does the University of Wollongong have an integrated entrepreneurial culture?	Survey: Questions 5a-h	% of staff agree; descriptive means and standard deviations	Strong positive view of the UOW adopting entrepreneurial approaches to its initiatives. Mixed views of UOW as a risk taker with the leadership far more positive than all staff
6	Does the University of Wollongong exhibit entrepreneurial characteristics?	Survey: Questions 6a-f and Case study documents	% of staff agree; descriptive means, standard deviations and supporting documents	Case study documentation strong on entrepreneurial abilities, staff, academic staff and leadership perception also positive

The discussion and recommendations resulting from the case study, implementation of the semi-structured interviews and the survey of all staff are discussed and summarized in Chapter 6.

Chapter 6: Discussion and Recommendations

Overview

This chapter summarizes the purpose of the study and the major findings. On the basis of these findings, some implications for universities are identified around themes relating to an entrepreneurial university.

Purpose of the Study

The study was informed by a review of the relevant literature, which provided the theoretical framework. From the exploration of the literature defining entrepreneurship, an entrepreneurial culture, and the more general issues of what makes for an innovative, flexible and responsive university, the study was constructed against the background of Clark's (1998) 'pathways of transformation'. The key research question was defined as follows: *Using the five headings developed by Clark (1998), which are termed the pathways of transformation, is the UOW an entrepreneurial university?*

The UOW was examined in three ways:

- through a survey of all staff, involving a survey instrument constructed for the purpose, using Likert style questions and semantic differential questions, to produce data which was analyzed;
- by a program of semi-structured interviews to garner a perception of the UOW; the semi-structured interviewees included:
    - a sample of academic staff;
    - a sample of the leadership (which included 14 academic staff); and
- through the use of a case study, which included an examination of key data, and available documentation on policies and practices within the University.

Discussion and Conclusions

In response to the key question, *Using the five headings developed by Clark (1998), which are termed the pathways of transformation, is the UOW an entrepreneurial university?,* and based on an analyses of the survey data, the semi-structured interviews and the case study, it was concluded that the UOW is an entrepreneurial university.

The case study in particular, supported by the survey of all staff and the semi-structured interview program of a sample of the leadership and the academic staff, revealed that an entrepreneurial culture had been created and developed at the UOW. The creation of the ITC, the UOWD, the diversification of its funding base to incorporate a strong 'third-stream' of income, especially the international student full fee program, the creation of the innovation campus, the establishment of a graduate medical school, and the enterprising approach to increasing its research funding thereby establishing its credentials as a research intensive university, were all key elements arising out of the case study findings. Confirmation by external bodies and the literature, such as that given by AUQA, strengthened the conclusion that the UOW is entrepreneurial as viewed through the case study approach against the backdrop of Clark's (1998) pathways of transformation.

There were some gaps in the literature, most notably definitions of what actually constituted an entrepreneurial university. This was not surprising, given the view of Shattock: "Entrepreneurialism, as an economic phenomenon, is a term which is widely used in a popular sense but which has defied definition". (Shattock 2005, p.16) Additionally, the role of the Vice-Chancellor, as a dominant influence in directing a university along the paths of transformation, was given significantly more emphasis throughout the semi-structured interviews of a sample of both the leadership and the academic staff in this study, than is reflected in Clark's (1998) pathways of transformation and the literature more generally.

There are also a number of matters for consideration and discussion arising from the findings.

Online Survey

The online survey responses were representative of the UOW staff population. There were two exceptions that may have affected the results. The UOWD staff group was 11% of the response but only represent 5% of the total staff. One possible explanation for this over representation could be the entrepreneurial nature of the staff at UOWD which may have lead the staff to seek to respond to this kind of survey and contribute; cultural differences reflective of the geographical region in which UOWD operates may be another possible explanation that drove staff at the UOWD to respond with a higher rate. An extra email was also sent to UOWD staff. This follow up email could have prompted an additional cohort of staff to respond which may explain the higher representation of UOWD staff in the response. Another explanation could be that the author of the survey (and this Thesis) may have been better known to the staff at UOWD and this greater recognition may have influenced the response rate.

The other group that appeared to be over represented was the Administration staff grouping which generated 16% of the response although they are only 10% of the total staff at UOW. A potential reason for their high response could be that as a group they are more informed about the decisions made at the University and therefore may have been more informed to answer questions around the 'pathways of transformation' present at the UOW.

Semi-structured Interviews

Pathway 4, *Does the UOW have a stimulated academic heartland?*, was discussed with the highest word count, by both of the semi-structured interview groups (SEAM N=559 and A N=496). This is of particular interest as this was the only pathway for which there was no real evidence found for its existence at the UOW. Additionally the academic staff group discussed

pathway 5, *Does the UOW have an integrated entrepreneurial culture?*, with the next highest word count (A N=441). This pathway had mixed evidence for manifestation at UOW. However, the SEAM group was more succinct on pathway 5 (N=286) discussing it with the least number of words. This may reflect a differing need to discuss the issues surrounding this pathway, to that of the academic staff.

Leadership

The analysis of the program of semi-structured interviews, involving a sample of the SEAM and a sample of academic staff confirmed that the leadership, but specifically that of both Vice-Chancellors McKinnon and Sutton, was crucial to the development of the pathways, the overall process of transformation and the establishment of the entrepreneurial culture at the UOW. Clearly, the staff of the UOW felt that "...it is the responsibility of the central steering core to decide who to support and to what extent, and in a way that offers continuous encouragement to others to bring forward new ideas". (Shattock, 2003 p.41)

This was the key issue arising from the semi-structured interview program and is of particular interest as it reflects upon the way in which Clark (1998) records and codifies the five pathways. A number of examples were provided to support the crucial nature of the role of the Vice-Chancellor in providing leadership, including the creation of ITC which was a key initiative covered as part of the case study in Chapter 4. While McKinnon had the vision to create the ITC, as a regional initiative in response to a major downturn in the local economy, and to support it through its early formative years after establishment, Sutton backed his own judgment by modifying the role of ITC, to both strengthen its performance as the commercial arm of the UOW, but more importantly, to sustain it. Both knew ITC was capable of much more than just being an incubator for the exploitation of intellectual property relating to new and emerging technologies. Both McKinnon and Sutton understood the necessity to develop each of the income streams reflected in the work of Clark, these being: "mainline institutional support

from a governmental ministry; funds from governmental research councils; and all other sources lumped together as 'third-stream income". (Clark 2001, p.12)

It was clear from their actions, policy initiatives and leadership, that both Vice-Chancellors understood the primary importance of this strategy to the development and sustainability of the University's entrepreneurial culture and to the role of ITC in achieving this goal. "Such diversification of income seems essential for entrepreneurial character". (Clark 2001, p.12)

An outcome of this study then, emphasized throughout the interviews of a sample of the academic staff, is the nature and centrality of leadership in achieving the change or transformation process required to create and sustain an entrepreneurial university. In particular, leadership as expressed through the position of the institutional leader, the Vice-Chancellor, was an occurring theme. From the data, it deserves greater emphasis than that given in Clark's (1998) five pathways, although it is included within the ambit of the first pathway, a strengthened steering core.

The study indicated that leadership, whether that of the Vice Chancellor (a strongly supported outcome of the interview process) or using the analytical tool of distributed leadership (an outcome of the literature survey), is an essential element, potentially mandatory, and therefore worthy of a higher profile in the pathways, especially in the nomenclatures, to emphasize its essential and pivotal role.

This view of leadership, as being critical, is also supported in the literature by, among others, Clark (2001), Gronn (2002), Marginson (2004), McInnis (2001) and Muijs (2006), but would appear to be given insufficient weighting in Clark's (1998) 'pathways of transformation'.

Research Question 1

Does the UOW have a strengthened steering core?

All groups saw strong effective leadership being exercised at the UOW and the presence of a strengthened steering core.

This was supported by the survey data, which had 40% or more of the staff moderately or strongly agreeing in seven of the ten questions. This finding was also strongly supported by an analysis of the semi-structured interviews with the leadership, noting that 14 of those interviewed are classified as academic staff. However, the survey data, when analysed, indicated some clear differences between the staff groupings. In particular, that general staff were more positive than academic staff and that female academic staff were more positive than male academic staff, about the existence of this pathway of transformation. A sample of academic staff members when interviewed did however view the UOW as possessing a strong steering core, and believed that it had set its direction well and exhibited good 'self steering'.

According to the entrepreneurial subscale options 1-4, moderately or strongly agree, almost 50% of staff agreed that the UOW had a strong steering core (49%). This was at odds however with the analyses of the semi-structured interviews.

A further issue arising from the literature review and in particular the semi-structured interviews with the SEAM of the UOW, was the key role of the Vice-Chancellor in providing leadership within a strengthened steering core to bring about the process of change leading to transformation. For this reason, leadership was dealt with separately in the context of research question one: a strengthened steering core.

Research Question 2

Does the UOW have an expanded development periphery?

Evidence supported the existence of an expanded developmental periphery at the UOW.

This was supported by the survey data and by an analysis of the semi-structured interviews. More than 50% of all staff indicated a positive view in four of the five questions asked. However, only 37% viewed resources allocated to community outreach efforts as adequate. It is also noted that there was a high 'non response' rate of 20% recorded for this question. The analysis of responses from the semi-structured interviews resulted in an overall perception of 'patchy'. This also supported the analysis of the survey data for female staff and male staff, both academic and general, which was quite negative, indicating that resourcing for successful engagement with the development periphery was not seen as adequate.

However, in support of the survey data, the perception of the SEAM involved in the semi-structured interviews was that when engagement occurs, it is done very well. The academic staff interviewed felt that they were encouraged to be proactive in engaging with the expanded development periphery on the research front, in particular industry and the region. But due to its youth as a university, academic staff commented that the UOW remained weak in the area of alumni support.

According to the entrepreneurial subscales options 1-4, moderately or strongly agree, more than 50% of staff members responded positively for the presence of an expanded development periphery (52%). This was also supported by the analyses of the semi-structured interviews of both the leadership and the academic staff.

Research Question 3

Does the UOW have a diversified funding base?

Analysis of the data supported the existence of this third pathway of transformation.

While more than 50% of all staff responded positively to 5 of the 7 questions, the data revealed a high non response rate for almost all questions on this

pathway. In keeping with this, there was a negative response for *turns declining government support into opportunities*, and, *places sufficient importance on discretionary sources*. The academic staff interviews supported the high non response rate for this pathway, with academic staff commenting that they were not as informed as the leadership on this issue. Despite this, there was a perception amongst the academic staff interviewed that the UOW had been very successful at obtaining research funding.

However, there were positive responses for all other questions on this pathway of transformation. In particular, male general staff were very positive for *moves more quickly than other universities to ensure financial viability*, and this was supported in the outcomes of the semi-structured interviews.

But again, there were clear gender differences in responses, with female staff, both academic and general, more positive than male staff, and the Admin Functional Area and the Entities Area provided the most positive groupings overall.

According to the entrepreneurial subscale options 1-4, moderately or strongly agree, more than 50% of staff members responded positively for the *presence of a diversified funding base* (55%). This was supported by the analyses of the semi-structured interviews of both the leadership and the academic staff group.

Research Question 4

Does the UOW have a stimulated academic heartland?

There was little evidence of the perceived presence of a stimulated academic heartland arising from an analysis of the data.

Although 55% of all staff perceived that the UOW *creates a supportive environment,* the weakest scores from the survey for any of the pathways were shown for this fourth pathway of transformation. This was supported by

an analysis of the semi-structured interviews for both the leadership group and the academic staff. In particular the academic staff felt that although the UOW had recently improved, it was still a little patchy on rewards. Conversely the academic staff felt adequately consulted.

In response to *promotion and reward structures are not adequate*, there was an especially poor result recorded by female general staff. This is interesting, as those interviewed in the program of semi-structured interviews saw morale as being good for all staff, and did not indicate any gender issues in perception, in relation to this pathway, or any of the other pathways.

According to the entrepreneurial subscale options 1-4, moderately or strongly agree, more than 40%, but less than 50% of staff agreed that the *UOW had a stimulated academic heartland* (40%). This was supported by the analysis of the semi-structured interviews of the SEAM involved in the interviews.

Research Question 5

Does the UOW have an integrated entrepreneurial culture?

The evidence for the existence of this pathway at the UOW was not clearly established by the data. Whilst more than 60% of staff perceived the UOW to *adopt an entrepreneurial approach to its initiatives*, the view of the university as a risk taker was poorly supported as was the question, *fosters and nurtures rather than controls and contains*. This was at odds with the views of the SEAM as recorded in the semi-structured interviews. Overall, the SEAM involved in the semi-structured interviews perceived the UOW to *strongly encourage risk, nurture ideas and support innovation*.

Clark and Causer (1991) counter this problem of internal inconsistencies:

> ...individual opinions and responses are not necessarily internally consistent... Ambivalence and ambiguity do not always need to be resolved...but may accurately capture the reality of the situation at the time of research. (Clark and Causer 1991, p.173)

Additionally Patton (1994) supports this:

> Finding such inconsistencies ought not to be viewed as weakening the credibility of results, but rather as offering opportunities for deep insight into the relationships between enquiry, approach and the phenomenon under study. (Patton 1994, p.248)

According to the entrepreneurial subscale options 1-4, moderately or strongly agree, more than 40%, but slightly less than 50% of staff agreed that the UOW *had an integrated entrepreneurial culture* (46%). This was at odds with the analysis of the semi-structured interviews with the leadership who felt that the institutional culture was entrepreneurial. This view from the subscale was supported by the academic staff interviewed who felt that the UOW did possess an integrated entrepreneurial culture; this view was countered with a perception that the UOW, a relatively young university, was still working on its processes. In particular the UOW was seen to be fine tuning the processes around Intellectual Property (IP) and had not yet "got it right".

Research Question 6

The Entrepreneurial Scale

The entrepreneurial scale, developed specifically for this study, investigated eight aspects of the UOW: entrepreneurial, innovative, adaptive, flexible, supportive, values driven, strongly led and community engaged.

The UOW was perceived to be entrepreneurial, adaptive, flexible, supportive, strongly led and community engaged. In addition, more than 40% of the staff perceived the UOW to be values driven.

This scale was developed, in addition to the five questions based upon Clark's (1998) 'pathways of transformation', to assess both the perception of the UOW Staff, and the potential for establishing an entrepreneurial scale which might form the basis of future studies.

The results were at odds with the data derived under the Likert scale questions as part of the survey. This may have been because, when given

the option of two extremes (semantic differential), the views of staff sat distinctively on one side. This is seen when subjects are highly invested in a topic and wish to give socially desirable responses. Even though the precaution of anonymity was given, it may have been advisable to use an instrument that was less direct than the semantic differential. (Heise 1970) Therefore, the questioning under the Likert scales may have been a more complex, yet subtle way of understanding perception.

Generally, the data revealed responses for all staff were positive, but there were two specific exceptions recorded. The academic staff responded 'poorly' for the questions *values driven to expedient and community engaged to self-focused,* and gender differences were quite marked, with the data for females being more positive to both questions, and the data for academic males, quite negative.

Additionally, a subscale was developed around the entrepreneurial scale in the survey of all staff. The data indicated that greater than 60% of staff members viewed the UOW as an entrepreneurial university (63%). This was also supported by the analysis of the semi-structured interviews, and both confirmed the findings of the case study.

Significance of the Study

The study was important for several reasons, including:

- its potential contribution to the further understanding of the attributes and characteristics of an entrepreneurial university, and in particular, the extent to which the UOW is seen to possess such characteristics;
- the way in which such understandings might be used and applied by the SEAM of the UOW;
- the potential to replicate the study across other universities to assess the extent of their transformation process;

- its potential to assist in understanding the process of transformation as a contributing factor to the development of an entrepreneurial culture;
- insights which might inform educational leaders in higher education institutions, both contemporary and future, seeking to introduce reforms and innovations; and
- to provide important questions for future study.

Further Research

This study also highlighted the need for further research in several areas:

- the role that gender plays in shaping staff responses to the process of transformation, given the survey data on *values* and *community engagement* and the analyses of the semi-structured interviews;
- the role of the Vice-Chancellor, within the overall leadership of a university, in providing leadership in the process of transformational change, which is necessary to establish an entrepreneurial culture;
- the development of a template for assessing the extent to which a university is entrepreneurial;
- the advantages and disadvantages of a departmental structure to the process of transformation;
- the advantages and disadvantages of online surveys versus paper based surveys in the university environment in the context of response rates;
- survey construction, and the impact of questions on responses given the data on financial questions from the survey; and
- cultural differences in responding to surveys, shaped either by the nationality and background of the faculty member, and/or by the geographical location of a branch or a campus of a university.

Summary

Maybe as important as the findings themselves, was the way in which the results and the case study were written up and presented.

> To ensure that the products of case study research are believable and authentic representations of the social environment, in which the research was conducted, the way in which we present the findings is crucial. (MacPherson, Brooker *et al.* 2000, p.57)

But irrespective of this judgment, the UOW, as has been shown through the case study, supported by the survey data and the semi-structured interviews, and despite its relatively small size and regional location, has achieved significant transformational change in the process of becoming an entrepreneurial university. Clark contended:

> My qualitative case studies of exemplars of change offer a strong lesson for future research. Concepts induced from exemplary practices are strengthened by the reassurance of solid facts – documented actions taken in defined contexts. More good case studies that lay bare those facts will be needed to further illuminate the character of entrepreneurial universities emerging and devolving at a rapid rate, internationally, in the early years of the 21st century. (Clark 2005, p.3)

It is contended that this case study of the UOW makes a contribution to this ideal, and that it is appropriate that the UOW be referred to as an entrepreneurial university. The facts, the data from the survey of all staff, an analysis of the semi-structured *interviews* and the relevant literature support this conclusion.

Appendices

Appendix 1: Sample Email: All Staff

From: all_general_staff-bounces@mailman.uow.edu.au on behalf of James Langridge [jamesl@uow.edu.au]
Sent: Thursday, 27 October 2005 4:29 PM
To: all_academic_staff@uow.edu.au; all_general_staff@uow.edu.au
Subject: I need your help

To all Staff,

I am seeking your assistance with some research I am undertaking on the characteristics of the University and I invite you to complete the following online survey: http://staff.uow.edu.au/survey/

The survey should take you no longer than ten minutes.

Thank you in anticipation of your help.

Kind regards

Jim

James Langridge

Vice-Principal (International), University of Wollongong

CEO & Managing Director, ITC Ltd

Phone: +61 2 4221 3212

Fax: +61 2 4221 4447

all_general_staff mailing list
all_general_staff@mailman.uow.edu.au
http://mailinglists.uow.edu.au/mailman/listinfo/all_general_staff

Appendix 2: Online Staff Survey

Survey of University Characteristics

The aim of this survey is to examine the characteristics of an entrepreneurial University. I am seeking your co-operation as I try to understand some of these issues, particularly as they relate to the UOW.

Specifically, you are invited to complete the following questionnaire. Please answer each question in relation to the UOW and not your unit, faculty or controlled entity. It should only take 10 minutes, and will mostly involve selecting buttons.

Naturally, your answers will be treated in the strictest confidence. No one involved in the study, or seeing the results, will be able to identify you. Only the aggregate or overall results will be made available, and if published, will only be in the form of statistical summaries of the data. Submitting the answers to the questionnaire will be taken as your consent to participate in this research. Any queries you have on the survey should be directed to jamesl@uow.edu.au .

I am currently undertaking this research as part of a Doctoral Program through the Centre for Higher Education Management and Policy (CHEMPaS) at the University of Southampton. My supervisor is Professor John Taylor who is the Director of the Centre.

Please respond to the survey by Thursday November 10, 2005.

The Characteristics of a University

In broad terms, universities are judged according to the quality of their teaching and learning and research status. But they are often described or categorised in other terms such as innovative, staid, traditional or flexible to name but a few descriptors.

Judgments and descriptors are based on outputs and perceptions which, in the end, are achieved by factors within the university. Factors such as leadership, organizational structure, community interface, environmental responsiveness are examples of variables within a university that contribute to its status and identity.

Thinking about UOW please answer the following questions. All opinions are valuable. It is not important whether the answer is positive, negative or neutral, but that you answer the questions with honesty.

For each of the statements below, please indicate the extent of your agreement or disagreement. A selection of 0 indicates you are not able to answer the question

1. Thinking about UOW's ability to "steer" itself, how do you perceive UOW exhibits the following characteristics:

	To a great extent 5	4	3	2	Not at all 1	Unable to answer 0
Collegiality of decision making	☐	☐	☐	☐	☐	☐
The ability to respond to threat	☐	☐	☐	☐	☐	☐
Flexible management systems	☐	☐	☐	☐	☐	☐
Clear institutional competencies it wishes to attain	☐	☐	☐	☐	☐	☐
Strong, effective leadership	☐	☐	☐	☐	☐	☐
Inclusiveness in decision making	☐	☐	☐	☐	☐	☐
Failure to clearly state organisational objectives	☐	☐	☐	☐	☐	☐
Strengthened managerial processes	☐	☐	☐	☐	☐	☐
The capacity to respond to competition	☐	☐	☐	☐	☐	☐
The ability to withstand emerging competitive pressures	☐	☐	☐	☐	☐	☐

2. How would you describe UOW's approach to interaction with its broader communities (e.g. industry, professional groups, community groups and other external stakeholders):

	Most definitely 5	4	3	2	Not at all 1	Unable to answer 0
Successful in reaching out to partners and the community at every available opportunity	☐	☐	☐	☐	☐	☐
Unable to develop and refine structures which support outreach activities	☐	☐	☐	☐	☐	☐
UOW supports objectives related to external interaction	☐	☐	☐	☐	☐	☐
It provides sufficient access points for communities to engage with it	☐	☐	☐	☐	☐	☐
UOW resources adequately community outreach efforts	☐	☐	☐	☐	☐	☐

3. As the financial environment in which it operates changes, UOW:

	Strongly agree				Strongly disagree	Unable to answer
	5	4	3	2	1	0
Moves more quickly than other universities to ensure financial viability	☐	☐	☐	☐	☐	☐
Develops new and alternative funding sources	☐	☐	☐	☐	☐	☐
Turns declining government support into opportunities	☐	☐	☐	☐	☐	☐
Places sufficient importance on discretionary sources	☐	☐	☐	☐	☐	☐
Sees diversification as critical to its future	☐	☐	☐	☐	☐	☐
Gives sufficient support to developing alternatives	☐	☐	☐	☐	☐	☐
Fails to identify financial diversification	☐	☐	☐	☐	☐	☐

4. Please read the statements below. Think about them in terms of working at the UOW and respond accordingly.

	Strongly agree				Strongly disagree	Unable to answer
	5	4	3	2	1	0
The University creates a supportive working environment	☐	☐	☐	☐	☐	☐
UOW attempts to get staff to understand and "buy into" the vision	☐	☐	☐	☐	☐	☐
Staff receive opportunity for engagement in University	☐	☐	☐	☐	☐	☐
Staff could be considered to have a high level of morale	☐	☐	☐	☐	☐	☐
Promotion and reward structures provided by UOW are not adequate	☐	☐	☐	☐	☐	☐
Leaders attempt to "carry" the staff with them in achieving the vision	☐	☐	☐	☐	☐	☐

5. In describing the University's approach to creating an institutional culture, UOW:

	Strongly agree					Strongly disagree / Unable to answer
	5	4	3	2	1	0
Adopts an entrepreneurial approach to its initiatives	☐	☐	☐	☐	☐	☐
Supports a work culture which encourages risk taking	☐	☐	☐	☐	☐	☐
Does not value or reward innovation	☐	☐	☐	☐	☐	☐
Accepts change as an institutional characteristic	☐	☐	☐	☐	☐	☐
Actively cultivates a distinctive institutional culture	☐	☐	☐	☐	☐	☐
Embeds its values through appropriate structures	☐	☐	☐	☐	☐	☐
Fosters and nurtures rather than controls and contains	☐	☐	☐	☐	☐	☐
Values engagement in creating institutional culture	☐	☐	☐	☐	☐	☐

6. Read the following descriptors and select a button at the point where you perceive UOW fits on the following continuum.

entrepreneurial _____ conservative

innovative _____ conventional

adaptive _____ inflexible

flexible _____ rigid

supportive _____ unsupportive

values driven _____ expedient

strongly lead _____ laissez faire

community engaged _____ self-focused

Respondent Profile

Please select only one option for the following questions.

1. **I am a member of the:**

- ○ General Staff
- ○ Academic Staff

2. **My employment status is:**

- ○ Permanent / Continuing
- ○ Fixed term
- ○ Casual

3. **I work:**

- ○ Full time
- ○ Part time

4. **Gender:**

- ○ Female
- ○ Male

5. **Age:**

- ○ Under 25 years of age
- ○ 25 to 35 years of age
- ○ 36 to 45 years of age
- ○ 46 to 55 years of age
- ○ 56 to 65 years of age
- ○ over 65 years of age

6. **Total number of years employed by UOW:**

- ○ fewer than 1 year
- ○ 1 to 5 years
- ○ 6 to 10 years
- ○ 11 to 20 years
- ○ 21 to 30 years
- ○ Greater than 30 years

7. **Which part of the university are you MAINLY employed in:**

Faculty:

- ○ Arts
- ○ Creative arts

- O Commerce
- O Education
- O Engineering
- O Graduate School of Business
- O Graduate School of Medicine
- O Heath and Behavioural Sciences
- O Informatics
- O Law
- O Science

Support Service:

- O Central Administration
- O Research Office
- O Library
- O Student Services / CEDIR
- O Buildings and Grounds

Controlled Entity:

Illawarra Technology Corporation Ltd:

- O UOW in Dubai
- O UniAdvice
- O ITC International Projects
- O WUC Auckland
- O WUC Sydney
- O WUC Wollongong
- O ITC Corporate Services

UniCentre Ltd:

- O

URAC Ltd:

- O

Thank you for taking part in this survey.

Appendix 3: Sample Email: Semi-structured interviews

From: James Langridge [jamesl@uow.edu.au]
Sent: Tuesday, 14 February 2006 11:54 AM
To:
Subject: DBA Interview

Dear ,

Thank you for agreeing to be interviewed for my thesis.

The purpose of this email is to supply you with an advance copy of the key questions I would like to cover during the interview.

No.	Question
1	What is your perception of the university's ability to steer itself?
2	How would you describe the UOW's approach to interaction with its broader communities and by broader communities I mean industry, professional groups, community groups, and other external stakeholders?
3	What are your comments on the UOW's ability to diversify its funding sources?
4	In thinking about the UOW's academic heartland, how well and in what ways are the staff engaged, consulted and rewarded?
5	Do you view the UOW's institutional culture as entrepreneurial and if so why?

At the conclusion of the interview, there will be an opportunity to include any further comments which you may deem relevant.

I will also be seeking your agreement to tape the interview.

Thank you again.

Kind regards

Jim

James Langridge
Vice-Principal (International), University of Wollongong
CEO & Managing Director, ITC Group of Companies
***Phone:** +61 2 4221 3212*
***Fax:** +61 2 4221 4447*

Appendix 4: Staff Interviewed

Table 54 Semi-structured interview: positions interviewed

Position at the UOW
CEO, UOW in Dubai
Dean, Faculty of Arts
Dean, Faculty of Commerce
Dean, Faculty of Creative Arts
Dean, Faculty of Education
Dean, Faculty of Engineering
Dean, Faculty of HBS
Dean, Faculty of Informatics
Dean, Faculty of Law
Dean, Faculty of Science
Dean, Graduate School of Business & Prof Development
Director, Buildings and Grounds
DVC (Academic)
DVC (Operations)
DVC (Research)
Lecturer, IPRI
Lecturer, UOWD
Managing Director, ITC Education
Professor, CTCP
Professor, IPRI
Professor, UOWD
Senior Lecturer, CTCP
Senior Lecturer, IPRI
Senior Lecturer, UOWD
University Librarian, UOW Library
Vice-Chancellor & Principal
VP (Administration)

Appendix 5: Sample Interview

JL	[Blank] thanks for agreeing to be interviewed for the purpose of my research. I'd like to go through 5 questions the first of which is your perception of the University's ability to steer itself and if I have just been explaining universities model themselves or allow themselves to be modeled according to their source of funds. So 80% of their funds come from the Government and of that 10% comes to science then science looks like 10% of the university and so they're steered by . So that's the context. What's your perception of the University's ability to steer itself?
# 12	I think if you divide it into external and internal I will start the external which is a problem I think the public Universities is that the percentage of funding the public Universities get from the Government now starts to regulate the public universities in a way it doesn't regulate the private universities so the Federal Government now often funded places in a way that they actually put them into specific categories so that limits the Universities get moved around from faculty to faculty. If you receive funding from the Federal Government then funding categories , now we're clever at working within that environment particularly [Blank] and [Blank]are able to blur the boundaries, the boundaries can be interpreted in different ways but at the end of the day the regulation of the Federal Government does limit the public University's ability to steer in any really rapid sense the University in an outward area of opportunity. So there's a public lead weight on us but privately the University of Wollongong finds a way around it. So we find our way around it by having a broad interpretation of the categories, we are able to convince the Government often to move between categories to reflect both the market as we see it and the direction that the University would want to go in and we have a Government arrangement within the university that allows us to be the first mover. So I think internally we have a significant ability to steer ourselves but we are limited by external regulation which means that we've got to find a way around the external regulations which we are generally able to so it's a balancing act we have between the heavy handed Government and the Universities and this particular University having a governance structure and an attitude which finds ways around obtrusive regulations.
JB	You have your, given those restraints. Is there an aspect in the University's structure organization-wide which you would change to increase the capacity to self steer
# 12	Yes – you would certainly reduce the size of the council to half the size of the council and I would have a different process for selection of council members so it would be an almost a board in a corporation with a few additions. It would not be a corporation it would be closer to a [inaudible] and the academic senate as it is at the moment because it's large it doesn't cause us any trouble but if you were serious you'd want to use that as a academic steering and you would want to reduce that in size as well with a representative from every faculty. So I'd streamline the governance within the University and what that would mean is that decisions one way or the other would be made in a more informed way and much more quickly.
JB	I'd like to ask you about our approach to interaction with broader community industry, professional groups, community groups and external stakeholders. How would you describe our approach?
# 12	I think the approach itself, I think we're very good at it. I think we have I think as good as any University, probably better than many in our relationship with the local community. I think that has come about over the distance of the University via a lot of people including [Blank] and there's a link with the community at senior level and has been ever since it's been established and unlike any other cities the city leverages off the University and the University off the city, that is a really good thing. From the point of view of the broader community and the citizens of the region, it's hard to see how we could do much better. I think we can and in trying to do that we set up the Community engagement group with [Blank] and already even though I thought we couldn't do better they've come up with ideas as a result of surveys and that would indicate that we can actually do better with the local community. Originally they were set up to try and get that section of the community that just sees University's beyond their reach and there is a proportion of people in Wollongong that just would never even contemplate going to University because they have been a son or daughter of a tradesman and that's what you are going to do so I think there is still an opportunity for us [inaudible] to make sure that section of the community which I think is becoming smaller and smaller don't actually feel as though it's their University. So I think that community engagement group with [Blank] is doing a good job on that. I think we are successful but less successful in the links with the

	professional groups. I think industry groups I should say, industry, professional, community I think are pretty good but we could be better, industry I think we do very well with. I think the links establishment of the University and those links are regionally and nationally very positive. It doesn't mean you can't do it better for example the defence industry is a player of the University and I don't know how we're going to break into that, but that is job for [Blank], but by and large whether regional and national, we have a good reputation and a good mix and a good interaction with industry. Professionally, professional groups I think is the weakness. I don't think we've had a look at a strategy through the University, certainly I haven't heard of it, to try and professional groups. I mean our Law School involved lawyers our Medical involved medicos, Engineering, we have engineering association operating out of this University. It's pretty piecemeal and its not an uncommon view within the professional groups in the region, I think there is work to do, I'm not quite sure how to do it but it's being done by individual faculty level. I don't think the University-wide level I think we might have strategy, I'm not involved in it.
JB	Can I just ask a question, in terms of the external stakeholders you covered specifically, in a general way, external stakeholders what's your view about the Universities approach and direction for stakeholders?
# 12	I think it's very positive I think we've established ourselves as a University that does involve itself with the stakeholders, our students, our staff, State Government, Federal Government, I would think that it would be hard to see how we could do better I mean the surveys of students inevitably positive in terms of the experience they've had, maybe we should do a survey of staff. My reading of it is that the morale is quite high and surveys often encourage the grumbles, more negative. I don't detect other than a very positive attitude on behalf of staff. It's my opinion that just people feed it back to me and in terms of State and Federal Government we would be one of the more effective Universities in the so I'd give us a big tick on with the general external stakeholders.
JB	Thank you. Can I lead into, then, to how we diversify our funding sources. Could you comment
# 12	I think the big success in our diversifying our funding sources has been has been the international students and that is something [Blank] lead, we deliberately came in as I understand it on the second wave not the first wave and that the University moved in the late '80s in the international area has been hugely successful and continues to be and so in terms of international I think that's been a significant diversification of our funding source, not just significant but necessary, we've been on the verge - talking earlier about earlier the ITC operation has been hugely successful and has contributed to the diversification to the University in a very, very positive way and if it hadn't the University of Wollongong College and the history has that it moves from one to another. What we haven't done very well at is moving into the student contributions at the graduate level from domestic students who have not cracked that. We were late movers on it for philosophical reasons our Business School is predominately international . The business school has not been successful in diversification of funding outside the international so we have not been successful in terms of domestic full fee payment for students at post-graduate level. Philosophically, we have not looked at the undergraduate level but how long we can hold on that I don't know. It is an opportunity for us if we can into dire straits, but I'll be very reluctant to do that and in general terms we were a slow mover on the postgraduate full fee and we suffered as a result of that [Blank]. So I think we have not done well in the domestic, postgraduate full fee, we've done well internationally, we've done well with the ITC. I think we have not cracked yet , done well in the . scholarships but we've not really cracked as I see it any other Australian University and appropriate alumni, foundation or associate and I think we have limited scope in that area. It's not impossible but I don't think we know how to do it we've just been fortunate with the medical chairlady of the medical school opened up although we haven't had an opportunity to do in the past but the most significant diversification in funding source will have to be through our commercial arm and the continuation of the international possibly the fees for the domestic at some stage. But I think we are limited.
JB	On commercialization of technologies. I know from my own knowledge we have attempted, but some universities have set up science parks as their around the world. Would you want to reflect on what I would see. [Yeah no that is fair enough], the next generation, a new research management related to the innovation on campus
# 12	We didn't commence the innovation campus to drive diversification as a region in terms

	of its economic base. But as it's developed it's clear it does offer a potential down the track toward a funding source. Well, also the link with UniQuest, present an opportunity for our students and therefore as a result um potentially the University to either to get into royalty or investment so if you were looking, so if I were to look out 10 years, I think the innovation campus and our new commercialisation arrangements would be producing small but significant income to the university. If I look short term I don't see if I look within the next 3 or 4 years. You have got to look out close to 10 years and then I think you will be getting some return from the innovation campus and you will be getting some return just because the attitudes have changed and our judgment is that we know you have got to do it now Australia's highly we don't quite know how to do it but we are getting closer I think a combination of UniQuest and the Innovation Campus. I'd say that turn into a small to medium size but certainly significant income source but not until [inaudible].
JB	A change of pace now in terms of direction of focus, the Universities academic heartland how well and in what ways are staff engaged, consulted and rewarded?
# 12	I mean I think that to go with the consultation, um, I think that the extent of the consultation between the faculties is pretty significant. We don't do anything without consulting, so that the strategic plan that we have got is really something which the whole University has owned. So I think the consultation has been, I think what's come in the way sometimes is the unions. But I think the consultation process has been significantly detailed and successful. Are the staff engaged? I think they are. You know have had people who have by necessity been very much committed to this University or else they wouldn't be here or in this region, often families have been involved, with more than one person, that has been a terrific benefit for this university. But we are moving into the era of higher guns and um they just go to the highest bidder and I think the scene is changing a little bit, you know the [Blank] because they wanted to be here um, we bring a lot of people here because we pay them to be here and we have the right environment for them to be here and so our natural advantage in engagement which had been has been a significant advantage, staff are engaged that have got a reason, they do actually believe in the vision and they do want to be here [inaudible]I think we are going to have to deal with if we still want staff engaged we are going to have to deal with the shift in culture because a lot of the people who have been here won't leave and have been born and raised on the Wollongong culture and just be [inaudible] We've done it before [inaudible] and so it can be done. Over time they can become part of the Wollongong culture but if the medical school and the buying in of research teams and they're going to be our top guns we have got a number of top guns we currently have there is a risk to the culture that we currently have and therefore the type of engagement that you know so far so good. So for the moment I'd say the staff are engaged, they are consulted, and rewarded – well I mean we do our best on that we are never going to be um class players, so it's got to be a combination of lifestyle, financial reward, but also appreciation and satisfaction of the Wollongong culture at the University. It's got to be those 3 things to deal with the reward side of it.
JB	The last formal question do you view the University's institutional culture as entrepreneurial? And if so, why?
# 12	Yeah I do – very much so. I mean it's been that way from the establishment of McKinnon. I guess. I wasn't around but I have heard a lot about... skills or human interests – I just don't know. But, what I do know is that when I came here there was an entrepreneurial culture and that had been generated by [Blank] with support from people like [Blank] um and I think that remains. Um, I do think we try things, step our more quickly. I'm more decisive than other institutions, I think it is because of the streamlined decision-making processes within the university and our readiness to take risks involved. I think in terms of why we got it I think that's [Blank] natural tendency, [Blank] natural tendency and [Blank] drove it in the early days. I think then it was proven to be successful and probably the only way Wollongong as quickly as it did so for all of those reasons I think there's a culture now at this University that is a good thing. They may not have used the word entrepreneurial anymore but first movers or whatever ability and readiness to try things that other universities hesitate on. I think that within this University and the Medical School is a really good example of that, and I think when Wollongong starts to lose that, then we're stuffed, because that's our relative advantage to other universities not that others are not entrepreneurial, but we've got it all, but we've also got to hold that entrepreneurial advantage that we have and if you can think of a better name than

	entrepreneurial, but I think you know what we're talking about and the Medical School is really good example of that.
JB	[Blank], you alluded to the issue of leadership interestingly everybody I have interviewed has. Um, and interestingly our of my reading I decided I couldn't ignore the role of leadership, so I put a section in my thesis on that because it kept popping up. What is your view about the particularly about the role of leadership in this whole issue the university moving into an adaptive, entrepreneurial and responsive way?
# 12	Well I think the University of Wollongong is probably fortunate it is a combination of [Blank] giving it its academic status, and then [Blank]and then [Blank] but that meant that you had at least 2 vice-chancellors so that is very little change at the senior level which has allowed constant both culture and direction for the Uni. That can be a disaster if the people, if it doesn't work out if the match is not good with the university, but I think the match has been good – personality wise, style wise, leadership wise and I think that has been a great strength of the University of Wollongong. It had to be coupled with a Chancellor arrangement where the chancellors would only have 2. [inaudible] the chancellor would have values but we had to break a few take a few short cuts to where we wanted to get to and it was very close and worked extremely well with [Blank] over the years and then with [Blank]. And then [Blank] has followed on from that as the important relationship [inaudible] he's been supportive in that direction so we had only 2 chancellors and 3 vice-chancellors. That could have been a disaster if it didn't work in terms of a match with the vice-chancellors or it could have been a disaster if the match between vice-chancellor and chancellor didn't work. The position has been that I think, fortunately all of that has worked very, very well for this university. So um, my observation on that I think we, um, it has been critical. I think that at the chancellor/vice-chancellor level that's the reason for continuity and strength I think but it wouldn't work for a university if it was just the chancellor and vice-chancellor so I think that when people say leadership they often just stop there. In my experience here, and I can't go back too far beyond when I came here in [Blank], this University has been really well served by the senior executive as a whole. The senior executive have had leadership written all over them, they've pushed and focused in a way that I don't see, in a unity sense that I don't see at all other universities, I do see it at some but the strength of the senior executive of this University even though it has turned over has been critical to the success of this University and it's because, even if they have their little differences of opinion or whatever, the unity of purpose of the senior executive and the mutual support they give each other has been here since I arrived in '99 and maybe before that, I don't know. I reckon that's been critical you know the Vice Chancellor and um you can see it that the Chancellor and Vice Chancellor can get along and the senior executive where you actually, it's the web, to the senior executive and the university and if they're not actually moving and then the direction of the University doesn't work. That's my view on that. I think we have a really strong senior executive in fact I go around saying it's the best in the country so I have better shut up on that so that we don't get them knocked off. [laughs] So I think the continuity has served us well
JB	That's the end of the formal interview. I want to thank you. Is there anything you want to say in addition to the construction of these questions
# 12	That's the only other comment I'd like to make is the leadership context. I've seen it at other universities, just come from [Blank]. There were 2 people there who [inaudible] when the leadership is so shallow it becomes a problem I actually think we're in, by and large we have had good Deans who have shared the vision. The fact that the Deans see themselves as responsible for the University as a whole and not just a mere faculty is something which this university has benefited from and they still see it that way. The attitude of the Dean's and the quality of the Deans in response to that last question.

List of references

(1972). The University of Wollongong Act, 1972.

Abbott, A. (1992). What do cases do? Some notes on activity in sociological analysis. What is a Case? Exploring the Foundations of Social Inquiry. C. C. Ragin and H. S. Becker (eds). Cambridge, Cambridge University Press. 1: 53-82.

Al-Bawaba (2005). University of Wollongong in Dubai cements partnership with Dubai Knowledge Village. Al-Bawaba News.

Amaratunga, D. and Baldry, D. (2001). "Case study methodology as a means of theory building: performance measurement in facilities management organisations". Work Study **50**(3): 95-104.

Atkins, M., Dersley, J., and Tomlin, R. (1999). "The Engagement of universities in regional economic regeneration and development: a case study of perspectives". Higher Education Management **11**(1): 97-115.

AUQA (2006). Report of an Audit of the University of Wollongong. A. U. Q. Agency: 66.

Bargh, C., Bocock, J., Scott, J., and Smith, D. (2000). University leadership: the role of the chief executive. Buckingham, The Society for Research into Higher Education and Open University Press.

Bass, B. M. (1990). "From Transactional to Transformational Leadership: Learning to Share the Vision". Organisational Dynamics **18(3)**(Winter): 19-31.

Barnett, R. (2005). "Convergence in Higher Education: The Strange Case of 'Entrepreneurialism'." Higher Education Management and Policy **17**(3): 51-64.

Bennis, W. G., Benne, K. D., and Chin, R. (1969). The Planning of Change. New York, Holt, Rinehart and Winston, Inc.

Bird, S. (2006). *Adjournment*. (House, MP Cunningham, ALP, Opposition), <http://parlinfoweb.aph.gov.au/piweb/view_document.aspx?id=2545669&table=HANSARDR> accessed 2 March 2006.

Bolman, L. G. and Deal, T. (1994). "Looking for leadership: another search party's report, Educational Administration Quarterly, **30**(I), pp.76-96,

Braun, D. and Merrien, F. X. Eds. (1999). Towards a new model of governance for universities? A Comparative View. Higher Education Policy Series 53. London, Jessica Kingsley.

Brunetto, Y. (2000). "Management of policy implementation within Australian universities". Asia Pacific Journal of Human Resources **38**(1): 50-66.

Buchbinder, H. (1993). "The Market Oriented University and the Changing Role of Knowledge". Higher Education **26**(3): 331-47.

Bunders, J. F. G., Broerse, J. E. W. and Zweekhorst, B.M. (1999). "The Triple Helix Enriched with the User Perspective: A View from Bangladesh". Journal of Technology Transfer **24**(2-3): 235.

Burt, R. S. (1997). "A note on social capital and network content". Social Networks **19**(4): 355-373.

Burt, R. S., Guilarte, M., Raider, H. J., and Yasuda, Y. (2002). Competition, contingency, and the external structure of markets. New Institutionalism in Strategic Management. **19:** 167-217.

Bruyn, S. T. (1966). The human perspective in sociology : The methodology of participant observation, Englewood Cliffs, N.J.: Prentice-Hall

Castle, J. (1991). University of Wollongong, An Illustrated History 1951-1991. Wollongong, University of Wollongong.

Castro, E. A., Rodrigues, C., Esteves, C., and da Rosa Pires, A. (2000). "The triple helix model as a motor for the creative use of telematics". Research Policy **29**(2): 193.

Clark, B. R. (1963). The Role of Faculty Authority, California Univ., Berkeley. Center for the Study of Higher Education.[CIQ11250].

Clark, B. R. (1996). "Substantive growth and innovative organization: New categories for higher education research". Higher Education **32**(4): 417.

Clark, B. R. (1997 (a)). "Common problems and adaptive responses in the universities of the world: organizing for change". Higher Education Policy **10**(3-4): 291-295.

Clark, B. R. (1998). Creating Entrepreneurial Universities. Organizational Pathways of Transformation. New York, Pergamon.

Clark, B. R. (2000). "Collegial Entrepreneurialism in Proactive Universities: Lessons from Europe". Change **32**(1): 10-19.

Clark, B. (2001). "The Entrepreneurial University: New Foundations for Collegiality, Autonomy, and Achievement". Higher Education Management **13** (2): 9-24.

Clark, B. R. (2003). "Sustaining change in universities: continuities in case studies and concepts". Tertiary Education and Management **9**(2): 99-116.

Clark, B. R. (2004 (a)). Sustaining Change in Universities: Continuities in case studies and concepts. Maidenhead, Open University Press.

Clark, B. R. (2004 (b)). "Delineating the character of the entrepreneurial university". Higher Education Policy **17**(4): 355.

Clark, B. R. (2005). "The character of the entrepreneurial university". International Higher Education **38** (Winter): 2-3.

Clark, J. and Causer G. (1991). Introduction: Research Strategies and Decisions. Handbook for research students in the social sciences. G. Allan and C. Skinner, New York: Falmer Press.

Coaldrake, P. (2000). "Reflections on the repositioning of the government's approach to higher education, or I'm dreaming of a white paper". Journal of Higher Education Policy and Management **22**(1): 9-21.

Cohen, L., L. Manion, et al. (2000). Research methods in education, London, Routledge Falmer.

Converse, J. and Presser, S. (1986). Survey Questions: Handcrafting the Standardized Questionnaire. California, Sage Publications.

Currie, J. (1998). Introduction. Universities and Globalization: Critical Perspectives. J. Currie and J. Newson (eds). London, SAGE Publications: 1-14.

Currie, J. and Newson, J. (1998). Globalizing Practices: Corporate Managerialism, Accountability, and Privatization. Universities and Globalization: Critical Perspectives. London, Sage: 141-152.

Danell, R. and Persson, O. (2003). "Regional R&D activities and interactions in the Swedish Triple Helix". Scientometrics **58**(2): 203.

Davies, J. L. (1987). "The Entrepreneurial and Adaptive University: Report of the Second US Study Visit". International Journal of Institutional Management in Higher Education **11**(1): 12-104.

Davies, J. L. (2001 (a)). "The Emergence of Entrepreneurial Cultures in European Universities". Higher Education Management 13, no **2**: 25-43.

Davies, J. L. (2001 (b)). "A Revolution in teaching and learning in higher education: the challenges and implications for the relatively traditional university". Higher Education in Europe **26**(4): 501-514.

Duderstadt, J. J. (2000). A University for the 21st Century. Ann Arbor, The university of Michigan Press.

Duke, C. (2002). Managing the learning university. Buckingham England, Society for Research into Higher Education and Open University Press.

Dunleavy, P., Margetts, H., Bastow, S., and Tinkler, J. (2005). "New Public Management is dead-long live digital-era governance". Journal Of Public Administration Research And Theory.

Etzkowitz, H. (1999). Academia agonistes: The 'triple helix' of government-university-industry relationships in the United States. Towards a new

model of governance for universities? A Comparative View. D. Braun and F. X. Merrien. London, Jessica Kingsley.

Etzkowitz, H. (2000). "Tech transfer, incubators probed at Triple Helix III". Research Technology Management **43**(6): 4.

Etzkowitz, H. (2003). "Research groups as 'quasi-firms': the invention of the entrepreneurial university". Research Policy **32**(1): 109-121.

Etzkowitz, H. and L. Leydesdorff (1998). "The endless transition: a 'Triple Helix' of University-Industry-Government relations". Minerva **36**: 203-08.

Etzkowitz, H., Webster, A., Gebhardt, C., Terra, B.R.C. (2000). "The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm". Research Policy **29**(2): 313-330.

Foddy, W. (1993). Constructing Questions for Interviews and Questionnaires. Cambridge, University Press.

Fourie, F. and Fourie, M. (2001). "Striking a Balance between Becoming Entrepreneurial, Nurturing the Academic Heartland and Transforming a Higher Education Institution". Higher Education Management **13**(3): 65-84.

Fox-Wolfgramm, S. J. (1997). "Towards developing a methodology for doing qualitative research: the dynamic-comparative case study method". Scandinavian Journal of Management **13**(4): 439-455.

Fuller, S. (2005). "What Makes Universities Unique? Updating the Ideal for an Entrepreneurial Age." Higher Education Management and Policy **17**(3): 27-52.

Gallagher, M. (2000). The emergence of entrepreneurial public universities in Australia: paper presented at the IMHE general conference of the OECD Paris, September 2000., Australian Dept of Education, Training and Youth Affairs. Higher Education Div. Canberra.

Gibb, A. (2002). "In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge". International Journal of Management Reviews **4**(3): 233-269.

Glastonbury, B. and MacKean, J. (1991). Survey Methods in Handbook for research students in the social sciences. G. Allan and C. Skinner (eds), New York: Falmer Press.

Griffis, S. E., Goldsby, T. J., and Cooper, M. (2003). "Web based and mail surveys: a comparison of response, data and cost". Journal of Business Logistics **24**(2): 237-258.

Grigg, T. (1994). "Adopting an entrepreneurial approach in universities". Journal of Engineering and Technology Management **11**(3,4): 273-298.

Gronn, P. (2002). "Distributed leadership as a unit of analysis." The Leadership Quarterly **13**: 423–451.

Guskin, A. E. (1996). "Facing the Future. The Change Process in Restructuring Universities". Change(July/August): 27-37.

Hannan, A. and Silver, H. (2000). Innovating in higher education: teaching, learning and institutional cultures. Buckingham, The Society for Research into Higher Education & Open University Press.

Hartgerink, N. (2003). Innovation and incentives - Wollongong and the Illawarra. The Australian.

Heise, D. R. (1970). The semantic differential and attitude research. Attitude Measurement. G. Summers. Chicago, Rand McNally: 235-253.

Hills, H. P. D. (1983). Re: Regional Industrial Exploitation of Technological Opportunities. V. Chancellor. Sydney.

ITC. (1990). 1989 ITC Annual Report. 1-52.

ITC. (2004). 2003 ITC Annual Report. 1-58.

Jablecka, J. (2001). "Entrepreneurship, Innovation, and Quality: The Successful Strategy of a Newly Established Institution: The Example of Wyzsza Szkola Biznesu-National Louis University in Nowy Sacz". Higher Education in Europe **26**(3): 367-380.

Jensen, J. L. and Rodgers, R. (2001). "Cumulating the intellectual gold of case study research". Public Administration Review **61**(2): 235.

Kaukonen, E. and Nieminen, M. (1999). "Modeling the Triple Helix from a Small Country Perspective: The Case of Finland". Journal of Technology Transfer **24**(2-3): 173.

Labaree, R. (2005). "The risk of 'going observationalist': negotiating the hidden dilemmas of being an insider participant observer." Qualitative Research **2**(1): 97-122.

Labovitz, S. (1970). "The Assignment of Numbers to Rank and Order Categories". American Sociological Review **35**: 515-524.

Lewis, T., Marginson, S. and Snyder, I. (2005). "The Network University? Technology, Culture and Organisational Complexity in Contemporary Higher Education". Higher Education Quarterly **59**(1): 56-75.

Lieberson, S. (1992). "Small N's and big conclusions: an examination of the reasoning in comparative studies based on a small number of cases. What is a Case?" Exploring the Foundations of Social Inquiry. C. C. Ragin and H. S. Becker. Cambridge, Cambridge University Press. **1:** 105-.

Lindsay, A. (1994). "Quality and management in universities". Journal of Tertiary Education Administration **16**(1): 55-68.

Louis, K. S., Blumenthal, D., Gluck, M. E., and Soto, M. A. (1989). "Entrepreneurs In Academe: An Exploration Of Behaviors Among Life Scientists". Administrative Science Quarterly **34**(1): 110-131.

Lundin, S. C., Lancaster, L. C., and Gardner, J. W. (1990). "Beyond Leadership. The Importance Of Followership". The Futurist **24**(3): 18-23.

MacPherson, I., Brooker, R., and Ainsworth, P. (2000). "Case study in the contemporary world of research: using notions of purpose, place, process and product to develop some principles for practice". International Journal of Social Research Methodology **3**(1): 49-61.

Marginson, S. (1996). "University Organisation in an Age of Perpetual Motion". Journal of Higher Education Policy and Management **18**(2): 117-23.

Marginson, S. (1997). "Steering from a distance: Power relations in Australian higher education". Higher Education **34**(1): 63.

Marginson, S. (1998). The Best of Times and the Worst of Times: Research Managed as a Performance Economy--The Australian Case. ASHE Annual Meeting Paper.

Marginson, S. (1999). The enterprise university comes to Australia. Australian-Association-for-Research-in-Education (AARE) Annual Conference, Melbourne, AARE.

Marginson, S. (2000). "The enterprise university in Australia". Leading & Managing **6**(2): 98-112.

Marginson, S. (2004). "National and global competition in higher education". Australian Educational Researcher **31**(2): 1.

Marginson, S. (2005). University changes may weaken role in global knowledge economy. The Sydney Morning Herald.

Marginson, S. and Considine, M. (2000 (a)). The enterprise university: power, governance and reinvention in Australia, Cambridge University Press.

Marshall, C. and Rossman, G. B. (1999). Designing qualitative research, Sage Publications.

Martin, B. (2002). "Dilemmas of defending dissent: the dismissal of Ted Steele from the University of Wollongong". Australian Universities Review **45**(2): 7-17.

Markham, C. (2001). *Bill (2nd reading)*. (NSW, MP Wollongong, ALP, Opposition), <http://www.parliament.nsw.gov.au/prod/parlment/hansart.nsf/searchla/ca256d11000bd3aaca256b120027ed37> at 13 March 2006.

Matchett, S. (2003). Macquarie passes audit. The Australian.

McBrierty, V. J. (1992). The University-Industry Interface from the Lab to the Market. Programme on Institutional Management in Higher Education, Université Joseph Fourier-Grenoble, France.

McBurnie, G. and Pollock, A. (2000 (b)). "Opportunity and risk in transnational education - issues in planning for international campus development: an Australian perspective". Higher Education in Europe **25**(3): 333-343.

McDonnell, A., Lloyd Jones, M., and Read, S. (2000). "Practical considerations in case study research: the relationship between methodology and process". Journal of Advanced Nursing **32**(2): 383-390.

McInnis, C. (2001). "Promoting Academic Expertise and Authority in an Entrepreneurial Culture". Higher Education Management **13**(2): 45-55.

McKittrick, T. (2001). National marketing and internationalisation approaches: the view from the 'True North'. 'Developing global capacity through international education: conference proceedings. Australian-International-Education-Conference (15th: 2001: Sydney-NSW). Sydney, IDP Education Australia.

McNay, I. (1999). Changing cultures in UK higher education: the state as corporate market bureaucracy and the emergent academic enterprise. Towards a new model of governance for universities? A Comparative View. D. Braun and F. X. Merrien (eds). London, Jessica Kingsley.

Middlehurst, R. (1999). "New Realities for Leadership and Governance in Higher Education?" Tertiary Education and Management **5**(4): 307.

Middlehurst, R. (2001). "University challenges: Borderless higher education, today and tomorrow". Minerva **39**(1): 3-26.

Middlehurst, R. (2004). "Changing Internal Governance: A Discussion of Leadership Roles and Management Structures in UK Universities". Higher Education Quarterly **58**(4): 258-279.

Middlehurst, R. and Elton, L. (1992). "Leadership and Management in Higher Education". Studies in Higher Education **17**(3): 251-64.

Miller, R. I. (1999). Major American Higher Education Issues and Challenges in the 21st Century. London and Philadelphia, Jessica Kingsley Publishers.

Mitchell, J. C. (1983). ""Case and situation analysis"". Sociological Review **31**(3): pp.186-211.

Mossberg, H. E. (1994). "Entrepreneurism in the Academic Setting". American Journal of Pharmaceutical Education **58**(4): 390-99.

Mount, J. and Belanger, C. (2001). "'Academia Inc.' The Perspective of University Presidents". The Canadian Journal of Higher Education **31**(2): 135-166.

Muijs, D., Harris A., et al. (2006). "Leadership and leadership development in highly effective further education providers. Is there a relationship?" Journal of Further and Higher Education **30**(1): 87–106.

Neal, J. E. (1998). "Quality Assurance in the Entrepreneurial University". New Directions for Institutional Research **25**(3): 69-85.

Pallant, J. (2002). SPSS: A Survival Manual. Sydney, Allen and Unwin.

Patterson, G. (2001). "The Applicability of Institutional Goals to the University Organisation". Journal of Higher Education Policy and Management **23**(2): 159-169.

Patton, M. Q. (1990). Qualitative Evaluation and Research Methods, Sage, Newbury Park, CA.

Patton, M.Q. (2002). Qualitative research and evaluation methods, Sage, Thousand Oaks, CA.

Pawlowski, K. (2001). "Towards the Entrepreneurial University". Higher Education in Europe **26**(3): 427-437.

Pearse, H. (2003). Our Universities: Backing Australia's Future - CAPA's analysis of the consequences for postgraduate students, Council of Australian Postgraduate Associations (CAPA).

Peeke, G. (1994). Mission and change: institutional mission and its application to the management of further and higher education. Buckingham, The Society for Research into Higher Education & Open University Press.

Perry, C. (1998). "Processes of a case study methodology for postgraduate research in marketing". European Journal of Marketing **32**(9/10): 785-802.

Platt, J. (1992). "Critiques of conventional practices". What is a Case: Exploring the Foundations of Social Inquiry. C. C. Ragin and H. S. Becker. Cambridge, Cambridge University Press. **1:** 21-52.

Pratt, G. and D. Poole (2000). "Global corporations 'R' us? The impacts of globalisation on Australian universities". Australian Universities' Review **42**(2): 16-23.

Rhoades, G. and Slaughter, S. (1997). "Academic Capitalism, Managed Professionals, and Supply-Side Higher Education". Social Text (51, Academic Labor): 9-38.

Rowley, J. (2002). "Using case studies in research". Management Research News **25**(1): 16-27.

Ross, L., Rix, M., *et al.* (2005). "Learning distributed leadership: part 1." Industrial and Commercial Training **37**(3): 130-137.

Saad, M. (2004). "Issues and challenges arising from the application of innovation strategies based on the triple helix culture. Experience of

the incubation system in Algeria". The International Journal of Technology Management & Sustainable Development **3**(1): 17.

Schutte, F. (1999). "The University-Industry Relations of an Entrepreneurial University: The Case of the University of Twente". Higher Education in Europe **24**(1): 47-65.

Shattock, M. (1999). "Governance and management in universities: The way we live now". Journal of Education Policy **14**(3): 271.

Shattock, M. (2000). "Strategic management in European universities in an age of increasing self-reliance". Tertiary Education and Management **6**(2).

Shattock, M. (2002). "Re-balancing modern concepts of university governance". Higher Education Quarterly **56**(3): 235-244.

Shattock, M. (2003). Managing successful universities. Maidenhead UK, Open University Press.

Shattock, M. (2005). "European Universities for Entrepreneurship: Their Role in the Europe of Knowledge The Theoretical Context." Higher Education Management and Policy **17**(3): 13-25.

Slaughter, S. (1998). "National Higher Education Policies in a Global Economy". Universities and Globalization. Critical Perspectives. J. Currie and J. Newson. Thousand Oaks, SAGE Publications: 45-70.

Slaughter, S. and Leslie, L.L. (1997). Academic Capitalism: Politics, Policies, and the Entrepreneurial University, The Johns Hopkins University Press.

Slaughter, S. and Leslie, L.L. (2001). "Expanding and Elaborating the Concept of Academic Capitalism". Organization **8**(2): 154.

Slaughter, S. and Rhoades, G. (1996). "The emergence of a competitiveness research and development policy coalition and the commercialization of academic science and technology". Science Technology and Human Values **21**(3): 303.

Smilor, R. W., Dietrich, G. B., and Gibson, D. V. (1993). "The entrepreneurial university: The role of higher education in the United States in technology commercialization and economic development". International Social Science Journal **45**(1): 1-11.

Soares, V. A. M. and Amaral, A. M. S. C. (1999). "The Entrepreneurial University: A Fine Answer to a Difficult Problem?" Higher Education in Europe **24**(1): 11-21.

Sullivan, K. P. H. (2000). "Identity, Conflict and Reputation in the University Setting: an illustrative case study". Journal of Higher Education Policy and Management **22**(2): 177-185.

Temple, P. and Shattock, M. (2005). European universities in the knowledge society: institutional entrepreneurship and organisational change. 27th Annual EAIR Forum. Riga, Latvia, The European Higher Education Society.

Tolofari, S. (2005). "New Public Management and Education". Policy Futures in Education **3**(1): 75-89.

Trowler, P. and Knight, P. (1999). "Organizational socialization and induction in universities: Reconceptualizing theory and practice". Higher Education **37**(2): 177-195.

UOW. (1999). Illawarra Technology Corporation (ITC) Report, University of Wollongong Council. **Resolution No.1999/90**.

UOW. (2002). 2001 Annual Report, University of Wollongong: 1-99.

Weber, R. P. (1990). Basic content analysis, Sage Publications.

Yin, R. K. (1992). "The Case study method as a tool for doing evaluation". Current Sociology **40**(1): 121-137.

Yin, R. K. (1994). Case study research: design and methods. London, Sage Publications.