



# WRESTLING WITH A FINE WOMAN:

## THE HISTORY OF POSTGRADUATE EDUCATION IN AUSTRALIA 1851 - 1993

The Struggle for Knowledge hath a Pleasure in  
it like that of Wrestling with a Fine Woman.  
(Lord Halifax, Seventeenth Century)

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## ERRATA

- P.5 line 10 change structure to structured  
P 23 line 1 change thought to though  
P 26 line 19 change it to its  
P 27 line 20 comma after attend  
P 34 line 18 change as to was  
P 55 line 21 change form to from  
P 57 line 13 The universities  
P82 line 2 led to  
P110 line 6 delete not  
P119 line 16 delete although  
P127 line 22 New South Wales  
P187 line 6 close gap  
P192 line 6 close gap  
P309 line 8 change to ten in business, three in health  
P327 line 6 change kings to kinds

### Amendments

- P61 The University of Melbourne, founded in 1853, began its teaching program in 1855.
- P90 The first Doctor of Science degrees at the University of Melbourne were most probably honorary degrees (generally degrees not academically-earned at a university) though the criteria of “original research” could have been met by the two recipients, David Orme Masson, foundation Professor of Chemistry, who arrived the previous year and Professor Sir Frederick McCoy, foundation Professor of Natural History, appointed in the 1850s and a Fellow of the Royal Society of London.

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## SUMMARY

Since the Report of the Committee on Australian Universities in 1957, postgraduate education in Australia has expanded greatly in comparison to the relatively minor role it played in the nineteenth and early twentieth centuries. This thesis examines the history of this transformation and in particular, the rise of the research degree, culminating in the introduction of the PhD to Australia in 1946. It discusses the subsequent diversification of postgraduate education to include coursework, professional doctorates, diplomas and certificates.

The thesis analyses the change in the credentialling role of the postgraduate degree, from the moral dimension it carried in the nineteenth century to that of a sifting and accrediting mechanism in the twentieth century. It assesses, in particular, the influence of overseas models of postgraduate education on the development of an indigenous system and the impact of the rise of science and scientific method in the development of the modern research university.

It examines the increased role of the state in the transformation of the university from an elite to mass institution, with concomitant effects of this on postgraduate education. It contends that the changing relationship between state, universities and the research sector, combined with gradual loss of university autonomy, has impacted strongly on a hitherto relatively independent postgraduate sector. As universities have become increasingly assimilated into the marketplace and state, corporatization, entrepreneurial activity, direction of research and university development by government have directly impinged upon the postgraduate sector. The thesis argues that, in a mass tertiary education system, postgraduate qualifications have acquired differential market value. Aligned with this, multiple pressures for growth in the postgraduate and postdoctoral areas have effectively created a new tier of education - that of a quaternary sector.

The thesis concludes with an assessment of the impact of the Dawkins years on postgraduate education, current influence of overseas models, and an analysis of future trends within the sector, both nationally and internationally.

## **DECLARATION**

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the University Library, being available for loan and photocopying.

## **ACKNOWLEDGEMENTS**

I would like to acknowledge the expertise, support and critical input of my supervisors, Professor. Ian Davey and Mr. Ian Brice.

I would also like to acknowledge the forbearance, support and tolerance of my family.

## ACRONYMS AND ABBREVIATIONS

AIDAB	Australian International Development Assistance Bureau
ABSTUDY	Aboriginal Study Assistance Scheme
APRA	Australian Postgraduate Research Awards
ARGC	Australian Research Grants Committee
ARC	Australian Research Council
ASTEC	Australian Science and Technology Council
AUC	Australian Universities Commission
AUSTUDY	Commonwealth age related scheme of education allowances
AVCC	Australian Vice Chancellors Association
CAE	Colleges of Advanced Education
CAPA	Council of Postgraduate Associations
CPRA	Commonwealth Postgraduate Research Awards
CRTS	Commonwealth Reconstruction Training Scheme
CRC	Cooperative Research Centres
CSIRO	Commonwealth Scientific and Industrial Research Organization
CTEC	Commonwealth Tertiary Education Commission
DEET	Department of Employment, Education and Training
EFTSU	Equivalent Full time Student Unit
FAUSA	Federation of Australian University Staff Associations
HEC	Higher Education Council
HECS	Higher Education Contribution Scheme
NBEET	National Board of Employment, Education and Training
NHMRC	National Health and Medical Research Council
OECD	Organization for Economic Co operation and Development
OLAA	Open Learning Agency of Australia
OPRS	Overseas Postgraduate Research Scholarships
PWRD	Post War Reconstruction Department
TAFE	Technical and Further Education
TEAS	Tertiary Education Assistance Scheme
TEC	Tertiary Education Commission
UNS	Unified National System



# INTRODUCTION

## PREAMBLE

In 1951, in the centenary year of the establishment of the University of Sydney, Australia's first university, a request for a commemorative stamp was refused by the postal authority, on the grounds that this would be of insufficient interest to the public at large. The total Australian university population then numbered less than 30,000, with only ten PhDs granted nationally in the previous year. In contrast, by 1993, over half a million Australians were enrolled in higher education; 20% of these were postgraduates. However, no stamp has ever been issued to commemorate any university, although a series is planned to commemorate medical science research. The penetration of the Australian psyche by the institution of the University is a relatively modern, tentative, phenomenon; perhaps no other national institution of such importance has been so popularly unacknowledged, despite a long and eventful history.

## RESEARCH OBJECTIVES

The recent upheavals of the Dawkins years have focused new attention on tertiary education. In order to fully understand the ramifications of system change since 1987, and to make sense of the present, it is necessary to have an understanding of the history of postgraduate education in Australia. While the undergraduate sector has received much attention, the history of the postgraduate sector has not been fully documented. No comprehensive history of Australian postgraduate education exists. The thesis aims to redress this lack.

The history of Australian postgraduate education is inextricably linked to those international postgraduate models which have influenced its nature and structure. For much of the Australian history, the British "apprenticeship" research model has been paramount. In this

model, degrees undertaken in a period of scholarly apprenticeship and enculturation were comprised of research and a thesis, with no advanced taught courses. In the last decade especially, a competing American “professional” model, involving formal training centred around taught courses in graduate schools, examinations and often a dissertation, has become prominent. The analytic focus of the thesis centres on the historic influence at these competing models.

As David Jones reminds us, “what constitutes a model is a subjective matter . . . a national model may be many things, but it is never the totality of a nation’s system of higher education.”<sup>1</sup> While it increasingly embraces some of the features of the American system, an Australian model of graduate education is constantly evolving. Selective graftings from British and American systems over the last two centuries have bred a hybrid postgraduate sector and a multi-stemmed national model.

Since the **Report of the Committee on Australian Universities** (commonly known as the Murray Report) in 1957, postgraduate education in Australia has expanded greatly in comparison to the relatively minor role it played in the nineteenth and early twentieth century Australian universities. A major research objective is to document the influence of overseas models of postgraduate education on the formation of indigenous postgraduate models and to consider linkages to social, economic and political considerations. A concomitant objective is to describe the genesis of the transformation of the postgraduate sector - in particular, the rise of science and the research degree, culminating in the introduction of the PhD to Australia in 1946. A further, linked objective is to chart the development of a broadening concept of Australian postgraduate study (which today includes coursework higher degrees, professional doctorates and a plethora of diploma and certificate courses, along with graduate schools) and

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<sup>1</sup> David Jones, “National models of Higher Education: International Transfer”, in Burton R. Clark & Guy R. Neave (eds) *The Encyclopaedia of Higher Education*, Pergamon Press, Oxford, p958



examine the student diversification which has also occurred. A final objective is to postulate likely future trends within the postgraduate sector, as a result of change.

The Nobel Prize winner, Ernest Rutherford, considered that the introduction of the PhD to the United Kingdom in 1917 was "a real and very great departure in English education... the greatest revolution... of modern times."<sup>2</sup> The introduction of the PhD to Australia in 1946 heralded a similar revolutionary transformation in both the Australian University and the research sector. In the same way, the widespread adoption of an American professional model of postgraduate education in recent years indicates another important transformation.

The evolution of a supra-tertiary, or quaternary, sector of education is linked to recent changes in the postgraduate sector. The sector can no longer be adequately encompassed by the term "tertiary education". New kinds of skills, training, and sheer demand ensure this sector is qualitatively different from the old tertiary sector. Postgraduate education is not simply an add-on or adjunct to tertiary education. A new nomenclature is needed. The demography of worldwide demand at the close of this century augurs change, in order to accommodate the rise of this distinct quaternary tier.

In Australia, as in many OECD countries this century, postgraduate education has increasingly become an instrument of public policy since World War Two. Political economies influence and give form to graduate education in modern postgraduate models, in such areas as manpower need and enrolment numbers and funding. World War Two highlighted inadequacies in research capabilities and a need to further develop these. British, and later, aspects of American, research models were adopted and facilitated this.

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<sup>2</sup> Renate Simpson, How the PhD came to Britain: a century of struggle for postgraduate education, The Society for Research into Higher Education, Guildford, Surrey, 1982, p153

Following the pattern of the British experience, the relationship between the state, universities and the research sector in Australia changed from one of university autonomy, to relative autonomy, to some loss of autonomy by the 1990s. The Dawkins era saw a tying of universities to industrial and national needs; a gearing-up process to make universities more responsive to national needs was linked with their increased incorporation into the economic objectives of the State.

As postgraduate education in Australia has become increasingly part of the international arena, identification with the international discipline, perhaps more than the home institution, is a feature of the modern research culture. This, in combination with new technologies, has to some degree militated against more extensive state control of research in universities though pressures are evident. With the rise of the mass undergraduate university, pressures have begun to be exerted on the next, postgraduate, tier. Expectations, once raised, are hard for the state to quell, especially as underlying demand builds with a rise in those suitably qualified at the undergraduate level.<sup>3</sup>

The international corpus of knowledge contextualized as postgraduate must be observed against the emergent internal stresses of the dynamic and evolving postgraduate system itself. The transformation of this system in Australia reflects new tensions between competing models of postgraduate education, centred round their viability for modern postgraduate needs.

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<sup>3</sup> The debates surrounding the nature and purpose of postgraduate education in many ways replicate those in the 1880s in Australia concerning the introduction of technical education - whether it was to be for personal development and advancement or to serve national purposes.

## **POSTGRADUATE DEFINITIONS**

In this thesis, the following definitions apply. "**Postgraduate**" refers to a student who has embarked on a course of study which is truly "**post-graduate**". Consequently, honours students are not considered postgraduate students for the purposes of this thesis, although they may sometimes be acknowledged as such elsewhere. In this thesis, all kinds of courses subsequent to initial degree level, including graduate diploma, coursework and research degrees, are encompassed by the term "**postgraduate**".

"**Candidature**" refers to the period when a student is enrolled for a higher degree; it begins with enrolment and finishes, for research students, with successful thesis examination. Coursework higher degrees may also contain a thesis, though of smaller length; much of the degree consists of discrete units of structure study (coursework). For the masters degree, current standard candidature is one to two years for a full-time coursework degree, and up to two years for a full-time research degree. The expected candidature time for a full-time research PhD (based on scholarship duration) is up to four years. Recently introduced professional doctorates (many of which are subject to fees) have candidature times (depending on field) of between two and ten years.

"**Completion rate**" (used particularly in the case of research students, awarded the bulk of scholarships nationally) refers to the total length of time, less any sanctioned intermission periods, between candidature commencement and submission of a thesis for examination.

## LITERATURE REVIEW

### OVERSEAS RESEARCH

The history of modern postgraduate education, and postgraduate models has been relatively well documented in the American literature, as America was the country where postgraduate education developed most rapidly. An extensive body of American literature exists, often alongside the same histories, concerning such issues as credentialism, supervision, the PhD and the linking of research and national needs, graduate schools and the research-teaching-study nexus. The early history of medieval European universities, which is germane to any study of the origins of modern postgraduate education, has been fairly extensively documented in both the European and American higher education literature, though the focus of many accounts has often been on undergraduate education. The most relevant to an examination of the early Australian system are the British and German sources, with American sources valuable for an examination of modern aspects of Australian postgraduate education.

German literature in translation includes early accounts of the postgraduate sector of the German university, while the origin of postgraduate studies and the PhD in early German universities is also given some examination by English and American authors.<sup>4</sup> More detailed accounts of the education of American postgraduate scholars in the German universities in the nineteenth century and the adoption of the seminar system and scientific research method within the fledgling American graduate schools are given by later American researchers.<sup>5</sup>

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<sup>4</sup> Wilhelm von Humboldt, "On the Spirit and Organizational Framework of Intellectual Institutions on Berlin", translated by Edward Shils, *Minerva*, Vol.8, 1970  
Freidrich Paulsen, *The German Universities: Their Character and Historical Development*, translated by E.D.Perry, MacMillan and Company, New York, 1895  
Abraham Flexner, *Universities American English German*, Oxford University Press, New York, 1930  
Charles McClelland, *State, Society and University in Germany 1700-1914*, Cambridge University Press, Cambridge, 1980  
Harold Perkin, "The Historical Perspective", in Burton R Clark (ed.) *Perspectives on higher education*, University of California Press, 1984

<sup>5</sup> Laurence Veysey, *The Emergence of the American University*, University of Chicago Press, Chicago, 1965  
Bernard Berelson, *Graduate Education in the United States*, McGraw-Hill, New York, 1960  
Burton Clark, "The Research Foundations of Postgraduate Education", *Higher Education Quarterly*, Oxford, Vfol. 47:4, 1993  
Renate Simpson, *How the PhD came to Britian: a century of struggle for postgraduate education*, 1982

Contemporary historians of higher education, Burton Clark and Renate Simpson, have given detailed accounts of the history of the seminar system. Joseph Ben-David and Abraham Zloczower provide a detailed interpretation of the rise of the modern German university, as well as of the English, American and other European university systems.<sup>6</sup> This seminal paper charts conditions under which research and teaching can be best organized, concluding that the American graduate university provides the optimal environment. The **European Journal of Education** (1986) devoted an issue solely to European postgraduate education, looking at history and current issues in Germany as well as the Netherlands, Scandinavia and Britain.<sup>7</sup> The Australian researcher, Ingrid Moses, has also given a recent overview of the German system.<sup>8</sup>

In America, modern postgraduate issues, such as credentialism and the proliferation of the PhD, were investigated as early as the beginning of the twentieth century.<sup>9</sup> Early general histories of American higher education include accounts of the development of the distinctive American graduate school, which rapidly became an important sector.<sup>10</sup> Burton Clark, prominent in the field since 1962 (**Educating the Expert Society**) has written more recently in the 1990s on contemporary postgraduate issues. As well as charting European and American postgraduate history, he analyses the distinctive national configurations of a variety of postgraduate and research models.<sup>11</sup>

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<sup>6</sup> Joseph Ben-David and Abraham Zloczower, "Universities and Academic Systems in Modern Societies", European Journal of Sociology, vol. 3, 1962

<sup>7</sup> European Journal of Education, Vol. 21:3, The European Cultural Foundation, Amsterdam, 1986

<sup>8</sup> Ingrid Moses, "Higher Education in the Late Twentieth Century, Reflections on a Changing System, A Festschrift for Ernest Roe", Higher Education Research and Development Society of Australia, University of Queensland Printery, St. Lucia, 1990

<sup>9</sup> William James, "The PhD Octopus", Memoirs and Studies, Longmans Green and Company, London, 1903

Burton Bledstein, The Culture of Professionalism, The Middle Class and the Development of Higher Education in America, W.W. Norton, New York, 1976

<sup>10</sup> Laurence Veysey, The Emergence of the American University, 1965, Bernard Berelson, Graduate Education in the United States, 1960

Robert Wolff, The Ideal of the University, Beacon Press, Boston, 1969

Talcott Parsons and Gerald Platt, The American University, Harvard University Press, Harvard, 1975

<sup>11</sup> Burton Clark, Educating the Expert Society, Chandler, San Francisco, 1962

"Graduate Education and Research Training", Research and Higher Education: the UK and the US, SRHE, Open University Press, Buckingham, UK, 1992

"The Research Foundations of Postgraduate Education", Higher Education Quarterly, Vol. 47:4 1993

"Rooted in Humboldt", The Times Higher Education Supplement, 13 August 1993

Places of inquiry: research and advanced education in modern universities, University of California Press, Berkeley, 1995

He documents (1993) the evolution and continued relevance of the Humboldtian research-study-teaching nexus in inquiry-based institutions of higher learning. As Germany was the nineteenth and early twentieth century exemplar of this linkage, so the United States has become the current international exemplar, particularly in the last half of the century. He analyses those conditions, at national, institutional and basic unit (departmental) level, which most fully support the nexus. The growth of knowledge requires advanced-level postgraduate training, **for** research and **in** research. The American postgraduate model, rather more than the British, provides such training, he considers.

In his most recent book (1995) he further examines the essential micro-level role of the department in graduate education. American universities are characterized as “graduate department universities”. It is in departments that taught graduate courses and systematic exposure to sub-specialities in disciplines transfer the knowledge which cannot be adequately taught at lower levels. The business of universities, he contends, is to stimulate inquiry as well as knowledge production and dissemination. Universities which best do this integrate research and research training with teaching and study.

On issues of the relationship between state, university and marketplace, Michael Katz is important.<sup>12</sup> Though not primarily concerned with postgraduate education, he investigates the role of research, and the gatekeeper role of universities in a technical and managerial society. His discussion of the moral responsibilities of the contemporary university has some relevance to the nineteenth century moral credentialing function of higher degrees.

Katz notes four components of the assimilation of universities into the market place and the state. The components, as Katz defines them, are increased similarity in principles that underlie organization and operation of universities and corporations, especially the application

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<sup>12</sup> Michael Katz, Reconstructing American Education, Harvard University Press, Cambridge, Massachusetts, 1987

of supply and demand (with the consequence that education has a market value). Internal priorities and lines of development are determined by the requirements of corporations and the State (with a consequence that research directions are determined by availability of funding). Furthermore, activities of faculty members increasingly begin to resemble those of entrepreneurs or bureaucrats, while the direction of university development is justified by appeals to the "needs" of the economy, society, technology or some other government force.

Along with Katz, Jaroslav Pelikan (1992) maintains the critical tradition, with his critique of the research history and research function of universities.<sup>13</sup> The historic function of supervision and mentors is also examined, along with likely interdisciplinary directions for future research, with the biological sciences a possible future model for new kinds of dissertations (invoking W.M. Reid's seminal **Bioscience** article in 1978).<sup>14</sup>

A recent key history is William Bowen and Neil Rudenstine's **In Pursuit of the PhD** (1992), the most comprehensive account of American postgraduate history since Berelson, with detailed and exhaustive analysis of issues such as optimal research group size and completion rates in institutions across America.<sup>15</sup>

An account of the history and influence of various international models of graduate education is given by Rhoades (1991) who applies particular scrutiny to the American model, where certain organizational structures and political economies shape graduate education. "Apprenticeship" and professional graduate models, the formalization of doctoral education worldwide (often along the lines of American models) and the move toward globalization of graduate ideologies, form the basis of his account in which the graduate sector is increasingly aligned to national technological purpose and needs.<sup>16</sup>

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<sup>13</sup> Jaroslav Pelikan, The idea of the university - a reexamination, a commentary on Newman, Yale University, Yale, 1992

<sup>14</sup> Reid W M Will the Future Generations of Biologists Write a Dissertation? BioScience, Vol.28:10, 1978

<sup>15</sup> William Bowen and Neil Rudenstine, In Pursuit of the PhD, Princeton University Press, Princeton, 1992

<sup>16</sup> Gary Rhoades, "Graduate Education", in P.G. Altbach (ed.) International Encyclopedia of Higher Education, Garland Publishing, New

Similar comparative perspectives on international graduate education are provided by Gumpert (1992). He raises issues such as articulation between graduate and prior levels of education, the size and complexity of the graduate level, graduate funding sources and frameworks for the study of graduate education and notes, "so far, graduate education has been understudied by scholars of higher education".<sup>17</sup> The American literature, nevertheless, is at the forefront of such investigation, where approaches to the study of higher, and increasingly, graduate, education (for example, case studies of departmental organization) also encompass sociological and anthropological methodologies.

Current indepth analyses of American postgraduate issues (often linked to historical accounts) are also found in journals such as **Higher Education Quarterly** and increasingly, the popular press. Interest in issues such as the nature and purpose of the PhD and other doctorates, or credentialism, is now widespread - a reflection of the pervading influence of the graduate school in American society. **Business Week** for example, in 1994 reported that the latest US census showed a "yawning gap" between average annual full-time salaries of males with and without higher degrees, of \$18,000 (1994).<sup>18</sup> The graduate school is also of interest to mainstream publishers. Pepper White's **The Idea Factory: Learning to think at MIT** (1992) gives a factual, student's-eye view of the workings and intense pressures at a highly competitive graduate research school.<sup>19</sup>

While the modern British literature is concerned with similar themes, there has been only one comprehensive history of postgraduate education in that country, **Renata Simpson's How the Phd came to Britain** earlier contributed a chapter on postgraduate history to Ernest Rudd's

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York, 1991

<sup>17</sup> P.J. Gumpert, "Graduate Education: Comparative Perspectives", in Burton R. Clark & Guy R. Neave, The Encyclopedia of Higher Education, Pergamon Press, Oxford, 1992, p1125

<sup>18</sup> Business Week, February 28, 1994, p22

<sup>19</sup> Pepper White, The Idea Factory: Learning to think at MIT, Dutton Penguin, New York, 1992



**The Highest Education**, an account of modern graduate education in Britain.<sup>20</sup> She considers the medieval origins of higher degrees in Europe and their development in Britain to the twentieth century.

In most general histories of British universities, some attention is given to postgraduate studies, though it is not a major theme.<sup>21</sup> While postgraduate credentialism is not examined in the British literature to the extent it is in the American (a result of the much greater importance given in the British system to the undergraduate and honours degree) Michael Young's **The Rise of the Meritocracy 1870-2033** (written in 1958) signalled the rising importance of higher degrees.<sup>22</sup> He postulated a fictional future, where merit rather than class was the primary means of social and economic mobility. Although a satire, it was based on pertinent observations of change in British society and its universities and was widely read at the time.

In the last two decades, attention has also been given to issues affecting good graduate education, such as completion rates, changing conceptions of research and "current dilemmas" of postgraduate education.<sup>23</sup> Such commentaries analyse the effects of Government intervention in higher education since the 1960s, which has emphasised the role of research and allowed for an overall, if uneven, increase in postgraduate research numbers.

Much of the debate concerning British postgraduate issues occurs in journals, such as that of **The Society for Research into Higher Education** and increasingly, as Britain has moved

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<sup>20</sup> Renate Simpson, How the PhD came to Britain, 1982, and "The History of Graduate Education in Britain", in Ernest Rudd's The Highest Education, Routledge and Kegan Paul, London, 1975

<sup>21</sup> Sir James Mountford, British Universities, Oxford University Press, London, 1966

V.H.Green, The Universities, Penguin, London, 1969

Michael Sanderson, The Universities in the Nineteenth Century, Routledge and Kegan Paul, London, 1975

George Davie, The Democratic Intellect: Scotland and her Universities in the 19th Century, Edinburgh University Press, Edinburgh, 1961

<sup>22</sup> Michael Young, The Rise of the Meritocracy, An Essay on Education and Equality, Penguin Books, Victoria, 1958

<sup>23</sup> Ernest Rudd, A New Look at Postgraduate Failure, SRHE, Guildford, Surrey, 1985.

Stuart Blume "A Framework for Analysis", The Future of Research, SRHE, Guildford, Surrey, 1982.

Tony Becher, Maurice Kogan, Process and Structure in Higher Education, Routledge, London, 1992

into the EEC, the **European Journal of Education**. The **Times Higher Education Supplement** is a major forum for debate concerning a wide range of postgraduate issues, most recently the government's 1993 science White Paper, which advocated limiting PhD science places and favoured the preliminary masters degree.

Despite a new prominence accorded to postgraduate issues in the literature, there has, however, been little analysis of the influence of contemporary international postgraduate models, in the manner of the American literature.

## AUSTRALIAN RESEARCH

In recent times there have been increasing concerns about the role of higher education, including its relation to the national economy, and in particular, its research role. However, there have been no comprehensive accounts of the development of postgraduate studies in Australia and the early historic literature is sparse. What little discussion of postgraduate history exists is to be found mainly in sources such as institutional (often commemorative) histories.<sup>24</sup> These are mainly undergraduate accounts; postgraduates are only a peripheral feature, largely due to small student numbers.

After World War Two, other institutional, as well as faculty and departmental, histories were written. Again, the focus was largely undergraduate; postgraduate history is not accorded a separate status.<sup>25</sup> Collections of reminiscences and personal histories of early students, though mainly undergraduate in orientation, include some incidental postgraduate information.<sup>26</sup>

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<sup>24</sup> H.E Barff, A Short Historical Account of the University of Sydney, Angus and Robertson, Sydney, 1902

Ernest Scott, A History of the University of Melbourne, Melbourne University Press, Melbourne, 1936

Geoffrey Blainey, A Centenary History of the University of Melbourne, Melbourne University Press, Melbourne, 1953

<sup>25</sup> Fred Alexander, Campus at Crawley, F.W. Cheshire for the University of Western Australia Press, Melbourne, 1963

Malcolm Thomis, A Place of Light and Learning, University of Queensland Press, St. Lucia, 1985

Milton Lewis, A National Research University: the Origins and Early Years of the ANU, MA thesis, Australian National University, Canberra, 1972

W.G.K. Duncan and R.A. Leonard, The University of Adelaide: 1874-1974, Rigby, Adelaide, 1973

## ACCOUNTS OF CHANGES IN HIGHER EDUCATION

As a commentary on Australian higher education in the 1950s, with specific reference to postgraduate studies, A.P. Rowe's **If the Gown Fits** is a significant early work in the field.<sup>27</sup> This is an autobiographical account of the years spent at Adelaide by the University's first full-time Vice-Chancellor, who played a crucial role in the postwar development of national postgraduate studies. Rowe, a British technologist, was highly critical of the state of postgraduate studies in Australian universities and implemented significant change at Adelaide. He also influenced Menzies' decision to establish the 1957 Committee of Inquiry into Australian Universities (Murray Report). Rowe's book reached a wide audience and caused considerable controversy.

Any debate concerning higher education prior to Rowe occurred within a rather narrow context, for example, university symposia, the publications of the Australian Vice Chancellors' Committee, articles in university journals (the first journal, *Vestes*, did not appear until the 1950s), essays and university speeches. The debate generally occurred within universities and was not Commonwealth initiated. After the release of the Murray Report, several accounts of the state of higher education were published. Again, the focus remained largely the undergraduate sector, though with the increased government interest in research and the strengthening of postgraduate studies advocated by the first two governmental inquiries into higher education, there was new attention to postgraduate matters in these accounts.<sup>28</sup> After the creation of a binary tertiary system in the 1960s, following the

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Clifford Turney, Ursula Bygott, Peter Chippendale, Australia's First: a History of the University of Sydney Volume 1 1850- 1939, W.F. Connell, G.E. Sherington, B.H. Fletcher, Clifford Turney, Ursula Bygott, Vol 2 1940-1990, Hale and Iremonger, Sydney, 1992, 1995. An official history of ANU is forthcoming.

<sup>26</sup> Hume Dow, (ed.) Memories of Melbourne University, Undergraduate Life in the Years since 1917, Hutchinson, Melbourne, 1983  
Farley Kelly, Degrees of Liberation: A Short History of Women in the University of Melbourne, The Women Graduates Centenary Committee, University of Melbourne, 1985

<sup>27</sup> A.P. Rowe, If the Gown Fits, Melbourne University Press, Melbourne, 1960

<sup>28</sup> A. Grenfell Price, The Humanities in Australia, a Survey with special reference to the universities, Angus and Robertson, Sydney, 1959  
E.L. Wheelwright, Higher Education in Australia, Cheshire, Melbourne, 1965  
D.S. Macmillan, Australian Universities, a Descriptive Sketch, Sydney University Press, Sydney, 1968  
G.S. Harman and C. Selby Smith, Australian Higher Education, Problems of a Developing System, Angus and Robertson, Sydney, 1972

recommendations of the second major inquiry into tertiary education (the Martin Report), the Colleges of Advanced Education, and the new system itself, received scrutiny.

By 1966, universities had expanded greatly in the wake of the Murray and Martin Reports. Postgraduate education was an area where the Murray Report, especially, recommended strengthening. Postgraduate numbers rose, so much so that there were fears of a doctoral oversupply in some disciplines. The first study concerned solely with postgraduate education which raised concerns regarding doctoral education, examined this "oversupply" in the field of chemistry.<sup>29</sup> Major themes of a later study by Hill concerned links with industry and matching PhD production to industry needs, as well as charting areas of PhD oversupply.<sup>30</sup>

The components which Katz noted as indicative of the assimilation of universities into the marketplace and state are today increasingly hallmarks of universities in Australia. Nowhere is this more clearly seen than in the postgraduate sector. The second of the components (increased determination of university priorities and development by the requirements of corporations and the state) was evident by the time of the Hill study. Similarly, papers given at a joint industry/Adelaide Advisory Centre for University Education seminar on graduate education in 1978 demonstrated the close relationship between science postgraduates, industry and universities, with the theme of the seminar an attempt to create a "better fit" between industry and university postgraduates.<sup>31</sup>

In the 1970s and 1980s, major themes in the literature of higher education, in the wake of a reining-in of expenditure after a period of expansion, were accountability and the "steady state" of the higher education sector generally.<sup>32</sup> Postgraduate issues included research and

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<sup>29</sup> Stephen Hill, P. Armstrong, Ian Ross, "Australian PhD graduates in science and applied science" Proceedings of the Third Conference of the Royal Australian Chemical Institute, Canberra, ACT, 1966

<sup>30</sup> Professor Stephen Hill, PhD Education in Australia: The Making of Professional Scientists, Australian Academy of Science, Canberra, 1974

<sup>31</sup> Graduate Education, University of Adelaide Advisory Centre for University Education, seminar papers, 1979

<sup>32</sup> G.S. Harman, A.H. Miller, D.J. Bennett, B.I. Anderson, Academia Becalmed, Australian National University Press, Canberra, 1980

Colleges of Advanced Education (where, with the advent of the College degree, there were new pressures for higher degrees) and the slowing of growth. New Centres of Excellence were opened, created and funded by the federal government. This was a continuance of links with industry, and now the State. The "needs" of the state, economy, and technology, as Katz noted, increasingly influenced postgraduate education.

After 1980, higher education journals increasingly tackled postgraduate issues. *Vestes* in 1980, and the journal of the Higher Education Research and Development Society of Australia (HERDSA) in 1984 both devoted most of an issue for the first time to postgraduate concerns such as scholarships, examination of theses, supervision, research and development.<sup>33</sup>

In this period, much of the literature concerning postgraduate issues also emanated from university higher education research bodies such as the Tertiary Education Research Centre at the University of New South Wales and the Centre for the Study of Higher Education at the University of Melbourne, as well as from the Council of Australian Postgraduate Associations. In the journals, the history of postgraduate, as distinct from that of undergraduate, education was also examined for the first time.<sup>34</sup>

Few Australian theses have made reference to the history of Australian postgraduate education, though some have made peripheral reference; a notable exception has been Whittle's 1990 thesis.<sup>35</sup> Examples of thesis themes include the history of Commonwealth involvement in tertiary education, Postwar Reconstruction, and women and tertiary education.

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Terry Hore, R.O. Linke, L.H. West, *The Future of Higher Education in Australia*, McMillan, Melbourne, 1978

Edward Gross, John Western, *The End of a Golden Age: Higher Education in a Steady State*, University of Qld Press, St. Lucia, 1981

<sup>33</sup> A HERDSA Green Guide on supervision was published in 1985.

<sup>34</sup> Alan Lindsay "Doctoral Education: Continuity and Change", *HERDSA*, Vol.9, 1987. The origins, nature, and development of doctoral education from the award of the first PhDs up to the 1980s are considered, as well as the imbalance of sexes amongst doctoral candidates, poor stipends, low growth rates, a poor labour market for PhDs, pressures for doctoral education in CAEs and the possibility of coursework doctorates.

<sup>35</sup> David Jones, "A Century of Exoticism: Australian Universities 1850-1950", *History of Education Review*, Vol. 14:1, 1985

Jan Whittle's MEd thesis, "Postgraduate Participation and Performance: Research Students at the University of Adelaide",

In the literature of the 1980s and 1990s, a variety of postgraduate issues were considered through the media of specialised conference proceedings, newspaper articles, and both institutional and government-sponsored research (particularly through the Department of Employment, Education and Training). New themes to emerge in the literature in the 1980s included quality and diversity, while many postgraduate issues were increasingly seen as international issues. Gender issues often linked to equity concerns, achieved new prominence.<sup>36</sup>

## RECENT AUSTRALIAN LITERATURE

Current concerns include the nature and purpose of doctoral education, supervision, completion rates, coursework and scholarships.<sup>37</sup> The full history of Australian postgraduate education and the influence of overseas models, has however, not been documented, nor an analysis made of the influence of overseas models.

The relationship between higher education and the economy is considered by Simon Marginson, who contends that private schooling and postgraduate education, termed

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University of Adelaide, 1991, examines postgraduate issues - a new emphasis. Detailed data on 1985 cohort of research students identified areas of concern such as completion rates. As the most detailed study of postgraduates at Adelaide, it is a valuable work in the literature.

In his PhD thesis, "The development of Tertiary education in Australia, 1939-1979", J.T. Hyde, University of Adelaide, 1984, traces the increasing role of Commonwealth in tertiary education after World War Two as universities became an arm of public policy. While postgraduate education is not specifically considered, the thesis considers the role of the wartime Walker Committee (which was influential in stimulating university research and the foundation of the Australian National University) and the Universities Commission in lobbying for postgraduate scholarships in 1955.

Carol Johnson's PhD thesis "Social Harmony and Australian Labor: the Ideology of the Curtin, Chifley and Whitlam Governments", University of Adelaide, 1986, does not examine postgraduate issues directly, but considers the role of wartime research and industry and government links in Post- War Reconstruction. Alison McKinnon's PhD thesis "Awakening Women: Women, Higher Education and Family Formation in SA 1880-1920", University of Adelaide, 1989, has some information on early Adelaide postgraduates.

<sup>36</sup> For example, Ingrid Moses, Barriers to Women's Participation as Postgraduate Students, Department of Employment, Education and Training, Australian Government Publishing Service, Canberra, 1989

Gabrielle Baldwin, "The Pursuit of the PhD", in D.R. Jones and S.L. Davies, Women in Higher Education: an agenda for the decade, The University of New England, Armidale, 1990 Assumptions which underlie much of the discourse and policy in the area of equity and women's participation in postgraduate education (such as goals of equal representation in non-traditional courses and in professorial numbers) are provocatively challenged by Baldwin.

<sup>37</sup> For example, David Cullen, Margot Pearson, Lawrence J. Saha, R.H. Spear, Establishing Effective PhD supervision, DEET, Australian Government Publishing Service, Canberra, 1994  
Australian Vice Chancellors Committee, The Progress of Higher Degree Students, University of Queensland Press, St. Lucia, July 1990. This includes a brief history of Australian higher degrees. The National Report on Australia's Higher Education Sector, Australian Government Publishing Service, Canberra, 1993, also includes a chapter on the historical background of Australian universities, though any discussion of postgraduate education is incidental. In this most comprehensive volume, apart from statistical tables, the section entitled "Postgraduate studies" takes up less than two pages and concerns particularly the years since 1990

"positional goods", are the key areas of market development in Australian education.<sup>38</sup> Increasingly, higher education is central to the economic debate in Australia, though the earlier economic concept, Human Capital Theory, has been discredited. Marginson examines Labor's research policies and the drive to develop non-government funding sources in the light of current research support scarcities.

Two recent generalist accounts of university problems provide a critical analysis of the changes to the universities in recent years.<sup>39</sup> Maslen and Slattery, both journalists who write about higher education, express concerns about the evolution of large "multiversities", and a possible division of universities into those which concentrate on research and those which may become teaching-only institutions, as a result of increased competition for funds. The authors note that education is increasingly seen as a commodity and consider the role of new technologies and their likely effects on higher education.

Lowe, an academic scientist, examines inadequate research resources in Australia, the problems of concentrating research, and apparent attempts to separate teaching and research. He also cautions that a caste system of universities may evolve, with middle band universities lacking the research resources of the older universities, and debunks the notion that most productive research is only done in large units. His account advocates a mix of types of research units and calls for basic research funding increases.

Little has been written by Australian researchers about models of tertiary, or more specifically, graduate, education. One exception has been Jones (1992) who charts the history, international transfer and adaptation of various national models. Australian models are hybrid ones, mixing as they do elements of different undergraduate and graduate systems

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<sup>38</sup> Simon Marginson, *Education and Public Policy*, Cambridge University Press, Melbourne, 1993

<sup>39</sup> Geoff Maslen, Luke Slattery, *Why our Universities are Failing: Crisis in the Clever Country*, Wilkinson Books, Melbourne, 1993  
Ian Lowe, *Our Universities are Turning us into the "ignorant country"*, University of New South Wales Press, Sydney, 1994

and modes of governance. Graduate education, Jones asserts, has been a “major transmitter of models of higher education”; this is evidenced in the adoption (and adaptation) of features such as the American-style graduate school in other countries, though the characteristic feature of the American graduate sector, its sheer size and range, is less easily exported.<sup>40</sup>

More recent Australian literature has deliberated the place of professional doctorates, asserting that doctoral education in Australia is in a transition phase. While the proliferation of professional doctoral programs occurred mainly after 1993, the debate had already begun in the late 1980s.<sup>41</sup> Other current issues concern PhD oversupply, first mooted in the sciences in the 1970s, are once more of concern, as is the academic standard of some masters degrees and the quality of newer research environments.<sup>42</sup>

## SUMMARY OF AUSTRALIAN RESEARCH

Unlike the overseas literature, few accounts exist in Australia of the history of postgraduate studies. Of those incomplete accounts that do exist, most were written after World War Two. While postgraduate issues such as completion rates, gender differences and supervision are increasingly to the fore in the Australian literature after 1980 (as is the case in the overseas literature) there has been less Australian examination of the role and purpose of doctoral study. Comparatively little has been written in Australia concerning the credentialling and sifting role of postgraduate education, and nothing on the moral dimensions of early higher degrees. Research and the role of science remain dominant themes in the current Australian literature, as they are worldwide.

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<sup>40</sup> David Jones, “National Models of Higher Education: International Transfer”, in Burton R. Clark & Guy R. Neave (eds.) The Encyclopedia of Higher Education, Pergamon Press, Oxford, 1992.

<sup>41</sup> T.W. Maxwell & P.J. Shanahan (eds.) Which Way for Professional doctorates? Contexts and Cases, The University of New England, Armidale, 1996.

<sup>42</sup> Grant Harman, “Which way now for postgraduate education?”, Campus Review, 31 July 1996



In the late twentieth century, the “apprenticeship” research model is questioned as the sole model for an increasingly diverse Australian postgraduate sector. Little, however, has been written concerning the desired future shape of this sector nor has a coherent philosophy been offered. More immediate issues such university autonomy, increased links to industry, deregulation, and problematic funding of both postgraduate scholarships and research are the current foci of the contemporary Australian literature.

## **METHODOLOGY AND SOURCES**

The main primary sources encompass primary archival research, analysis of government reports and documents, and interviews. In Australia, previous research has concentrated mainly on the period after World War Two. For the period before World War Two, primary sources include university calendars, early statistical sources such as the **Yearbook of the Universities of the Empire 1914-1947**, and the AVCC 1935 position paper "**The Case for Commonwealth Assistance to Universities in Post-Graduate Studies**".<sup>43</sup> Interviews with surviving early postgraduates (including the first two Australian PhDs) have been conducted and taped interviews (from the Special Collections at the University of Adelaide) with early women graduates noted. Transcripts of early ABC radio tapes from the ANU archives have also been consulted.

Institutional and departmental histories from Australian universities have been used. University newspapers, magazines, archival records and faculty and departmental minutes at the Universities of Adelaide, Sydney, Melbourne and New South Wales, have been additional sources. After World War Two, primary sources include key state and national government documents, reports, papers, policy statements, parliamentary speeches and DEET internal or commissioned reports, series and statistics.

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<sup>43</sup> Document presented to the Australian Vice-Chancellors' Committee, University of Melbourne, 19 August 1935

Other key sources include institutional documents, calendars and reports. Archival records from the Universities of Adelaide, Melbourne, Sydney, NSW and the ANU, along with institutional statistics, departmental handbooks, and faculty and departmental minutes, have also been used. Further sources include position papers from key lobby groups (for example the AVCC and postgraduate student associations), as well as interviews with postgraduates (including early PhDs at Adelaide and other universities, with the assistance of alumni associations) and interviews with key policy makers at Commonwealth, state and university level. Comparative case studies of the development of postgraduate studies at the Universities of Adelaide and New South Wales during different periods form a major component of the thesis.

## **ORGANIZATION OF THESIS**

The following chapters present the research findings. The Australian history spans a period of over a hundred and forty years, while Western postgraduate education (from which the Australian system cannot be considered in isolation) spans ten centuries. Chapter One thus provides an attenuated, but necessary, history of the development of postgraduate degrees in Europe and the United States. Chapter Two deals with the early history of postgraduate degrees in Australia, from the mid-nineteenth century until the outbreak of World War Two and documents the influence of the British model on Australian postgraduate education. Chapter Three traces the further development of postgraduate studies, from the introduction of the PhD at Melbourne University during the closing stages of the War, to the establishment of the Murray Committee of Inquiry into Australian Universities in 1956. Chapter Four charts an expansionary period in postgraduate education, culminating in a period of contraction after 1975 and incorporates the beginning of the influence of an American professional model. Chapter Five delineates a period of comparative stasis, marked by changes in national

government and policy, and the further development of both postgraduate models. Chapter Six, which spans the years between 1987 and 1993, considers the great changes of the "Dawkins years", their aftermath, and the influence of competing graduate models in the last decade. In the Conclusion, an assessment is made of these reforms in relation to the postgraduate sector as well as the nature of postgraduate models currently existing in Australia and their linkages to social, economic and political considerations. An analysis is made of future trends in this maturing sector, which, the thesis contends, has become a new tier of higher education.

# **CHAPTER ONE: HISTORICAL MODELS OF POSTGRADUATE EDUCATION**

The origins of modern postgraduate models (which may be termed “apprenticeship” and “professional”) can be traced back to the medieval European universities. This is evidenced, for instance, in the nomenclature - such as the ancient titles of “master” and “doctor” - though today their original meanings have altered somewhat. In order to fully understand the nature and structure of modern models, some historical background is necessary.

## **EARLY EUROPEAN BACKGROUND**

Early postgraduate models were not based on research. The notion of research, and researching teachers, which today seems so integral to the modern university, arose only in the late eighteenth/early nineteenth centuries, specifically in the German universities. Before this, university teachers were often not expected to engage in research but in the transmission of received knowledge, though there was an established tradition of critical scholarship - of refining and sometimes adding to, classical scholarship. (The scientific revolution of the seventeenth century, as instanced, for example, by Galileo at Padua), was the precursor to the nineteenth century development of inquiry and empirical knowledge as the dominant paradigm, particularly in science. The modern research imperative of universities, that is, the discovery of “truth” through scientific investigation, dates from this time. While the modern university teacher/researcher and postgraduate differ from their forebears, early concepts of student apprenticeship leading to eventual incorporation into the elite echelons of mastership, still underpin modern research postgraduate systems.

Higher degrees, granted generally after an initial degree, have, though not always, denoted advanced achievement. Traditional (and to some extent, modern) doctorates and masterships denoted achieved eminence in scholarship, or higher professional expertise, or, from the nineteenth century onward in some universities, expertise in research.

For the structure and organization of medieval universities and higher degrees, this chapter draws on a number of sources.<sup>1</sup> Sources for the early and later history of German universities include American, German and British accounts.<sup>2</sup> The early history of American universities and their higher degrees is drawn from American and Australian accounts.<sup>3</sup>

The origins of the terms "doctor" and "master" can be traced even further back than the medieval beginnings of distinct European universities such as Bologna, Paris, Oxford and Cambridge, during the twelfth and thirteenth centuries. The ancient Greeks and Romans had classified all knowledge into seven groups, later known in medieval times as the seven liberal arts. Teachers of these arts, generally monks, preserved and transmitted this knowledge. A master originally meant a teacher of the arts. In the tenth and eleventh centuries, "magistri artium", those who taught the arts at the lower level Trivium (grammar, dialectic and rhetoric)

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<sup>1</sup> For accounts of both medieval European and British universities, this account draws on Renate Simpson, "The History of Graduate Study in Britain", in Ernest Rudd, The Highest Education: a study of graduate education in Britain, Routledge Kegan Paul, London, 1975 and her later book, How the PhD came to Britain: A century of struggle for postgraduate education, Society for Research into Higher Education, Guildford, Surrey, Monograph 54, 1983

Other accounts include V.H.H. Green, The Universities, Penguin, Harmondsworth, 1969

Sir James Mountford, British Universities, Oxford University Press, London, 1966

Martin Clarke, Classical Education in Britain 1500-1900, Cambridge University Press, Cambridge, 1959

William Boyd, The History of Western Education, Adam and Charles Black, London, 1961

James Scotland, The History of Western Education, University of London Press, London, 1970

Negley Harte, The University of London 1836-1986, The Athlone Press, London, 1986

<sup>2</sup> Friedrich Paulsen, The German Universities Their Character and Historical Development, translated by E.D.Perry, Macmillan and Company, New York, 1895

Charles McClelland, State, Society and University in Germany 1700-1914 Cambridge University Press, Cambridge, 1980

Abraham Flexner, Universities. American English German, Oxford University Press, New York, 1930

<sup>3</sup> As well as Flexner's account, other sources include Bernard Berelson, Graduate Education in the United States, McGraw-Hill, New York, 1960 and

Laurence Veysey, The Emergence of the American University, University of Chicago Press, Chicago, 1965

Gary Rhoades, "Graduate Education", in Altbach, PG (ed) International Higher Education: An Encyclopedia, Garland, New York, 1991

Burton R Clark, Places of inquiry: research and advanced education in modern universities, University of California Press, Berkeley, 1995

David R Jones, "National Models of Higher Education: International Transfer" in Burton R. Clark and Guy Neave (eds) The Encyclopedia of Higher Education, Pergamon Press, Oxford, 1992

Susan Davies, "Doctoral Education in Transition", in TW Maxwell and PJ Shanahan, Which Way for Professional Doctorates?, The University of New England, Armidale, 1996

and the Quadrivium (arithmetic, geometry, music and astronomy) began to gather in Paris; from such groupings the University of Paris evolved.

In the earliest years of the earliest universities, "doctor", "master" and "professor" were interchangeable titles, denoting advanced study and the right to teach.<sup>4</sup> They were the only qualifications conferred by the early universities and cannot in any sense be regarded as higher degrees.<sup>5</sup> It was only later, as studies became more structured, that the bachelorship was introduced to signify the first step toward the mastership and examinations were required for admission to the teachers' or professors' guilds or colleges.

Apprenticeship has always been an integral part of the attainment of higher degrees and a recognition of the "craft" of knowledge. In the twelfth century at Paris, an apprenticeship of five to seven years was required in the scholars' guilds as the disciple of a master. If the examinations were passed and his disputation was satisfactory, a student became a Master of Arts and was thus formally licensed to teach the liberal arts. The acquisition of the licence to teach (*licentia docendi*) in part replicated the structure of other medieval craft guilds, where, after fixed periods of instruction under a master, the apprentice could aim for licensing and mastership himself.<sup>6</sup> Gradually, many students sought the prestige of mastership without intention of teaching and distinctions were made between teaching and non-teaching magistri. The definition of mastership underwent a change, coming to signify course completion and scholarly accreditation rather than intention to teach.<sup>7</sup> This was a significant change, for "master" and "doctor" now had an additional meaning.

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<sup>4</sup> Renate Simpson, "The History of Graduate Study in Britain", p6

<sup>5</sup> Renate Simpson, How the PhD came to Britain, p6

<sup>6</sup> William Boyd, The History of Western Education, p147. Masters were bound to teach for some years, thus providing teachers in the arts faculty. This reinforced Aristotle's dictum that the proof of the mastery of knowledge was the ability to teach.

<sup>7</sup> *ibid* p1469 William Boyd, The History of Western Education, p147

As the early masters and doctors undertook more advanced study, the "superior" faculties of law, theology and medicine were added to the "inferior" arts faculty, thus creating a hierarchy of faculties and higher degrees. It was in these "superior" faculties that much education for the professions took place.<sup>8</sup> Course structures in the early universities varied, but at Bologna, for example, after five years of study, a civil law student became a Bachelor without examination and the student was required to give lectures on chapters or a whole book studied. After two more years of directed study he could apply for the doctorate. Private and public examinations (the latter in the cathedral) a lecture and disputation followed. If these were passed, the archdeacon then conferred the right to teach at a ceremony involving the bestowing of a gold ring, elevation to the magisterial chair in the cathedral and public procession.<sup>9</sup> It was a public, ceremonial recognition, which still in essence survives.

The disputation was a central feature of the medieval doctorate. Public disputations, often conducted in the cathedrals which were great centres of authority, reinforced the oral nature of knowledge transmission, and rhetorical skills were prized. It was this oral aspect of doctoral education which gradually fell into disuse (or survived in attenuated form as the viva voce) as printed books became more widely available. In contrast, medieval notions of apprenticeship and enculturation into a discipline survived the transformation of some higher degrees to research degrees.

## **THE UNITED KINGDOM**

For much of its history, Australia's postgraduate (and undergraduate) models derived from those of the United Kingdom. Scrutiny of the nature and structure of these antecedents, particularly the undergraduate, is therefore pertinent.

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<sup>8</sup> Renate Simpson, "The History of Graduate Study in Britain", p6  
See also Hastings Rashdall, "The vocational university rejustified, 1902", in Michael Sanderson (ed) The Universities in Nineteenth Century, Routledge Kegan Paul, London 1976, p219

<sup>9</sup> William Boyd, The History of Western Education, p147

The earliest university model was primarily ecclesiastical, though law and medicine could also be studied at Oxford and Cambridge (founded from the thirteenth century) and at the four oldest Scottish Universities at Edinburgh, Glasgow, Aberdeen and St. Andrews (founded from the sixteenth century). The third British university, the University of Durham (founded in 1832) also had an ecclesiastical orientation. Gradually, “polite learning” or “liberal education” (in the English universities, often less than rigorous) became another feature of the model, as the universities undertook the additional function of educating the sons of the gentry. By the nineteenth century, the British curricula was centred around the classics (at Oxford) and mathematics (at Cambridge).

However, this differed in the Scottish universities. There, universities had long had links, and exchange, with Continental (particularly Dutch) universities, and many Scots students furthered their studies on the continent. The undergraduate curriculum was a broad one, studied by all students, and had particular strengths in philosophy and medicine (though bitter debate saw the gradual ascendancy of the English model of greater subject specialization as the nineteenth century progressed). In the eighteenth century, the Scots discarded the English tutorial system of instruction and adopted a low-cost system of lecturing, using professors expert in single subjects, a feature which would later have a marked effect on the academic structure of later British universities.

One aspect of the tertiary model in both countries was its small size and exclusivity - linked to cost, gender and class - though the Scottish system was less class-based and students also did not have to stay in colleges. (Women were excluded from universities until the latter half of the nineteenth century. After changes instituted between 1869 and 1878, women were first permitted to enrol for degrees at the University of London in 1878. The university gave



women the opportunity to attend lectures on electricity as early as 1832, established the first college in the nation for women in 1848 (Queen's College) and allowed women to sit a Women's General Examination, similar to the Matriculation Examination.)

From the beginning, undergraduate, let alone higher degree, candidates were always few in number. After the sixteenth century, plague, war, the lure of universities on the continent and new religious strictures for entry saw overall student numbers plummet. English universities lost much of their rigour and the ancient higher degree model changed. From this time, higher degrees bestowed (such as the MA, which will be discussed later) became often little more than nominal in character; such examinations as took place remained oral. (The Bachelor of Divinity higher degree, for instance, a requirement for fellowship in the English university colleges, could by the nineteenth century be obtained for little more than the payment of a large fee). Moreover, much medical and legal education took place outside the universities, within professional contexts, in such places as hospitals and the Inns of Court (in London). Professional education in these two disciplines was never considered a prime function of the early British model.

A further aspect of the early British, in general contrast to the Scottish, model was the importance of residence and collegiate teaching. Oxford and Cambridge were based around endowed residential colleges. With the drop in student numbers in the sixteenth century, most teaching was undertaken by college fellows rather than the professors of the university. The once highly-regarded professoriate was small, underpaid and relatively insignificant by the nineteenth century; students were not obliged to attend university structure was to be a significant inhibitor to the development of research and the setting-up of good research laboratories in the English universities of the nineteenth century.<sup>10</sup>

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<sup>10</sup> *ibid*,p8-10

The early British models were strongly aligned to the Anglican Church (though the Scottish were not). After the English Reformation, undergraduates at Oxford and Cambridge were required to subscribe to the Thirty-Nine Articles of the Church of England before university entry. Higher degree holders, through compulsory oaths of belief and membership of Convocation, were also strongly enmeshed, for the universities were, by code of governance and practice, both upholders, and part of, the “established” Church and State. The education provided was avowedly less for utilitarian and professional purposes (though in the context of such deeply-imbedded Church and State linkages this may be questioned) than for the cultivation of moral and intellectual character and for affirming religious affiliation.

## **THE MA DEGREE**

The nature of the MA degree varied over time. In the fourteenth century, boys entering Oxford and Cambridge began their studies at fourteen, completed their bachelor's degree at eighteen and could be examined for their mastership three years later if they wished. With the development of public schools in the fifteenth and sixteenth centuries, in France and Germany the bachelorship was gradually shifted downward and marked by the award of the baccalaureate at the end of school. The bachelorship remained a university qualification in Britain.

Over time, the Oxford and Cambridge MA gradually became "a pure formality - a confirmation of the bachelor's degree."<sup>11</sup> Requirements for the masters degree in England were gradually reduced, until a token few weeks of residence after the BA, and a fee, were all that was required to take out the mastership three years after the initial degree (a tradition which continued at Oxford and Cambridge and even Australia, into the twentieth century). The ancient privileges of the MA - the right to teach and sit in convocation of the university -

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<sup>11</sup> Renate Simpson, How the PhD came to Britain, p6

were, however, retained. Well into the later nineteenth century, the bestowing of a higher degree at Oxford also required an oath of belief - even after reforms saw the removal of compulsory religious affirmations at ordinary degree level. (Professed Anglicanism was still needed for admission to the Senate at both universities). The MA, along with other higher degrees, carried connotations beyond the guild of scholarship. It was also a kind of badge which carried explicit and implicit meanings of elite accreditation and affiliation - religious, national - even, with all the subtle nuances this could evoke, as a “gentleman”.

Unlike England, in the oldest Scottish universities the MA was generally (and until quite recently) the first degree awarded in arts faculties after four years undergraduate study. At Cambridge and Oxford, the only first degree offered until 1966 was the BAS, which covered all subjects. Many Oxbridge higher degrees were termed bachelors degrees (for example, BMus, BD, LLB and even the Bsc) a practice not emulated in Australia.

By the beginning of the nineteenth century, standards of scholarship, along with enrolments, had reached a low point in British universities, though Scottish universities retained a reputation for rigour. Some small attempts to lift standards had been made over the previous fifty years. Efforts were made to revive the medieval masters examinations, but the attempt failed and the only examined higher degrees remained comparatively rare doctorates in law, divinity, medicine and later music. However, the institution of the Oxford honours examination in 1802 saw the beginnings of a revival of undergraduate standards, with honours students at Oxford and Cambridge separated from “pass” students and required to pass rigorous examinations. The University of Durham did insist at first on an examination and residence for its MA but by 1858 this requirement had lapsed.

## **BRITISH UNIVERSITY MODELS**

The first quarter of the nineteenth century saw demand for a model of a university which could cater for the emergent professional and commercial needs of an industrializing democracy - in a secular context. From this emerged a new British model (exemplified by the University of London) based on aspects of Scottish (and to some extent, German) models. The specialized Scottish lecturing system was adopted and the department became the basic operating unit in the universities established in the nineteenth century, while German research ideas were seen as innovative.

The University of London opened in 1828 as a secular and non-residential Joint Stock Company; its explicit aim was the provision of legal and medical education, along with science, modern languages, philosophy and political economy as well as a traditional liberal education, with no religious bars. The low-cost lecturing system and the democratic, non-residential aspects of the Scottish model were melded to the inquiry-based methods of the German model, which catered both for emerging, as well as ancient, professions. Formally chartered in 1836 as an examining university only (with teaching devolved to affiliated colleges) its examinations could be undertaken after study at many institutions within the Empire. The university also succeeded in making the MA an earned degree.

Another significant model of tertiary education emerged in mid-century in Ireland, near the time the first two Australian universities were established (and where religious issues were also sensitive). Three state-endowed Queen's Colleges were founded by Act of Parliament in 1845, to provide non-denominational, non-residential teaching for Queen's University, which was subsequently given its charter in 1850. None of the endowment could be used for any form of religious education. The curriculum was significantly wider and more utilitarian than

at the older universities (for example, diploma courses were offered, within the Arts degree, in civil engineering and agriculture). Modern history and languages, as at London, were new options for the MA.

At the same time, the Oxbridge university model underwent significant change. In mid-century, after decades of debate concerning necessary reformation of the two oldest universities, Royal Commissions were established to inquire into Oxford and Cambridge. While it recommended that classics and mathematics retain their supremacy, the Commission also recommended the narrow undergraduate curriculum be liberalized in order to provide more modern subjects. The professoriate was reinvigorated, with new emphasis given to scholarly achievement, and given more control over university affairs - a reform which would later generate a better climate for research. Criticism was made of the requirement of students to subscribe to the Thirty-Nine Articles, and the Commission recommended that students lodging outside the colleges be admitted to the universities, which would have ramifications for later universities, as residence had long been considered essential to university attendance. However, the importance of residence within the towns (rather than at colleges elsewhere) for the granting of "extension" degrees was acknowledged.

The Commission also sent out questionnaires to various members of the universities, to ascertain whether higher degrees should be examined. Most respondents were not in favour and higher degrees in professional areas remained as designators (upon payment) of certain academic rank. The three-week residence requirement for the Oxford MA was even abolished (though not the lucrative fee) to the disgust of some such as Mark Pattison, tutor at Lincoln, who was to later become a passionate and influential advocate of rigorous undergraduate education, raising the standard of higher degrees and granting fellowships for scientific research.<sup>12</sup>

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<sup>12</sup> Pattinson was scathing about what he called "one of the greatest scandals of the English University, the sale - no other words describes it

From mid-century to the 1870s, among proponents of liberal, professional and scientific education, a debate continued about the purposes of the university - a debate of no small relevance to the nascent Australian universities. The establishment at Oxford of Schools of Natural Sciences, Law and Modern History, typified new concepts of what could be taught in a university. During this period, a new relationship was forged between universities and the professions of medicine, law, engineering (and the Civil Service) as more professional degrees were offered. The establishment of many professional bodies also occurred at this time, auguring the beginning of more formalized kinds of professional accreditation.

Despite the reforms at Oxbridge, the most progressive university model in this period was that of London, with its emerging strengths in science. In 1860 it was the first university to award a Bsc (previously science was only studied within the arts degree) and also introduced the first British doctorate in science, the equivalent of the Master of Arts.<sup>13</sup> It helped to stimulate the development, later in the century, of the “civic” universities, with their strong ties to local industry, as many students at the technologically-oriented northern civic colleges were able to study for the London Bsc through external examination. In 1868, London instituted the DLit (at first termed Doctor of Literature, later more commonly the Doctor of Letters [DLitt] at other universities) due to popular pressure for a doctorate. In the same year, the University of Wales became the first university to offer an MA by dissertation, from topics listed by the university. The DLitt (Doctor of Letters) at Cambridge was not introduced until 1883 and at Oxford not until 1900.

The introduction of the London DLit entailed some ingenuity. A formal Legal Opinion sought from the Law Officers of the Crown attested that the University could not award the title of

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- of our degrees”. He argued that undergraduate education alone was not the main purpose of a university and that lecturers should consider themselves “men of science”, primarily learners rather than teachers. Renate Simpson, “A History of Graduate Study in Britain”, pp25-26

<sup>13</sup> *ibid*, p8

Doctor of Arts, as the term "doctor" was the equivalent of "master" and did not signify different steps in the same faculty (and indeed this was the original medieval meaning).<sup>14</sup> Some lateral thinking was required, with the result being the institution of the DLit degree. This rarely-awarded degree was at first an examined degree, but was later taken mainly by research thesis after 1885.

Universities in the UK became more receptive to the new notion of research which had emanated from Germany in the late eighteenth century. Some of these were the civic universities, such as those which were chartered in the last quarter of the century in the industrial cities of Manchester, Birmingham and Liverpool (a little too late to be seen as models for the very first Australian universities though their inexpensive teaching methods and modern subjects would have some effect). They "engaged in research to prove their value to the industrial patrons who provided their laboratories".<sup>15</sup> Formal accreditation in science research was not available in the early part of the century in Britain. Many of the best British scholars, particularly those in scientific fields like chemistry, went to Germany to study and take the German PhD. By the end of the century, this lack of postgraduate research training became an increasing embarrassment to many British scientists.

In 1878, Durham introduced the first British MSc. Significantly:

The MSc, unlike the MA, was in almost all universities an "earned" degree from the beginning, requiring a period of post-graduate study and some form of test, either an examination or dissertation or both.<sup>16</sup>

Attempts to introduce a DSc at Durham met with some opposition and the **University Journal** (17 December 1881) argued, "as the standard for the MSc is so high, we

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<sup>14</sup> Simpson, *How the PhD came to Britain*, p49

<sup>15</sup> Michael Sanderson, *The Universities in the Nineteenth Century*, p7

<sup>16</sup> Renate Simpson, "A History of Graduate Study in Britain", p8

fail to see the object of a further degree in science".<sup>17</sup> Nevertheless, the first British DSc was introduced the next year.<sup>18</sup>

In Scotland, all four universities introduced the DSc, DLitt and DPhil after 1860. These five-year degrees, which showed the influence of German models, contained elements of research from the beginning (unlike the London DSc). Candidates had to be MA holders, aged over twenty and, in some scientific areas, had to present a dissertation as well as pass an examination. By the close of the century, the research component for all science disciplines increased considerably; as early as the late 1860s, doctorates in philology (for first-class honours graduates) were obtainable by one year's research only.

By the end of the nineteenth century, most universities except for Oxford and Cambridge offered earned masters degrees and many, doctoral degrees by thesis rather than by examination (thesis submission being usually only allowed five years after a first degree). The notion of research - particularly in science and stimulated by European and American experiences - gained currency in the later nineteenth century despite disparagement by some scholars. Pattison's sparring partner, the champion of the tutorial system and Vice-Chancellor of Oxford, Benjamin Jowett, famously cried: "Research! A mere excuse for idleness! It has never achieved and never will achieve any results of the slightest value".<sup>19</sup>

In contrast to the situation in Germany, however, research at British universities as an adjunct to teaching duties rather than forming the organizational basis of the university - thus emphasizing the marginality of postgraduate studies. Furthermore, "research" was generally thought to be "scientific research", involving "scientific method" and was thus confined more

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<sup>17</sup> *ibid*, p9

<sup>18</sup> The statement is remarkably reminiscent of the protests made by the Science faculty at Adelaide when Melbourne was urging other universities to introduce the PhD in the mid-twentieth century. See Chapter Three.

<sup>19</sup> Quoted by Jowett's colleague, Logan Pearsall Smith in Jaroslav Pelikan, *The idea of a university - a reexamination*, Yale University, Yale, 1992, p85



to the scientific disciplines (again in contrast to Germany and, by the end of the nineteenth century, America).<sup>20</sup>

Within the universities of the UK in the nineteenth century and well beyond, “scholarship” was seen as the province of the humanities and “research” that of the sciences. This distinction (often in practice difficult to analyse and maintain) affected the location and nature of research in the British university. One definition of “scholarship” is “breadth of culture, ripeness of judgement and wide-ranging intellectual curiosity”. These qualities were seen as the hallmarks of those eminent humanities scholars who “never engaged in research” but followed traditions of disseminating (and often adding to) received wisdom. However, they may equally be those of the best science “researchers”.<sup>21</sup>

In the last years of the nineteenth century, postgraduate bachelors Certificates of Research in Science to graduates of other universities were awarded at Oxford and Cambridge from 1895, though in the twenty seven years of the existence of these degrees, relatively few were awarded. Bristol and London also attempted similar degrees, though these too petered out. While the supremacy of "scholarship" over new-fangled "research" was effectively asserted in the most ancient British universities, by the early twentieth century the tide began to turn when science and politics in tandem pursued the talisman of the German-initiated PhD.

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<sup>20</sup> The history of science and “scientific method” itself has a diverse and fascinating history, one too detailed to pursue at great length here. For the purposes of this thesis, “positivism” is the sense in which scientific research and scientific method of the latter nineteenth and early twentieth centuries in British universities may be defined. This involved hypothesizing, setting up experiments and observing results - generally in laboratories.

<sup>21</sup> V.H.H. Green, *The Universities*, Penguin, Middlesex, 1969, p218

## THE GERMAN PHD MODEL

The genesis of the modern postgraduate research model can be found in the German university, the wellspring of the modern PhD and university-based scientific research. Other western postgraduate models derive from this early German model.

In the late seventeenth and eighteenth centuries, radical innovations at the German universities of Halle and Gottingen included the use of German instead of Latin in teaching and emphasis on modern philosophy and science, where the new German philosophers:

applied themselves to improving the very fabric of the universities - their organization and their methods of dissemination and extension of knowledge.<sup>22</sup>

In the early nineteenth century, one of these new educational philosophers, Wilhelm von Humboldt, reformed the secondary Gymnasium (school) system, instituted university teacher training programs and established the University of Berlin. He formulated the idea of the research/teaching nexus as a crucial component of the modern university, maintaining that "both teacher and student have their justification in the common pursuit of knowledge."<sup>23</sup>

This radical formulation signalled the start of the research postgraduate tradition, for advanced students were no longer to be passive, but rather active, collaborators in scholarship. Humboldt further argued that while state support for universities was essential, university autonomy was necessary for the best research and teaching.

Unlike the British professoriate, in the early nineteenth century the German professoriate was strong and influential. The German student was free to pursue study at more than one

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<sup>22</sup> Renate Simpson How the PhD Came To Britain, p13

<sup>23</sup> Wilhelm Von Humboldt, "On the Spirit and Organizational Framework of Intellectual Institutions in Berlin", Translation by Edward Shils, Minerva, Vol.8, 1970, p243

university and to specialise, taking no examinations but producing and defending a thesis two or three years after matriculation. During the intellectual ferment of the later eighteenth century in Europe, the German arts (or philosophy) faculty rose in prominence, with its major degree a new doctorate of philosophy. Within the faculty, the philology seminar, in particular, became the focus of the new ethos of research in the late eighteenth century. Seminars such as those conducted by Wolf at Gottingen and by Gesner at Halle were the real nurseries of scientific research:

It is true that their purposes were originally different. They were intended to be pedagogical seminars for future teachers in the classical schools, but in fact they were, before all else, institutions in which the technique of philological research was taught.<sup>24</sup>

Received wisdom was increasingly questioned, to be replaced by a new emphasis on rational inquiry and discovery. The disputation and certainty were supplanted by research and the investigatory thesis. The doctoral dissertation, the Doctorate in Philosophy, came to signify accreditation as a learned investigator.

The philosophy faculty was considered the "learned faculty" as distinct from the professional schools of law and medicine and had close links with prestigious Royal Academies.<sup>25</sup> Both natural (scientific) and moral philosophy as well as mathematics and philology were taught in the faculty, which was at the cutting edge of new thought. A combination of intellectual rigour, scientific method and the heady if unnerving excitement of an environment which questioned theological beliefs, increasingly began to draw American scholars to Germany early in the nineteenth century in a quest for the German doctorate.

The doctorate in Germany was effectively the only degree which could be earned at a university as there was no bachelors degree. The German student began university at nineteen

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<sup>24</sup> Freidrich Paulsen, The German Universities Their Character and Development, p187

<sup>25</sup> *ibid*, p80

or twenty and about three years later took the **Staatsexamen**, a state examination which led to government employment as well as teaching. Those students who continued on at university wrote a thesis after two to three years of attendance at seminars which emphasised scientific method. Generally, extensive oral and written examinations followed, with successful students receiving the PhD.

Written examinations largely replaced the disputation as a means of assessment for the higher degree in the nineteenth century:

The disputation, the traditional standard exercise for achievement of the dignity of Doctor, died out in this period. Though dissertations were still often written in Latin and rarely took on the dimensions of a full-length book, they did represent a major step forward in the incorporation of high scholarly standards into degrees, especially when compared to the sometimes corrupt and meaningless disputations of the previous century.<sup>26</sup>

Over the course of the century, the number of German doctorates in law and medicine rose rapidly. The number of PhD doctorates (in the philosophy faculty) also rose for, apart from the advantages its possession gave to a Gymnasium teacher, the increasing availability of scientific careers made the degree attractive.

The expense of the degree (for local students) also gave status to the holder of the degree. For those without private means acquisition of the degree was often difficult - doubly difficult for those who aspired to an academic career.<sup>27</sup> A second dissertation, the Habilitation, was necessary for appointment to the limited number of academic posts for which the patronage and good will of the mentor were all-important.

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<sup>26</sup> Charles McClelland, *State, Society and University in Germany 1700-1914*, p198

<sup>27</sup> The impecunious graduate student entered what the Germans termed a "hungering and suffering" period as a tutor, often reliant on his professor for sustenance, to the extent of receiving his cast-off clothing and food. The difficulties were considered part of the initiation, good for tempering the scholarly soul.

Students were not tied to institutions in Germany; as in medieval times, courses could be taken with teachers at a variety of universities. This flexibility attracted American graduate students, who were, moreover, able to enter the system at PhD level. It was not possible for these graduates to enter a British university immediately at masters level or above.

Competition, decentralization and to some extent, lack of state control, were hallmarks of the German university in the nineteenth century. These features seem to be crucial to the success of later influential postgraduate national models (witness the primacy of the US in the twentieth century). Decentralization and competition were aided by the fact that the area of influence of German culture, which included some universities, extended beyond its defined national borders, and thus much German state control. New ideas were introduced quickly and the model of the University of Berlin was widely copied (especially in the case of the philosophy faculty, encompassing arts and sciences, which had achieved prominence at Berlin). Competition helped the discipline of philosophy become so influential. As new universities were created, there was demand for philosophically-trained research staff across all faculties. When demand for staff in some disciplines became saturated, new sub-disciplines gradually rose to the status of disciplines. Similar expansion of research boundaries would be emulated in the new national postgraduate model evolving in the United States.

## **AMERICAN POSTGRADUATE MODELS**

The private college, which offered four years of sometimes poor quality undergraduate instruction based on a common classical curriculum, was the main American tertiary institution from colonial days to the nineteenth century. Postgraduate education occupied a marginal position in these colleges, which numbered in the hundreds. By the end of the

nineteenth century, however, American higher education was transformed by the rise of competitive private, as well as state, universities with an orientation toward research. From the mid-nineteenth century onward, a dominant feature of American postgraduate education was the growth of the German-inspired graduate school (with its research bias) grafted on to the undergraduate college modelled on the English system. Allied to this was the influence, to some degree, of the Scottish concept of “useful knowledge”. By the century’s end, the American postgraduate model was a “professional” one, characterized by formal coursework and certification and increasingly geared toward the professions.

Most American institutes of higher learning early in the century were in a sorry state, with little real scholarship evident. Many American colleges were more high school than university, while strained relations between staff and students and a certain amount of thuggery on campus were common. The flimsy effort required to gain a masters degree (on payment of a fee a few years after the bachelors degree as well as a requirement to be of "good character" - understood at the time to mean having kept out of prison) did not satisfy those students who wished to undertake more rigorous higher degrees.<sup>28</sup>

## **THE AMERICAN PHD**

Germany became a magnet for these students in the early nineteenth century, with the first German PhD awarded to an American in 1817. It was the generation of Americans born after 1840 however, who really began the trek, with many inspired by the German model of inquiry-based research.<sup>29</sup> Around 10,000 Americans studied in Germany in the nineteenth century, most toward the end of the century.<sup>30</sup> Living costs in Germany were very cheap compared to America, even including travel expenses, and compared favourably to the cost of a masters degree at Harvard. At some German university “diploma mills” the PhD could be

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<sup>28</sup> Burton Bledstein, The Culture of Professionalism, W.W. Norton, New York, 1976, p 275. See also pp134-6

<sup>29</sup> *ibid*, p20

<sup>30</sup> Bernard Berelson, Graduate Education in the United States, p11

obtained in as little as two semesters, which was an attraction to many, although these quickly-acquired degrees fell into disrepute later in the nineteenth century.<sup>31</sup>

The period 1860-1880 was one in which "scientific method", used in everything from historic document research to laboratory investigation, was increasingly dominant in Germany. With enthusiasm, Americans embraced this new method, though its holistic underpinning's were often misread:

The German ideal of "pure" learning... became for many Americans the notion of "pure science" with methodological implications which the conception had often lacked in Germany. The larger, almost contemplative implications of Wissenschaft (investigating and writing in a general sense) were missed by the Americans, who almost always assumed "investigation" meant something specifically scientific... ignoring the lofty evocation by nearly all Germans of underlying spiritual unity. Scientific Americans, unlike most scientific Germans, identified scientific specialisation with the entire purpose of the university.<sup>32</sup>

In 1891, Josiah Royce, one of the American students who had travelled to study in Germany, wrote:

England was understood not to be scholarly enough. German scholarship was our master and our guide...one returned an idealist...devoted to pure learning...burning for a chance to build the American university.<sup>33</sup>

Not surprisingly, there was pressure for the PhD to be introduced to America. The American organizational response was the creation of the graduate school, distinct from either liberal undergraduate or professional schools. This was to become possibly the defining component of the American postgraduate model and research and specialization would devolve to this separate tier. The generalist college curriculum was unable to provide the specialization needed, particularly in the case of the sciences.

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<sup>31</sup> Laurence Veysey, *The Emergence of the American University*, p131

<sup>32</sup> Laurence Veysey, *The Emergence of the American University*, p127

<sup>33</sup> *ibid*, p130

The PhD was first awarded in 1861 at Yale, a college where research at first was only an adjunct to mainstream teaching.<sup>34</sup> Two years of study after the first degree, including one year in residence, coursework, an examination and a dissertation making a contribution to knowledge, were required. From the first, due to the non-specialized and broad nature of the American undergraduate degree, preliminary coursework formed a major part of PhD study. In 1876, the richly-endowed Johns Hopkins University was established and included the first American Graduate school as part of its organization; research was supported as a major component. The university was first envisaged as a graduate institution, but this proved unviable.

At first, staff at Johns Hopkins wanted students to select their own graduate courses, but there was perceived to be:

a good deal of...indefinite browsing and puttering. Those of us who were charged with management concluded we must take advantage of the degree ... to keep these students in line. The PhD was the next degree after the BA degree and we recognised we must offer this in order to keep that body of workers in line and that, in order to secure the results we wanted, it was also necessary to require a piece of research as a requisite. That is the machinery we used.<sup>35</sup>

Apart from the bureaucratic, almost "factory" style of language (keep in line, workers, machinery) this regimentation of mature students is remarkable and the antithesis of the notion of the independent researcher. It is perhaps an early example of the more formally-organized nature of the American graduate school, though the relatively poor academic standard of American graduates, compared to the more specialist preparation of graduates in Europe, may have necessitated this.

In an enabling environment of free market competition, private graduate schools were soon established at Harvard, Cornell and Columbia, while the earned masters degree was revived in

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<sup>34</sup> The first American PhD dissertation was in Latin, handwritten on six quarto pages.

<sup>35</sup> Ira Remsen, cited in Laurence Veysey, *The Emergence of the American University*, p314



many other institutions. The establishment of graduate schools did not occur painlessly, nor were the schools able to stand alone as some of their founders had at first hoped, for there was suspicion and resentment from the undergraduate sector:

The natural hostility of college faculties was only sharpened by the recognition that the new institution represented science and professionalization whereas they represented the classical curriculum and a "calling".<sup>36</sup>

"Research", in a competitive environment, was fostered across many graduate disciplines as institutions realized the market value of being research-centred. In 1896, a survey of twenty four graduate schools showed that though the largest proportion of graduate students (one-third) were studying ancient or modern languages, the philological or scientific approach was emphasised.<sup>37</sup> One quarter of students were in natural sciences and one quarter in social sciences where "scientific method" was also strong. Only ten percent were studying subjects (such as fine arts) which tended not to emphasise scientific method. In 1876, forty-four PhDs were awarded by twenty five institutions, increasing to 125 by 1890. By 1900 about 250 earned doctorates had been conferred in America and 150 institutions had graduate programs (though only about a third conferred doctorates).<sup>38</sup>

Some important distinctions must here be drawn between some British and American higher degrees. Many American doctorates (often in a desire to increase status) were and are conferred in areas of initial professional preparation - for example, the MD (Doctor of Medicine) or DDS (Doctor of Dental Surgery). In Britain these were not initial degrees but higher degrees, and less frequently awarded. Moreover, degrees which were purely honorary in America, such as the LLD, DMus and LittD, were often earned higher degrees in the UK.

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<sup>36</sup> Bernard Berelson, Graduate Education in the United States, McGraw Hill, New York, 1960, p7

<sup>37</sup> Laurence Veysey, The Emergence of the American University, p173

<sup>38</sup> *ibid*, p14

By the end of the century, the American tertiary sector comprised both private colleges and universities as well as new state universities and had two distinct tiers, undergraduate and postgraduate. While some attempts were made to make the tiers themselves separate faculties, it was found that the most useful overall institutional structure was a vertical faculty system. Funds from the well-endowed undergraduate tier were used to subsidize graduate stipends, research and teaching. Within the university, the department became the crucial academic operational unit, formed by increasing academic specialization and operating under the banner of a strong administrative graduate school structure. Admission procedures to such schools were formalized, while both coursework and research were part of the graduate school model.

Many professional bodies and societies were established in the last decades of the century, while academic teaching and research had itself become a profession. By 1900, the PhD was increasingly considered the necessary employment credential for college teachers and researchers and was awarded at 47 universities, generally as an earned, but also as an honorary degree. Other earned doctoral degrees were those in science (ScD) awarded since the 1870s, and briefly, in pedagogy (PedD). By the turn of the century, the German PhD came to be considered the equivalent of a masters degree from a good American university.<sup>39</sup> Nevertheless, many Americans still travelled to Germany for the degree, though rising living costs in Germany, questions about the quality of education offered at some institutions and an improvement in the quality of American graduate schools, saw the student tide turn. Rising concerns over German influence in American academic circles early in the century and the offering of the British PhD in 1917 also stemmed the flow.

In the twentieth century, the locus of postgraduate education and scientific research gradually shifted from Europe to America, where new kinds of higher degrees evolved. Not only were

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<sup>39</sup> Burton Bledstein, The Culture of Professionalism, p313

there new kinds of professional doctorates (such as the doctorate in education, the EdD) but higher degrees began to be awarded in areas hitherto considered non-university subjects, such as domestic science and business studies. The pervasiveness of the PhD as a teaching, rather than solely research, credential was observed in America as early as the turn of the century.

William James, in his 1903 essay, "The PhD Octopus" was:

concerned lest the true spirit of learning was crushed... Is not our tendency to appoint no instructors who are not also doctors an instance of pure sham? Will anyone pretend for a moment that the doctor's degree is a guarantee that its possessor will be successful as a teacher? The Doctor- Monopoly in teaching, which is becoming so rooted in American custom... is a sham, a bauble, a dodge, whereby to decorate the catalogues of schools and colleges.<sup>40</sup>

By 1912, Dean West of Princeton was complaining that the PhD was like a "union card" for academic employment, so entrenched had it become.<sup>41</sup> After 1920, the numbers of university faculties granting the PhD expanded and doctoral numbers soared. Undergraduate numbers also increased, providing a pool of strong underlying demand for postgraduate qualifications, which increasingly provided valuable leverage in competitive employment markets. The withdrawal of American postgraduate students from German study, national prosperity at home and a vigorous and entrepreneurial graduate system, saw remarkable PhD growth which continued throughout the century.

## **THE AMERICAN MASTERS DEGREE**

By the turn of the century, the masters degree was generally an earned degree. Masters degree numbers across disciplines rose after 1920, but the status of the degree suffered as a consequence of the proliferation of the PhD and it was increasingly regarded as a secondary

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<sup>40</sup> William James, "The PhD Octopus", in *Memoirs and Studies*, Longmans Green and Company, London, 1903, p338

<sup>41</sup> Bernard Berelson, *Graduate Education in the United States*, p185

teacher's degree. As early as 1910 it was described as "slightly a cultural degree, partly a research degree but everywhere a teaching degree for secondary schools".<sup>42</sup>

Some secondary teachers wanted the PhD instead of the MA. The allure of what James called the "three magic letters" was strong. "The trouble lies in the name of the degree conferred. It is not the Masters degree but a PhD that is wanted", lamented Dean Cross of Yale in 1925, when reviewing attempts to set up a two-year masters teaching degree.<sup>43</sup> By mid-century the masters degree had come to be seen as a fifth year of undergraduate work and was strongly associated with professional practice rather than research. In response to pressure from some professions for the PhD or some other doctoral variant such as a professional doctorate, in 1920 Harvard initiated a doctorate of education (EdD). It was administered by the School of Education, rather than the Graduate School, a factor which may have led to the degree being considered a second-class PhD, for the school was able to determine its own policies and standards.<sup>44</sup> The institution of this professional doctorate was the precursor to the awarding of professional doctorates in engineering and business.

Concerns about the quality of American PhDs began to be raised with the proliferation of the degree. As William James had noted, some students were considered to be more interested in the letters to be added after their name rather than research. Graduate schools often had to remedy perceived undergraduate academic deficiencies.<sup>45</sup> With the growth of coursework in graduate schools, a fear was expressed that graduate schools would be seen as merely "continuation schools".<sup>46</sup>

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<sup>42</sup> *ibid*, p185

<sup>43</sup> Dean Cross (1925), quoted in Bernard Berelson, Graduate Education in the United States, p30

<sup>44</sup> Susan Davies, "Doctoral Education in Transition", in T.W. Maxwell and P.J. Shanahan (eds.) Which Way for Professional Doctorates? The University of New England, Armidale, 1996, p63. The EdD was discarded in favour of the PhD in 1922.

<sup>45</sup> *ibid*, p30. See also Abraham Flexner, Universities: American English German, p81

<sup>46</sup> Dean Cross, quoted in Bernard Berelson, Graduate Education in the United States, p30

A consequence of the loss of prestige of some masters and PhD courses was the growth of post-doctoral work, especially in science areas (Guggenheim post-doctoral scholarships were awarded as early as 1925). This was primarily due to perceived training deficiencies in some over-large research groups and the lower standard of some students entering graduate school. The Massachusetts Institute of Technology and the Californian Institute of Technology were the first to establish Schools of Advanced Study for post-doctoral fellows (in the 1950s) to overcome such deficiencies and, paradoxically, provide what some considered was not available in PhD programs, "real doctoral training".<sup>47</sup>

In marked contrast, in Britain many masters postgraduate degrees retained rigour and prestige. This was largely an outcome of the "super-sifting" of the British secondary and honours system, which saw smaller numbers of select students embark on higher degrees. As the American university did not have this system of classification or ranking, there was little academic bar to postgraduate study at masters level.

American research began to occur outside the universities in the early twentieth century. While some government bodies undertook limited research, it soon became obvious that they could not be the home of basic research. Some philanthropists, such as Rockefeller and Carnegie, founded graduate research institutes, but again research there became strategic rather than open-ended. Universities began to encourage philanthropy as never before, with a resultant growth in laboratories, student stipends, and special research funding and buildings, as well as investment funds. The large private foundations began to fund research at large private universities (in the 1920s) and at the large state universities (after 1930) generating a research economy located outside state funding.

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<sup>47</sup> *ibid.*, p195

By 1940, about 15% of the relevant age cohort attended college, making America the first nation to have mass higher education. Institutions awarding doctorates increased from around 50 in 1920 to nearly 100 in 1940; doctorates awarded grew 500% in this period, after increasing 250% in the previous two decades. Masters degree numbers matched those of PhDs awarded up until 1930 when they were granted in greater numbers. However, the masters degree continued to be seen as a professional degree. In 1940, one-third of masters degrees were conferred in education. In terms of growth, innovation and research expenditure, the American model of postgraduate education, nurtured in a milieu of entrepreneurial competition, had become by mid-century a new model for later global emulation.

### **THE INTRODUCTION OF THE PHD TO BRITAIN**

By the early twentieth century, momentum had built within the British universities for the introduction of the research-based PhD. Although Bachelor of Science research degrees (by dissertation) had been instituted at some universities and laboratories such as the Cavendish at Cambridge were world-renowned, few such degrees were awarded. Government concern had grown over the lack of industrial scientific research in British universities, while World War One had exposed serious local shortfalls in the supply of some imported manufactured goods, many of which had previously come from Germany. The government announced a scheme for the development of scientific and industrial research. A department of the same name (DSIR) was set up and a small number of linked postgraduate research scholarships established. Better training in science research was required, with the PhD the preferred vehicle. The introduction of the degree was hastened also by other political considerations.

While the first Allied Colonial Universities Conference of 1903 in Britain had called for increased facilities for postgraduate education, the Universities Congress of the British

Empire in 1912 was the first to tackle the question of the “lower” doctorate, the PhD. (A representative from the University of Melbourne was present, and pleaded for the recognition of Australian first degrees as equivalent to the British bachelors degree, in order that Australian graduates could enter British postgraduate courses without further study.) The main topic was, however, the provision of the PhD for Canadian (and American) students. Existing British doctoral degrees could not be completed by many students in two to three years, as some additional study had to be first undertaken. After the conference, a Universities Bureau was formed with:

an integral part of [its] activities... the furtherance of postgraduate education and the development of research degrees culminating in the introduction of the PhD.<sup>48</sup>

In a bid to stem the flood of Americans who flocked to Germany to undertake PhD studies, during World War One the Foreign Office exerted pressure on British universities to introduce an indigenous degree which would attract these students. There was mounting concern about the influence of German propaganda which was circulating to former American students. Oxford and Cambridge had inaugurated various postgraduate awards in the 1890s for graduate level overseas students (without the usually compulsory Greek) but as these were bachelorships, they were not keenly sought by those Americans who wanted a doctorate. Nor did they provide much training in research technique.<sup>49</sup>

During the course of the War, university conferences called for the introduction of the degree to further international cooperation and strengthen ties with allies. The setting up of a national university body to undertake, among other things, international liaison, was enthusiastically supported in order to enhance the attractiveness of Britain as a destination for postgraduate study. In 1917, the northern British universities declared their support for the introduction of

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<sup>48</sup> Renate Simpson, How the PhD came to Britain, p111

<sup>49</sup> *ibid* pp 78-80. A Professor at Oxford, F.C. Schiller, who had taught at Cornell during the 1890s, considered that, at the turn of the century, post graduate education at Oxford was “not so much unorganised as non-existent”. The Regius Professor of Modern History, C.H.Firth, did introduce the option of a thesis to the modern history degree in 1908, but as it was additional to the rest of the work, few postgraduate students, he said, “were enterprising enough to offer one”.

the PhD. This sparked intense debate. Oxford was the first to institute the degree in 1917 (with the nomenclature of DPhil rather than PhD) and the other universities soon followed suit. Once instituted, the new degree was enthusiastically embraced; over 700 British PhDs were awarded within five years of the degree's inception. As Renate Simpson has noted, the introduction of the PhD:

was, and remains, the only occasion on which all the British universities have introduced a major innovation in virtually identical form and virtually in unison.<sup>50</sup>

Unlike the US, the degree had no coursework component. The postgraduate model in the UK remained one of elite apprenticeship and there was no pressure to implement the graduate school. Postgraduate numbers remained small and the undergraduate sector retained primacy. Though the PhD had been intended for overseas students, more British than overseas students took the degree. The expected American influx did not occur, in part because of the growth in prestige of some of the American graduate schools. Paradoxically, despite the introduction of the PhD as a means of attracting American scholars, the flow in the second half of the century has often been from Britain to America in both graduate and postdoctoral sectors.

### **BRITISH POSTGRADUATE EDUCATION 1918-1939**

The pattern of British postgraduate education in this period has relevance to Australian postgraduate education and the introduction of the PhD. Preconditions were similar, though with a time lag of twenty years, while the British postgraduate model, in terms of structure, nomenclature and duration, continued to exert considerable influence on the pattern of Australian higher degrees.

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<sup>50</sup> Renate Simpson, "The History of Graduate Study in Britain", p13. This was to bear a remarkable similarity to the Australian experience some thirty years later.



While most British postgraduates before 1930 were in the arts, by 1930 the largest proportion were in the pure and applied sciences. The PhD degree was considered primarily a science degree and was particularly attractive to students of chemistry. This was because the degree had a definite employment edge, particularly in private industry - so much so that something of an oversupply of British chemistry PhDs occurred in the 1930s.<sup>51</sup>

The introduction of the PhD raised British research capability and provided the impetus for improving research infrastructure. British university research capability (before World War One, confined to a few privately-endowed laboratories) was enhanced by the inauguration of a limited number of research studentships after World War One, a move which signalled the beginning of government support for university research (though there had been some small support for agricultural research as early as 1910.) These scholarships were linked to the new Department of Scientific and Industrial Research. There were comparatively few awards however, with only about 82 given annually between 1928 and 1938.<sup>52</sup>

Prior to World War Two, in marked contrast to the US, there were only twenty-four British universities, with an average size of 2,000 students. Postgraduate numbers remained small with 6.2% of full-time students postgraduates in 1938.<sup>53</sup> Teaching retained supremacy over research, which, while excellent in individual institutions, remained nationally uncoordinated and not linked to perceived national needs. The early British PhD originally comprised between one and two years of research, and a thesis. No coursework was involved and partly because of this, but more particularly because of the British university's strong undergraduate orientation, the graduate school along American lines did not eventuate.

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<sup>51</sup> Sir James Mountford, British Universities, p79

<sup>52</sup> Renate Simpson, "The Study of Graduate Education in Britain", p14

<sup>53</sup> Sir James Mountford, British Universities, p78

Within higher education, the postgraduate sector remained small, selective and minimally nourished by government and industry. The jewel in the crown of the British university still remained the honours undergraduate degree.

## **THE SECOND WORLD WAR AND ITS AFTERMATH**

World War Two had a galvanising effect on postgraduate studies in Britain, America and Australia, as it had the effect of highlighting deficiencies in scientific research and training. This was the beginning of a period of massive world tertiary growth (its very scale making a comprehensive account of growth in the postwar American and British postgraduate sectors beyond the scope of this thesis). The postgraduate sector in both countries continued to grow, particularly in the US, though the rate of growth was less strong in decades where a poor global economic climate saw funding cutbacks. (American postgraduate enrolment growth rates between the mid-1970s and 1980 were only 0.3% per annum, roughly comparable to the UK in the same period.) The strong growth of the American research sector is evidenced by the 35,000 PhDs awarded in 1990, with around ten times that number of masters degrees (half in education and business alone) also awarded.

## **POSTGRADUATE EDUCATION IN THE UNITED STATES**

In the US, the first two decades after the war were the era of “Big Science”. Government became a major source of postgraduate funding. Dr. Vannevar Bush, Director of the Office of Scientific Research and Development, was commissioned by President Roosevelt to investigate how “the continuing future of scientific research in this country may be assured on a level comparable to what has been done during the War”.<sup>54</sup> The resulting 1945 report,

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<sup>54</sup> See Don Aitken, “How Research came to dominate higher education and what ought to be done about it”, Australian Universities Review, Vol. 33:1:2 1990, p9

**Science - the Endless Frontier**, was instrumental in the establishment of the National Science Foundation of the USA. This became the model for many later international research granting bodies. Key recommendations of the 1945 report were to increase science student numbers, scholarships and fellowships, and to encourage industry participation and basic research.<sup>55</sup>

Science was considered essential for each country's future development as it would affect economic growth. Belief in the efficacy of technological innovation was echoed later in Britain in the famous 1963 speech by Harold Wilson, **Labour and the Scientific Revolution** where he spoke of an impending "white-hot technological revolution".<sup>56</sup> Human Capital Theory, which emanated from post-war America, stressed the economic advantages to the nation and individual of highly trained labour.<sup>57</sup> This gave added weight to moves aimed at increasing the scientific labour force.

In 1959, Eisenhower's **White House Science Statement** stressed (to a nation stunned by the Russian launch of Sputnik), the urgency of strengthening scientific research.<sup>58</sup> Science PhDs were in short supply and could not meet projected demand for college teachers. In the US in 1958, there were only 250 PhDs granted in mathematics, 500 in physics, 1,000 in chemistry and 650 in all engineering fields.<sup>59</sup> Many of these would not go into teaching. The statement urged engineering colleges to develop graduate schools in engineering as well as the sciences:

For this nation to graduate less than 650 PhDs per year in Engineering is to imperil it. Graduate education is and will remain very expensive. And yet every dollar the nation invests in this field will be repaid a hundred... a thousand times over in future national welfare.<sup>60</sup>

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<sup>55</sup> *ibid*, p9

<sup>56</sup> Harold Wilson, quoted in Stuart Bloom, "A Framework for Analysis", in The Future of Research, Society for Research into Higher Education, Guildford, Surrey, UK, 1982

<sup>57</sup> The economic returns on tertiary, postgraduate education outweighed the costs incurred.

<sup>58</sup> The White House Statement by the President, released by James Hagerty, Press Secretary to the President, May 24 1959, p34

<sup>59</sup> *ibid*, p9

<sup>60</sup> *ibid*, p34

Despite cutbacks in federal funding after the mid-1970s, the postgraduate sector remained strong. State, as well as some private universities, had become major centres of research. By the mid-1980s, there were over one and a half million graduate students, around 200 doctoral granting universities, and a further 600 institutions granted as their highest award the masters degree - though many of these aspired toward the prestige of research and doctoral status.

The significance of the department (where teaching and research continued to be located) in the American model was entrenched, with the graduate school-department nexus strong. Coursework remained a feature of graduate programs. Generally, two years of coursework were followed by an examination for students proceeding to doctoral research, while masters degrees were of one to two years duration. Funding was diversified across ever-increasing numbers of research departments and institutions, and competition intense.

At some universities, such as Chicago, Columbia and Harvard, postgraduate enrolments exceed those of undergraduates. Research, with its ability to attract funding from industry and government, was an asset to institutions, in terms of both finance and prestige. However, despite increased federal government funding after the war, the level of support was never constant or dependable. Major funding sources, most notably in the area of infrastructure, continued to be the universities' own reserves, followed by those from local government and industry. Following a long established model, postgraduates themselves, particularly in non-research areas, were major contributors toward the cost of their courses.

While various forms of student support were available, these could not support the bulk of students; due to limited federal support many postgraduates in research areas sought teaching positions within their departments. Moreover, fees from overseas postgraduate students, whose numbers had steadily increased since the war, formed a key source of revenue.

Blended funding streams saw other income, such as endowments originally intended for undergraduate sectors, often diverted to the postgraduate area. This American model of managing and funding a large and diverse postgraduate sector (with a strong input from private sources) achieved increased global significance.

A new aspect of the model, particularly in scientific areas, was the growth of new centres of research, outside of the department, and either within or external to the university. In these centres of research, new industry/university/state partnerships were formed and funded. The postwar American postgraduate model remained dynamic, responsive and constantly evolving. Near the turn of the century, as their higher education systems expanded, other governments would look to America as a model for structure, innovation and perceived cost efficiency.

## **POSTGRADUATE EDUCATION IN THE UNITED KINGDOM**

For much of the twentieth century, the British undergraduate, as well as graduate, sectors remained elite and small. From 1920, state monies were provided to the universities through the University Grants committee. The administration of the universities, and their academic processes, devolved to the universities even though the University Grants Committee provided a steadily rising proportion of funds from 1920 to 1946 (33% to 80%). Such state input, though benign and to some degree at arm's length, set the pattern, or mindset, for an increasingly interventionist national system of tertiary education later in the century.

The first of a British series of governmental reports into higher education did not appear until well into the twentieth century. Postwar, the 1946 Barlow Report recommended that the number of science graduates each year from universities be doubled. DSIR awards were also increased to 400 a year and other state scholarships became available.<sup>61</sup>

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<sup>61</sup> Renate Simpson, "The History of Graduate Study in Britain", p14

Despite such new emphasis on science policy, governments in the 1950s and 1960s concentrated at first on the undergraduate rather than the postgraduate sector. Eight new universities were established and after 1957 there was a surge in undergraduate enrolments. In that year, one in nine students was a postgraduate. Although this fell to one in sixteen two years later as undergraduate numbers swelled, total graduate student numbers continued to increase until 1972, when one-sixth of students were postgraduates. At that time, postgraduate numbers were growing at a faster rate than undergraduate.<sup>62</sup> Nevertheless, while the government came to consider postgraduate degrees, especially in science and technology, of economic benefit, and were willing to fund more scholarships, the undergraduate sector remained the focus of attention.

As governments invested more heavily in tertiary education, British universities were subject to unprecedented government scrutiny. One outcome was the setting-up, in the mid-1960s, of a binary tertiary sector, comprising universities and vocationally-oriented polytechnics and teachers' colleges. Research and doctoral study was confined to the universities. Two major government reports, those of the Robbins and Swann Committees in the early and late 1960s, dealt in part with postgraduate issues, with the Robbins Report the catalyst for the great expansion in undergraduate numbers. Babyboomers (as in America and Australia) crowded the universities, creating a new pool of future demand for postgraduate education. Report recommendations were made for increases in graduate places, especially in arts, and in coursework rather than in research programs.

The Swann Committee's recommendations, however, called for a limit to graduate expansion, a move from PhD to coursework postgraduate study after some time in employment, and

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<sup>62</sup> Renate Simpson, "The History of Graduate Study in Britain", p15

changes in the nature and delivery of the PhD.<sup>63</sup> A looming oversupply of science PhDs also prompted recommendations to make teaching and industry attractive to these graduates (many of whom of course went to America, where employment prospects in research laboratories and academia remained plentiful). During the 1960s and 1970s in Britain, PhD growth also occurred in many social science and humanities areas, a trend long-evident in America. The spread of the PhD to other disciplines was evidence of a move toward the acceptability of the degree across the faculties. Increasing internationalization of specialist disciplines was a factor, though the major structural component of the American postgraduate sector, the graduate school, was not adopted in Britain until 1990 (at Warwick). Neither was coursework widespread until the 1980s.

The election of a Conservative government in 1979 ushered in a decade of increased government control over tertiary institutions. Funding freezes were instituted and overseas postgraduates (26% of postgraduates in 1980) were required to pay full fees. The universities' relative autonomy in many areas was pegged back, as issues of funding, policy, and scholarships were increasingly decided centrally through the Department of Education and Science and the successor to the University Grants Committee, the Universities Funding Council. University access remained limited in comparison to America, with only around 7% of the relevant age cohort attending university. Access to many postgraduate courses was constrained, as scholarships in all but very few areas deemed to be of indispensable benefit to the economy (such as engineering and technology) were slashed and the postgraduate sector entered lean times.

After 1986, the government's desire to concentrate graduate research saw the assessments of departments, rather than institutions, with the result that some departments closed or amalgamated. Much funding was targeted toward "strategic" research and Interdisciplinary

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<sup>63</sup> *ibid.*, p21

Research Centres were established. The research environment generally became one of intense competition for government funds and contracts. In the universities, graduate student places, while centrally allocated, were not directly funded; various national research councils were the main source of funding. In 1989, the polytechnics, which had long chafed against restrictions on research, were amalgamated into a unified national system, where they could undertake “applied” research (though, with the kudos and funding linked to doctoral research universities, new pressures emerged as many new universities wished to engage in “pure” research and award research doctorates). A concerted, if problematic, effort was made by government, through selective funding, to differentiate universities into research and teaching-only institutions.

The British postgraduate model, by the early 1990s, remained one of apprenticeship - elite, marginal and organizationally unstructured, particularly in terms of research students. Research was generally situated in the department, which concentrated overwhelmingly, however, on its undergraduates; postgraduate numbers at this level were too small for coursework instruction on the American model. In the case of research students, this was often considered unnecessary, for intense specialization from the last years of secondary education had perhaps eliminated a need for such instruction.

A new feature of the postgraduate model was the government-sanctioned growth in coursework degrees and diplomas. Between 1980 and 1990, full-time postgraduate students in “taught courses” increased by 80%. Funding for doctoral students was squeezed, a deliberate policy initiative to shift funding to apparently more in-demand, economically useful areas. Institutions were expected to generate more revenue themselves, and in response to government wishes, offered more masters degrees (many of them by coursework and for fee-paying students) particularly in technology and business. By 1992, only one in three graduate



students received government aid - many of these in science and engineering disciplines. In that year, the government allowed polytechnics and some other institutions to become universities if they wished, a move which further intensified competition for government grants and research funding.

Despite efforts to diversify funding streams, by the early 1990s the British postgraduate sector was hedged by both funding uncertainty and tight and directive state control - the latter somewhat an anomaly under a conservative government ostensibly committed to freemarket competition. The tradition of central national funding of higher education begun half a century earlier continued. The characteristic smallness and selectivity, quality and prestige of the British university (with a modal institutional size of only 3,000 to 4,000 in the early 1990s) flowed on to the postgraduate sector.

This was generally regarded, in Britain, as a strength of the system and stands in stark contrast to the massification and diversity of the freemarket American tertiary model. However, in many scientific areas research is seen to be hampered by such smallness of scale and lack of competition - with the establishment of some graduate schools a modern response. Without quite fundamental change however (such as increasing access to universities and thus the size of the whole tertiary sector) the British postgraduate model cannot emulate the large and competitive American model.

## **CONCLUSION**

Britain and America provided the models which most strongly influenced the development of Australian higher education. These relatively modern models, however, sprang from, and retained, facets of much older models, such as the concept of apprenticeship and enculturation into a discipline. Even the modern graduate school and postgraduate admission to some

professional faculties (as in the US) reworks the medieval idea that professional degrees should be taken in the "superior" faculties.

These two systems exhibit great diversity, offering interesting choices and models for Australian policy makers and administrators in the later twentieth century. The American system, unlike the British, was and is comparatively free of government control. Britain has a single tier tertiary system, while the US has a dual tier - with a separate postgraduate sector largely located in the graduate school. The American graduate school has been described as "society's central channel not only for the training of scholarly talent but also for its recognition and selection".<sup>64</sup> In Britain the channel for training advanced scholarly talent was a more narrow one, differently located within the tertiary sector. It was this model of a postgraduate system that provided the early conceptual framework for the Australian system.

The university is one of the oldest surviving institutions in the Western world and within it, postgraduate education and higher degrees have a similar antiquity. Australian postgraduate education did not spring fully-formed from a void, but was an accretion of ancient and modern traditions and innovations. The complex construction of a history of Australian postgraduate education must necessarily be underpinned by an acknowledgment of these continuities and later adaptations.

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<sup>64</sup> Bernard Berelson, Graduate Education in the United States, p226

## **CHAPTER TWO: THE SPIRIT REMAINS THE SAME: POSTGRADUATE EDUCATION IN AUSTRALIA 1851-1939**

In 1857, the Coat of Arms of the University of Sydney carried the motto "Sidere Mens Eadem Mutato" (Though the constellation has changed, the spirit remains the same) along with the lion of the University of Cambridge, the open book of the University of Oxford and the Southern Cross. The University of Sydney, like the other early Australian universities, may have been Antipodean in location but was firmly Anglophile in orientation.

### **THE NINETEENTH CENTURY UNIVERSITY**

At the end of the nineteenth century there were only four universities in Australia, all founded between 1851 and 1891. The University of Sydney was founded in 1851 and opened a year later with 24 students. Melbourne, founded in 1855, opened with an enrolment of 16 students. Adelaide, founded in 1874, began lectures two years later with 58 students; many of these were "extension" students who attended some lectures but did not take a degree. The University of Tasmania, which began in 1891, also enrolled few students. Understandably then, postgraduates were also few in number for the first four decades. The early Australian universities were under-resourced, relying on fees, state aid and some endowments. Intellectually, they were somewhat isolated from their communities. In the case of Sydney and Melbourne, this isolation was also deliberately physical, though suburbia soon engulfed the local version of dreaming spires: a transplanted, set-apart Oxbridge campus.

In 1849, some sixty years after the colonial settlement of New South Wales, a Select Committee set up to investigate the possible founding of a university noted:

The University of Harvard, to our shame... was established by the Pilgrim Fathers of New England, in less than twenty years after its settlement... nearly sixty two years have elapsed ... and we still have to send our sons to some British or foreign University, at the distance of half the globe... in most cases with certain detriment to their morals; in few, with any compensating improvement to their minds.<sup>1</sup>

The voluntary, deeply religious settlers of New England, desirous of a trained ministry, were very different from many of those in a colony established as a penal settlement. Nevertheless, among the small Australian middle class there was a wish for a university. Local pride was at stake. The population of New South Wales was 200,000 in the 1850s, larger than the population of 30,000 in New England at the time of Harvard's establishment. At the time of the founding of Sydney and Melbourne, there were already four English, four Scottish and two Irish universities.

The early universities were instituted not because of overwhelming demand from the average Australian, however wounded local pride might be. Rather they were set up to replicate the institutions of England and in so doing to shape the social order by strengthening links between the mother country and the colony through education. Redmond Barry, founder and Chancellor at Melbourne, expected that its professors would "stamp on their future pupils the character of loyal, well-bred English gentlemen."<sup>2</sup> Archdeacon Scott, in 1824, considered that a university would:

tend to strengthen the connection between the colony and the parent country by implanting English habits and opinions among the best educated members of the community.<sup>3</sup>

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<sup>1</sup> H.E. Barff, A Short Historical Account of the University of Sydney, Angus and Robertson, Sydney, 1902, p5

<sup>2</sup> Geoffrey Blainey, A Centenary History of the University of Melbourne, Melbourne University Press, Melbourne, 1957, p10

<sup>3</sup> Quoted by S.H. Smith and G.T. Spaul, A History of Education in New South Wales, 1788-1925, Philip and Son, Sydney, 1925, p39

At Sydney, the idea of a university had its genesis in the aspirations of some small secondary colleges and academies of early Sydney, but the “founding father” of the University of Sydney was undoubtedly the parliamentarian William Wentworth, a strong advocate of education, who presented the first (unsuccessful) Bill for a university in 1849. He envisaged the university initially as one concentrating on professional graduate education, with the teaching of liberal arts generally relegated to affiliated colleges. Professional interests drove this proposal, for the Australian Bar had recently opened and an examining and teaching institution was required to prepare legal candidates for admission. Similarly, in medicine, new restrictions and requirements were applied, necessitating better educational preparation, while the establishment of scientific societies saw some eagerness for advanced scientific education.

However, a lack of graduates able to undertake graduate professional studies soon saw amendments made to this proposal. A successful Bill to charter the University was passed in 1850, though not before much debate. Often, bitter sectarian disputes were largely resolved by ensuring that Australian universities became determinedly secular institutions. The unreformed Oxbridge model of a college residential tutorial system did not become deeply ingrained in the Australian university culture, partly because of the lack of a substantial wealthy upper class, but also because the university, rather than the college, was deliberately designed to be the main teaching authority. Rather, the Scottish (and London) model of daytime attendance at lectures prevailed. The role of the denominational residential colleges, which were set up with the establishment of the first Australian universities, was thus reduced, in line with the models of reformed Oxbridge and London (and the non-residential Irish Colleges). Sydney’s Act of Incorporation followed in many respects the Charter of the

University of London, though its examining and teaching functions were more closely linked. The examining function was a necessity, given the problem of distance.<sup>4</sup>

Some aspects of the ancient Oxbridge model could be found, however - principally in the architecture of the earliest universities and the narrow curriculum initially offered, particularly at Sydney. Sydney and Melbourne were empowered to offer degrees in Arts, Law and Medicine and Music (at Melbourne) - the traditional, and only, degrees offered by the University of London at that time. By the time Adelaide was established, the first BSc and DSc degrees had been inaugurated at London, and thus the "London model" followed was somewhat different. Overall, what was to evolve at Sydney and the Other Australian universities was a hybrid university model, influenced by contemporaneous British, Scottish and Irish models - non-sectarian and non-residential, with universities founded and endowed by the State.<sup>5</sup>

In May 1851, gold was discovered at Wellington in New South Wales and thousands of Australians were gripped by gold fever. The great gold rush had begun. It was partly co-incidental that the first two universities were established at this time as prolonged discussion and dispute had already gone on in Sydney. Yet there were to be direct and indirect effects of the goldrush on universities - bequests, buildings and a heady cocktail made up of new arrivals, new ideas and new expectations, leavening to some degree the caution and narrowness which had characterised previous debate. Early professors were young (Sydney's professors were all under forty - a deliberate hiring policy) and brought an initial dynamism to the new universities, with the first three professors at Sydney and the first four at Melbourne

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<sup>4</sup> C. Turney, U. Bygott, P. Chippendale, *Australia's First: a History of the University of Sydney Vol. 1 1850-1939*, Hale and Iremonger, Sydney, 1992, p53-55

<sup>5</sup> *ibid.* See Chapters One to Three, particularly, for a more detailed discussion of the influence of foreign models on the early development of the University.

covering all courses taught. The excitement and sense of opportunity, which the gold rush drew in its wake, may have been an added lure to these academics.

For the first two decades, classes at Sydney and Melbourne were small. However, by the 1870s and particularly in the boom years of the 1880s, new fortunes had been made and newly wealthy businessmen and manufacturers were desirous of university education for their sons (and later daughters). In the 1880s the populations of Sydney and Melbourne were each under 300,000. By 1891, Sydney's population had risen to 383,000 while Melbourne's leapt to nearly 491,000. Manufacturing accounted for 10% of economic output in NSW and Victoria by the end of the 1880s, when it was estimated that two-thirds of the richest Australians were Victorian. Yet they were not as wealthy as the great university-endowing American and British industrialists.

Many fortunes made on the goldfields by foreign-owned companies left Australia, sometimes to be used for bequests to English universities (the goldrush in Victoria only created two local millionaires).<sup>6</sup> Nevertheless some money did flow to the local universities and new buildings were erected and new courses begun.

The third university to be established during the goldrush period was the University of Adelaide, founded in 1874 in a much smaller city and with somewhat shaky beginnings. A visiting English journalist (R.E. Twopeny) noted in 1883:

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<sup>6</sup> The fortune made on the goldfields by Holloways Pills, for example, was used to endow women's colleges in England. David Jones "A Century of Exoticism: Australian Universities 1850-1950", *History of Education Review*, Vol.14:1, 1985, p16. He quotes W.D. Rubenstein ("The Top Wealth Holders of NSW 1817- 1939", *Australian Economic History Review*, Vol .X, 1980) who was impressed by "just how low the levels of wealth holding and sizes of top fortunes were, even after the early decades of settlement had passed." A wealth survey of Australians conducted during World War One found only 466 Australians had assets of over 100,000 pounds. One particular effect of the small numbers of wealthy Australian industrialists (and the small-scale nature of much Australian industry) was the relative lack of bequests and endowments in the scientific and technological areas. This had ramifications in areas such as the building of research laboratories and in weak university- industry links.

it has conferred five degrees at a cost of 50,000 pounds and the professors threaten to outnumber the students. The vaulting ambition of the little colony has somewhat o'erleaped itself..<sup>7</sup>

The speculative boom of the 1880s saw Australian land and share prices rocket, particularly in the eastern states. Part of the profits from this enabled a new bourgeoisie to send sons and daughters to private schools and university. The small but significant rise in postgraduates at Melbourne during this decade may have been a reflection of increased parental ability to support sons (and later daughters) for a greater period of study. In the early 1880s, Twopeny considered Melbourne University to be "one of the greatest achievements of Victoria, having the great merit of taking the trouble to understand and keep abreast of the times", with its reputation in all subject taught above that of Oxford and Cambridge and in medicine is higher than London itself."<sup>8</sup>

When the speculative bubble burst in the late 1880s and the stock market tumbled, fortunes were lost, manufacturing collapsed and unemployment soared. The Western Australian goldrush in 1890 saw an exodus to that sparsely populated colony from the eastern colonies. Nevertheless, through the 1890s overall university numbers in the eastern states did not fall, though enrolments at the University of Tasmania, when it opened in 1891, were small. Despite predictions of failure, four Australian universities had been established by the turn of the century.

The Australian universities at the turn of the century and, indeed, up until the second half of the twentieth century, were small in number and size, and restricted to the capital cities. Cost and class were often significant barriers to student entry. Compared to many other British colonies, on a population basis they were few in number. This was partly because there was

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<sup>7</sup> R.E. Twopeny, Town Life in Australia, Penguin Colonial Facsimiles, Melbourne, 1983, p145

<sup>8</sup> *ibid.*, pp143-4



no contestation from rival university models as in Canada (with its proximity to the US) or South Africa (with its alternative Boer culture and language). The Australian population was small and the white population was relatively culturally homogeneous. As well, by the time Western Australia and Queensland had sufficient population or prosperity for the establishment of universities, the depression of the 1890s had struck.

Tertiary education had been from the start the preserve of the small upper-middle-class. Teacher education, the traditional route of upward mobility for the bright working class student, was something of an exception. At Adelaide, from the turn of the century, student teachers were admitted free and numbered about a third of enrolments. Part-time enrolments there, again often in arts, though total student numbers were not high in relation to population until well into the latter half of the twentieth century. While the universities, particularly from the 1880s onward, became in some respects utilitarian professional training institutions, the level of tertiary education among Australians in the nineteenth (and even twentieth) centuries was not high and often lower than in other English-speaking countries.<sup>9</sup>

A distrust of "culture" and other than utilitarian education among richer Australians was sometimes noted.<sup>10</sup> There was little demand for expansion of numbers within the modestly state-funded universities though agitation for further state universities saw the founding of the universities of Queensland in 1910 and Western Australia in 1911.

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<sup>9</sup> In 1939 Australia had a lower proportion of students to inhabitants than any other English speaking country outside Britain itself. New Zealand and Canada had twice as high a percentage and the US and Canada two and three quarter times as high, even with appropriate reductions for "less than university standard" work in North America. Postgraduate education, and the research links this implies, also lagged far behind Canada, South Africa, the US and Britain. David Jones, "A Century of Exoticism", p14

<sup>10</sup> David Jones, *ibid*, p16. Jones also cites Geoffrey Serle's description of the colonial philistine in The Rush to be Rich, Melbourne University Press, Melbourne, 1971.

## **NINETEENTH CENTURY AUSTRALIAN DEGREES <sup>11</sup>**

To understand the nature and structure of Australian higher degrees, similar consideration must be first given to undergraduate degrees. The initial degree offered in the early universities was the BA, though university charters did provide for other degrees such as the MA, and doctorates in laws and medicine, music (at Melbourne and Adelaide) and science (at Adelaide) to be offered later. The first universities followed the basic classical curriculum, namely Latin, Greek and mathematics. Scientific studies were at first only part of the early BA curriculum. Science faculties were not established (nor was the BSc offered) until the 1880s, at a time when new laboratories were built at Sydney and Melbourne, in particular. The MSc was not instituted until the 1890s at Melbourne, shortly after at Tasmania and not until the 1920s at Adelaide and Sydney.

The earliest science doctorates were granted at Melbourne in the 1880s, though provision for the science doctorate, along with those in medicine, law and music, had been made in Adelaide's founding Act of 1874. The Colonial Office in London objected at first to the granting of science degrees and subsequently the University's Royal Charter was delayed until 1881 when the separate degrees of BA and BSc were created. (The law and medical faculties were established in 1884 and 1885 and a Board of Studies in music in 1885). Thus for the first three decades of the Australian universities, science was a branch of the arts, in accordance with ancient tradition. The rise of scientific study at English universities like London, and the inauguration of the British MSc, were powerful influences which only effectively permeated the Australian universities from the 1870s onward.

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<sup>11</sup> (Note Appendix 1)

## THE BA DEGREE

The BA required attendance at lectures for three years, though some subjects could be taken by private study (for example modern languages at Adelaide) and examinations in all subjects. Students sometimes began university in the early days at Sydney and Melbourne at fifteen or sixteen as "it was often cheaper to send sons to university than to school"<sup>12</sup> (though initial university enrolments were minuscule). This meant a graduate could be as young as 18 - often the starting age for university in England and Europe.

At Sydney, the prescribed subjects for all pass students were classics, mathematics, chemistry, natural philosophy and logic. At Melbourne, four other science subjects as well as the very modern history and political economy were added as compulsory subjects. While for the first thirty years of the Australian university, arts was the only fully fledged faculty, later faculties of law, medicine, engineering, economics and science built on this foundation, with many graduates in science and law having first degrees in arts. Sydney had the power to grant degrees (often *ad eundem gradum*) in law and medicine before formal establishment of these faculties in the 1880s and 1890s. Medical and law faculties were instituted in the early 1860s in Melbourne.

As previously noted, many students at Adelaide were not full-time students. Most Australian students also lived at home. These features continued to be peculiar to Australian universities and often disquieted many academics who had received a full-time, residential (overseas) tertiary education. Initial subjects for the BA at Adelaide were English, classics, philology and logic, mathematics and physical and natural sciences. The inclusion of English represented modernity and to some extent a break from the strictly classical Oxbridge curriculum.

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<sup>12</sup> Geoffrey Blainey, A Centenary History of the University of Melbourne, Melbourne University Press, Melbourne, 1953, p87

However English could not be taken as an honours subject at Adelaide until 1922 and MA studies in English were only possible the following year. The modern languages, French and German, could be taken as subjects for the BSc (instituted in 1882) before they became subjects allowed for the BA in 1887. Much scientific research was only available in European languages.

## **THE MA DEGREE**

While provision was made in University founding acts for the granting of doctorates in law, medicine and music (at Adelaide and Melbourne) and science (at Adelaide), the only faculties for decades were the arts faculties. The earliest postgraduate degree was thus the MA, with the first such degrees awarded at the end of the 1850s. The first MA degree awarded in Australia was to George Henry Green, of whom little is known except that he took his MA in 1858 and was one of the first three BA graduates in 1856 from Melbourne. At Sydney, William Charles Windeyer, Australia's first graduate, took one of the first seven MAs in 1859. He had received his BA in 1856 with first class honours in classics, logic and mental philosophy, as well as receiving prizes for English essays.<sup>13</sup>

The first MAs at Sydney and Melbourne were not, strictly, always earned degrees. Acts of Parliament had provided that a University Senate or Convocation in each state could only be elected when there were a hundred graduates who had obtained higher degrees from the two universities. Owing to the small numbers of local students, ad eundem higher degree graduates were an important element in the creation of the university as an academic

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<sup>13</sup> Following in the footsteps of his father (a prominent lawyer and member of the Legislative Council) he was admitted to the NSW Bar in 1857 and entered the Legislative Council soon after. Subsequently he became a Doctor of Laws, Solicitor-General and Attorney-General before his appointment as a Supreme Court Judge in 1879. He retained a lifelong interest in education and in 1895 was elected Chancellor of Sydney University.

corporation. By 1867 Melbourne had over a hundred electors, while the first University of Sydney Senate was elected in 1876. At Sydney:

Up to the year 1856, it was provided that the degree of Master of Arts could be conferred without examination after the lapse of a certain time from graduation as a bachelor, but after that date an examination was made compulsory, though for many years it continued to be of a nominal character, largely ... because it was desired that the number of members of Convocation should, as soon as possible, reach the minimum of one hundred necessary for the legal constitution of the University as a Parliamentary electorate.<sup>14</sup>

The MA to a certain extent had its colonial beginnings in the concept of the admission of graduates to the world-wide body corporate. It gradually became a taught and examined degree, as it was at London and the new British universities. While it was possible to finish a BA at an early age there was an age bar for MA degree conferral.<sup>15</sup> Although by the early 1890s five MA "schools" or subject areas existed at Melbourne, Honours BA students were exempt from examination. The 1893 Melbourne Calendar noted that:

candidates for the MA should be Bachelors of Arts of at least one year's standing... those who have passed the MA examination and attained two years standing may be admitted... any candidate who has obtained Honours in any school at the Final Honour Examination in Arts and who is a BA of no less than two years standing may be admitted to the Degree of MA without further examination.<sup>16</sup>

This tradition persisted well into the 1930s at Melbourne. A.A. Phillips, writing of his days at Melbourne University (or "The Shop") in the early 1920's recalled:

I was at "The Shop" for only three years, the time then needed to qualify for an MA (though for sheer meanness I did not take mine out, for a BA Hons would serve my purpose as well and then meant the same thing).<sup>17</sup>

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<sup>14</sup> H.E. Barff, A Short Historical Account of the University of Sydney, 1902, p90

<sup>15</sup> At Sydney, regulations in 1890 stated that "two years must have elapsed since the time of the BA examination and the candidate must be over twenty one". Candidates for the degree in the early years could take the exam a year after the BA though two years had to elapse before conferral. Melbourne had a similar age requirement. University of Sydney Calendar, p116

<sup>16</sup> University of Melbourne Calendar, 1893, p180

<sup>17</sup> A. A. Phillips, in Hume Dow (ed) Memories of Melbourne University: Undergraduate Life in the Years since 1917, Hutchinson, Melbourne, 1983, p46

Another old scholar who received his Melbourne MA in the 1930s wrote :

My father thought it would be a nice thing ... to present all those of his children who were qualified their masters degree. Since I had received the Degree of BA (Hons) with a good second, and since I had waited the prescribed number of years, and since my father had paid the prescribed fee, I was duly admitted to the Degree of Master of Arts.<sup>18</sup>

Adelaide, founded in a different era and modelled on the newer British universities like London, began with a somewhat stricter policy. This was undoubtedly influenced by the fact that by this time the MA had successfully become an earned degree at London. The 1878 Adelaide Calendar stated that a candidate could not sit for the MA examination until two years after the BA had been conferred. A candidate for the MA was required to "show a competent acquaintance with at least one of three fields - classics and comparative philology, metaphysics, logic and professional economy or mathematics".<sup>19</sup>

By the 1890s MA candidates at Adelaide had to pass an examination in three out of seventeen prescribed subjects, though on rare occasions a brilliant student might produce a thesis instead. The small number of BAs ensured few masters candidates, with the first MAs conferred, in 1889, on David Hollidge and William Cooke. In the 1890s only six MAs were granted; they remained a rarity well into the next century. The small university and state population, lack of a substantial wealthy middle class and the cost of study were key factors.

Adelaide's regulations were revised in 1902 to enable three undergraduate subjects taken over two years after the BA as the only requirement for an ordinary MA. An Honours MA, in the four fields of classics, mental and moral science, history and mathematics, was instituted at Adelaide, although only seven such degrees were conferred between 1908 and 1928. In

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<sup>18</sup> Melbourne University graduate, personal letter, August 1991

<sup>19</sup> University of Adelaide Calendar, 1886, p56

classics, two years study was required after the Honours BA and syllabuses indicate a similar time for other subjects was required. An original essay or thesis research was undertaken, and in some subjects an examination . The first MA Honours degree was awarded to John Ward at Adelaide in 1909 (in classics) and was the University's first arts degree with an original research component. Small numbers of Honours MA degrees were similarly awarded at the other universities. The MA degree in the last decades of the nineteenth and some of the twentieth century was generally a taught degree and in this respect, the ancestor of the modern coursework masters degree.

When the University of Tasmania began teaching in 1891 there were only eight students, all enrolled in Arts. However, interest in the establishment of a university had existed for some decades. An Act of Parliament had created a Body Corporate in 1858 to award Associateships in Arts to suitable students after examination and the Tasmanian Government provided annual scholarships for two students to study in the United Kingdom. The first MA degree awarded went to Ernest Turner in 1898, with the second awarded to Maude Leggett in 1899. MA regulations were similar to Melbourne, in that BA (Honours) students could be admitted to the degree without the usual examination, after two years. For the first three decades of its existence the small and struggling island university granted only about ten bachelors degrees annually, so postgraduates were few in number.

At the University of Sydney, through most of the first four decades of its existence, very few MAs were awarded. In the boom years of the 1880s, as many as sixteen were awarded annually.

In the depression years of the 1890s, however, this sometimes fell to a low of two a year. By 1904, 245 MAs had been conferred at Sydney. In contrast, by the turn of the century, over 400 had been conferred at Melbourne. Melbourne continued to confer more MAs well into the next century, even when Sydney became the larger university. The small University of Adelaide had awarded nine by 1901, while two were awarded at the University of Tasmania by 1900. (See Appendix 1)

A number of factors may have caused the disparity between MAs awarded at Sydney and Melbourne. There was a difference in both the size of the city of Melbourne and its university compared to Sydney. Also, through much of the nineteenth century the quality of Melbourne schools and in particular, girls' schools, was an additional factor.<sup>20</sup>

The schools provided a good classical education, teaching subjects like Latin and Greek, which were required for university entry. Melbourne's wealth and the existence of a middle class prepared to pay for the extended education of their children, attracted well-educated tutors and teachers who contributed to the somewhat indefinable "cultural climate". While the calibre of academic staff at the Universities of Melbourne and Sydney was excellent, at one point all the Australian members of the Royal Academy came from Melbourne. In the late 1870s, significantly, Melbourne was the first university to admit women and from the 1880s onward, a growing proportion of MA students were women.<sup>21</sup>

The MA degree in the nineteenth century was in many ways the social signifier of exemplary reputation. According to the early by-laws at Sydney, admission to the degree required a

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<sup>20</sup> The first major girls' schools to be established with an academic curriculum and purpose, Presbyterian Ladies College and Methodist Ladies College, were founded in 1875 and 1882 respectively, in Melbourne. Sydney's MLC was founded in 1886 and PLC in 1888.

<sup>21</sup> See Ernest Scott, A History of the University of Melbourne, Melbourne University Press, Melbourne, 1936, p102. Women were at first admitted to Matriculation and Arts only. The University of Sydney, which admitted women shortly after Melbourne, was the first to also admit women to medicine. See also Farley Kelly, "Different Experiences: Women Students 1883-1913", Degrees of Liberation, a Short History of Women in the University of Melbourne, The Women Graduates Centenary Committee of the University of Melbourne, Parkville, 1985.



candidate to be "of good fame and character".<sup>22</sup> It was the mark of a gentleman and scholar, and undoubtedly carried more weight than the early American connotations of having at least kept out of jail for a few years after graduation. This moral and social credentialling function was to die out imperceptibly in the twentieth century. To accredit the female MA holder as a "gentleman" was problematic. While the MA or other higher degree was essential in order to sit in the Senates of the nineteenth century universities, despite the later admission of women to the MA, only male MAs could become members of the nineteenth century university Senates.<sup>23</sup>

The Faculty of Arts at Sydney, like the other arts faculties, remained small until the end of the 1890s, when teaching staff and subject choice expanded. In 1861, there were thirty-one students and in 1881, eighty-one. By 1891 there were 397 including eighty eight teacher trainees. A high proportion of nineteenth century MAs became teachers, though this often involved years of part-time study.

Early arts professors often taught a great range of subjects. Some professors were greatly overworked. At Sydney, the 1890 foundation Professor of History, George Wood, up until 1916 taught all courses alone from first to third year, and was responsible for all honours and postgraduate students. In contrast, the first professors at Adelaide "were protected from having too many students by compulsory Greek".<sup>24</sup> They had plenty of time for their studies, no assistants and relatively high salaries but were expected to contribute to literary and scientific societies and indeed represent "Culture" itself in the new colony. For the first forty years, history was not taught as a separate subject at Sydney as it was seen as a branch of

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<sup>22</sup> University of Sydney Calendar, 1890, p117

<sup>23</sup> Female MAs petitioned the University of Melbourne regularly from 1898 onward for admission to Senate but were refused until 1913. One reason suggested was that most were teachers and would thus swell the numbers in Senate "representing liberal opinion". Women did not receive the vote in Victoria until 1908. See Farley Kelly, Degrees of Liberation: A Short History of Women in the University of Melbourne, Women Graduates Centenary Committee of Melbourne, Parkville, 1985, pp22-23

<sup>24</sup> Sir William Mitchell, Commemoration Address, University of Adelaide, 1942. Quoted by J.J. Auchmuty, "Australian Universities: the Historical Background", The Humanities in Australia, A. Grenfell Price, (ed) Angus and Robertson, Sydney, p26

literature. An Act of Parliament in 1884 stated that there should be no compulsion to attend lectures or to sit for an examination in modern history, ethics or metaphysics as various churches were concerned about possible proselytism occurring. At Melbourne, history and political economy was a compulsory subject in arts from the beginning, undoubtedly contributing to Melbourne's early arts postgraduate dominance.

The ancient DLitt degree, for original and substantial contributions to some branch of letters, and awarded on the basis of a combination of published and unpublished work, was not conferred during the nineteenth century and was extremely rare in the twentieth, with only two conferred at Sydney, for example, up to 1944 and one at Adelaide prior to 1940. Of the 18 conferred at Melbourne, some were honorary. A tradition of pursuing advanced arts study in England, and limited local library holdings, were undoubtedly factors contributing to the paucity of such degrees.

## **PROFESSIONAL POSTGRADUATE DEGREES**

Postgraduate studies in these faculties grew slowly in the nineteenth century, partly because of the view espoused by the early professoriate that professional studies grew out of instruction in the arts, with a liberal education a preliminary to vocational education. This (British) model saw an arts degree required for the study of law, while in engineering and medicine at least the first year of an arts degree was compulsory.

The faculties themselves took time to become established, with the doctorate preceding the award of the masters degree in each except engineering, where the masters degree was awarded first. As previously noted, the early universities had the power to grant degrees and doctorates in law and medicine before the formal establishment of these faculties later in the

century. The Bachelor of Law degree was established in 1860 at Melbourne, but its Law Faculty was not formed until 1873. Additionally, Melbourne had the power to grant doctorates in music from its foundation, and before the establishment of the faculty. At Melbourne and Sydney, the science and engineering faculties evolved through the arts faculties. From its earliest days, Adelaide sought to grant doctorates in law, medicine, music and most notably, science.<sup>25</sup>

While the early professional doctorates are considered in the following section, additional information may be found in the later section entitled **Higher Doctorates**.

## **MUSIC**

The first and only nineteenth century Australian doctorate in music was granted to George Torrance in 1879 at Melbourne. Regulations for the doctorate required the candidate to be a Bachelor of Music of three years standing and that he "present an original work for Orchestra and Chorus which he shall direct at his own expense".<sup>26</sup> Not surprisingly, candidates were few and for many years, most students proceeded toward a diploma only, further limiting postgraduate candidature. At Adelaide the Elder Conservatorium granted its first diplomas in 1898 and degrees in 1900, with Edward Davies gaining the first Adelaide doctorate in 1902. Requirements included passing six written examinations and the presentation of an original composition lasting at least forty minutes, with full orchestra accompaniment (though no mention is made of the expense being borne by the candidate). Adelaide and Melbourne were the only universities to grant music doctorates prior to World War Two.

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<sup>25</sup> "The University shall have the power to confer the Master of Arts, The Doctor of Medicine, Doctor of Laws, Doctor of Science and Doctor of Music". The University of Adelaide Calendar, 1878, p16. The University of London, Adelaide's model, had already established the BSc and DSc (equivalent at first to the MA) in 1860. Adelaide's Charter was finally granted in 1881, after objections to the colonial university granting science degrees were overcome. In that same year, new regulations made research and a dissertation more prominent in the award of London's DSc degree.

<sup>26</sup> University of Melbourne Calendar, 1890, p216

## LAW

At Melbourne and Sydney postgraduate law degrees were few (and often honorary) in the nineteenth century, whilst initial law education often took place within the profession rather than at the Universities. Melbourne enrolled three law undergraduates in 1862, while Sydney did not have a Chair of Law until 1890, although university bylaws in 1855 provided for the conferral of undergraduate law degrees after lectures and examination in jurisprudence. Two doctorates in law were awarded at Sydney in 1866 and an average of six per decade thereafter. By 1900, seventeen doctorates had been awarded, with two of these ad eundum degrees.<sup>27</sup>

Melbourne awarded its first LLD degree in 1876 to (Sir) George Bowen. By 1893, nineteen such degrees had been conferred, though again the majority were often honorary or ad eundum degrees. In contrast to Sydney, which had not instituted a masters degree in law, Melbourne's 1890 regulations required that a candidate for the law doctorate be a Master of Laws of three years standing. A candidate was also required to pass a viva voce and present a thesis. By 1881, Melbourne had conferred three Master of Laws degrees, and by 1895, thirty five.

The 1890 Calendar regulations at Adelaide for the LLD required that the candidate be a LLB of four years standing, pass all LLD examinations in one year (in Roman law, constitutional law, international law and jurisprudence) and submit "an original essay of sufficient merit on some approved topic which need not be composed during the examination."<sup>28</sup> In that year there were only thirty-two law students in total, with three final year students, making the

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<sup>27</sup> The LLD degree could not be conferred until two years after undertaking both LLB and BA degrees. The candidate, who was to be at least twenty five, was required to pass a written examination. University of Sydney Calendar, 1890, p119

<sup>28</sup> University of Adelaide Calendar, 1890, p127

pool of potential postgraduates very small. At Adelaide, as in Tasmania, no postgraduate law degrees were conferred until well into the next century. Despite the cachet of the LLD, postgraduate law qualifications have been relatively uncommon in Australia until recently. Both medicine and law lacked a university research tradition or orientation, with different honour systems evident within the professions (for example, in law, King's and Queen's Counsels and judges).

## **MEDICINE**

Prior to the establishment of local medical schools, early medical doctorates awarded were ad eundem degrees. The first medical school in Australia was established in 1862 at Melbourne, which awarded its first MD in 1871. By 1890, candidates there were required to have spent at least two years in a hospital or five in practice, present oral and written case commentaries, and pass a viva voce as well as the prescribed written examinations (including one in logic). Sydney established a medical school in 1883, while Adelaide's followed in 1884. In the early years at the nineteenth century universities, the MD (Doctor of Medicine) preceded the ChM or MS (Master of Surgery) as a postgraduate degree.<sup>29</sup>

At Sydney the first university-earned MD degrees were granted in 1895. Candidates at Sydney could take the degree two years after the MB after two years in practice. They were required to pass an examination and present, and sometimes orally defend, a thesis. Candidates were also required to "furnish a certificate of good fame and character, signed by two competent persons".<sup>30</sup>

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<sup>29</sup> This parallels the early situation in science where the doctorate was at first the only postgraduate degree.

<sup>30</sup> *ibid*, p129

The earliest ChM degrees were awarded at Sydney in 1888 and it was not until 1927 that the ChM degree became the Master of Surgery (MS). The ChM was conferred two years after the ChB (Bachelor of Surgery), two years in surgical practice and after passing further examinations in surgery as well as logic and moral philosophy. By 1900, 84 MD degrees had been conferred at Melbourne, while at Sydney only sixteen non ad eundem degrees had been conferred. In contrast, 123 ChM degrees were awarded at Sydney up to 1894 (ten of these to women) while only seven such degrees were awarded at Melbourne by 1900.

At Adelaide, prior to the opening of the medical school in 1882, regulations provided for the conferral of the Bachelor and Doctor of Medicine degrees to registered doctors who had practised in the state for five years. By 1890 there were on average four to five students in each undergraduate year of the medical course, so postgraduates were rare. Requirements for the MD and MS were very similar, with prerequisites being the MB and ChB degree. The first MD and ChM regulations for local students required between two and five years of clinical experience after the MB, with some exemptions for first-class honours graduates. Four examinations were required, though a thesis could be written in place of the examination on the history of medicine. The first Adelaide MD was conferred on Charles Hope in 1891, and the first MS (one of very few conferred until 1939) to Henry Newland in 1902.

As Tasmania had no medical school in the nineteenth century, medical postgraduates were confined to the three oldest universities where nineteenth century numbers remained small.

## **ENGINEERING**

The demand for technological education was not great in the nineteenth century, with the notable exception of mining and to some extent, primary industries, which required skilled expertise and research:

At heart the problem was that the industrial challenge to create a major strand of technical education was not there. There were few local markets for technical goods, the requirements of local industry for skills was muted and traditionally met by importing those skills.<sup>31</sup>

No technologically-based Australian universities existed at a time when overseas universities such as Manchester and the Massachusetts Institute of Technology, with their links to giant industries, were growing. Nor were there the kind of endowments that large industry made to these new overseas universities. Such technical education as existed until World War Two was mainly located outside of the universities, in trade-oriented schools and Schools of Mines. Some of these, such as the Melbourne Working Men's College, forerunner to the Royal Melbourne Institute of Technology, were influenced by similar college models in England.<sup>32</sup>

Nevertheless, engineering was taught from the early years at both Melbourne and Sydney. Two students (both with BA degrees) were enrolled for the Bachelor of Engineering at Melbourne as early as 1864, with the first Master of Civil Engineering degree granted in 1883. Ten years later, twenty six civil engineering degrees had been conferred.

Sydney (with its more narrow classically-oriented curriculum) had a somewhat later start as engineering was a sub-department of the science faculty until the Professor of Engineering was appointed in 1884. In 1885, there were only three undergraduate engineering students. It was not until the 1890s that the first four masters degrees in engineering were conferred and undergraduate student numbers rose to nearly ten times that of science.

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<sup>31</sup> Stephen Murray-Smith and A.J.Dare, The Tech, Hyland House, Melbourne, 1987, p47

<sup>32</sup> Francis Ormond, instrumental in setting up the College, was impressed by two Colleges of the University of London.

The flurry of mining exploration during the boom years of mineral exploration in the 1870s and 1880s led the establishment of various Schools of Mines, as at Adelaide and Ballarat, though these were not degree granting institutions. Nevertheless, along with the technical schools and colleges like the Royal Melbourne Institute of Technology, they were to provide the basis for technological postgraduate education in the next century.

Adelaide's School of Mines (established in 1889) provided much of South Australia's early engineering education. Undergraduate and postgraduate degrees were not normally awarded by the School. The nearby University of Adelaide in 1919 awarded the first Master of Engineering granted Edward Rennie from the School. Candidates were required to have had three years' professional experience and to submit either an original engineering design or thesis. The University of Tasmania was without an engineering faculty until well into the twentieth century.

By the 1890s there were ten technical colleges in Victoria alone, under state and increasingly, Education Department, control. These did not cater for postgraduate study, and were generally sub-graduate in function. The universities employed few technological staff, unlike some overseas universities. As Murray-Smith noted, "in 1913, there was an engineering staff of five at Sydney and four at Melbourne, compared to sixty-seven at the Massachusetts Institute of Technology."<sup>33</sup> It was not until well into the twentieth century that postgraduate technological education was really established. Masters degrees in Civil and Mining Engineering were the only postgraduate technological degrees granted.

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<sup>33</sup> Stephen Murray-Smith, "Technical Education in Australia" in E. L. Wheelwright, Higher Education in Australia, Cheshire, Melbourne, 1965, p186



## SCIENCE AND THE MSC DEGREE

The rise of science and scientific method marked a watershed in the nature and scope of postgraduate degrees awarded in Australia. However, there was a time lag in the institution and award of the new British science higher degree, the MSc, as science faculties were not established in the Australian university until the 1880s. Adelaide was established at a critical juncture, with its founding Act recognising the newly emergent scientific orientation of the newer nineteenth century British universities (such as London, which inaugurated the first BSc and DSc degrees in 1860).

Science faculties in the Australian universities evolved, as in Britain, from the arts faculties, which included science subjects. Early MA degrees in Australia were often granted in scientific studies (for example, MA degrees were granted in physics at Sydney as early as the 1860s). In 1865, one of the Chairs at Sydney was that of Chemistry and Experimental Physics (and Natural Science) with one professor and assistant. It was not until 1880 that the Challis bequest and additional state government grants enabled additional staff to be appointed and separate professorships of physics, chemistry and biology to be established. In 1882, a separate Faculty of Science was established "with a curriculum of pure science, leading to a degree of Bachelor of Science, with a sub-department in Engineering".<sup>34</sup> As in law, there was at first no masters degree in science at Sydney, with the doctorate preceding this degree. Many of those awarded a BSc at Sydney or Melbourne had an MA or BA, often with a science major, so the BSc was in some senses postgraduate in the early years.

Melbourne provided for the first Australian masters degree in science in the 1890s. As well as being the first university to award the degree, it was the only university to award the degree to both men and women in the nineteenth century. The 1894 Melbourne Calendar stated that the

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<sup>34</sup> H.E. Barff, A Short Historical Account of the University of Sydney, p94

examination for the MSc was to be the same as the final honour examination for science, and could be granted two years after the BSc. Like the MA degree at Melbourne, the degree in the early years resembled an honours degree. The first Melbourne and Australian MSc was granted in 1893 to Norman Willismore. Five others were granted at Melbourne by the end of the century including two to women, one of whom was Willismore's wife, Leonore (nee Little).

At the University of Tasmania requirements for the MSc degree were similar to Melbourne's. The University conferred two MSc degrees in 1907 and by 1908, out of a total of ten postgraduates since establishment, three were in science. Although few degrees were awarded annually at the University, many of these were postgraduate. (In 1908, of the fifteen degrees granted, five were postgraduate.)

In Britain, research had become an integral part of the British scientific higher degree, especially after the introduction of the PhD to Britain. Influenced by this, the Australian MSc degree underwent a change in the 1920s, with a research and thesis component required.

While not the first Australian research degree (the DSc entailed original research) it set a new pattern for higher degrees in Australia, by formally enshrining the thesis and supervised research as part of the masters degree (though supervision guidelines were generally informal and candidates might work on collaborative research). The DSc, which required original research and which was often undertaken by eminent academics, did not require supervision. Research laboratories, supervision and mentorship were extant prior to this, but were to become increasingly important. The first two MScs were awarded at Sydney in 1924, with one to a female. At Adelaide, the MSc was first awarded in 1926, with the first female MSc

awarded in 1927. At Adelaide the degree could be taken two years after the BSc (with an examination if undergraduate honours had not been obtained) and included a short thesis.

Requirements for the new MSc at Sydney in the 1920s varied across the science disciplines, from a thesis and "selected course of reading from the Professor" (physics) to thesis only (entomology) to an "original thesis and a written and possibly oral examination" (chemistry).<sup>35</sup> The MSc degree at Sydney and Adelaide remained a year longer in duration than at Melbourne, where it could be obtained a year after the BSc until after World War Two (the BSc honours degree did not exist at this time at Melbourne). This reflected a new rigour in scientific research degrees.

The introduction of the MSc was one of the major postgraduate developments of the nineteenth century. Another was the admission of women to undergraduate, and subsequently postgraduate, education. In Australia, as in Britain, the two developments were roughly contemporaneous.

## **EARLY WOMEN POSTGRADUATES**

The admission of female students to Australian universities was proscribed until the late 1870s, though this was in advance of the universities of Oxford and Cambridge, which did not allow women to enrol until the next century. (While an American university was the first to confer a degree on a woman in 1875, the models which were probably most influential in Australia were those of Owens College, at Manchester, the first English institution to admit women, and the University on London, which allowed women to enrol in all courses except for medicine in 1878).

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<sup>35</sup> University of Sydney Calendar, 1927, p171

Female student numbers were low initially. In Adelaide, for instance, few girls' schools taught Greek, a prerequisite for the granting of the Bachelor of Arts degree. The first women graduates there took degrees in science.<sup>36</sup>

The first female Australian BA, Bella Guerin, graduated from Melbourne in 1883, having listed her last place of education as "home study". **The Bulletin**, "misquoting her title as MA, voiced the mock-gallant hope that the beautiful **and** clever Miss Guerin would in due course attain the title best befitting a woman, that of MAMA".<sup>37</sup> In 1885, she became (along with Lydia Harris - who gained her MA degree in political economics and Jurisprudence) Australia's first female MA, gaining her degree in logic and mental philosophy.

In the 1890s, two or three women per year were awarded the degree at Melbourne; between seven and eighteen MAs in total were awarded there annually. The first women students were in their twenties, generally older than many of their male contemporaries. Bella Guerin had matriculated in 1878 and Lydia Harris in 1874, but were unable to enter university until legislation had been passed allowing the admission of women to Melbourne University.

The admission of women to university was opposed on such grounds as the smallness of their brains and possible loss of femininity (and, in the case of medicine, modesty). University-educated women would be over-qualified for their life's true work - marriage and motherhood - and thus money would be wasted. However, opposition was gradually overcome.<sup>38</sup> The decorous behaviour of the early women students here and in England drew favourable

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<sup>36</sup> For a more detailed examination see Alison McKinnon, The New Women: Adelaide's Early Women Graduates, Wakefield Press, Adelaide, 1986

<sup>37</sup> Farley Kelly, Degrees of Liberation, A Short History of Women in the University of Melbourne, The Women Graduates Centenary Committee of the University of Melbourne, 1985, p1

<sup>38</sup> Farley Kelly, Degrees of Liberation, pp4-45. These arguments were used in the public debate which also raged in England. Kelly notes that in Australia, the Catholic Church was the denomination most antagonistic to women's higher education. Convent-educated Bella Guerin encountered particular difficulties, as "intellectual pride" was discouraged.

comment - and perhaps the age and maturity of these students was a factor which hastened their acceptance. They were committed students, eager for knowledge. At the end of the century 108 women held undergraduate and postgraduate degrees from Melbourne in arts, science, medicine and music. Of this number, three gained MAs in the 1880s, with nine more granted between 1890 and 1895.

At Sydney, the first woman MA, Florence Thompson, gained her degree in 1887. Sarah Brennan, who gained her MA in 1891 in logic and mental philosophy, later completed a science degree. Five female MAs were granted by the turn of the century. From the 1890s the percentage of female MAs gradually increased, with 33% of those awarded going to women between 1898 and 1905. Total female enrolment at the University of Sydney continued to grow, with 137 enrolled in 1911 and 370 in 1915. As at other universities, most were enrolled in arts and many were to become school teachers.

Adelaide granted no MAs to women before 1900. The first female MAs were awarded to Caroline Clark and Ethel Holder in 1901. As previously noted, absence of Greek at matriculation precluded arts entry for many women, with the first female graduate at Adelaide, Edith Dornwell, receiving a BSc. By 1908, six MAs had been granted to women. At The University of Tasmania, the second MA conferred in 1899 went to a woman and up to 1908, of the seven MAs conferred, four were awarded to women.

No women gained postgraduate degrees in music in the nineteenth century though they made up the bulk of diploma students. The first woman to gain a music doctorate in Australia was Ruby Davy in 1918. This was also the first doctorate granted to a woman at Adelaide.

The first Master of Science degree at Melbourne (and in Australia) to be awarded to a woman went to Leonore Willsmore (nee Little) in 1894. By 1895, five MSc degrees had been awarded to women at Melbourne. None were awarded to women at the other universities in the nineteenth century. Georgina Sweet (MSc Melbourne 1898) became the first female DSc in the early 1900s and was also the first woman to receive a doctorate in Australia. By the early years of the twentieth century, Melbourne had established an early science dominance of some note. At Sydney, only seven BScs had been awarded to women up to 1904, and no postgraduate science degrees were awarded.

Women were admitted to undergraduate medical courses at Sydney before Melbourne, though the first female graduate to be admitted to medical practice in Australia was from Melbourne. In medicine, no postgraduate degrees were awarded to women at Melbourne in the nineteenth century. Five Master of Surgery degrees were awarded to women at Sydney by 1898 though, as has been noted, these were not strictly postgraduate degrees. Adelaide and Tasmania did not have any female medical graduates before 1900, and very few in the next half century.

Most female postgraduates in the nineteenth and indeed, twentieth, century were in arts, and teaching, generally in secondary schools, was the most popular occupation. They were often poorly paid for the prestige of a position at a "good" private school - and in common with women teachers in the early state systems, earned much less than men of similar qualifications.<sup>39</sup> Those who did not teach, generally married. As working wives were frowned on, marriage and a career were mutually exclusive.

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<sup>39</sup> See Farley Kelly, Degrees of Liberation, p52, for a discussion of prestige. Kelly cites the perceived lower status of state schools, and women graduates' preference for secondary teaching. Many did not like the secular character of state schools, or preferred girls' schools. The majority of female MAs before 1920 "preferred to specialise" and unless they had small schools of their own, could divide their time between a number of schools, where mathematics, science and language qualifications were "much in demand". Poor female pay in private schools was partly due to a refusal by women teachers (who at the turn of the century outnumbered male private school teachers five to one) to organise industrially until the interwar period. Such behaviour was considered unladylike.

The last decade of the nineteenth century was the beginning decade for women postgraduates. A liberalising of cultural attitudes saw women admitted in increased numbers to university. This coincided with a liberalisation and extension of curricula in the universities. But the liberalisation and opening-up occurred in some fields only. Many more decades were to pass before there were female postgraduates in all faculties, and in more than minuscule numbers.

## **HIGHER DOCTORATES**

As has been seen, the ancient doctorates in law, medicine, music and theology predated the masters degree in these faculties. With the exception of the theology doctorate (for the early Australian universities were determinedly secular) it was within the power of the early universities to award most of these doctorates from the beginning, even before the establishment of the relevant faculties. Apart from medicine, candidates for higher doctorates were, and remain, few in number. While all the doctorates required some original research or contribution to knowledge, the nineteenth century DSc was the forerunner of the modern research-based higher degree - in particular, the PhD. It is this degree which provides the link between the nineteenth and twentieth century, as scientific method and the rise of the research-based modern university became dominant paradigms. An examination of the requirements shows an early orientation toward research.

The 1890 Sydney Calendar stated that the DSc could be conferred three years after the BSc and that a candidate "must produce evidence of scientific employment and research" as well as passing theoretical and practical examinations.<sup>40</sup> As Sydney only granted a few BSc degrees in the 1880s, doctoral candidates were few in number and were often staff members. By 1904, forty eight BScs had been granted, including seven to women, with Walter

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<sup>40</sup> University of Sydney Calendar, 1890, p128

Woolnough awarded the first Sydney DSc under these conditions in 1904. The ancient tradition of an oral examination remained an option for examiners in many disciplines well into the twentieth century, as did a written examination. Usually both were dispensed with if a candidate had an honours undergraduate degree. In 1927 the Sydney Calendar noted that three examiners, one of whom was to be an external examiner, were required for a thesis (the length of which was not specified) which made "an original contribution to knowledge."<sup>41</sup> Qualifying examinations were required unless the BSc had been passed with honours. By 1927, twenty-five DScs, including one in engineering, had been awarded at Sydney since its foundation.

The structure and purpose of the degree (formally accrediting sustained and original research and scientific method) was an important precursor to that of the PhD. Initially, the Australian DSc had similarities to the PhD, in terms of research and minimum time taken, though the DSc was not supervised. The two doctorates eventually became qualitatively different, with the DSc, based on a large body of scholarly work undertaken over many years, awarded to distinguished researchers. In Britain, the PhD was from the first referred to as the "lower doctorate", often obtainable after as little as two years research. In terms of status, independence and scholarly standing, the DSc remained the superior degree.

Candidates for the Melbourne DSc had to be Bachelors of Science of three years standing, "pass a special examination in some branch of Science proposed by the candidate and approved by the Professorial Board and give proof of satisfactory original research".<sup>42</sup> As the science faculty was only established in the 1880s, few were awarded, with the first two received by David Masse and Frederick McCoy in 1887.

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<sup>41</sup> University of Sydney Calendar, 1927, p102

<sup>42</sup> University of Melbourne Calendar, 1894, p189



Requirements for a Doctor of Science at Adelaide were substantially the same as at Sydney and Melbourne, though first class Honours BSc students might be exempted from examination. The first doctorate was awarded in 1902 to Clinton Farr; twenty-one were awarded before World War Two. At the University of Tasmania, no DScs were granted in the nineteenth century, and very few in the twentieth.

The professional faculties of law, medicine and engineering did not have uniform requirements for doctoral candidates, nor was the thesis always an integral part, especially for law and medicine. At some universities, notably Melbourne, Doctorates of Law and Letters were sometimes honorary, unlike those in science.

The LLD was first awarded at Sydney in 1866 to James Paterson, well before the law faculty's foundation in 1890. Melbourne's first LLD was conferred in 1876, while Adelaide and Tasmania did not confer the LLD until the twentieth century. The regulation lapse of time between conferral of the LLB and the LLD varied between two and four years. Examinations and a viva voce were required but, as I have previously indicated, in 1890 only Adelaide required the submission of a thesis.

In contrast, at Adelaide in 1890, a thesis on the history of medicine for the MD was optional. No thesis was required for the MD at Melbourne in that year, though candidates for the MD at Sydney were required to present a thesis. At all the Australian universities at that time, examinations, case commentaries and a viva voce were the normal requirements for the degree, which could be taken two years after the conferral of the MB. As previously documented, most MDs were conferred at Melbourne and Sydney. No MDs were awarded at

Tasmania until well into the twentieth century, with only one awarded at Adelaide in the nineteenth century, to Charles Hope, in 1891.

As previously noted, the DLitt, or Doctorate in Letters, was a rarely awarded degree. Melbourne conferred most of these Australian doctorates in the nineteenth and early twentieth centuries. In 1890 the University of Melbourne required the candidate to be an MA of at least three years standing and to submit an "original printed thesis" - the only university to expressly require a printed thesis.<sup>43</sup>

Adelaide, Sydney and Tasmania instituted the degree much later with very few awarded prior to World War Two. In 1927 Adelaide required a typewritten thesis or a published work or a combination thereof. Only candidates who held honours, masters or doctoral degrees in any faculty were eligible. While scholarly contribution to knowledge was acknowledged, greater weight was eventually given to published work when awarding the doctorate (in part to distinguish it from the PhD).

Postgraduate education in the nineteenth century was a rarity, with undergraduate education also a small sector. Yet by the end of the nineteenth century, discernible differences could be noted - between states, disciplines and sexes. Growth in the last two decades saw two new universities opened, new courses established, and women admitted to the universities. The foundations of a new tier of Australian education and scholarship had been laid.

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<sup>43</sup> Later the degree was opened to those without a BA but "adequate training in letters". A thesis was also required. University of Melbourne Calendar, 1917, p142.

## **RESEARCH IN THE EARLY TWENTIETH CENTURY**

The spirit which pervaded the Australian university in the first half of the twentieth century remained little changed from its nineteenth century beginnings. The university remained an inward-looking institution, educating a very small proportion of the population. Research was sporadically funded, mainly from limited internal university monies and state grants. Postgraduate scholarships were few in number and often awarded only for overseas study. For the relatively small numbers of academic positions in the universities, a masters degree was the Australian norm. The rarely-conferred Australian doctoral degree, while it had immense prestige, was not the research training qualification for academic employment that the PhD was in America. However, doctoral qualifications gradually became more important in science faculties. In 1939, over half of the total of 139 Australian university academic science staff had PhDs gained abroad.

Two new universities were founded in the early years of the new century - the University of Queensland in 1910 and the University of Western Australia in 1911. Queensland began with seventy five students and the faculties of arts, science and engineering, while the University of Western Australia began with 182 arts and science students. At Queensland, additional faculties of agriculture and commerce were established in the 1920s and dentistry, veterinary science and medicine in the 1930s. Very few postgraduate degrees were awarded in the first three decades at Queensland, though postgraduate study had early on been a topic of some debate.

Western Australia did not have a medical faculty until the late 1950s and awarded only one or two masters degrees in arts and science over the first four decades. There was a deliberate

policy at the University of Western Australia to encourage graduates to pursue postgraduate study elsewhere, as the University was considered an undergraduate campus:

The more brilliant students were encouraged to do their graduate work elsewhere - mainly overseas. The limits of... graduate research facilities within the university were matched by a limited range of highly specialised employment by the predominantly agricultural economy of the state.<sup>44</sup>

This was not peculiar to UWA however, for all of the Australian universities encouraged their most brilliant students to apply for scholarships for postgraduate study abroad, generally in the UK. No other university saw itself so explicitly undergraduate in orientation.

While conditions at the six universities varied, it gradually became the norm for all candidates to sit for examinations for the masters degree unless they had graduated with honours in their initial degree. Increasingly, honours candidates wrote a thesis instead of taking examinations, though at Sydney, for the MA in 1921, a choice was possible. For doctoral candidature, depending on the field, examinations and an independent thesis on an approved topic submitted a specified period after the initial degree, gradually became the norm. This was supplanted mid-century by a thesis or published body of work only.

While degree courses at Australian universities in the first half of the twentieth century remained substantially the same as had existed at the turn of the century, some additional postgraduate courses and degrees were inaugurated. Various postgraduate diplomas, often coursework, and taken by examination or thesis, were offered; these were the forerunners of the modern graduate diploma. Early diplomas inaugurated in the first forty years were offered in public health and psychiatry (at Sydney and Melbourne) anthropology, tropical medicine,

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<sup>44</sup> Fred Alexander, Campus at Crawley, A Narrative and Critical Appreciation of the first Fifty Years of the University of Western Australia, F.W.Cheshire, University of Western Australia Press, Perth, 1963, pp494-5

and radiology (Sydney) dietics (Melbourne) and metallurgy, electrical and mining engineering (Adelaide).

Other postgraduate degrees were instituted, including, in the 1920s, the first masters degrees in commerce and economics degrees at Melbourne and Sydney respectively. In 1930, Phyllis Rountree received the first Australian masters degree in bacteriology at Melbourne, a degree especially created for her by the Registrar for her fourth year of fieldwork because no such degree existed.<sup>45</sup>

Postgraduate teaching diplomas were instituted in the 1920s at the three oldest universities and the teacher training colleges came increasingly under the influence of the universities. In Melbourne (where a Master of Education degree with a thesis component was instituted in 1926 and a postgraduate Bachelor of Education in 1938) and Sydney, teachers' college staff were often graduates engaged in research, though this waned after World War Two when the colleges were forced to recruit staff from within the teaching service.

The first doctorates in veterinary science were granted as early as 1909 at Melbourne, with doctorates granted at Sydney shortly after this. In the 1920s, Sydney, Melbourne and Adelaide instituted the doctorate in dental science (DDS).

Other postgraduate medical innovations included courses which were offered after World War One at Adelaide and elsewhere "on recent advances in medicine, in response to a request from the British Medical Association".<sup>46</sup> The ChM at Sydney was formally changed in 1927 to the

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<sup>45</sup> Despite possession of the only master's degree in the field, her later work at the Waite Institute was terminated after three years because, she was told "we don't employ women permanently". Phyllis Margaret Rountree, interview conducted by Kerry Gordon, [University of New South Wales Archives](#), 1971, pp3-4

<sup>46</sup> [University of Adelaide Calendar](#), 1924, p295

Master of Surgery, thus becoming truly postgraduate. A thesis was required, as well as examinations, two years surgical practice and case reporting.

Gradually the pattern of Australian research degrees altered. Coursework and examinations generally disappeared by the 1930s, to be replaced almost universally by independent research and a thesis.<sup>47</sup> There was little formal guidance in research methods while informal instruction and academic apprenticeship enculturation was often by osmosis and observance. The observation made as late as 1955 by R.M. Crawford, head of Melbourne's Faculty of Arts, was apposite:

Some departments in some, perhaps in all, of our universities provide regular seminars and more or less regular supervision<sup>48</sup>

The influence of American research and postgraduate training models, centred round the PhD, largely did not permeate the Australian university in the first six decades of the century.

However, the introduction of the PhD at Oxford in 1917 did have some influence in Australia. As previously noted, the first Allied Colonial Universities Conference was held in Britain in 1903. Among other issues discussed were those pertaining to overseas postgraduate students, particularly those studying in Britain. At the first Universities Congress of the British Empire, held in Britain in 1912 (attended by a representative from the University of Melbourne), a British "lower doctorate" was mooted. The setting up of the Universities Bureau of the British Empire in 1912 (with one of its aims

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<sup>47</sup> Independent research sometimes meant that few, if any, attempts were made to provide formal guidance in research methods. Arts students, particularly, could be full or part-time students, often over an indeterminate number of years. Postgraduates were sometimes seen as inexpensive and easy to "tuck-in". As late as 1970 one academic noted, "it would be possible to tuck-in half a dozen postgraduate students into a school for guided reading and fairly informal seminar-type teaching without adding greatly to teaching loads." L.W. Parkin, "Postgraduate Teaching Courses at the South Australian Institute of Technology", The Role of the Adelaide CAEs, John Argue (ed) Mitchell Press, Adelaide, 1970, p44

<sup>48</sup> R.M.Crawford, "Studies in the Non-Science Faculties" in A Symposium on Postgraduate Study in the Australian University, Australian Vice-Chancellors Committee, Commonwealth Inter- University Conference, 1955, p53

the development of research degrees) and a similar Congress held in 1921, disseminated knowledge of the British PhD to colonial universities.<sup>49</sup>

In 1924, after an Australian Universities Conference held in Adelaide, the University of Melbourne wrote to all Australian universities, in order to ascertain their opinion concerning the introduction of the PhD. On the instigation of the Melbourne University Council, the Science Faculty discussed the proposal and drew up detailed regulations for the possible award of such a degree. The regulations for the DSc were also reworked to ensure the degree's distinctiveness, with the DSc requiring a "work containing an original and substantial contribution to some branch of Science" as well as "distinction for published contributions to Science". The PhD required a thesis which would "form a distinct contribution to knowledge of the subject and afford evidence of originality". The PhD could be begun immediately after obtaining honours in the bachelors examination in the Arts, Science or other "approved" Faculty, whereas seven years must have elapsed before the DSc could be undertaken.<sup>50</sup>

The response was cool, with no other universities favouring the introduction of the degree. At the University of Queensland, the degree was rejected:

on the grounds that each degree should be distinct in title and association with a particular faculty, that the PhD might lower the value of existing doctorates and that what had been considered appropriate for British universities in the post-war period was not justifiable within the context of Australian universities.<sup>51</sup>

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<sup>49</sup> See Renate Simpson, *How the PhD Came to Britain*, Society for Research into Higher Education, Guildford, 1983, pp101-111.

<sup>50</sup> *Minutes of the Science Faculty*, The University of Melbourne, 7 October 1924. University of Melbourne Archives.

<sup>51</sup> Malcolm Thomis, *A Place of Light and Learning: The University of Queensland's First Seventy Five Years*, University of Queensland Press, St. Lucia, 1985, p134

The University of Sydney concurred, expressing further concerns about effects on its recently established MSc degree. Masters degrees generally would be “apt to lose caste and attractiveness”. Australian did not have the resources and numbers for further high level postgraduate work, and the University urged instead an increase in overseas scholarships for Australians. It noted, with caution, that the British PhD was only a “recent experiment, not yet fully tested”.<sup>52</sup> The University of Tasmania rejected the proposal, as it intended to introduce the DLitt. (Which the new degree might prejudice). Adelaide expressed “strong opposition” while the University of Western Australia noted it had “no sufficient reason” for the degree’s institution.<sup>53</sup> In the light of such unenthusiastic responses, Melbourne did not pursue its proposal, a precursor to the degree’s introduction at the University twenty years later.

## THE CSIR

In the twentieth century, scientific research transformed Australian postgraduate education, both within universities and through bodies such as the Council for Scientific and Industrial Research (CSIR). Although the CSIR was not an accrediting body for postgraduate degrees, it was to become a major source of employment for science postgraduates and of scholarships, particularly after World War Two. Research and experimental stations were set up in conjunction with the universities, with mutually beneficial results. The rise of the modern research university and permutations such as Co-operative Research Centres can partly be traced to these early collaborations and influences.

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<sup>52</sup> Report of the Professorial Board on the question of the establishment of the Degree of Doctor of Philosophy in the Australian Universities, The University of Sydney, 10 October 1924. The University of Melbourne Archives.

<sup>53</sup> Letter, The University of Tasmania, 21 November, 1924.

Letter, The University of Adelaide, 28 October, 1924.

Letter, The University of Western Australia, 11 October, 1924.

Letters to the Registrar, The University of Melbourne, The University of Melbourne Archives (1925/166)



The genesis of the CSIR predated Federation. Parliamentarians Alfred Deakin and W.H. Groom had proposed the establishment of a Federal Bureau of Agriculture, an idea mooted again six weeks after the first federal parliament met, by Sir John Quick. Another parliamentarian, Groom's son, Littleton Groom, was also a staunch advocate. In 1910, a party of Scottish Commissioners arrived to investigate Australian agriculture. Their subsequent report undoubtedly influenced Prime Minister Hughes, who was in favour of some central body which could more effectively address national agricultural problems (for example, the scourge of prickly pear). In 1909 a branch of the British Science Guild had been established in South Australia. It was this body which first suggested the setting up of an Institute for Scientific and Industrial Research. It followed British precedent, for the first direct state support solely for postgraduate students in Britain had been in agriculture in 1910. The DSIR, the British Department of Scientific and Industrial Research, was set up in 1915. (see Chapter One).

In 1913, Dr. T. Brailsford Robertson, Associate Professor of Physiological Chemistry and Pharmacology at the University of California and familiar with American research institutes, visited Australia. He was asked by a subcommittee in Adelaide to outline a plan for such a body for Australia. The report was shelved but it made some interesting suggestions. Seven departments were mooted; as well as departments relating to agriculture, others were for "functional diseases", medical research, ethnology and linguistics. This report could be considered the forerunner of not only the CSIRO but also in part, that of the Australian National University research schools established in the late 1940s and 1950s in Canberra. It is interesting to note that the report which favoured an American-style research institution was instigated in Adelaide, where the Waite Agricultural Research Institute was to become a national leader in scientific postgraduate studies.

The first involvement of the federal government in research occurred during World War One, when the universities were asked to advise on the supply of raw materials. In 1920, a government act established a national Institute of Science and Technology which struggled on, woefully underfunded until 1926, when another act saw the CSIR formally established to undertake research into agriculture, industry and national security. In 1946, military research was hived off and the body renamed the CSIRO. The first trickle of Commonwealth money (30,000 pounds) for research purposes was allocated to the CSIR in 1936.

## **THE NATIONAL UNIVERSITY MOVEMENT**

A movement to establish a national university was also instrumental in changing Australian postgraduate education. In the 1920s a group of public servants and scientists in the new national capital of Canberra, led by Sir Robert Garran, campaigned for a national university. A report commissioned by the Prime Minister, S.M. Bruce (in 1926) acting on a proposal by the head of the CSIR, Dr. A.C. Rivett, recommended the setting up of a national research university on the postgraduate Johns Hopkins model. As well as scientific investigations, there were to be core departments of economics, law and engineering. Rivett considered such a:

shrine for investigators will attract to Canberra men and women capable of creating an atmosphere of culture... Australia needs and is ready for the beginning of a university with the aims of the Johns Hopkins university. This body must soon be found laboratories at Canberra for at least three main lines of scientific endeavour: entomology, plant pathology and forest products. If the Council is wise, it will commence these divisions only when it has outstanding men to direct them.<sup>54</sup>

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<sup>54</sup> Dr. A.C. Rivett, A University at Canberra, CSIRO Archives, 1927, quoted in Milton Lewis, A National Research University: the Origins and Early Years of the ANU, unpublished MA Thesis, Australian National University, Canberra, 1972, p158

The idea of a national university with special purpose continued to attract support even during the straitened times of the 1920s depression, though not from the federal government. In 1929, T.H. Laby, Professor of Natural Philosophy at Melbourne, considered that such a national university would be "the equivalent of Oxford or Cambridge".<sup>55</sup> In 1934, L.F. Fitzhardinge, a member of the University Association, proposed the building of a national university around "humane studies" in order to promote the fostering of qualities in which the Australian elite were perceived to be deficient. Australians, he considered, were "deprived of the long tradition which makes them almost second nature in the intellectual and governing classes of older countries".<sup>56</sup>

Some concern had been expressed about the low educational level of many senior public servants. Unlike Britain, few public servants held undergraduate, let alone postgraduate, degrees, except in specialised areas. In Australia there was a certain level of distrust and lack of understanding of the work of universities. Little use was made of generalist graduates, despite university complaints. In 1905, there were only sixty graduates in the Commonwealth Public Service and less than a thousand (most in technical and professional posts where university qualifications were necessary) in 1940.<sup>57</sup> In 1929 a small university college affiliated to the University of Melbourne opened in Canberra, to provide part-time education for local members of the public service.

Increasing demand for university assistance led the AVCC in 1935 to consider the case for Commonwealth assistance in postgraduate studies. Sir William Mitchell, Chancellor at Adelaide, proposed that the Commonwealth, rather than the states, be responsible for all postgraduate work and training. In its submission the University of Melbourne noted:

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<sup>55</sup> T.H. Laby, "A University for the Commonwealth", *Australian Quarterly*, Vol 1, March 1929, pp 32-34

<sup>56</sup> L.F.Fitzhardinge, "The University that will be" *Prometheus*, 1934-5, p11

<sup>57</sup> See David Jones, "A Century of Exoticism", p19

To an increasing extent the Commonwealth has been drawing upon the universities for assistance, both direct and indirect...[directly] by providing accommodation, facilities in the Universities for specific researches, Royal Commissions and acting in an advisory capacity at the request of the Government itself. Indirect assistance is given by training in methods of research for men and women needed for the technical and professional positions in the Commonwealth Service which involve research duties... the Universities wish to emphasise the importance of increasing the facilities available for training research workers and ask for assistance from the Commonwealth... [as] the CSIR has been compelled to import many... technical officers.<sup>58</sup>

## **THE PATTERN OF TERTIARY GROWTH**

Melbourne, which had been the largest university in the nineteenth century, was gradually eclipsed by Sydney in the 1920s, while the universities of Adelaide, Western Australia, Tasmania and Queensland remained very small. In terms of postgraduate degrees awarded however, Melbourne retained supremacy. In 1923, 2,755 students were enrolled at Sydney, 2,283 at Melbourne and 320 at Adelaide. Sixty seven higher degrees were conferred at Melbourne, thirteen at Sydney and eight at Adelaide. Most were MAs, with forty conferred at Melbourne. Of the eleven Australian doctorates conferred in medicine that year, nine were from Melbourne.

In 1937 Sydney's enrolment had grown to nearly 3,400. In that year, thirty one higher degrees and thirty diplomas in education were conferred. By comparison, at Melbourne, which had grown to a similar size, ninety three higher degrees and nineteen diplomas in education were granted. The only other university to grant many higher degrees, Adelaide, conferred thirteen higher degrees and three diplomas.

During the first four decades of the century, a high proportion of MAs granted at Sydney and Melbourne (up to half in some years in the twenties at Sydney) went to women. Consistently,

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<sup>58</sup> Report of the Australian Vice-Chancellors Committee, Melbourne, August 1935, pp8-9

the proportion of females granted MAs at these two universities was greater than the overall proportion of female students at the universities. Fluctuations in both undergraduate and postgraduate numbers after the turn of the century were affected by a number of factors, notably the First World War and the depression of the late 1920s and early 1930s. To some extent this was reflected in the gender balance in MA enrolments. However, women had begun entering the universities in increasing numbers quite early in the century as higher education for women became more accepted. Public high schools for both sexes had opened after Federation, making access to universities marginally more possible for talented students of both sexes. The proportion of female students at Sydney, for example, doubled between 1911 and 1915 to reach 370 out of 1,800 students.

University staff shortfalls and cutbacks during the Depression created difficulties which impacted on postgraduates. At Adelaide, the University was without a librarian for three years, and the Professor of Classics added these duties to his teaching; staff wages were cut and state government grants fell as did enrolments (and income) in some faculties. Nevertheless, the small postgraduate numbers did not drop markedly.

By 1939, when the first official national university figures were collected by the Commonwealth Statistician, 272 postgraduate students were listed at six institutions. A more accurate figure would be over 300, if students at Sydney and Queensland were included, which were significant omissions in the statistics. Eighty one higher degree students were listed in Australia in 1939. However, actual degrees awarded in the following years confirm that many enrolments were not officially counted. (Table 2.1) Higher degree students at Australian universities at the time did not have to enrol, nor were universities obliged to report their numbers to the Statistician (and Queensland and Sydney did not report full numbers until

1947 and 1957 respectively). In 1940, thirty masters degrees alone were granted at Sydney, so higher degree numbers the preceding year must have exceeded this.

TABLE 2.1

**HIGHER EDUCATION ENROLMENTS - 1939**  
**HIGHER DEGREES AWARDED - 1939**

\* Sydney and Queensland did not need to report statistics of higher degree student enrolments  
 [This was optional]

	SYDNEY	MELBOURNE	ADELAIDE	TASMANIA	N.E.	UWA	QUEENSLAND
<b><u>ENROLMENTS</u></b>	30 - 40 [*estimated ]	40 - 80 [*estimated] 40 listed in statistics	43	1	2	-	*
<b><u>MASTERS DEGREES AWARDED 1939</u></b>	39	65	9	-	-	4	-
<b><u>DOCTORATES AWARDED 1939</u></b>	6	14	4	2	-	-	-

Source for Degrees Awarded : 1939 Australian University Statistics, Commonwealth Bureau of Census and Statistics.

Melbourne had easily the greatest number of Australian postgraduates just prior to World War Two, far greater than Sydney. According to the statistics, Melbourne had thirty five higher degree students in 1939, and that year awarded a total of 158 postgraduate degrees and diplomas. Fourteen doctorates were awarded in medical and scientific fields and 65 masters degrees of which nineteen were MAs and twenty were MScs. In contrast, only six doctorates were awarded at Sydney. Adelaide, a much smaller university, awarded four and Tasmania two.

In 1939 Adelaide had 122 postgraduates enrolled and 43 higher degree students in 1939. Most of the postgraduate students were enrolled in Diploma of Education (Secondary) courses, for which a degree was a necessary prerequisite. Over half the higher degree students were

enrolled for the MA, with the remainder spread across other disciplines. The New England University College (established in 1938 as a college of the University of Sydney) in 1939 had two postgraduates enrolled and Tasmania one (with the only two higher degrees awarded there that year being doctoral degrees) while UWA reported diploma students only. Of the 170 Australian students listed as special research workers in receipt of scholarships and grants, the bulk were at Melbourne, Sydney and Adelaide.

At the beginning of World War Two, the six universities and two colleges had an enrolment of 14,236, of whom over half were enrolled at the universities of Sydney and Melbourne. Though some growth had occurred over the century, they remained elite institutions, remote from the community at large and from each other. Despite some state government support, the universities remained autonomous institutions, largely free to determine their own directions, although the beginnings of Commonwealth involvement occurred in this period.

By mid-twentieth century, the early moral and social credentialing function of the MA degree had been changed by the rise of the modern science higher degree, other earned higher degrees and the rise of scientific method. Universities ceased to be explicitly responsible for the moral guidance of their students.<sup>59</sup>

After nearly ninety years under the Southern Cross, the universities' orientation was far from Antipodean. The Australian university remained in spirit, perhaps more than any other Australian institution, a colony of England. One major difference between the two university systems was the failure of the PhD model to become established in the Australian university, in part because there was no political imperative for its development, as in Britain.

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<sup>59</sup> For a modern perspective, see M.B.Katz, "The Moral Crisis of the University" in Reconstructing American Education, Harvard University Press, Cambridge, Massachusetts, 1987

In the late 1930s, an Australian postgraduate higher degree was not generally sought for employment purposes, as the bachelors degree sufficed for many advanced positions (although in academia, the masters degree was often preferred). A growing research ethos had begun to permeate the Australian university through the science higher degrees of the DSc and MSc. The DSc, with its requirement for the demonstration of original and significant research, provided a local model for future higher degrees. Of the twenty six Australian doctorates awarded in 1939, all but one were in medical and science areas. This pattern of distribution was to continue for the next two decades, marked by the momentous introduction of the PhD degree.



## CHAPTER THREE: AN ADVENTURE IN IDEAS: FROM THE INTRODUCTION OF THE PHD DEGREE TO THE MURRAY COMMITTEE

### THE INTRODUCTION OF THE PHD

In June 1944, a second attempt to introduce the PhD was made when the Dean of the Faculty of Science at Melbourne University, John Turner, wrote a momentous letter to the Dean of Science at Adelaide University, Professor Mawson, as well as to other Australian Deans of Science:

The Faculty of Science has been discussing the advisability of introducing a research degree of the PhD type. Opinion is divided, but a number of members of the Faculty are strongly in favour of the introduction of such a degree. However it is realised that such a step should not be taken without very thorough consideration of the problem. Some members feel that it should be taken, if at all, jointly by the Universities of Australia. Our Vice-Chancellor, Mr. Medley, wishes to raise the matter at the next Vice-Chancellor's meeting. I am writing to you informally to ask whether the subject has ever been raised at your Faculty meetings. If so, I would be glad to know what was the general opinion.<sup>1</sup>

The "general opinion" from Adelaide was thunderous:

The feeling was almost unanimously and firmly against the establishment of the degree of PhD. The principal ground was that here, anyway, such a degree would be little more than a duplicate of our present MSc degree.<sup>2</sup>

At Adelaide the MSc (including undergraduate study) was at least a five year degree (as at Sydney) unlike Melbourne's four - a fact which Turner acknowledged and hoped to rectify. The BSc (Hons) was not instituted at Melbourne until the 1950s - well after the introduction of the PhD. Turner wrote once again to Adelaide stating that in August the Melbourne faculty

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<sup>1</sup> University of Adelaide: Archives, Correspondence with the University of Melbourne on the Proposed Establishment of the PhD Degree, No.158, 1944 (27 June 1994)

<sup>2</sup> *ibid.*, 24 July 1944

had "unanimously agreed that the institution of a PhD degree was desirable; a small subcommittee is now to discuss the matter with our Vice-Chancellor".<sup>3</sup>

The letter continued:

The main reasons advanced in favour are :

1. it would enable the building up of a good research team in many departments.
2. it would furnish a real incentive for good men to postpone their introduction into industrial life. Such an incentive is not at present provided by the one-year MSc course nor by the DSc.
3. it would give departments a bigger pool of trained men from which to draw for demonstrators.
4. it would eliminate to some extent the hardship experienced by some highly competent students who, because they are not able to gain one of the few scholarships available for overseas study, are unable to work for a PhD degree
5. the PhD degree is generally recognised as the junior degree in Science overseas, and the MSc is in general not very highly regarded: in some universities it is equivalent to a "failed PhD". The Melbourne Faculty would not therefore agree with the statement that an MSc is better than a PhD if they are to be regarded as alternatives.<sup>4</sup>

The Minutes of the University of Adelaide Education Committee in August that year reiterated the opposition but asked that the matter be raised at a forthcoming Australian Vice-Chancellors meeting and said that it "felt that if Melbourne establishes the degree other universities also will have to do so".<sup>5</sup>

In 1945, the Professorial Board of the University of Melbourne passed a resolution in favour of establishing the degree. By mid-1946 applications were being received for candidates for the degree at Melbourne. A new era had arrived.

By 1946, Tasmania and Western Australia were considering making the PhD available to science graduates. (Tasmania was the second university to award the degree in 1949).

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<sup>3</sup> *ibid.*, 7 August 1944

<sup>4</sup> *ibid.*

<sup>5</sup> University of Adelaide: Archives. Minutes of the Education Committee, Report No.8, 18 August 1944

Queensland had indicated "definite limited approval" in 1944 but later decided its poor facilities and accommodation did not allow the introduction of the degree, while Sydney and Adelaide were not in favour.<sup>6</sup>

In October, 1944, the Professor of Geology at Sydney put a motion to the Professorial Board that a proposal to establish the PhD degree be referred to the Faculties of Arts, Science, Engineering, Agricultural Science and Veterinary Science, who would report back later that year. Only Agriculture was enthusiastic. While the Science Faculty was in favour of the degree "only when there were strong postgraduate schools in most departments", other Faculties were against the proposal; the Arts Faculty was "hostile... [and] a move was unanimously carried rejecting the proposal".<sup>7</sup> In October, 1946, however, the Committee of Deans decided that it was "desirable to establish the degree", provided regulations for the degree were common to all faculties and were in keeping with Oxbridge models.<sup>8</sup> In early 1947, the faculties were asked again. All, except Arts, were generally in favour and a two-year, full-time degree was established in the Science Faculties by the end of 1947. By 1950, there were twenty enrolments for the degree, one-fifth of the University's total postgraduate enrolments in that year.

By 1949, resistance to the degree had crumbled and the PhD had been introduced in all Australian universities, though not in all faculties. The arts faculties held out longest. Adelaide, which introduced the science PhD in 1948, did not introduce the degree in arts until 1953, while Sydney did not introduce it until 1955. The attitude of arts faculties will receive more detailed consideration later.

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<sup>6</sup> The University of Melbourne: Archives, Minutes of the Faculty of Science, The University of Melbourne, 7 September 1944

<sup>7</sup> W.F.Connell, G.E.Sherington, B.H.Fletcher, Clifford Turney, Ursula Bygott, Australia's First: a History of the University of Sydney 1940-1990, Vol.2, Hale and Iremonger, Sydney, 1995, p48

<sup>8</sup> ibid, p48

## THE STRUCTURE OF THE EARLY PHD

The first three PhDs were conferred at Melbourne in 1948. Initially, the Australian degree required two years of advanced full-time research on campus under supervision, generally after five years of previous study. It would take two years longer to obtain than at most British universities, a significant local departure from the British model. The Australian MSc obtained after five years had a rigour acknowledged by many British universities, which explains the reluctance of some Australian universities not to embrace the PhD.

While some research could be carried out at another institution, Melbourne's regulations stated: "no candidate will be admitted to the degree unless he has at some stage carried out research for two years at the university".<sup>9</sup> This was to some extent a new departure, because higher degree candidature and research had often been part-time and off-campus in Australia. The new rules were circumvented to some degree however:

Sydney, by 1953 was accepting staff of bodies such as the CSIRO, located within the university grounds, and of companies with research laboratories, such as CSR and ICI. Often the fiction was maintained that, like university staff, they were pursuing their candidature on a full-time basis and were not external to the university.<sup>10</sup>

The requirement of full-time, campus-based study ensured the new degree was qualitatively different from the masters degree, which was sometimes, particularly in arts, pursued part-time. Supervision was an important component. While supervision for students completing off-campus masters degrees research had been somewhat informal:

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<sup>9</sup> University of Melbourne: Archives, Information and Application Form for Doctorate of Philosophy, 1946

<sup>10</sup> Australian Vice-Chancellors' Committee, The Progress of Higher Degree Students, University of Queensland Printery, St. Lucia, July 1990, p9

the [PhD] degree implies completion of a course of supervised research ... the extent of training and supervision will differ from department to department, but the candidate is advised to keep closely in touch with his supervisor at all stages.<sup>11</sup>

In most respects, the Australian PhD model followed the British model; the degree was entirely research-based and followed an apprenticeship model, with neophyte researchers enculturated into the norms of discipline practice. British (Oxbridge) PhD models of degree structure were initially followed. British attitudes toward the degree were also replicated, as the ancient higher degree order was restructured to allow for the new degree. Melbourne noted that the degree was a “junior doctorate... representing completion of a course of training in research ... signifying the holder is fit to embark on independent research ... [but] it does not rank with the DSc or DLitt”.<sup>12</sup>

While Melbourne and Sydney's regulations, for example, at first required PhD candidates merely to be graduates, later regulations were more specific, with either a masters degree or honours bachelors degree a prerequisite (at Sydney, in special cases candidates with neither qualification might be admitted after passing an honours standard examination).<sup>13</sup>

The degree came to be seen as clearly sequential to the masters or advanced bachelors degrees. Some ambiguity, however, did attend the delineation of PhD and higher doctoral requirements. To some degree, the two were similar, inasmuch as the new PhD was often equivalent in research requirements to the early DSc. By the 1950s, PhD regulations at all universities specifically required a substantial and original contribution to knowledge in the PhD thesis - which was the requirement for the award of the higher doctorate (though the first regulations in the 1940s did not make this a clear requirement. Melbourne saw only the DSc

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<sup>11</sup> The University of Melbourne: Archives. Information and Application Form for Doctorate of Philosophy, 1945

<sup>12</sup> *ibid.* See Appendix A for examples of early PhD regulations.

<sup>13</sup> University of Sydney Calendar, 1958, p273

fulfilling this criteria - see Appendices 5 and 6). One response was that of Sydney, which sought to differentiate between the two kinds of science doctoral degrees by lengthening the time taken to obtain a DSc after the BSc Honours.<sup>14</sup>

Higher doctorates generally had not been awarded to those below a minimum age of twenty five years and generally denoted seniority and distinguished scholarship. Lengthening of the time to award reinforced this notion of seniority. The minimum length of time required for the DSc at Sydney then became equivalent to that for the DLitt and the higher science doctorate retained exclusivity and prestige.

Why was Melbourne, instead of one of the other Australian universities, the first to introduce the PhD? The University had some reputation for innovation, first noted last century. It had, of course, been the first university to propose the introduction of the PhD twenty years earlier. Despite the initial lack of success, the idea had not gone away, with the Science Faculty in the 1940s the foremost proponent of the degree. In Britain (in some contrast to the American and German PhD model) the degree was at first seen very much as a science degree (even though available in other disciplines) - a view that also initially prevailed in Australia.

In the first large-scale survey of PhD education in the Sciences by Professor Stephen Hill, it was maintained by some that "the PhD degree was specifically introduced to help staff Australian universities".<sup>15</sup> In particular, this applied to science faculties. World War Two highlighted deficiencies in scientific research training and the PhD was seen as a means of alleviating such deficiencies by providing trained academics and laboratory research staff

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<sup>14</sup> University of Sydney: Archives, Minutes of the Faculty of Arts, 7 November 1951

<sup>15</sup> Professor S.C. Hill, PhD Education in Australia, The Making of Professional Scientists, Australian Academy of Scientists and Industry Forum, Griffin Press, Report No.7, 1974, p152

(often postgraduate students). The 1944 Melbourne Science Faculty Minutes, which corroborate this, dwell on the shortage of poorly paid science demonstrators and students sufficiently trained to undertake independent research.<sup>16</sup>

Melbourne's particularly outspoken Vice-Chancellor, J.D. Medley, was influential.<sup>17</sup> As the 1944 University of Melbourne letter to Australian science faculties shows, Medley had been involved with discussions concerning the introduction of the PhD and had plans to discuss the degree at the next Australian Vice-Chancellors' Conference, though he was not initially enthused. Rather, the Melbourne Science Faculty was at first the prime mover in the push for the degree, as the following exchange noted in the 1944 Science Faculty minutes illustrates:

Professor Turner, Dean of Science:

*The Vice-Chancellor is not in favour of the PhD degree.*

Professor Trikojus:

*The Vice-Chancellor should be asked to discuss this matter with the Faculty of Science.*<sup>18</sup>

At the Science Faculty meeting in September 1944, which unanimously "agreed to the idea of the PhD", it was argued that a PhD course "might be instrumental in causing the university to have a still higher research reputation", an ultimately persuasive argument. The Dean noted, moreover, "administrative duties take up considerable time; often the only way to get research done was to have competent students do it with you".<sup>19</sup>

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<sup>16</sup> Melbourne University: Archives, Minutes of the Science Faculty, 7 September 1944

<sup>17</sup> Medley was appointed full-time Vice-Chancellor at Melbourne in 1937. As a full-time administrator with drive, involvement and time, Medley was able to put research at the forefront of his vision for his university. The Vice-Chancellor, he noted, "was a new kind of job. Until comparatively recently (our universities) were administered on a part-time basis." J.D. Medley, "the Present and Future of Australian Universities", The Macrossan Lectures, University of Queensland, Melbourne University Press, 1945, pp13-40

<sup>18</sup> *ibid*

<sup>19</sup> *ibid*

By the 1940s, the Science Faculty at Melbourne was possibly the pre-eminent Australian science faculty.<sup>20</sup> In 1939, Melbourne enrolled more students and awarded more higher degrees than other Australian science faculties. It was deeply involved with the war effort, and achieved many important technological breakthroughs. Melbourne, which established the first medical faculty, had also long been a centre for Australian medical research.

One factor which hastened the establishment of the PhD at Melbourne was undoubtedly competition from the proposed Australian National University, which was to award primarily the PhD degree. The AVCC, led by Medley, was initially opposed to the new university, fearing a reduction in already small limited research funds. Early establishment of the degree at Melbourne pre-empted a feared postgraduate drift to the ANU.

By 1945, Medley welcomed the establishment of the ANU, though he warned:

not if is allowed to wax fat at the expense of other universities. We must provide really good postgraduate schools at all universities... we have no schools of postgraduate research which are worthy of the name. Our universities are grossly starved of funds and there is very little pure research. They are bogged down by past history.<sup>21</sup>

## **EARLY PHDS**

The first PhD at Melbourne (and in Australia) in 1948 was an arts PhD, awarded to Erica Wolff (in French). Her previous degree had been an MA in History, undertaken with some personal and research difficulty in wartime, and with personal hardship as first a young undergraduate, then postgraduate, student and refugee from Europe. The award of the first PhD in arts is interesting, given the particular opposition to the degree of other arts faculties

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<sup>20</sup> The small University of Adelaide had also achieved some reputation for eminence. Adelaide awarded one or two science doctorates annually during the 1920s and 1930s (as much as the larger University of Sydney) and produced early science graduates of the calibre of Sir Mark Oliphant and Howard Florey.

<sup>21</sup> *ibid*



elsewhere in Australia. Medley himself was personally supportive of postgraduate arts research, asserting:

The presence of active schools of postgraduate training is as much an instrument for the fostering of the humanities as a library, a Chair of Fine Arts or a theatre.<sup>22</sup>

The first science PhD awarded in Australia, also at the first ceremony at Melbourne in 1948, went to (Sir) Rupert Myers. The degree was an outcome of his wartime defence research in metallurgy on a Commonwealth Research Officership. Sir Rupert noted that:

in about 1944 the university approved the conditions for the award of the degree and I was given permission to enrol... after three years I presented my thesis... there was no other option but to study in Australia... I did have a strong desire to work on Australian raw materials and their beneficiation and this would have been best done in Australia.<sup>23</sup>

Erica Wolff was able to support herself with part-time work at the university and during her MA candidature had a minor scholarship (which she considered unusual for an MA) and a major scholarship from the university during her PhD candidature. Though she had "no proper supervisor and worked in isolation", she felt she had great support from staff, especially from the eminent Melbourne historians Chisholm and Crawford, and also Nettie Palmer.<sup>24</sup>

The following year (1949) four more science PhDs (all male) were awarded at Melbourne, while a woman received the first PhD (in science) at Tasmania, the degree having been introduced in 1947. Despite its small size, Tasmania awarded PhDs in Science in numbers comparable to, or greater than, other states in the early 1950s.

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<sup>22</sup> J.D. Medley, "The Present and Future of Australian Universities", pp13-40

<sup>23</sup> Sir Rupert Myers, personal letter, 4 August 1991

<sup>24</sup> Erica Wolff, personal letter, 12 July 1991

In 1949, Melbourne awarded the first two Australian PhDs in agricultural science, and the first PhDs in medicine (1950) education (1951) and commerce in 1957. Western Australia awarded its first science PhD in 1950, after having introduced the degree in 1946. At Sydney, the first PhDs were in engineering and science in 1951.<sup>25</sup> Queensland did not award its first PhD until 1953 (in arts).

Adelaide's first two PhDs in agricultural science in 1951 were awarded to two students at the Waite Agricultural Research Institute, Abdul Karim (a UNESCO-sponsored agricultural scientist) and to Tom Browning. Browning began study at Adelaide under the Commonwealth Reconstruction Training Scheme (CRTS) which enabled returned soldiers to enter tertiary institutions, and received his doctorate at the age of thirty-one. His degree was completed in two years, after one year of a masters program.

Dr. Browning recalls that the availability of lecturing work at the Waite Institute, an agricultural research institute within the University of Adelaide, was an important factor in choosing to undertake research there. A paucity of overseas scholarships, his modest financial means and the introduction of the PhD degree at Adelaide, were also factors. Because of his limited financial means he recalled, "I was completely dependent on success" and noted the degree "greatly improved his employment prospects".<sup>26</sup>

The CRTS scheme offered returned soldiers opportunities which were previously largely unavailable for poorer students. The ex-servicemen were a keen new component of the student body, with the maturity and drive to use those opportunities at undergraduate and postgraduate

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<sup>25</sup> The first was awarded to Eleanora Gyrfas, in science

<sup>26</sup> Tom Browning, interview, 19 June 1991

levels (thousands of Australian undergraduate degrees were gained through the scheme; up to 200 masters degrees were gained annually, particularly in the 1950s).

Masters degrees awarded were evenly divided between arts and sciences in 1950, whereas most of the eleven PhDs awarded in that year were in sciences. From 1948 through to the early 1960s, doctoral degrees awarded grew at a rate of around 5% per annum. In 1955, for the first time more PhDs were awarded than higher doctorates. Total postgraduate degrees awarded in Australia were still small however (390 in 1960) with the largest number (197) awarded in the field of science. By 1960, science masters degrees awarded were nearly four times as many as those in arts, while science PhDs were double those in arts.

## **THE PHD AND THE SCIENCES**

Despite the wartime interest in scientific training and the Commonwealth Reconstruction Training Scheme scholarships, scientific manpower and government input still remained low in comparison to many other countries throughout the 1950s. At the beginning of the War, the various Australian colleges and institutes of technology were in many ways better prepared than the universities for the practical demands of wartime research. There had long been pressure for elevation to university status at both Sydney and Melbourne Technical Colleges. After the War, a new institution with links to the Sydney College, the New South Wales University of Technology, was established. (The influence of the University on postgraduate science education will be charted later). This was to provide much needed research skills in the applied sciences, initially in applied chemistry and chemical engineering.

However, suitable science graduates in key disciplines remained scarce in the 1950s. In 1954 the Professor of Chemical Engineering at Sydney University said he "could not make a single

graduate available for the development of atomic power or any other industrial project, for two or three years", while the CSIRO warned "Australia is running dangerously short... of well-qualified scientists".<sup>27</sup> While the Australian MSc degree had high status in Australia and overseas, there was an initial shortage of qualified PhD supervisors, as well as some "insecurity" about the examination of PhD theses overseas.<sup>28</sup>

Some Australian postgraduates in the 1950s continued to study abroad, generally in the UK, in a rich and varied scientific milieu.

Many Australian science PhD students however, had a relatively long and narrow PhD experience which:

from 1948 until well into the 1960s outdid the most traditional forms this had taken in the UK and Europe. The prime feature ... was prolonged and intensive work on a narrowly specialised subject, under a single staff member as supervisor. It was not uncommon ... to work under the same supervisor for five or six years.<sup>29</sup>

Between 1956 and 1960, numbers of Australian science PhD graduates varied from 38 to 73 annually, while engineering and agriculture PhD numbers began to rise. In total, between 1956 and 1960, twenty seven science PhDs were granted to women and 272 to men (a slightly better proportion than in arts where five of the 76 PhDs awarded went to women). Physics had captured public attention in the aftermath of the war and was seen by many as the "glamour science" attracting many of the brightest minds (so much so that Vice-Chancellor Medley spoke of dissuading unsuitable researchers bewitched by "the alluring professors of comic strips").<sup>30</sup>

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<sup>27</sup> R.F. Butts, Assumptions Underlying Australian Education, Australian Council for Educational Research, Melbourne, 1955, p45

<sup>28</sup> S.C.Hill, PhD Education in Australia, The Making of Professional Scientists, p14

<sup>29</sup> *ibid*, p14

<sup>30</sup> Sir John Medley, "Farewell to Academe", The Medical Journal of Australia, December 30, 1950, p953

At Adelaide, the first two women (Barbara Hall and Barbara Potts) to be awarded science PhDs in 1956, studied physics. Dr. Hall (now Possingham) came from a family where tertiary study was encouraged; her mother and aunt were graduates. In the 1950s:

Physics was a high priority [subject] most prestigious - it was a very exciting period. It was **the** subject to do.<sup>31</sup>

In order to study physics at Adelaide High, Dr. Hall obtained permission to attend a previously boys-only class. It was not until the mid-1950s that girls were able to undertake university science study in disciplines like physics, as few girls' schools taught physics. (This was in contrast to the situation in the early years of Adelaide University, when women were initially precluded from arts study because girls' schools did not teach the requisite Greek. They enrolled in science, where Greek was not a prerequisite). However, no women were granted PhDs in arts at Adelaide in the 1950s, and female science PhDs were also few in number. (The first DSc [in bacteriology] awarded to a woman at Adelaide in 1957 was to Nancy Atkinson, who had first enrolled for the doctorate in 1928).

Although most of the female students in Australian universities in the 1950s were in arts faculties, although many of the earliest PhDs granted to women were in science. Women were awarded the first PhDs at Sydney (1951) and Tasmania (in 1949), the latter also being the first female Australian science PhD. The fact that most universities' first PhDs were in science reflected the degree's inauguration in the science faculty and a lack of early enthusiasm for the arts PhD outside of Melbourne's Arts Faculty.

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<sup>31</sup> Dr. Barbara Possingham, interview, 4 July 1991

## THE HUMANITIES AND THE PHD

When Melbourne University canvassed the opinions of all its faculties in regard to the PhD degree in 1945, it included in its report an extract from a survey of provincial English universities in 1935, which noted that the PhD degree was seen by British arts faculties as a:

cheap doctorate which deprived the true higher degree of its lustre and that as an incentive to research it was unworthy of universities and their students. On the other hand in the Science schools it did bring forward research workers.<sup>32</sup>

While these may not have been the sentiments of all Australian arts faculties, most were hesitant about the introduction of the degree, which some saw as devaluing higher doctorates (such sentiments were not exclusive to arts faculties, but were perhaps most strongly expressed there). The Senate of the University of Queensland had:

decided in 1935 to institute the higher doctorate of DLitt, having eleven years earlier declined to accept the lower one of PhD. This they did on the grounds that each degree should be distinct in title and association with a particular faculty, that the PhD might lower the value of existing doctorates and that what had been considered appropriate for British universities in the postwar period was not necessarily justifiable in the context of Australian universities.<sup>33</sup>

At Melbourne, of all the comments received from faculties in 1945 concerning the proposed PhD degree, those from the Arts Faculty were the most detailed and exacting. Amongst them was the requirement that candidates for an arts PhD must have achieved first class honours at the MA examination, thus setting up early bona fides for the arts PhD as a respectable and rigorous degree.

The degree was a contentious issue in other Australian arts faculties. Sir Rupert Myers, Australia's first science PhD, recalled:

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<sup>32</sup> University of Melbourne: Archives, Faculty of Science Minutes, Proposed Establishment of the Degree of Doctor of Philosophy, Vol.8, 24 July 1945

<sup>33</sup> Malcolm Thomis, A Place of Light and Learning, University of Queensland Press, St. Lucia, 1985, p134

There was fairly strong opposition to the degree, especially in arts faculties and most particularly at Sydney University, to doing anything which would appear to downgrade the MA which for many years senior academics had been saying was "as good as a PhD" [obtained in the UK or Europe]. In general the PhD was seen as being more "the property of" the scientists and technologists.<sup>34</sup>

While the degree was implemented with enthusiasm in the Science Faculties at the universities of Western Australia (as early as 1946) and Tasmania, the arts PhD was not introduced in all Australian arts faculties until the mid-1950s. At the University of Western Australia, the Faculties of Arts, Law and Education were unable to offer the degree in 1948, though it had become available in all other faculties.<sup>35</sup> In 1949, the Adelaide Arts faculty narrowly voted not to introduce the degree, using the casting vote of the Dean. In 1953, the youthful new Dean, Professor Smart, who had arrived in 1950 to take up the Chair of Philosophy, proposed the degree's introduction. The Faculty agreed and regulations were drawn up.<sup>36</sup> The University of Queensland in 1946 considered its "inadequate facilities and restricted accommodation [presumably in science] would not allow it to offer the degree".<sup>37</sup> It thus awarded its first PhD (in arts) to a female candidate in 1953. In that same year, Melbourne awarded four arts PhDs.

Meanwhile, the University of Sydney's Arts Faculty had still not introduced the degree, though opposition was less strident than in 1947, when a vote not to introduce the degree in the Faculty was carried by twenty one votes to four. At the Faculty of Arts meeting in August, 1954, postgraduate studies were discussed at length. A statement circulated at the meeting noted:

Increasingly the status of a university is assessed in terms of the research carried out within it and of the quality of graduate teaching done by it; an examination of

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<sup>34</sup> Sir Rupert Myers, personal letter, 4 August 1991

<sup>35</sup> Fred Alexander, *Campus at Crawley*, F.W. Cheshire, Melbourne, 1963, p444

<sup>36</sup> University of Adelaide: Archives, *Minutes of the Faculty of Arts*, 11 March 1953, Vol.6, p392

<sup>37</sup> Australian Vice-Chancellors' Committee, *The Progress of Higher Degree Students*, University of Queensland Printery, St.Lucia, 1990

overseas universities shows the two are very closely related. It would seem the time has come when the Faculty of Arts should seriously consider the extension of its formal teaching beyond the undergraduate level.

Two possibilities in terms of higher degrees present themselves. One is to change the character of the requirements for the Master of Arts ... to make it a genuinely internal degree... it does not seriously go beyond being an external degree. The other is to institute the Doctor of Philosophy degree.

When some years ago the Faculty decided against the [PhD], the following arguments were voiced:

- 1) the PhD degree might depress the standard of the Honours Master of Arts degree.
- 2) there were objectionable features in the way the degree operated overseas, eg. theses on trivial subjects.
- 3) the Faculty lacked the necessary facilities - quality and variety of staff talents, materials and other physical facilities.<sup>38</sup>

These objections were countered by proposals in 1954 to make the PhD "strictly an internal degree... the nature and fields of candidature of the (MA) and (PhD) would be different".<sup>39</sup>

The MA at Sydney was still seen as primarily an external degree, based on independent research, though proposals for formal seminars were mooted. The second objection, it was noted, was one which "may be made against any degree", but was essentially resolvable, provided two to three years research was required for a topic. The third objection, "the one with most force" had validity in some disciplines, where a year's overseas research might be deemed necessary. However, "once a beginning was made the argument for expanded facilities would be strengthened".<sup>40</sup> Two months later, the introduction of the arts PhD was recommended (a motion that the degree's abbreviation be D.Phil. was lost).

Through the 1950s, in Australia, postgraduate study remained the preserve of relatively few humanities students, though arts **undergraduate** numbers were the highest of any faculty.

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<sup>38</sup> University of Sydney: Archives, Minutes of the Faculty of Arts, 4 August 1954

<sup>39</sup> *ibid.*

<sup>40</sup> *ibid.*



Postgraduate arts qualifications were seen as unnecessary for any but academic occupations, while trainee teachers on scholarships studying arts were often discouraged by state education departments from undertaking further study, even at honours level. Consequently, PhD numbers in the arts were low.

After the war and throughout the 1950s, Melbourne awarded the greatest number of arts PhDs. Of the twenty two Australian arts PhD degrees awarded in 1955, by which time all arts faculties had introduced the degree, eighteen went to candidates from Melbourne (which also awarded fifteen MAs) while Sydney awarded twelve MAs and no PhDs. The Australian National University awarded one arts PhD and Queensland three that year, while other universities only awarded one or two MAs. (In that year, Melbourne had 102 candidates, the greatest number in the country, enrolled for PhDs in all disciplines, allaying fears that the Australian National University would draw great numbers of PhD students from other universities. By 1956, 72 students, over half of them from overseas, were enrolled for PhDs at the ANU).

While the masters degree remained the most common staff higher degree arts qualification in the 1950s and 1960s, many candidates for the arts PhD were staff members (as was often the case in the science faculties). This enabled an increase in the pool of arts PhD supervisors, though due to the continued high status of many masters degrees in arts, supervision of doctoral students by supervisors without doctoral qualifications was more common than in the sciences.

## LIBRARIES

Central to research in the humanities was the provision of adequately-stocked university libraries which were the laboratories of the arts. Libraries were at the heart of the classical, liberal model of university scholarship. While Australian science laboratories were also crucial to the development of the Australian research culture, they were relatively small in world terms until after World War Two (though admittedly, this can also be said of Australian libraries). Laboratories were not generally the repositories of research findings, including journals. Libraries housed this essential data. Furthermore, libraries were also the subject of some examination in Australia during the first half of the century, in a way that laboratories were not, and thus some scrutiny of their development is pertinent.

While the state public libraries in some cities, such as the Fisher in Sydney, had good collections in some areas, university libraries in the first half of the century were generally unprofessionally managed and lacking in depth. With the exceptions of Sydney, Adelaide and Melbourne, the university libraries lacked extensive collections and were poorly funded. The first Report on Australian state and university libraries (the 1935 Munn-Pitt Report) was damning. University library accommodation was poor, except at Adelaide; few librarians were professionally trained, with some universities, such as Adelaide, preferring to appoint scholarly lecturers with no library experience.<sup>41</sup>

At Queensland, the funding for its library was actually reduced in 1935, in order to defray costs for four new professional faculties and buildings. The American Carnegie Corporation

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<sup>41</sup> Harrison Bryan, *Australian University Libraries Today and Tomorrow*, James Bennett, Sydney, 1965, p11. At Tasmania, the library was administered by the one man, who was also Vice-Chancellor and a Professor and in his spare time "catalogued three-fifths of the collection".

offered scholarships for training of librarians in American graduate schools as a result of the Report in 1935 but only Adelaide responded. One other university with no full-time librarian declined on the grounds that there was nothing to be learned from American librarianship.<sup>42</sup>

The situation was not vastly improved twenty years later, even though some new extensions or libraries had been built (though Queensland's new library, which opened in 1949, was designed without any input from a librarian).<sup>43</sup> Librarianship standards did lift however, as subsequent national library reports noted. Nevertheless, at the end of the 1950s, overcrowding was a serious problem. Even more serious was the fact that, with increased postgraduate enrolments, the collections were often inadequate. Only in areas relating studies to Australian and Pacific studies were collections adequate, though some universities were reasonably well-stocked in some other humanities areas.

At the time of the Murray Report (in 1957) the largest university library, Sydney, held 403,000 volumes while between one and two million volumes were considered by some American librarians to be the minimum required for a university engaged in doctoral work. (The combined holdings of all university libraries in Australia as late as 1962 were no more than that of the library of Cambridge.) Only four universities in 1954, including Queensland, had holdings larger than the average small American university (148,000 volumes). Five years later the situation had changed very little:

The research holdings of academic libraries are ... extremely weak and it is clear that, with rare exceptions, advanced work in the humanities can only be carried out only under great difficulties. It is the almost unanimous view of librarians, that on present budgets it is impossible to buy adequately to meet research needs.<sup>44</sup>

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<sup>42</sup> *ibid* p13

<sup>43</sup> Harrison Bryan, "Australian University Libraries - A Measure of Success", *The Australian University*, 1964, Vol.2:1, p37. The library of the University of NSW was housed at the Sydney Technical College until the late 1950s.

<sup>44</sup> G.H.Russell, "The University Libraries", in *The Humanities in Australia A Survey* A.G.Price(ed.) Angus and Robertson Sydney, 1959,pp110-111

It is somewhat surprising that PhD research in the arts was pursued in the decade after the war, given the unfavourable conditions extant in the "engine" of humanities research. The establishment of the ANU did help to stimulate postgraduate research in the humanities although its research schools were limited to the Schools of Social Sciences and Pacific Studies.

The humanities PhD remained, at the end of the 1950s, a rather rare phenomenon in the Australian university. Sydney's Professor of English, A. G. Mitchell, himself a PhD (London) noted in the late 1950s:

In some universities, the degree has met with some resistance until recently. There is a feeling that "research" as a scientist understands it is not quite the same thing as the Arts scholar understands by scholarship and original work... there is the conviction that in most Arts subjects a PhD should be done abroad... [ it ] should be proof of the first hand knowledge of the European home of our civilisation. A PhD done entirely in Australia would have a regrettable parochial limitation about it. In some universities it has been felt the PhD has been forced upon Arts by circumstances... unless they go in for "research" they will be denied funds.<sup>45</sup>

Nevertheless, by the end of the 1950s the PhD had become an established feature of the humanities faculty where it had been drawn, somewhat reluctantly, in the wake of its science counterpart. The (British) science research model had become the new model for the Australian higher degree in arts, where the MA began to lose its primacy.

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<sup>45</sup> A. G. Mitchell, "The University Faculties" in A.G.Price (ed) The Humanities in Australia, A Survey, Angus and Robertson, Sydney, 1959, pp85-87

## WAR-TIME RESEARCH AND LATER OUTCOMES

The introduction of the PhD to Australia marked a new stage in postgraduate development, one directly linked to the increased importance in wartime of scientific research. In those war years:

for the first time, research became an arm of government policy. Consequently, the origins of the nexus between federal government funding and research are found in the war years.<sup>46</sup>

War imperatives galvanised research. The Second World War found Australia in many respects technologically unprepared, and highlighted the paucity of research and research personnel in Australia's universities. Often entire departments, like that of Physics at Melbourne, were diverted to war research. Much important research in vital areas like aeronautics, optics and medicine was conducted in the universities during the war and for the first time, the absolutely essential need for sufficient trained research personnel became clear to the Federal government.

Three institutions which played a prominent part in this change were the Waite Agricultural Research Institute, the Australian National University and the New South Wales University of Technology, the latter two established soon after the War. The Waite, established much earlier, became a pivotal research institution and major destination for international students after the influential A.P. Rowe was appointed as Vice-Chancellor of the University of Adelaide in the postwar years. The Australian National University was a new kind of university, research-based, and influenced by both British and American research models. Additionally, at New south Wales, the concept of a technologically-based university adopting aspects of the American professional model was new to Australia. These defining

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<sup>46</sup> Andrew Spaul, Australian Education in the Second World War, University of Queensland Press, St. Lucia, 1982, p222

institutional characteristics would have far-reaching effects on the nature of Australian postgraduate education.

Paradoxically, a remarkable degree of bureaucratic fluidity in some areas of national enterprise was generated despite wartime controls. Normal chains of command and methods of policy creation were by-passed, with direct reportage to the Prime Minister or heads of departments possible. Official, secret and semi-secret "think tanks" comprising seconded academics from various fields, generated new and visionary ideas, some of which were directly to affect postgraduate education after the War.

Post-war planning began early in the War. The key department was the Commonwealth Department of Post War Reconstruction (PWRD) which included many bureaucrats with an academic background in the social sciences. At its peak it employed a research and policy staff of around thirty and was one of the centres of what its Director-General, Dr. H.C. Coombs, termed the "intellectual ferment" of the latter War years.<sup>47</sup> Social and economic research was encouraged in order to help formulate federal Labor's reconstruction policy in Australia; research was also conducted in relation to the post-war needs of a destabilised Pacific. Federal research grants were provided, and for the first time, there was Federal involvement in university social science research.<sup>48</sup>

In 1942, the Minister of War Organization and Industry (WOI) J.J. Dedman, met with university vice-chancellors and encouraged universities to undertake research into problems

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<sup>47</sup> Transcript, Alan Manning, interview with Dr.H.C.Coombs, ABC radio documentary, The Australian National University, Australian National University Archives, Canberra, June- October, 1963, p4

<sup>48</sup> The Australian Social Science Research Council was formed in the wake of a joint university/PWRD conference in 1941, which decided the universities should establish social science research committees and put forward projects for federal funding. Andrew Spaufl, Australian Education in the Second World War, p224

associated with the war effort.<sup>49</sup> He set up a small federal body, the Universities Commission, to liaise with various federal departments and the universities and advise on manpower and training issues. The Commonwealth in wartime became the major employer of professionals and students, so Federal student support for certain key categories of students was sought - and later approved by Cabinet.

In 1943, the secret Inter-Departmental Committee on Education met for the first time. It was initiated by Dedman who had a strong personal interest in educational issues, and was chaired by the Deputy Director-General of WOI, Dr. E.R. Walker. "Walker" Committee members, who included Dr. Coombs, were charged with the review of the controversial issue of Commonwealth involvement in education and also with recommending future educational policy.<sup>50</sup> The final recommendations of the Committee included the establishment of a Commonwealth Office of Education and the establishment on a permanent basis of the Universities Commission. Another key recommendation was the establishment of an Australian National University, to have special strengths in science, government, Pacific affairs and Australian history and literature. The Committee noted:

the development of war industries was hampered by a lack of sufficient trained workers, and availability of workers with appropriate skills may be a limiting factor in all post-war industrial development. It is essential that adequate provision be made for the training of scientific research workers... much remains to be done if Australia is not prepared to be at a disadvantage in her dealings with other countries that are prepared to invest heavily in scientific education .<sup>51</sup>

In 1944 the Universities Commission, chaired by Professor R.C. Mills, Professor of Economics at Sydney, supported these proposals, though it went much further by advocating

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<sup>49</sup> Andrew Spaul, "John Johnstone Dedman", *History of Education Review*, Vol.21, November 1992, p50

<sup>50</sup> P.D. Tannock, *The government of education in Australia: the origins of federal policy*, University of Western Australia Press, Nedlands, 1975, p5

<sup>51</sup> P. D. Tannock, *ibid*, p89. *Final Report of the Inter- Departmental Committee on the Commonwealth's Responsibilities in Relation to Education*, 1944: 29, 37, 39

that the national university be a postgraduate institution only, not linked with undergraduate education as was originally envisaged, and that the university be organised around four research schools. The Commonwealth Reconstruction Training Scheme was also formulated at this time.

In six years of war the torpor of the Australian universities had been shaken. It was in this unusual environment that the introduction of the PhD to Australia was seriously mooted, as overseas travel for postgraduate study became virtually impossible. This focused concentration on indigenous PhD training. Myriad deficiencies in university and technical education, training and research had been exposed by the increased demands of war, while for the first time attention was given to looming post-war problems in many spheres. The Commonwealth was inexorably drawn into providing increased assistance for the universities in order to provide for postwar reconstruction and research and development.

### **A.P. ROWE**

In the same year (1948) that the PhD was introduced at Adelaide, its first full-time Vice Chancellor, the Englishman A.P. Rowe, was appointed. Rowe was to prove influential, not only in promoting postgraduate education at Adelaide, but also for Australia as a whole, particularly through his influence as Chair of the Vice-Chancellor's Committee in the 1950s and his input to the later Murray Committee Report on Australian Universities. He had worked in military research near Adelaide during the War and had met and talked with Prime Minister Chifley in 1947. Although he had no postgraduate tertiary qualifications, as a technologist he was familiar with the PhD and an enthusiastic advocate of modern research techniques.



His appointment was to shake up the University, with his time there in the 1950s marked by controversy. Many older academics retired, to be replaced by younger appointees, with a number holding overseas PhD degrees. Rowe was dismayed by what he perceived as the torpor of Adelaide and its lack of research. When he arrived there was "not a single full-time honours student engaged in research".<sup>52</sup> In the book **If the Gown Fits** which was published in 1960 after he had left, Rowe castigated the University for its:

complacency writ large on its banner... the exaggerated egalitarianism . . . all is far from well in Australia in regard to university work for higher degrees. If the degree of Doctor of Philosophy is to be accepted as a passport into the world of research, the position is a depressing one for Australia... between 1948-1958, only ten PhD degrees were awarded in the whole of Australia in Maths. It is a regrettable part of the university scene that many men and women need to be dragooned into pursuing postgraduate studies. Not many things are more important to Australia than that the centre of gravity of university effort should move toward postgraduate work. The output of first-rate research at Adelaide is poor; but I do not believe it is worse than in other universities ... in some fields it may be better than at most.<sup>53</sup>

1949 was a year of major changes at Adelaide. The Registrar at the time, Dr. Edgeloe, described it as an "annus mirabilis" in the life of the university and it was towards the end of that year that Rowe began to make his substantial impact on the University.<sup>54</sup>

Money was a problem, as the University had been poorly funded for years. It was seriously understaffed, and barely able to cope with the influx of returned servicemen, whose Commonwealth funding peaked in 1948. Australian students could often obtain well paid jobs with first degrees, there was a dearth of postgraduate scholarships, and what scholarships

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<sup>52</sup> A.P. Rowe, *If The Gown Fits*, Melbourne University Press, Melbourne, 1960, p32

<sup>53</sup> *ibid*, pp11-3

<sup>54</sup> V. A. Edgeloe, *The Waite Agricultural Research Institute The First Fifty Years 1924-1974*, Waite Agricultural Research Institute, Adelaide, 1984, p51

existed were largely for overseas study (though additional CSIRO scholarships did make some Australian study possible in the 1950s).

There was barely a research climate in Australia, as Rowe understood it:

Egalitarianism is more important than excellence ... the worth of research done ... is pathetically small [and there is] smug satisfaction ... There is a vast difference between the universities in Australia and other countries. It is the whole climate of opinion, within and without universities, concerning postgraduate work.<sup>55</sup>

Rowe diligently pursued funding, prising extra monies from the State Premier, Tom Playford. New Chairs and departments were established and to fill these, the "best men" were assiduously headhunted. Postgraduate numbers rose. By 1951, 390 postgraduates were enrolled at the University. Thirty-nine were PhD candidates, from a total student population of 1,173. Four years later, PhD candidates had risen to 71. Rowe was instrumental in the establishment of the Murray Committee in 1956 and in this his efforts were of national significance, for the Committee was a watershed in terms of increasing resources to all sectors of Australian universities.

In 1954, an Australian National Research Council symposium in Canberra resolved that it was time for an investigation into the universities.<sup>56</sup> (This Council, the precursor to the Australian Academy of Science, was initially formed in 1919, at the request of the Royal Society of London, who were responding to a proposal from the Royal Society of New South Wales. They wished to be the Australian member of the just-established International Research Council).<sup>57</sup> The proposal triggered much discussion and Rowe, as Chair of the Australian

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<sup>55</sup> A.P. Rowe, *If the Gown Fits*, p45, p176, p163

<sup>56</sup> See Alan Martin, "Menzies and the Murray Committee". *Ideas for Histories of Universities in Australia*, F.B. Smith and P. Crichton (eds.) Research School of Social Sciences, Australian National University, Canberra, 1990, p104

<sup>57</sup> See K.S. Cunningham, *The Social Science Research Council 1942- 1952*, Social Science Research Council of Australia, 1967, p3

Vice-Chancellors' Committee, wrote several times to Prime Minister Menzies, urging Menzies, "himself a distinguished graduate of a university, whom he found sympathetic to the idea", to set up an inquiry into the universities.<sup>58</sup>

Another of Rowe's interests was the formation of a graduate school. He was familiar with the American model, though it was forty years before something similar came to fruition at Adelaide. Rowe wanted postgraduate training in the latest techniques and technological applications, was keen to see the formation of a small number of specialised institutions, both within and without the universities and even urged Playford to "take the initiative... to set up a national body [possibly a graduate school] but received no answer".<sup>59</sup>

By the time Rowe left Adelaide, in the 1950s, the PhD was awarded in most faculties and science research had begun to flourish. In particular, the Waite Agricultural Research Institute's research charter had been re-invigorated by Rowe. Throughout Australia, the science-based PhD model for research training was slowly, but increasingly, also adopted by the humanities faculties.

## **THE WAITE AGRICULTURAL RESEARCH INSTITUTE**

Some of the first PhDs awarded in Australia were in agricultural science. The Waite Institute (with its research charter) was a seminal influence, both on the introduction of the PhD to Adelaide, and on the further development of the CSIRO (as the CSIR became known after World War Two). Many overseas, as well as Australian, students came to the Waite to study for the new degree, attracted by its reputation and funded by new scholarships. It was noted:

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<sup>58</sup> V. A. Edgeloe, Biochemistry, The Chemistry of Living Matter at the University of Adelaide 1885-1984: A Brief History, unpublished typescript, 1988, p11

<sup>59</sup> A. P. Rowe, If the Gown Fits, p198

The impact of the Institute on agricultural and biological research in Australia has been far-reaching in that, **inter alia**, it has catalysed the formation of several Divisions of the... CSIRO.<sup>60</sup>

The Waite Institute was established as a result of a bequest from the South Australian pastoralist, Peter Waite, who in 1913 wrote to the Chancellor of Adelaide University, expressing a wish that an agricultural teaching and research institute be established on land he owned not far from the University. The land subsequently passed to the University, which began teaching and advisory work there in the 1920s. Research and postgraduate study in the early days of the Waite were somewhat subordinate to these other functions, despite the first formal report on its undertakings in 1934 which emphasised that "the main objective of the Institute is to enlarge the stock of knowledge... to conduct researches".<sup>61</sup> Only a handful of masters degrees were awarded prior to the Second World War, yet despite this, the Institute developed a national reputation for agricultural research.

In 1947, the Department of External Affairs canvassed the possibility of graduates from British Commonwealth countries enrolling at the Waite and elsewhere as postgraduates.<sup>62</sup> Subsequently some of the early Australian PhD candidates were Colombo Plan students from Asian countries, which had had a tradition of PhD study in the UK. The first three Asian doctoral students at the Waite in 1949 held UNESCO scholarships, while many later arrived under the Colombo Plan. This was the beginning of Federal involvement in international education, an important part of the Walker Committee's recommendations. With this, a new kind of internationally-focused teaching/ research nexus was introduced to the Australian universities.

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<sup>60</sup> V. A. Edgeloe, *The Waite Agricultural Research Institute: The First Fifty Years 1924-1974*, p xii

<sup>61</sup> *ibid.*, p79

<sup>62</sup> The Colombo Plan was deliberately set up in 1950 to foster political stability, at a time of regional uncertainty after the Second World War. A meeting of Commonwealth Foreign Ministers in Colombo agreed to establish a scheme to foster economic development, enabling students to study in Australia.

With the arrival of A.P. Rowe at Adelaide, the Waite's research function was strengthened and much of its advisory function devolved to the State Agriculture Department. Rowe recognised that research was a fundamental part of the Waite's original charter and that retention of students for postgraduate study was vital. Numbers rose relatively rapidly at the Waite after the War. In 1945, there were thirty undergraduates and no postgraduates at the Waite. By 1955, there were seventy eight undergraduates and thirteen postgraduates, many from interstate or UNESCO or Columbo Plan-sponsored students.<sup>63</sup> From the 1950s onward, the Waite built up its research profile to a startling degree, to the extent that:

in the 1965-1974 decade, degrees conferred... comprised PhD 107, MAgSc 52, BAgSc 300, a distribution unequalled or even distantly approached in any other faculty in the University or in any faculty in any other Australian university.<sup>64</sup>

## THE AUSTRALIAN NATIONAL UNIVERSITY

The first Vice-Chancellor Sir Douglas Copeland, at his installation in 1952, called the Australian National University:

an adventure in ideas, providing evidence that a young, enterprising country can dedicate itself to the task of extending and developing its academic life at the highest level... providing unique opportunities for distinguished scholars to pursue their studies and researches and to train a select group of graduate scholars and fellows... thus to ensure a continuous stream of well-trained scientists of all kinds for the universities, research institutions, Governments and industries.<sup>65</sup>

The establishment of a national research university cannot be attributed to one person, and as has been previously shown, had a long gestation. Rather:

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<sup>63</sup> Up to 1975, around two-thirds of PhDs awarded to at the Waite went to non-Adelaide graduates, a reflection of the Waite's growing international reputation and early focus on postgraduate research

<sup>64</sup> V. A. Edgeloe, *The Waite Agricultural Institute*, p123

<sup>65</sup> Sir Douglas Copeland, Foreword, *The Australian National University*, Australian National University, Canberra, 1952

there were many contributors. There seemed to be several threads which were finally woven into the idea from which the university emerged.<sup>66</sup>

The ANU was formally established by Act of Parliament in 1946. It comprised four Research Schools - those of Social Sciences, Medical Research, Pacific Studies and Physical Sciences. The nomenclature itself was significant as primacy was given, for the first time in the establishment of an Australian university, to research. The influence of academic social scientists (such as K.S. Cunningham, Director of the Australian Council for Educational Research) and progressive economists such as Coombs, in planning for post-war reconstruction through their membership of various wartime committees, has already been noted. This was the genesis of the Research School of Social Sciences within the ANU. During the last years of the War, Coombs was described by a colleague as "a terrier with a bone, worrying the government all the time" with his determination to establish a national university.<sup>67</sup> Coombs said of his social science colleagues in the Department of Post War Reconstruction:

These men had drawn upon their theoretical sources for their work and were convinced that if a better world was to be achieved plans for it must be based on such sources also. They were influential in convincing governments not merely that university and similar educational training activities must be sustained as an essential part of the war effort but that the Government should increase its support for research both in the natural and social sciences.<sup>68</sup>

In 1943, Sir Howard Florey, the discover of penicillin, returned to Australia to advise on medical problems in New Guinea. Subsequent developments illustrate the fluidity of wartime decision-making, with the bypassing of bureaucratic channels. General Blamey, Commander-in-Chief of the Australian Armed Forces, had set up an Army Research

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<sup>66</sup> Dr. H.C. Coombs, in Milton J. Lewis, A National Research University: The Origins and Early Years of the ANU, MA thesis, Australian National University, Canberra, 1972, p114

<sup>67</sup> Dr. H. C. Coombs, transcript, ABC interview, p2

<sup>68</sup> Dr. H. C. Coombs, Appendix 62, "Inside Education" in David Dexter, The ANU Campus, Australian National University, Canberra, 1991, p305

Directorate reporting directly to him. Heading the unit was the enigmatic and influential Alfred Conlon, also head of the Committee on National Morale. Conlon had assembled a diverse range of creative and able academics (and poets) in this Directorate, who considerably influenced discussion concerning the establishment of a national university. He and the Professor of Physiology at Melbourne, R.D. Wright, managed to meet with Florey. They convinced Blamey to write a letter (which they themselves composed "with a case of claret") to Prime Minister Curtin, advocating the establishment of a National Medical Research Institute with Florey as head. Initially there was thought that this Institute could be located in Melbourne but "the idea was creeping round, perhaps Canberra".<sup>69</sup>

Curtin met with Florey and was enthused. Florey's subsequent report in 1945 to the government highlighted Australia's lack of world class research facilities and the continued loss of eminent researchers to overseas institutions. The ultimate outcome was the establishment of the Medical Research School in 1946 as part of the Australian National University, though for many years until facilities were built, the actual research was conducted overseas.

The development of the School of Pacific Studies was strongly linked to the efforts of Dr. H.V. Evatt, Minister of Foreign Affairs, though the Commonwealth Government had made a very early incursion into aid for universities when it helped fund courses in Pacific Affairs (primarily the teaching of Japanese) at Sydney University after World War One. Evatt recognised the increased strategic importance to Australia of the Asia-Pacific region and the necessity of a new research institution. He was supported in this by Australia's first Ambassador to China, F.W. Eggleston.

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<sup>69</sup> Professor R. D. Wright, transcript, The Australian National University, ABC radio documentary, June-October, 1963, p.3

In a speech in 1944, Dr. Evatt announced that the Canberra University College had created the School of Diplomatic Studies to train diplomatic staff. Until the Second World War, Australia had no Diplomatic Service, though by 1944 four diplomatic Ministers had been sent abroad. Evatt was keen to have the School in Canberra, close to the Department of External Affairs, and pushed the concept further to link with the idea of a national university:

The permanent establishment of a Diplomatic course will forward the project of a national University at Canberra... Australia should possess at the seat of its national government a national university providing a great centre for advanced studies, especially in modern scientific research.<sup>70</sup>

The genesis of the Research School in Physical Sciences can be traced to Dr. H. C. Coombs and his flatmate, the Commonwealth Astronomer, Sir Richard Woolley, who was "critical of a research university with no involvement with the natural sciences".<sup>71</sup> Astronomical work at Mt. Stromlo was attracting world attention and could be complemented at the ANU, Woolley suggested, by the work of theoretical physicists, who were pure theorists "needing little more than a room, pen and paper". Coombs found the argument "persuasive" for it "did not compete with the work of the CSIR and it certainly would enable the institution to present a more rounded image".<sup>72</sup>

In 1945 in London, Coombs and Prime Minister Curtin met with the distinguished Australian physicist, Sir Mark Oliphant, who recalled, "Nugget Coombs ... and a group of people had cooked up the idea of a graduate university".<sup>73</sup> Curtin was impressed by Oliphant and the lucidity of his scientific explanations, and was urged to ask Oliphant to head an Australian

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<sup>70</sup> Dr H.V. Evatt, quoted by Warren Denning, *Capital City Canberra Today and Tomorrow*, Verity Hewitt, Canberra, 1944, p7

<sup>71</sup> Dr. H. G. Coombs, "Inside Education" p306-7

<sup>72</sup> *ibid*

<sup>73</sup> Sir Mark Oliphant, personal interview, Canberra, 27 July 1993



research school. Gradually the concept of a science research school widened to include sophisticated and expensive research technology and laboratories. Such a school would involve considerably more cost than pens and pencils but these doubts were rapidly removed with the dropping of the atom bomb in that year. Oliphant was persuaded to come to Canberra although both Florey and Sir Keith Hancock (first head of the Research School of Social Sciences) tried to dissuade him, saying "everything was too nebulous ... a hole in the ground and lots of promises".<sup>74</sup>

Oliphant, an Adelaide graduate who had won a postgraduate scholarship to Cambridge, was "attracted by the idea of having at least one (Australian) institute like Princeton or Cambridge... I decided it was a better place for my children to grow up and I owed my country" though the move to Australia was personally "scientific hari kari".<sup>75</sup> Alfred Conlon had a hand in the matter as well; his son recalls, "My father played a big role in getting Oliphant, who was a patriot and a builder - he spent a lot of time talking to his wife".<sup>76</sup>

The two institutions mentioned by Oliphant were significant, in terms of shaping the nature of both the research school he was to head, and the Australian National University generally. He had undertaken pure research at the elite Cavendish Laboratory at Cambridge and later worked on the Manhattan Project (which produced the atom bomb) at the Institute for Advanced Study at Princeton. Though not organisationally part of Princeton University, it was closely linked, both academically and intellectually. This Institute, set up in 1930 and funded by the Rockefeller Foundation, was to explore "pure science and scholarship".<sup>77</sup> It was both a graduate research institution and centre for eminent researchers, attracting some of the best

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<sup>74</sup> *ibid*

<sup>75</sup> *ibid*

<sup>76</sup> Telford Conlon, interview, 16 August 1993

<sup>77</sup> Don Oberdorfer, *Princeton University: The First 250 Years*, Princeton University, Princeton, 1995, p125

scientific and mathematical minds in the world, including Albert Einstein. An Australian counterpart was obviously initially envisaged by Oliphant.

The idea of the creation of a new kind of post-war society had wide currency among the intellectuals and academics seconded to war work in departments like Post-War Reconstruction. Coombs later called the creation of the National University:

an expression of the optimism of the times... the social sciences provided the intellectual framework which would enable those purposes to be wisely chosen and the resources to be creatively directed. The proposed Medical and Physical Sciences Research centres were seen as the means by which science would serve humanitarian purposes as forcefully as it had served those of mass destruction. The university was to ... power the peaceful revolution, ushering in the "century of the common man" which leaders of all political persuasions here and abroad had promised.<sup>78</sup>

Professor Wright recalled:

Take the question of Universities. Suddenly Alfred (Conlon) and I began asking ourselves why shouldn't Australia be the new Constantinople if the people in the northern hemisphere really did wreck themselves? We looked at our six universities and decided that to try to do anything for the whole six would fall to the ground because they'd start squabbling over sixpence instead of asking for six million so the best plan would be to put up a new university and put it in the front yard of the Commonwealth Government and staff it with people of such eminence that when they asked for six million the Government would have to take it seriously instead of just laughing and spending it on... bombers. So we sat down to actually consider that any good university should start around one or more minds of pre-eminence... we knew it was no good persuading somebody of British origin to come and work in the bush, but with Australians there would be a nostalgic quality on top of the other.<sup>79</sup>

The final decision to establish the National University at Canberra was taken at the last Labor Cabinet meeting (July 2) two days before Curtin's death in 1945. It is pertinent to note that no

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<sup>78</sup> Dr. H.G. Coombs, "Inside Education", p307

<sup>79</sup> Professor P.D. Wright, Alfred Conlon A Memorial by some of His Friends, Benevolent Society of New South Wales, Sydney, 1963 pp28-9

member of the cabinet present to make that truly momentous decision was a university graduate.<sup>80</sup>

A joint Cabinet submission by the Ministers of Reconstruction and the Interior called for the establishment of three research schools, with an Institute of Physics also to be considered as well as an undergraduate college. Specialist training schools, such as a Public Service Training School and a School of Territories Administration, were also suggested as part of the University.<sup>81</sup> When the Bill to establish the University was debated a year later, in July 1946, the Opposition Leader, Robert Menzies, urged that it be a postgraduate University only, as the population of Canberra was too small to support an undergraduate component. He also voiced Vice-Chancellor Medley's concerns about siphoning off scarce research monies from the existing universities. Menzies, who had spoken positively as early as 1939 of a university at Canberra, was, however, in favour of the establishment of the research university and the Bill was passed.

The original concept of the University was somewhat changed by 1946. An undergraduate college was not made part of the University though the existing Canberra University College continued operation, and the proposed training schools were set up under different auspices. Though the foundation stone of the ANU was laid in 1948, it was years before all the Schools were properly housed on site. At first an Interim Council comprising three Australian academics and one New Zealander administered the University for which only "first-rate" postgraduates were sought.

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<sup>80</sup> H.V. Evatt, the Attorney-General, was in San Francisco at a meeting formulating the charter of the United Nations.

<sup>81</sup> Joint Cabinet Submission by Ministers for Post-War Reconstruction and the Interior, in David Dexter, *The ANU Campus*, Australian National University, Canberra, 1991, p269

Student numbers were small in the first decade, with around half of the students coming from overseas countries. A degree of jealousy and suspicion was generated, as other universities feared "poaching" of postgraduates. Scholarships were made available and to further collegiality, most students lived at University House. While the main degree awarded at the ANU was the PhD, a few postgraduates undertook masters degrees.

In 1952, Clunies Ross, the head of the CSIRO, appealed to the new Prime Minister Menzies for greater Commonwealth help for research, echoing his predecessor Rivett's comments that the days of free scientific exchange were over and that Australia had to become scientifically self-reliant. At first, however, there were relatively few science PhD students at the ANU. In 1952, twenty three students in varying disciplines were enrolled at the ANU. Twenty were PhD students. The first three PhDs (one in physics and two in Pacific studies) were awarded in 1954, along with the first (female) MA from the School of Social Sciences. Only seven physics PhDs were awarded until 1960; this was a result of the preference in that school for research development over research training.

In 1955 the first two female PhDs were awarded. One of these was the first in scientific medical research (though this was conducted mainly in England). By 1960, forty three PhDs and five MAs had been awarded and the university had 147 students. Although numbers were small, the ANU had gradually established itself, along the lines of the Institute for Advanced Studies, as primarily a postgraduate research university - a radical innovation in the Australian tertiary sector.

## THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY

In 1949, a new university of a type never before seen in Australia, was established in NSW. It was the first university to be established after the War and was also the first to be established in a state with a pre-existing university. It differed markedly from the University of Sydney, however, in that it was to be a university of **technology**; as such, its aims, curricula and student body were highly specific. The War had highlighted a need for increased technological expertise and education worldwide; in the UK, the Percy **Report on Higher Technological Education** and the Barlow **Report on Scientific Manpower** (in 1946) had called for increased technological education as had the aforementioned 1945 American Report, **Science - The Endless Frontier**. In 1946, the President of the Massachusetts Institute of Technology visited Australia and pressure mounted for the establishment of a similar indigenous technological institution. A new university with links to the Sydney Technical College, the New South Wales University of Technology, was established in 1949.

As early as the nineteenth century, Justice William Windeyer had referred to the possibility of an "industrial" university in NSW.<sup>82</sup> Windeyer, President of the Sydney Mechanics School of Arts, the forerunner to the Sydney Technical College, was not in favour of such a university, on both monetary and ideological grounds. The idea, however, persisted. Many diplomates at the Sydney Technical College hoped that their college would one day produce graduates, an aspiration that received increasing support from many sectors.

Wallace Wurth, Director-General of Manpower in wartime, realised the crucial role of science and technology and saw Australia's lack of technological expertise. He made representations for the establishment of technological university to Federal Cabinet and received in principle

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<sup>82</sup> A. H. Willis, The University of NSW: the Baxter Years, New South Wales University Press, Kensington, 1983, p14

support in 1946, while the NSW government agreed to the establishment of a Institute of Technology. The NSW Minister of Education, R.J. Heffron, was also a crusader, though there was some confusion about whether the institution should be a university or institute.

In 1948, Heffron wrote:

Increasing numbers of highly trained men are needed to consolidate the rapid and extensive industrial expansion which has taken place in recent years in this state. Both scientific manpower and technical manpower are needed - scientific manpower trained in research to extend even wider the frontiers of human knowledge - technical manpower, adequately trained in basic science, but with specialised training to apply science to industry and commerce. New South Wales Technical University has been founded to supply this technical manpower.<sup>83</sup>

The model of the new kind of institution envisaged was that of an American Institute such as the Massachusetts Institute of Technology and it was at first called the New South Wales **Institute** of Technology. Postgraduate coursework programs, along the lines of the American model were not, however, proposed. The British postgraduate model was too strongly entrenched. What emerged was yet another peculiarly Australian hybrid university model, which would seek to meld features of both models. A Development Council was established with the cooperation of the Technical Education branch of the Department of Education and in 1948 the first 46 undergraduates enrolled, under the auspices of the Sydney Technical College. There was criticism of the name, "Institute of Technology", and the concept of a degree-granting Institute was poorly understood.<sup>84</sup> The name was soon changed to "University". Some on the Development Council wanted the new institution to be initially a postgraduate research institution, with one member resigning when undergraduate courses

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<sup>83</sup> R. J. Heffron, "The New South Wales Technical University: Why New South Wales has established the first technical university in the Southern Hemisphere" quoted by A.H. Willis, *ibid.* p13

<sup>84</sup> A correspondent to the Sydney Morning Herald (2 May 1948) thought the name "a contradiction in terms" as such a university would not provide the broad education traditionally associated with a university.

were also established. In 1949, a Bill was introduced to Parliament providing for the establishment of the controversial New South Wales University of Technology. The University was to:

- A. provide facilities for higher specialised instruction in technology and science in their application to industry and commerce and
- B. aid by research and other suitable means the advancement, development and practical application of science to research and industry.

The University was to provide trained scientists, engineers and technologists: the first Australian university to have an emphasis on **applied** rather than basic or pure research. Significantly, research, and by extrapolation, postgraduate studies, were enshrined in the University's original charter.

The first degree courses were in engineering, science, architecture, commerce and technology (applied science). There was deliberately no arts faculty, a decision which continued to cause ongoing controversy. In 1949, the first two **higher** degree enrolments were accepted and short postgraduate courses begun, in electronics and television. Conversion courses allowed diplomates from the Sydney Technical College to receive the BSc and BE and by 1951, fifteen of these students had enrolled for higher degrees. Of the first seven professors appointed, six had postgraduate degrees and two, including Professor Philip Baxter, had British PhDs.<sup>85</sup> The founding Professor of Metallurgy was (Sir) Rupert Myers, one of the first two Australian PhDs.

In 1953, the first masters degrees were awarded (in applied chemistry and chemical engineering) and in 1955, the first PhDs (in applied chemistry and chemical and electrical

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<sup>85</sup> Baxter's fervour for the new University's scientific mission was attested to in a memorable description: "A latter-day St. John the Baptist, preaching salvation through science"- Sir Rupert Myers, in A.H. Willis, The University of New South Wales: the Baxter Years, Foreword, p7

engineering). While the first woman to receive a PhD was awarded the degree in 1956, there were few female undergraduates and postgraduates in the 1950s, largely because of the technological bias of the University and lack of an arts faculty (though some arts subjects were part of science undergraduate courses). As at Adelaide, overseas students soon assumed some importance, with the first Colombo Plan student graduating with an MSc (Wool Technology) in 1954.

Tensions arose in the mid-1950s over the University's scientific structure and issues of nomenclature. In 1956, the "Faculty of Applied Science" became the "Faculty of Science" and the "Faculty of Technology" became the "Faculty of Applied Science". An interesting dichotomy thus became evident in the pure/applied science area, with the inference of a scientific hierarchy, signifying the differing status of science degrees.

The first purely postgraduate Schools established (in 1955) were those of Traffic and Highway Engineering, through external sponsorship, while the first of several postgraduate research institutes was established in 1954 (Nuclear Engineering). UNSW also introduced an innovative coursework higher degree, the Master of Hospital Administration, in 1957. This was the first modern Australian higher degree to be offered by coursework and was aimed at a clientele already engaged in administration. It was a three year degree, comprising one year of lectures, one of hospital placement and one year for writing a short thesis. While such a course caused some debate, the University innovatively decided that there could be "several routes to a master's degree".<sup>86</sup>

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<sup>86</sup> A.H. Willis, *The Baxter Years*, p175



Many of the academic staff involved in teaching the new degree had experience and training in the US. Thus the first modern coursework degree in Australia was instituted at a new, technologically-oriented university and instigated and taught by academics familiar with the American coursework model for masters degrees.

A further innovation in 1958, was the Master of Technology in the Faculty of Engineering. It involved advanced formal study and a "report on a project specified by the Head of the School".<sup>87</sup> The degree was soon also offered by the Faculty of Technology. However, both Faculties changed the name of the degree after a few years, with the degree becoming the "Master of Applied Science" or "Master of Engineering". By 1960, the University too had dropped "Technology " from its title. This, combined with the award of its first arts degrees through affiliated colleges at Newcastle, Wollongong, and for a time, Broken Hill, saw a move toward parity with other Australian universities. This underscored ambivalence about the worth of what had been the University's prime function, the teaching of applied science and technology.

## **SUMMARY**

The Second World War marked the beginning of the transformation of the Australian university system, both in terms of growth and in federal support, while the most significant Australian postgraduate innovation, the PhD, was also mooted in this period. In 1939, the six Australian universities had enrolled just over 14,000 students, of whom at least 300 were postgraduates. By 1946, student numbers had risen to over 25,000, and around 600 were postgraduates. By 1957, total student numbers had more than doubled since 1939 and postgraduates numbered more than 2,000. The PhD had become a significant higher degree;

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<sup>87</sup> *ibid.*, p175

from 1955, more PhD degrees were awarded annually than higher doctorates, which were increasingly rarely conferred. In 1957, twenty-five higher doctorates were conferred across Australia, and 94 PhDs, compared to forty-eight higher doctorates in 1949 and eight PhDs. Masters degrees conferred remained relatively static in the period 1949 to 1957 (nearly 200 annually).

The first significant foray of the Commonwealth into higher education occurred in this period. The Universities Commission and Office of Education were established, bodies which would, as they evolved, have considerable clout in areas which affected postgraduate education. Further, J.J. Dedman had emerged during the war as the prototype of future Federal Education ministers and exercised considerable and far-reaching influence over Federal education policy.

Commonwealth intervention, which had been shaped by the exigencies of war, now affected university development, particularly in the area of manpower needs and science and technology. The ANU and the NSW University of Technology were established with government support, which meshed neatly with pre-existing demands, while the research role of the Waite was reaffirmed.

While the British apprenticeship model of postgraduate education remained predominant, even in the new research PhD degree, a significant new professional postgraduate coursework model had been introduced, along the lines of the American higher degree model. This occurred in a new university, where the founders were influenced initially by the model of an American institute of technology. However, this coursework model did not extend to the doctoral degree, nor were coursework degrees to be offered within a graduate school environment. Both the research PhD and the coursework higher degree model would, in the

long term, revolutionize the postgraduate sector. Internationalizing of the student body, the concept of an Australian research university and of a modern professional and technological postgraduate education, find their origins in the period during and just after the Second World War.

The Australian university system, and postgraduate numbers, were very small by international standards in 1945. In the decade after the War, the tertiary sector as a whole expanded, though this expansion came from a very small base. Most of this expansion occurred in the undergraduate sector; postgraduate research and scholarship remained largely remote, poorly understood, concepts for politicians and populace alike. Nevertheless, the imperatives of modern science and technology in postwar society exerted new strains on both sectors of what was still largely a nineteenth century tertiary system. A response to these pressures was the formation in 1957 of the first national tertiary inquiry, the Murray Committee.

## CHAPTER FOUR: THE WATERSHED YEARS

### THE MURRAY COMMITTEE

#### BACKGROUND

Australia in the 1950s had very different needs to that of the 1940s and consequently new demands were made on the universities and research institutes. It was becoming more attuned to the new global realities of a nuclear age, while sophisticated new technologies (like television) needing skilled technicians and scientists, were also introduced. New national research institutions were set up and older ones reorganized. The advent of nuclear technology, for example, led to a demand for highly trained research personnel at the new Australian Atomic Energy Commission. The CSIR, which had had its defence component greatly expanded and hived off during the War, had its core agricultural research brief strengthened, and a change of nomenclature (the organization became the CSIRO, the Commonwealth Scientific and Industrial Research Organization). As well, the internationalization of the Australian university continued. There was ongoing commitment to the university education of overseas students from nearby countries; many of these students entered postgraduate research areas.

In the 1950s, "manpower planning" became a widely-used economic term. At skilled levels, there were shortages of scientific and technological personnel. Australia needed more graduates and postgraduates in a wide range of disciplines, particularly scientific, but the technical colleges and the universities had only a small pool of indigenous graduates to draw upon. Newly created positions in universities and the CSIRO often went to overseas

applicants, while overseas institutions were also in competition for good science graduates.<sup>1</sup> This situation was exacerbated by poor retention and graduation rates at Australian universities, and consequently, postgraduate enrolments were affected.

Against this background, the Committee of Inquiry into Australian Universities was set up in November 1956 by the Prime Minister, Robert Menzies. The Committee was a belated response to calls from the Australian Vice-Chancellors Committee, which had been pressing for further Commonwealth support for the universities since 1949. Its 1952 report, **A Crisis in the Finances and Development of the Australian University** had called for a national inquiry into the state of Australian universities.<sup>2</sup> In 1956 (by which time Menzies had fought three elections) and in a year in which the economy showed improvement and tertiary enrolments began to grow, Menzies acceded to their request.

Adelaide's Vice-Chancellor, A.P. Rowe, "a man whose nuisance value became a vital element in changing the attitudes of Menzies and his departmental officers", played a significant role in the establishment of the Committee.<sup>3</sup> He not only came from a science research environment, but was the chair of the Australian Vice-Chancellors Committee. Rowe had a strong interest in technology and applied research, while Menzies' background was in arts and law - although he had an appreciation of, if not an enthusiasm for, the new technologies. Yet there was common academic (British) cultural ground. Neither questioned the idea of an Englishman being the best person to chair an Australian committee. Given the small size of the Australian universities in the 1950s, their historic links to the British system, and elements

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<sup>1</sup> See Sol Encel, "The Coming Brainpower Shortage", *Nation*, 31 January 1959, pp8-9. He documents the "export of talent" before World War Two and the shortage of trained manpower after the War. The CSIRO, for example, recruited one third of its research officers from overseas in 1959.

<sup>2</sup> Australian Vice-Chancellors Committee, *A Crisis in the Finances and Development of the Australian University*, Melbourne University Press, Melbourne, 1952

<sup>3</sup> Alan Martin, "Menzies and the Murray Committee", in *Ideas for Histories of Australian Universities*, F.B.Smith and P.Crichton (eds) Australian National University, Division of Historical Studies, Canberra, 1990, p104

of cultural cringe, this is not surprising. What is of interest, given the increased dominance of American research models in the post-war era, is that American input to the Committee was not considered, except in relation to the University of New South Wales. The linkages, even in science, were to Britain.

In 1954, when the Australian National Research Council (see Chapter Three) resolved that there should be a "thorough investigation" of the universities, Rowe became Chair of the AVCC after a membership of six years. He became convinced that a local body similar to the University Grants Committee in the UK was needed in order to help Australian universities "co-ordinate their affairs", though such a body would meet with opposition from Treasury, who feared unbridled demands for money. Rowe wrote to Menzies, urging an inquiry be established and advised:

If you ask me what would you do in my shoes, I would reply that I would note that the University Grants Committee in the United Kingdom had worked to the general satisfaction of Treasury...I would seek personal advice from the British Treasury on the name of one man who could be invited from the United Kingdom... If a Liberal government formed a University Grants Committee in Australia it would go far to correct the impression that a Labor government is more sympathetic to universities.<sup>4</sup>

Rowe's letter at once appealed to the Anglophile, the scholar and the politician in Menzies. The seed had been planted and Menzies was far from being stony soil. In 1956, Menzies took heed of Rowe's advice and invited Sir Keith Murray, chairman of the British University Grants Committee, to chair the Australian Committee (which also included the Vice-Chancellor of Leeds University, Sir Charles Morris). The other three on the Committee were Australian, and comprised the Chairman of the CSIRO, Sir Ian Clunies Ross, the

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<sup>4</sup> A.P. Rowe, letter to Menzies, 2 June 1954, quoted by Alan Martin, *ibid.*, p106

Assistant General-Manager of BHP, Jack Richards, and Alexander Reid, a member of the Senate of the University of Western Australia and the Commonwealth Grants Commission.

Menzies had long had an interest in the universities and was one of the first Australian politicians to make a speech about education in Federal Parliament, at a time when many politicians (and the mass of Australians) were often deeply suspicious, if not unmindful, of higher education.<sup>5</sup> Furthermore, as a university educated intellectual who maintained regular contact with the University of Melbourne, in particular, he had some insight into the system he wished to have investigated and changed.

In Murray, Menzies found a kindred spirit, inasmuch as both saw the universities, and in particular the humanities, as custodians of a long tradition of intellectual excellence and enquiry which underpinned Western civilization. In the aftermath of the Second World War and in the midst of the Cold War, perhaps not surprisingly, Murray considered the need for the humanities "greater than ever before".<sup>6</sup> Menzies stressed the importance of the humanities and also research, in the universities. In 1939, in an address to the Canberra University College, he defended both "so-called useless scholarship [which] develops the humane and imperishable elements in man", as well as research which "required infinite patience, precise observation, an objective mind and unclouded honesty", which he linked to the training of "character".<sup>7</sup> These were precisely the attributes that he felt his own education in the arts and the law had inculcated and which were to be reflected to some degree in the Murray Report itself.

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<sup>5</sup> In 1945 he spoke on education and research, saying that one of the causes of the War had been due to the decline of classical education in schools and universities and a subsequent "failure of the human spirit". As Opposition leader, in 1945, he moved a motion for a revised and extended educational system which would involve "substantial Commonwealth aid" and a Committee to enquire into Australian education (though he was to resist this later at other than tertiary level). See Bob Bessant, "Robert Gordon Menzies and Education in Australia", *Melbourne Studies in Education* 1977, p79, p82

<sup>6</sup> Sir Keith Murray, ABC Guest of Honour Talk, 2FC Sydney, 22 September, 1957, typescript, ABC Library, Sydney

<sup>7</sup> R.G. Menzies, *The Place of a University in the Modern Community*, Melbourne University Press, Melbourne, 1939, pp11- 12, 25

While pressures for permanent Commonwealth involvement in funding the poorly resourced universities in the 1940s and 1950s came largely from their vice-chancellors, research scientists, with their particular concerns relating to research funding and postgraduate training, were also central to this endeavour in the 1950s. However, despite the increasing dominance of science and science research models in the university, the debate was not always framed in totally scientific terms. A speech given in 1952 by the head of the CSIRO, Ian Clunies Ross, was an early influence and appealed to Menzies, the humanities scholar. In a speech entitled **The Responsibility of Science in the Modern World**, Ross called for a component of compulsory humanities study within a scientific education.<sup>8</sup> Science had become increasingly dominant, to the detriment of the original, humane ideals of the university. This could only be alleviated by Commonwealth intervention and funding of humanities study in the science faculties.

Menzies' own meritocratic view of university education was influenced by his experiences as a brilliant scholarship student at the University of Melbourne and he therefore favoured an expansion of the universities to favour more gifted students. However, as much as Menzies was a genuine apologist for universities (indeed, this was the education sector closest to his heart) he was nevertheless alert to the political and pecuniary ramifications of increased spending on education. His later support for triennial funding in the face of Treasury opposition and lack of precedent, was, then, particularly courageous.

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<sup>8</sup> Ian Clunies Ross, *The Responsibility of Science in the Modern World*, CSIRO, Melbourne, 1952, cited in Nicholas Brown, "Aspirations and Constraints in the 1950s", *Ideas for Histories of Australia*, p86



While the decision to commission the Inquiry was not a straightforward one, it was a momentous one for Australian universities. Alan Martin notes of Menzies:

He was not, as he liked in later years to imply, the originator of Commonwealth support for universities, nor... did he invent the idea of a Murray-type enquiry - indeed, for a while he was opposed to it. But as that idea developed, partly as a result of discussions among officials in his own department, he showed interest in it and came ultimately to make it his own.<sup>9</sup>

When Menzies presented the report of the Murray Committee of Inquiry to Parliament in November 1957, he considered it a "rather special night", one of the high points of his political career.<sup>10</sup> The decision to establish the Committee and implement its recommendations was one dear to Menzies. Murray recalled that, in their last conversation, Menzies had said:

I have been almost thirty years in Australian politics and have not found them very rewarding, but if I leave the Australian universities in a healthy state it will have been all worthwhile.<sup>11</sup>

## **THE COMMITTEE'S FINDINGS**

The Murray Committee spent three months touring the universities and hearing submissions, and its Report was tabled in Parliament in 1957. The bulk of the Report's recommendations were to concern undergraduate courses, as the main thrust of the enquiry centred on the undergraduate degree. This was understandable at a time of both rising expectations and growth in undergraduate numbers. Sections of the Report did, however, address postgraduate issues and these would have important ramifications.

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<sup>9</sup> Alan Martin, "Menzies and the Murray Committee", p114

<sup>10</sup> R.G. Menzies, cited in Bob Bessant, "Robert Gordon Menzies and Education in Australia", p75

<sup>11</sup> R. G. Menzies, cited in Alan Martin, "Menzies and the Murray Committee", p115

## POSTGRADUATE WEAKNESSES

The Report noted that:

A disquieting feature of the Australian Universities is the general weakness of honours and post-graduate research schools. This is perhaps most surprising in the Faculties of Arts and Science, on which the reputation of the universities for scholarship and research traditionally depends.<sup>12</sup>

An overly high standard expected in the average pass degree, with a consequent narrowing to a trickle of eligible honours students, was considered partly to blame for both the general weakness of these schools and the paucity of postgraduates.

In the Report's Summary and Conclusions other causes were advanced:

The reason for these weaknesses are manifold: the acceptance of the pass degree as the normal end-point of university education, the lack of close contact between teacher and student during earlier years [but] the main cause is financial stringency.<sup>13</sup>

The major weakness was lack of finance for equipment and staff, which resulted in small Australian research schools within the universities. Other weaknesses identified were the burdens of heavy undergraduate workloads and the paucity of scholarships. The attractiveness of employment in outside bodies such as the CSIRO, Defence Scientific Industries and the Atomic Energy Commission was also noted; many of the best students were recruited to the CSIRO straight from honours years, further limiting the pool of graduates available to undertake PhDs.

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<sup>12</sup> Committee on Australian Universities. Report. Government Printer, Canberra, 1957, p42

<sup>13</sup> *ibid.*, p122

While admitting to some areas of strength in the Australian science and technology research schools, the Report noted that this was not true of all such schools, and emphasized:

a strengthening is essential. Today, the Australian universities are providing, on a population basis, only one-quarter of the PhDs of the British universities and one-fifth of those of the United States and of Russia<sup>14</sup>

Russia and the US were otherwise barely mentioned in the Murray Report, except for the acknowledgment that there was little Australian acceptance of the American concept of graduate schools. The Report was overwhelmingly Anglocentric, in a year when the launch of Sputnik electrified the world and intensified Australian pressure for action on scientific research (some wits posited that the Vice-Chancellors had specially arranged the launch, so good was the resultant publicity for science).

## **SCIENTIFIC RESEARCH**

The significance of the Sputnik launch and the Cold War must not be underestimated as catalysts to research and research funding both in Australia and America. Curiously, however, the Report did not focus as strongly on scientific research as might have been expected. The Report's congeniality to Menzies was precisely because of its strong roots in an older, less-technologically focused British university tradition. The voice of a distinct post-War, technologically-based scientific community is not paramount, except in relation to the UNSW. At the same time in America, there were vigorous scientific lobbies for increased government support, as well as robust presidential statements and investigations. This degree of scientific

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<sup>14</sup> *ibid.*, p43

urgency is missing from the Murray Report. Nevertheless, the Report did note that:

judged pragmatically, university research in the sciences must be the door through which must come, in an increasing stream, those men and women of enthusiasm and high capacity, of whom the Australian community has need, to exploit fully the potential of its environment, to ensure... national development and to render service to its less fortunate neighbours in South-East Asia.<sup>15</sup>

Poised to do all three was a university like Rowe's Adelaide, already in 1956 the university with the highest percentage of full-time higher degree students in science, engineering and agriculture, the latter faculty providing "post-graduate and research facilities unmatched elsewhere in Australia".<sup>16</sup> Like the University of NSW, a combination of early expertise and specialization had helped to build reasonable postgraduate numbers.

## **RECOMMENDATIONS OF THE MURRAY REPORT**

The Report recommended better quality teaching in early undergraduate years to awaken interest in potential postgraduates, and more, and more generous, scholarships. Greater use of the fledgling Australian National University was also urged (at the time, less than half of the 74 students at the ANU were Australian) as was increased inter-university movement of postgraduates. More money was required to upgrade antiquated buildings and libraries, or build new ones. In many cases, libraries were found to be in a deplorable state or grossly under-resourced in terms of the volumes required for adequate postgraduate research, or even undergraduate needs. In order to reach the best world standards, massive expenditure was needed to boost the total Australian postgraduate and research culture.

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<sup>15</sup> *ibid.*, pp43-4

<sup>16</sup> *ibid.*, p50

Yet this boost was to be selective. The Report stated decisively:

It is obvious that it will never be practicable to establish research schools in every branch of science and technology in all universities; nor will it be in the humanities and social sciences. Consideration must be given to the need for ensuring the greatest mobility of postgraduate ... students so as to employ existing research facilities to the full.<sup>17</sup>

Many postgraduates in Australian universities in the 1960s, as in the previous decade, were staff members improving their credentials, often part-time. Their numbers had previously not been properly tabulated. With improved statistical gathering for the Commonwealth, these numbers were fully included in university records for the first time; previously staff candidates at some universities either had not been counted or listed as such.

The Murray Report also recommended increased numbers of scholarships at both honours and research levels in order to improve non-staff research numbers, as the universities:

are seriously limited in the number of research students they can accept... it is no longer accepted elsewhere that postgraduate students should be expected to exist on salaries only a portion of those earned by pass degree students in other employment. It is vain to recite the heroic sufferings of their elders in winning the opportunity for postgraduate training... the recommendation is that postgraduate Commonwealth Scholarships be instituted.<sup>18</sup>

Subsequently, the first one hundred such scholarships were awarded in 1959.

Most PhD enrolments in the late 1950s continued to be in the sciences, although the Murray Committee was concerned that the percentage of total science, engineering and technology students in 1957 was similar to that of pre-War years. More postgraduate and undergraduate

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<sup>17</sup> *ibid*, p47

<sup>18</sup> Committee of Inquiry into Australian Universities, *Report*, p46

scholarships were needed to increase participation rates in these areas - especially in the 1960s as extra, qualified teachers were needed for the baby boomers who moved into the high schools and tertiary institutions.

## **OUTCOMES OF THE MURRAY REPORT**

Menzies, on tabling the Report, called it a "new charter for the universities.. brilliant and provocative".<sup>19</sup> In the decade after the tabling of the Report, student numbers more than doubled - from 41,770 in 1958 to 95,380 in 1967. Both bachelor degrees and total postgraduate degrees awarded more than doubled in the period 1958-1965 alone. (Table 4.1 Degrees Conferred, 1949-1965) PhDs awarded in that decade, however, more than tripled, staff increased by 100%, and funding (through the Australian Universities Commission) increased enormously. By 1966, \$270,000,000 had been spent on universities, while national co-ordinating bodies for university education were formally established. This, along with the binary system of higher education established by the later Martin Committee, was to set the pattern for Commonwealth involvement in later decades.

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<sup>19</sup> R.G. Menzies, Commonwealth Parliamentary Debates, House of Representatives, 28 November 1957, pp2701-2

Table 4.1

**Degrees Conferred: All Universities, 1949-65**

<i>Year</i>	<i>Higher Doctorates</i>	<i>Doctors of Philosophy</i>	<i>Master Degrees</i>	<i>Bachelor Degrees</i>	<i>Total</i>
1949	48	8	197	3,454	3,707
1950	57	12	183	4,254	4,506
1951	32	21	173	4,272	4,498
1952	57	22	172	4,053	4,304
1953	34	29	190	3,673	3,926
1954	40	19	188	3,252	3,499
1955	23	70	172	2,967	3,232
1956	27	68	191	3,087	3,373
1957	25	94	200	3,025	3,344
1958	12	80	210	3,382	3,684
1959	31	123	228	3,615	3,997
1960	22	137	254	4,184	4,597
1961	28	126	307	4,743	5,204
1962	36	138	332	5,391	5,897
1963	33	174	366	6,131	6704
1964	34	203	387	6,960	7,584
1965	37	278	479	7,937	8,731

(Source: Australian Universities )

In comparison, during the 1950s and 1960s, postgraduate enrolments in the humanities, particularly at PhD level, remained relatively small. The science research model, with its concomitant adoption of the PhD as the late twentieth century "union card" was not found to any comparable degree in the humanities and social sciences, where change was relatively slow (and such change was not specifically encouraged by the Murray Report). The masters degree continued to retain considerable prestige in the humanities, where the British model of "scholarship", as distinct from "research", held sway.

Nevertheless, in the postgraduate arena generally, the release of the Murray Report signalled the beginnings of change. The increased involvement of the Federal government stopped short, however, of a challenge or desire to usurp university autonomy and in particular, autonomy in the privileged postgraduate sphere. Bodies such as the Australian Universities

Commission, (established in 1959) mediated between the university and the federal bureaucracy, though by the later 1960s this "arms length" approach would be brought increasingly into question.

While the establishment of the Murray Committee was innovative and had important effects on both tertiary sectors, the assumptions at its heart were essentially conservative. The implementation of the Murray Report:

secured the future direction of the Australian universities along lines which appeared to Menzies and his contemporaries consistent with their own outlook ... There was no question of the universities deviating significantly from the institutional and theoretical pattern well established... nowhere did it question the fundamental assumption that the British university structure was appropriate to Australia.<sup>20</sup>

Nevertheless, a precedent for governmental incursion into the tertiary sector had been set, and the scale of this involvement would increase with the subsequent release of the findings of the next enquiry into Australian tertiary education, popularly known as the Martin Report.

The years between 1957 (the year of the Murray Committee Report) and 1975 can be termed "watershed" years in the history of both undergraduate and postgraduate education in Australia, dominated as they were by the first two Commonwealth reports into tertiary education and the beginnings of large-scale Commonwealth government incursion into the financial management and planning of universities in Australia (also features of the contemporaneous British model). The years were marked also by the further rise of the American postgraduate coursework model. It was a period of change and growth, as post-war "baby-boomers" flocked to the universities in unprecedented numbers. From 1956 to 1966, the

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<sup>20</sup> Bob Bessant, "Robert Gordon Menzies and Education in Australia", p94



number of universities in Australia grew from nine to fourteen and between 1966 and 1975, seven new universities were established. This so-called "golden" era was marked by increased growth in federal funding to the tertiary sector as well as growing credentialism, engendered in some fields by the proliferation of higher degrees.

These years of university growth coincided with, and were partly stimulated by, strong national economic growth, without which expansion could not have occurred. It was a time of postgraduate plenty, particularly in the late 1950s and 1960s, as emphasis on technological development saw continued demand for science postgraduates. The universities and the research institutions, like the CSIRO, were often unable to recruit sufficient local staff from the small available pool of postgraduates. In a time of heightened demand, science and the science research model increased their tertiary and national importance.

In the 1950s, federal involvement was limited to Commonwealth research assistance to universities and small numbers of scholarships. The universities retained autonomy and, at undergraduate level, were reliant on state funding, private endowments and fees. In the 1960s, Commonwealth involvement in tertiary planning included a broadening of funding to include the new Colleges of Advanced Education as well as the universities, and recurrent funding. The universities were explicitly funded for research in 1963, while the Australian Research Grants Committee was established in 1964 to provide competitive research funding.<sup>21</sup> During the 1960s, the creation of a binary system of tertiary education and the formal establishment of various national advisory and co-ordinating tertiary bodies, such as the Australian Universities Commission, began to change the structure of Australian tertiary education and its relationship to the Commonwealth. In 1973, the Commonwealth assumed centralized funding

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<sup>21</sup> Don Aitken, "How research came to dominate higher education and what should be done about it", *Australian Universities' Review*, Vol.33:1:2, 1990, p10

for the tertiary sector after the advent of the Whitlam government. All these changes impacted significantly on the postgraduate sector.

While both undergraduate and postgraduate sectors of the university saw unprecedented growth from the 1950s onward, postgraduate numbers rose the most dramatically, albeit from a small base. Undergraduate annual growth rates peaked at 13% in 1960, while postgraduate growth was often greater. In 1950, twelve PhDs were awarded in Australia. A decade later, in 1960, that number had grown to 137. It was in some ways a remarkable rise, given that annual numbers of first degrees awarded remained relatively constant over this period (around three to four thousand). The numbers of masters degrees awarded annually also rose, again less rapidly, over the same period, growing from 197 to 254 per annum. By the end of the 1950s, the PhD degree was firmly established in the science faculties, so much so, that a few years later, in 1964, there was talk of an "oversupply" in some disciplines (particularly Chemistry).<sup>22</sup>

The wave which had gathered momentum in universities in the 1950s after the introduction of the PhD, was propelled and carried by swelling numbers of baby boomers and rising expectations in the 1960s. That wave was to break in the mid-1970s, but not before PhD numbers grew at 5% per annum (until the early 1960s) and at around 15% per annum for the rest of that decade.

The "watershed" years saw not only numerical, but attitudinal change. A new importance was given to research and postgraduate training, especially in the sciences, an importance reflected in greatly increased funding. Infrastructure, equipment, staffing and scholarships were also

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<sup>22</sup> The earliest Australian study to examine this phenomenon was conducted by Stephen Hill and P.N.G. Armstrong under the direction of Professor Ian Ross at Sydney University in 1966, "Australian PhD graduates in science and applied science". Co- ordination chemistry and nuclear physics were fields showing signs of postgraduate "oversupply". Cited in S.C. Hill, P.J. Fensham and I.B. Howden, PhD Education in Australia The Making of Professional Scientists, Australian Academy of Science and Industry Forum, Report No.7, Griffin Press, March 1974, pp18- 19

beneficiaries of increased federal funding. Reflecting student growth, increased funding and the new importance given to research, university staff numbers nearly trebled in the period 1950 to 1975, with most growth in the years 1960 to 1966.

Postdoctoral research, since the end of World War Two a feature of the American research culture, became increasingly common in some Australian science disciplines such as chemistry. If by the early 1960s the PhD was becoming necessary for an academic, scientific career, the "post-doc" was the requirement in these fields. The "academic union ticket" of the PhD had acquired an addendum. This academic credentialism, in the short term in science and in the long term in the humanities, would have a significant impact on the masters degree, precipitating both its decline and its transformation.

The second Commonwealth inquiry, the **Report of the Committee on the Future of Tertiary Education in Australia** (under the chairmanship of Sir Leslie Martin from 1960 to 1965) recommended the establishment of a binary system of tertiary education and in doing so, thereby formalized federally both what was considered worthy of advanced research and in which institutions it was to occur. With the introduction of colleges of advanced education, virtually an entire sector of tertiary students were locked out from postgraduate research. If the Murray Report set the script for tertiary expansion, the Martin Report was instrumental in defining the sectoral nature of this expansion.

## **THE MARTIN COMMITTEE OF ENQUIRY**

In 1959, as a result of accepting in full the Murray Report's findings, the Australian Universities Commission was created. This statutory body to advise the Federal Government on universities was headed by Sir Leslie Martin, Professor of Physics at Melbourne University. In 1961, the Australian Universities Commission, with the imprimatur of Menzies, established a Committee to Enquire into the Future of Tertiary Education, specifically in order to find means of supplying an alternative, cheaper stream within the tertiary sector. Unlike the Murray Committee, members of the larger Martin Committee (membership of which changed over time) were Australian, with two-thirds educated, or resident, in Victoria. Most were university men, with a small number representative of non-university tertiary institutions.

Like the Murray Report, the Martin Report of 1961-1966 was in many ways conservative in function and outcome. The government of the time, faced with an imminent explosion in student demand, due to rising expectations and the large baby-boom cohort about to reach the universities, was essentially told what it wanted to hear from the Report - that an economically and philosophically satisfactory solution to these problems existed. This was the creation of a binary system of higher education, with the addition of a new, sub-degree sector catering for "practical" and skills-based studies.

Postgraduate study and research were to be restricted to the existing universities, however. Certain central assumptions shaped the thinking of Sir Robert Menzies, Sir Leslie Martin, John Gorton, federal Minister for Science and Education, and indeed, possibly the majority of members of the Committee of Enquiry, as well as that of many who made submissions. One assumption was that research and scholarship were properly the function of a certain kind of institution only - the university. Another was that only a relatively small proportion within this

institution would be able to undertake the intellectually demanding role of "pure" researcher. Allied to this was an implicit belief that the ideal university model was English - furthermore, not just English, but more specifically, Oxbridge, and that the most desirable postgraduate models were to be found there.

In order to understand this assertion more fully, it is instructive to look at the educational backgrounds of certain key figures involved with the Enquiry, as their beliefs crucially shaped their attitudes toward higher education in Australia. University of Melbourne-educated Menzies, though he did not study in England, was a fervent Anglophile, and his later visits to the hallowed halls of English learning held all the rapture for him of a homecoming. For Menzies and many others, Oxford and Cambridge were exemplary models for the ideal university.

Dr. (later Sir) Leslie Martin, whom Menzies appointed to head the Enquiry, was also educated at Melbourne, first as a student in education, switching later to science. There he took a first-class honours degree in physics and later a masters degree. In the 1920s he won a scholarship to Cambridge, where he obtained a PhD and worked for four years in the Cavendish Laboratory with Sir Ernest Rutherford, before returning to Melbourne as senior lecturer in the Department of Natural Philosophy at Melbourne. The experience of Cambridge left an indelible mark:

Martin was a thorough product of the Cavendish approach. He accepted all its presuppositions. He believed implicitly in the primary role of the university in any system of higher education and took it for granted that its proper function was research and the training of research workers... the vital role of research was the mission of the university. His exemplar ... was the Cavendish Laboratory under Rutherford.<sup>23</sup>

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<sup>23</sup> Susan Davies, *The Martin Committee and the binary policy of higher education in Australia*, Ashwood House, Surrey Hills, 1989, p47

In 1955, Martin delivered a paper on postgraduate studies in science and engineering to a conference of Commonwealth universities in Canberra. This gave an early indication of his thinking on postgraduate matters. Australian universities, he found, were far from his ideal and he:

deplored their tendency to subjugate research for its own sake to providing the kind of postgraduate training which would supply governmental laboratories and industries with research personnel. He considered this led to the mechanical production of MSc and PhD graduates and training in which the emphasis was on techniques rather than ideas. Time limits of two or three years, together with inadequate allowances, encouraged students to choose trivial problems... a four year undergraduate degree for honours students was suggested, followed by a three-year doctorate.<sup>24</sup>

Although he recognized the value of existing institutes of technology, and supported the establishment of some universities along the lines of the University of New South Wales, he said the "purpose of a University of Technology was to provide a different type of person altogether, not research men, practical men".<sup>25</sup> The practical, industry-oriented man was not the same as the researcher who found out new facts. A distinction (however untenable that might be in reality) between pure and applied research was at the forefront of his mind. As a researcher and teacher of postgraduates himself, Martin was less interested in undergraduates during his teaching career, calling the non- research students "the rump (the BScs)... teachers and engineers and what have you".<sup>26</sup> Such thinking undoubtedly informed his advocacy of a binary tertiary system, with its division between research and practically-oriented studies.

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<sup>24</sup> Susan Davies, *ibid*, p48, citing Martin's paper, "Postgraduate Studies in Science and Engineering" in A Symposium on the Place of the Australian University in the Community and Postgraduate Studies in the Australian Universities, Australian Vice-Chancellors' Committee, Melbourne, 1955

<sup>25</sup> *ibid*, p49

<sup>26</sup> Recorded interview by Graham Woods with Sir Leslie Martin and David Dexter, Australian National University, 6 August 1975. A binary system, crudely dividing the elite "scholars" from the more "practically" inclined mass of students paralleled a distinction manifested in the Cavendish Laboratory itself, where the "mechanics", prized though they were for their skill, were not considered part of the top echelon of researchers.

John Gorton, whom Menzies appointed Minister-in-Charge of Commonwealth Research and Education in 1964, was educated at Oxford. He considered the heart of the Martin Report to be its emphasis on the binary division of higher education in Australia, with studies deemed practical and applied, catered for in new institutions like the Colleges of Advanced Education, where "no attempt should be made to provide the complex and expensive facilities required for postgraduate studies".<sup>27</sup> The universities were to continue to be the gatekeepers of scholarly knowledge and the degree, whilst the diploma was the main qualification to be granted elsewhere.

This was the conservative (in the true sense of the word) core at the heart of the radical proposal to differentiate between institutions of higher education and the students who attended them. Access to the traditional university was to be meritocratic, with an expansion to meet demand, while supposedly less "academic" students would be catered for elsewhere. Menzies and Martin, both scholarship boys, had thoroughly imbibed the ethos of their "traditional" universities. The irony was that the research university was itself a creature of limited existence, a nineteenth century phenomenon. The desire to "lock out" emerging applied technologies from the perceived traditional model of a university took no heed of this.

While the Martin Report closed off the possibility of postgraduate studies and research in institutes of technology and other non-university colleges, the CAEs were often staffed by lecturers who themselves had attained research degrees at university and were steeped in the research ethos, which they could not replicate in the new institutions.

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<sup>27</sup> *ibid.*, p53

Philosophically, there was common ground amongst the Committee members and universities regarding many aspects of postgraduate education. This sector would continue to be the preserve of a meritocratic elite, the cream of the cream; postgraduate numbers would remain a relatively small part of the tertiary sector.

Submissions to the Committee which appear in the collected papers of Professor Peter Karmel, the economist whom Menzies insisted be appointed to the Martin Committee, make interesting reading. Karmel, also a university professor, was keen to contain costs. However, in many postgraduate areas increased funding was obviously necessary. Notwithstanding the questionable figures quoted in different submissions (70% and 60% were the percentages given for new science PhDs leaving Australia annually) the thrust of these submissions is compelling, though their sense of urgency is not equally reflected in the subsequent Report.

The Arts Faculty at the University of Sydney wrote (with emphasis) in its submission in 1962, **"The present number of honours students is far too small. Australian universities have to train their own staff"**.<sup>28</sup> The submission from the Faculty of Science at Sydney noted, "every first class or good second-class honours (science) graduate should have the opportunity to undertake postgraduate study."<sup>29</sup> A "serious situation" was spoken of, and figures attached to show that of 86 Sydney science PhDs between 1958-61, 53 had gone overseas to work or engage in postdoctoral study of at least two years duration.

The Faculty of Engineering at Sydney, in its submission, predicted a deficit of 550 members of staff within the expanding faculty over seven years, as only a quarter of their postgraduates

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<sup>28</sup> Submission from the Faculty of Arts, University of Sydney, April 1962, P.H. Karmel, Papers related to the Martin Report, Flinders University Special Collections, pp6-7

<sup>29</sup> Submission from the Faculty of Science, Sydney University, 15 May 1962. *ibid.*, p2



would take up university positions. Of postgraduate teaching they wrote:

the present rather minor role will be replaced by one of equal importance to undergraduate teaching as in overseas universities.<sup>30</sup>

They also cited the need for research personnel and the increased content in undergraduate courses as reasons for the necessity to increase postgraduate study. As the percentage of postgraduates was low in Australia (less than 10% of all university students, with masters and PhD students being less than 6% of the total, "everything possible should be done to increase the number of postgraduate students".<sup>31</sup>

In its submission, the Association of Sydney University Teachers wrote, "with a population of ten million, Australia is only producing 125 PhDs a year" and that the rate of PhD growth was less than ten percent annually. They were concerned (in 1962) about staffing levels, urging intervention to increase the PhD output. A "brain drain" was cited, and mention made of a "crisis due to a swelling demand for advanced skills".<sup>32</sup> They noted:

The conclusion is unavoidable, that, as a matter of national urgency stipends must be made available for all students of first class and good second class honours quality, who can be induced to proceed to higher degrees.<sup>33</sup>

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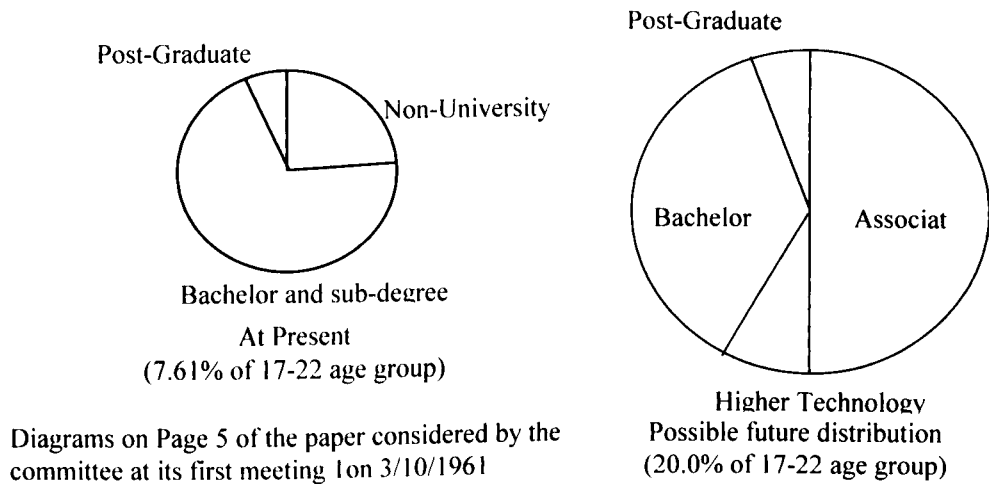
<sup>30</sup> Submission from the Faculty of Engineering, Sydney University, April 1962, *ibid*, p4

<sup>31</sup> *ibid*, p5

<sup>32</sup> Submission from the Association of Sydney University Teachers, March 1962, *ibid*, p7

<sup>33</sup> *ibid*, p9. With many jobs available for science graduates in the private sector, many were not proceeding to postgraduate study. The recipient of this submission was rather impervious to the pleas: an attached note reads "not very good except for some suggestions which are worth looking at".

An interesting diagram appears on page five of a paper considered by the Committee:



Source: Susan Davies, The Martin Committee and the Binary Policy of Higher Education in Australia.

Figure 4.1

The assumed post graduate proportion of the "pie" remains relatively constant, despite a rise in overall participation rates from the (1961) 7.61% of the 17-22 age cohort to a projected 20% of the cohort (though no date for this is given). No great future expansion of postgraduate numbers was envisaged. The reality was to be rather different, for during the 1960s and 1970s overall tertiary numbers rose faster than predicted. The Committee's predicted total tertiary enrolment for 1975 of 248,000 was exceeded by an actual enrolment of 275,000 (an increase since 1963 of 110%).

## THE COMMITTEE'S FINDINGS

While Martin was Chair, the Committee published three Reports between 1964 and 1966. "Higher Degree Studies" comprised three pages of the 1964 Report. It was noted that Australian universities had the responsibility to produce not only an elite of honours students, but also "broadly educated" pass students. Nevertheless, more good honours students were

important. The Report recommended that honours entry be available at the end of second or third year, unlike the "streaming" which existed from the first year in some universities (for example, Sydney - after the English model) in order to increase eligibility of talented students. The importance of postgraduate seminars was particularly stressed and the option of increased coursework canvassed:

It is considered desirable that more formal coursework be provided for candidates than is at present the case in many departments. It may not be advisable to go as far as those American universities which require virtually the whole of the preparation of the masters degree and one-half of the further two years of preparation for the PhD. to be taken up by further course work. However... departments should consider whether students would benefit by the inclusion of formal systematic lecture courses...<sup>34</sup>

Knowledge of American coursework models was growing; more academics, as well as Martin himself, had visited America. In 1962, The Committee received a submission from the University of New South Wales which stressed the need for more course work, particularly in science, engineering and technological areas, in order to keep up with expanding knowledge:

an extensive system of postgraduate formal education is a vital necessity... such courses as those leading to the degree of Master of Technology at UNSW are a good example of what is required.<sup>35</sup>

A strong plea was made for more honours scholarships to "alleviate staff shortages" and the submission continued:

it is intended that strong postgraduate schools should be developed in this university...[scholarships] attract greater numbers of talented students here as undergraduates.<sup>36</sup>

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<sup>34</sup> Australian Universities Commission, Committee on the Future of Tertiary Education in Australia, Report, 3 volumes, Government Printer, Canberra, 1964-5, Vol.1, August 1964, p71

<sup>35</sup> Submission from the University of NSW Staff Association, Karmel Papers, May 1962

<sup>36</sup> ibid., p11. This submission (in the collected papers of Karmel) has a handwritten note: "I don't agree with all of this but it is a carefully thought-out and useful document".

The Martin Report did not, however, give great attention to honours, though it reiterated that Australian universities, unlike British universities at the time, should give equal emphasis to the production of both elite and pass students. "Honours Courses" took up four, mainly descriptive, paragraphs in the 1964 Report, which also noted:

In scientific disciplines, training in research techniques, may be emphasized to a greater extent than in the humanities. Training may be given through modest independent research projects or as a junior assistant in research projects.<sup>37</sup>

UNSW was a pacemaker - especially in the area of course work in postgraduate studies. As the first of a new kind of (technological) university for Australia, the university could break new ground and modify preconceived attitudes concerning methods of postgraduate study.

Martin himself gave strong support to a proposal to establish a university of technology in Victoria, and, as one of the representatives from the University of Melbourne, sat on an advisory committee to the Victorian government. He considered the proposal as "an opportunity to remove responsibility for vocational education and service to the community from the technological faculties of the University of Melbourne".<sup>38</sup>

Overseas study was dealt with succinctly in two paragraphs in the 1964 Report, which challenged the notion that most postgraduate study was best pursued outside of Australia. It stated:

This practice has led to the relative weakness of most Australian post-graduate schools and the lack of research libraries, modern equipment and outstanding scholars."<sup>39</sup>

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<sup>37</sup> Committee on the Future of Tertiary Education in Australia, Report, Vol. 1, 1964, p70

<sup>38</sup> Sir Leslie Martin, cited in Susan Davies, *The Martin Committee and the Binary Policy of Higher Education in Australia*, p49

<sup>39</sup> Australian Universities Commission, Report of the Committee on the Future of Tertiary Education in Australia, 3 Volumes, Government Printer, Canberra, 1966, p72

The Report noted that PhD humanities scholars (in disciplines like history) were encouraged to go overseas to "comprehensive" university libraries whilst social scientists and scientists fared rather better in Australia. This contributed to the relative dearth of the former category of indigenous humanities PhDs up to the late 1950s. One of the first female Australian history PhD holders recalled: "by the 1960s, the PhD was a positive help in career...I applied for a lectureship at UNSW ... I walked in - in those years of university expansion few applicants had completed a PhD".<sup>40</sup>

Although it was still necessary for further postgraduate study in such disciplines as modern and oriental languages to be pursued abroad, by the early 1960s, many universities had the increased resources to provide a greater diversity of postgraduate courses. In general the Report considered:

students in many fields should be encouraged to complete masters degrees and, in an increasing proportion of cases, PhDs in Australian universities... after which it would be advisable for the ablest of them to undertake postdoctoral study overseas.<sup>41</sup>

Postgraduate mobility was another concern of the Committee, which recommended changes to Commonwealth scholarships. Such changes would enable students to enrol at different universities for postgraduate study and would "stimulate strong departments".<sup>42</sup> Apart from a lack of scholarships, other reasons concerning Australian students' lack of mobility, (such as the paucity of accommodation for graduate students nationwide) were not discussed.<sup>43</sup> Similarly, issues of distance, traditions of home residence and lack of undergraduate mobility were also not examined.

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<sup>40</sup> Heather Radi, PhD, personal letter, 20 August 1991.

<sup>41</sup> Australian Universities Commission, Report on the Future of Tertiary Education, Vol.1, August 1964, p72

<sup>42</sup> *ibid.*, p73

<sup>43</sup> Adelaide's Kathleen Lumley College, opened in 1967, was the first residential postgraduate college outside of Canberra.

The section in the 1964 report, "Library Resources for Post-Graduate Study" ran to seven paragraphs, more than any other section relating to postgraduates. Postgraduate students depended on well-stocked libraries, but acquisitions had not kept pace with enrolments.<sup>44</sup> The dictum that libraries were the laboratories of the humanities scholars was reinforced by the Report, as well as their role in keeping abreast of the latest scientific research. Australian libraries needed considerable expenditure on books and journals to reach world standard. Also needed were methods of sharing scarce resources between universities. Furthermore, an increase in skilled staff was needed to maintain increasingly sophisticated research collections.

In 1966, only one Australian university (Sydney) had one million volumes and most had far less, much below the minimum considered necessary for doctoral research (1.5 to 2 million volumes).<sup>45</sup> The Australian Universities Commission noted this and set up an Australian Advisory Council on Bibliographical Services. While upgrading of many appallingly stocked and housed university libraries had occurred after the Murray Report, more money was needed to keep up with international standards and the ever increasing flood of new publications. Even in these post-Murray "golden years", the libraries had financial problems - with finite resources and seemingly infinite expenses. Nevertheless, library expansion, and a new understanding of the role of libraries, were integral to the rise of postgraduate studies in the 1960s and beyond.

Few postgraduate innovations in the humanities area are discussed in the Report. One mentioned was the postgraduate Bachelor of Letters degree (of special interest to external

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<sup>44</sup> Harrison Bryan, *Australian University Libraries Today and Tomorrow*, James Bennett, Sydney, 1965, p15. Between 1949 and 1963, higher degree enrolments had risen eightfold. Student enrolments rose from a documented 329 to 4,550, whilst staff candidature numbers rose from 1,210 (full and part-time) to 4,467 (full-time)

<sup>45</sup> *ibid*, pp21-22

students) which was introduced at the University of New England in the early 1960s. Instituted as an alternative to the MA, it was "not strictly a research degree, but designed to allow students to advance their scholarship in a major subject of their first degree".<sup>46</sup> Graduates of the Arts Faculty could undertake a supervised, six-term reading course, attend the University for a specified period each year (if not an internal student) and complete a dissertation. Other new forms of postgraduate study were beginning to evolve in the 1960s, but this was far from the norm in Australia. The Report did not generally encourage widespread course innovation in the postgraduate sector. The introduction of a coursework component, particularly in some science higher degrees, was one change mooted, but in general the submissions from various parties to the Committee were more innovative and specific than the Report's later recommendations.

The three volume Martin Report basically presented the Government what it wanted - a rationale for tertiary expansion, generally in non-university institutions. The Report was in many ways an uneven one, lacking a developed philosophy, and even stylistic unity. (Chapters six to eight of the 1964 Report, for example, dealing with the Committee's plan for the future development and financing of tertiary education, were written by the secretariat).<sup>47</sup> The shorter Murray Report, in contrast, had greater philosophical and stylistic coherence. Neither, however, articulated a comprehensive philosophy for the development of Australian **postgraduate** education.

Martin retired as Chairman of the Australian Universities Commission in 1966. Further reports on tertiary education were released throughout the rest of the 1960s and 1970s through

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<sup>46</sup> Australian Universities Commission, *Report*, Volume 1, 1964, p10

<sup>47</sup> See Susan Davies, *The Martin Committee and the Binary Policy of Higher Education in Australia*, pp117-8. Davies (p167) considers the Report of 1964 and 1965, "a poor document without unifying vision... there was no discussion of aims or principles... the plan for development which it presented in conformity with the government's wish carried little intellectual conviction".

the Universities Commission, and other national and state bodies, such as the Commonwealth Advisory Committee on Advanced Education which reported to John Gorton, Minister for Education. (When this Committee was established in 1965, its terms of reference prohibited the granting of degrees in non-university institutions). Gorton considered the proposal to create a binary system the "heart" of the Martin Report:

almost certainly Menzies did not believe the sophistry at the heart of the binary policy, namely the separation of pure from applied study and research. He had no illusions about what would happen to the colleges given adequate government support: they... would develop into universities.<sup>48</sup>

Writing in 1984, Karmel noted that the Martin Committee had intended that the technical colleges provide:

genuine alternative avenues for higher education, but...the clear distinctions did not survive for long. The Commonwealth Advisory Committee on Advanced Education, subsequently the Australian Commission on Advanced Education, gave way slowly but surely in such matters as granting bachelor's degrees, the provision of masters degrees, support for applied research and provision of liberal arts courses.<sup>49</sup>

While the Martin Report initiated radical changes to the overall structure of the tertiary system, no major structural changes to the university sector and to the postgraduate sector in particular, were proposed (though some limited encouragement was given to new coursework models). In the postgraduate area, the Report was a descriptive rather than prescriptive, document. Universities were to continue to be autonomous, and government policy interference in the postgraduate area was to be minimal. Once the AUC was set up, the most relevant aspect of Commonwealth involvement (as was the case after the release of the

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<sup>48</sup> *ibid*, p170

<sup>49</sup> Peter Karmel "The Context of the Reorganization of Tertiary Education in Australia - a National Perspective" in Melbourne Studies in Education 1984, Melbourne University Press, Melbourne, 1984, p173



Murray Report) was a willingness to fund more science laboratories, libraries and research equipment - all of which impacted on the postgraduate sector.

## **POSTGRADUATE PROGRAMS IN THE HUMANITIES**

There was, however, increased internal questioning of postgraduate programs. In 1967, the Australian Humanities Research Council published a paper, "Postgraduate Studies in the Humanities - Three Essays", with Sir Keith Hancock, Professor P.A. Partridge and Professor Ralph Elliott the contributors. Sir Keith Hancock's 1965 paper was written just after the final section of the Martin Report was published and indicated some advanced thinking in the area of postgraduate study in the humanities. Reflecting on his many years supervising postgraduates in England and at the ANU, he noted the "vacant inter-stellar dark" of much solitary humanities research with its "ordeal by thesis".<sup>50</sup> To counteract this, he proposed greater variety in course structure, content and thesis length. Some of his proposals were certainly innovative, and included a range of creative activities to be built into programs to counteract the narrowing effect of much research activity. He commented, "the springs will dry up if they (students) spend the whole of their time in specialist research" adding, "theory ranks lower in my order of values than imagination".<sup>51</sup> Not surprisingly, perhaps, Sir Keith's ideas seem to have sunk without trace, despite his eminence as a historian and first head of the ANU Research School of Social Sciences.

In his essay, Partridge charted the development of the PhD in arts departments, noting the tendency for the MA which was once as "thick and thorough" as the PhD to be "downgraded"

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<sup>50</sup> Sir Keith Hancock, "Ordeal by Thesis". *Postgraduate Studies in the Humanities in Australia - Three Essays*. Occasional Paper No. 11, Australian Humanities Research Council. Sydney University Press, 1967, p2

<sup>51</sup> *ibid*, pp8-10

by it.<sup>52</sup> Confusion surrounded the MA's function, with some arguing that it was pointless to require the taking of two degrees (MA and PhD) of much the same character. A case for more course work in the masters program was made, along with examinations. Partridge also listed what he thought to be the main postgraduate issues in the humanities:

1. Should we encourage our students to remain in Australia for the doctorate?
2. If it is desirable, what is the point of courses for the less able postgraduates who remain here?
3. Would it be better to go abroad after the MA?
4. Should students go from bachelor's degree to PhD or terminate at masters?
5. What kind of MA is desirable for a higher degree?
6. What sort of educational and intellectual training should the course for a doctorate be designed to provide?

The last is the most important of all and occasions the most dispute.<sup>53</sup>

He considered systematized course work would require large numbers of postgraduates and qualified teachers (of which there were already too few). Elliott, in his paper, suggested a new category of higher degree, a Licentiate, which would include a period of time as a university teacher. He also found the lack of an institute of humanistic studies at the ANU troubling as the state universities were "too provincial... there is a need for a central body to advise on postgraduate training".<sup>54</sup>

The interesting questions raised in the essays show the philosophical inquiry occurring in at least some Australian humanities departments in the mid-1960's. Historically, these occasional papers are something of a watershed in themselves, as the humanities began to grapple more with the complexities engendered by the introduction of the PhD. Partridge noted:

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<sup>52</sup> P.A. Partridge, "Postgraduate Studies in Australian Universities", *Postgraduate Studies in the Humanities in Australia - Three Essays*, p14

<sup>53</sup> *ibid*, p19

<sup>54</sup> Ralph Elliott, "The Training of Postgraduate Students in the Humanities", *Postgraduate Studies in the Humanities - Three Essays*, p34

As time goes on and higher education becomes more complex and as the different educational, cultural and social purposes which higher education is expected to satisfy multiply and become more diversified, universities will be forced to examine diversification of education provided and the routes.<sup>55</sup>

The roughly contemporaneous report of the English Swann Committee which looked at the education and employment of higher degree research scientists had argued (also unsuccessfully):

the aims of the PhD... need to be considered. The time is long overdue for universities to start experimenting boldly with the PhD and with the regulations which govern the award of this degree.<sup>56</sup>

Elliott (Professor of Language and Literature at the fledgling Flinders University) considered that "it is in the new universities that new approaches to postgraduate training should be tried out".<sup>57</sup> Some did try, but change within humanities departments overall (and in the sciences) was slow, for the preferred higher degree model remained, at least for research higher degrees (and despite growing numbers of indigenous research degrees), British in orientation.

The three Australian essays reflected what was a lively debate internationally. In the United States, where graduate schools were firmly entrenched, debate about purpose and content of postgraduate study was commonplace. The essays were a precursor to later similar debates within the Australian universities.

## **EXPANSION IN THE TERTIARY SYSTEM**

The tertiary system at the time of Martin's retirement from the Committee continued to expand. Between 1966 and 1975, seven new Australian universities were established, four of

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<sup>55</sup> P.A. Partridge, "Postgraduate Studies in Australian Universities", *Postgraduate Studies in the Humanities - Three Essays*, p20

<sup>56</sup> Report of the Swann Committee (1968), cited in S.C. Hill, *PhD Education in Australia, the Making of Professional Scientists*, p17

<sup>57</sup> *ibid*, p36

them outside capital cities. In 1966, there were more than 1,600 full-time PhD students in Australia, half of whom were in receipt of Commonwealth studentships. After the 1965 Martin Report, an additional 100 studentships were granted to create a total of 500 new awards annually. By this time, postgraduate numbers were increasing at a faster rate than undergraduate numbers. Enrolments in higher degree studies across Australia rose from 1,120 in 1956 to 6,169 in 1965 and to 8,550 in 1967.<sup>58</sup> By 1969, postgraduate students made up 10% of the total student population in Australia. This increase was great but somewhat overlooked, as the locus of concern remained the undergraduate sector.

### **COLLEGES OF ADVANCED EDUCATION AND POSTGRADUATE STUDY**

In the late 1960s and 1970s, postgraduate enrolments in other than higher degree courses soared in colleges, and the roles of the two components of the binary system needed redefinition. CAEs were expected to have an applied, vocationally-oriented emphasis, not offer degrees and not engage in research. In the context of the establishment of the technologically-oriented University of New South Wales (which did engage in research and did offer degrees) such arbitrary division was irrational. There was great diversity among the institutions in the CAE sector, which comprised technical colleges, a few multi-purpose institutions (such as the Canberra CAE), strong institutes of technology, and, increasingly, small teachers' colleges. Although most colleges offered the sub-degree diploma through the 1960s and much of the 1970s, some institutions within the college sector grew increasingly dissatisfied and wished to offer undergraduate degrees and higher degrees - and research:

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<sup>58</sup> Melbourne, for example, had a 400% increase in postgraduate numbers in the years 1957-1967, while Adelaide's postgraduate numbers trebled in the decade between 1957-1967; much of this growth at Adelaide was in PhD enrolments, which increased from 60 in 1957 to 340 in 1967.

The doctrine that colleges are purely teaching institutions without any research function assumes a body of knowledge which can be transmitted by functionaries to people trained to do no more than manipulate the raw material ... This assumption about the nature of the colleges rests... on received notions about the nature of college populations.<sup>59</sup>

The Victorian Institute of Colleges, a group of eight technical colleges, was empowered by the Victorian government to award degrees in 1965. In 1968, the VIC decided to award the first such degrees in pharmacy, after the Victorian College of Pharmacy "proved with great skill that its course matched in intellectual effort and technical sophistication degree courses in science faculties in Australia and overseas universities".<sup>60</sup> This was against the wishes of the federal government, but federal financial support was not withdrawn from the college. However only the impending national Inquiry into Awards and Standards in Colleges of Advanced Education (under the chairmanship of Mr. F.W. Wiltshire) prevented similar immediate action from other colleges. By 1969, the federal Minister for Education indicated Commonwealth funding would be provided for certain degree courses in the CAEs. This then laid the groundwork for the beginnings of postgraduate education in the CAE and technical sector.

Not all states were keen for the development of such degree courses. In 1968, the Minister for Education in South Australia, Mrs. Joyce Steele, wrote a cautionary letter to the South Australian Institute of Technology (SAIT) - which had displayed interest in the awarding of degrees:

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<sup>59</sup> E.R. Treyvaud and John McLaren, Equal but Cheaper: The Development of Australian Colleges of Advanced Education, Melbourne University Press, Melbourne, 1976, p15

<sup>60</sup> Ian W. Wark, "Colleges of Advanced Education and the Commission on Advanced Education", The Commonwealth Government and Education 1964-1976: Political Initiatives and Development, I.K. Birch and D. Smart (eds.) Drummond, Melbourne, 1977, p163

In particular the Government has asked me to say that as a matter of policy we would wish to see continued emphasis to be given on teaching at first degree, diploma and certificate level with a firm restriction for the time being on postgraduate work extension.<sup>61</sup>

The spirited response of the Institute was "parity among schools and professional pride of staffs, demand... postgraduate work".<sup>62</sup> Federal and State governments rightly feared that once CAEs were granted the power to confer degrees, postgraduate degrees would be sought next. By the early 1970s, a few colleges, such as the Royal Melbourne Institute of Technology in Victoria, were engaged in fairly extensive staff and postgraduate research activities in applied science areas.<sup>63</sup>

While the growth of postgraduate studies after the War had been largely science-led, many in scientific and technological disciplines were concerned about the waning attractiveness of science to students in the late 1960s, compared to its heyday in the 1950s - and the ramifications for postgraduate study. The growth of some of anti-science sentiment, particularly in relation to warfare, was partly linked to a diminution in the proportion of undergraduates taking science courses, though science postgraduate levels remained largely unaffected in this period.

Business and management schools, with their American influences, developed new models of postgraduate education in the late 1960s and early 1970s. The 1970 **Commonwealth Inquiry into Postgraduate Education for Management** proposed the setting up of a postgraduate national specialist school for business, noting that this would be a "critical factor" in

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<sup>61</sup> Joyce Steele MP, letter to Dr. Evans, 10 January 1968, quoted in *The Role of the CAEs*, J.R. Argue, (ed.) South Australian Institute of Technology, Mitchell Press, Adelaide, 1970

<sup>62</sup> *ibid*, p46. Cost would not be too much of a problem - the Institute considered it would be possible to "tuck in" a few postgraduates (who would generally need little supervision) into many departments.

<sup>63</sup> Student involvement in research was required. For instance, third and fourth year electronic engineering students "were expected to be involved in an applied research project derived from the electronics industry, with which the staff had established close links." The first masters degrees in applied science and engineering were awarded in 1975 at RMIT, while bachelors degrees were first awarded in 1971. See Stephen Murray-Smith and Anthony Dare, *The Tech: a Centenary History of the Royal Melbourne Institute of Technology*, Hyland House, Melbourne, 1987, p446

sustaining economic development.<sup>64</sup> The Report called for the school to be located in a university near the Central Business District and that entry to the Master of Business Administration need not always be via an undergraduate degree. Doctoral programs aimed at training future academics were to be distinguished from the practical business-oriented MBA.<sup>65</sup> UNSW was particularly well-placed to respond to this.

By the 1970s, justification of a binary system became increasingly difficult. The South Australian **Report of the Commission of Inquiry into Education** in that state in 1971, attested that as institutions evolved, distinctions were more difficult to maintain. It noted:

We believe there are and should be significant differences between universities and colleges, but that any attempt to categorize the institutions into two distinct sectors is bound to fail. We believe that tertiary education should be conceived as a unified system offering a wide variety of courses at a variety of institutions to students with different abilities and interests.<sup>66</sup>

One of the authors of that Report, Peter Karmel, co-wrote a 1973 report on the binary system for the AUC which noted ten differentiating features between the universities and colleges; it stated that universities "should have more substantial library and scientific facilities than colleges" noted the staff of colleges should be "strongly committed to teaching" rather than research, and reiterated that the CAE sector should not offer degrees by research.<sup>67</sup>

As the binary divide increasingly was breached, postgraduate coursework programs in CAEs grew. By 1972, forty postgraduate (diploma or masters) courses were offered by CAEs across

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<sup>64</sup> The Committee of Inquiry into Post-Graduate Education for Management, Report, Australian Government Printing Service, Canberra, 1970, p2

<sup>65</sup> The UNSW postgraduate School of Administration which had been set up in 1960, fitted the criteria for expansion perfectly; the non-traditional nature of the university encouraged experimentation.

<sup>66</sup> Committee of Enquiry into Education in South Australia, Report, para.11.47, Government Printer, Adelaide, 1971

<sup>67</sup> Karmel and Bull Report for the Australian Universities Commission, 1973. See E.R. Treyvaud and John McLaren, Equal but Cheaper, p13

Australia.<sup>68</sup> There was growing demand from the CAEs for parity with the universities at postgraduate level - a factor in the binary system's demise

The key to the failure of the binary system was a combination of poor philosophical foundations and credentialism. Degrees, rather than diplomas, were increasingly desired by students and a research culture grew in those CAEs which offered degrees and postgraduate study, thus threatening the philosophical basis of the binary divide. As previously noted, university educated CAE staff increasingly sought to undertake research, which brought with it opportunities for personal and institutional advancement and status. The growing importance of postgraduate studies in the CAEs became a precipitating factor in the system's demise.

## **RESEARCH AND POSTGRADUATE FUNDING**

Some applied research was undertaken in CAEs in the period to 1975, generally in the technical colleges; funding came primarily from industry or institutional general revenue. The advisory Commission on Advanced Education, established in 1965, reiterated the view of the Martin Committee that there should be a primary emphasis on teaching in CAEs. In contrast, the AUC recommended the universities be funded for research through recurrent grants, paid dollar for dollar by state and federal governments. In the 1964-6 triennium, \$10,000,000 was recommended; instead, the federal government gave \$6,000,000 and established the Australian Research Grants Commission (under the chairmanship of Professor R.N. Robertson, Professor of Botany at the University of Adelaide and a member of the CSIRO executive) to provide scientific equipment for outstanding research scientists.<sup>69</sup>

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<sup>68</sup> Australian University Graduate Conference, *Whither Tertiary Education?* Seminar, University of Queensland, 28 January 1973, p14

<sup>69</sup> The first chair was Professor R.N. Robertson, Professor of Botany at the University of Adelaide and a member of the CSIRO executive



In the 1967-9 triennium, the AUC recommended grants of \$10,000,000, but the federal government gave only slightly more than half this amount, with the remainder directed to the ARGC. The universities were expected to provide for basic research from general revenue and through the Commonwealth Special Grants for Research and Research Training scheme, introduced in 1963. Prior to 1967, the cost of the scheme was shared equally between the Commonwealth and states. With the introduction of the ARGC, the whole cost of the scheme was left to the states. This provoked tension, with some states, in particular, Victoria and New South Wales, unable or unwilling to provide the full cost. As a result, postgraduate training and research equipment expenditure suffered in these states for some years. Martin (who considered far more was needed to fund the development of postgraduate education and for scientific equipment in universities) and the AVCC were vocal critics of this state of affairs, and eventually full Commonwealth funding was reinstated by the end of the decade.

Increasingly in the 1960s, the federal cabinet, and Gorton in particular, rather than the AUC, made policy decisions on the direction of research funding. Though input was sought from the AUC, their financial recommendations were not fully followed.

Other areas were affected by research funding. While university libraries were not explicitly funded for postgraduate research in the period to 1975, holdings overall were nevertheless expanded. The CAE sector, particularly, saw an expansion of holdings (which would enhance potential postgraduate capability) in the 1970s. The major Commonwealth initiative in the postgraduate area in the period to 1975 was the Postgraduate Awards Scheme, which was central to the increase in postgraduate research enrolments. The initial 100 scholarships

offered annually to research postgraduates in 1959 had grown to 725 new scholarships offered annually in 1975, when over 2,000 postgraduates in total were supported. By 1975, nearly 19% of all research scholars were supported by such scholarships, compared to 4.5% in 1959.<sup>70</sup>

By the 1970s, undermining of federal policy on CAEs (such as the granting of degrees) by some state governments, dispute over the level of matching grants in some states during the 1960s and the differing views of a variety of agencies on the nature and level of research funding, made the whole area of research funding increasingly problematic and complex. The beginnings of new tensions characterize the period from 1964 to 1975, with the AUC strongly defending university research autonomy in the face of increased federal desire to control research funding. The federal piper had begun to call the tune.

### **THE WHITLAM YEARS 1972-1975**

A change of government in 1972 saw the Labor Party, under Gough Whitlam, come to power federally, heralding the beginning of many changes in the educational sphere. While most of these changes occurred in the schools and the undergraduate sector, they would have a flow-on effect to the postgraduate sector.

The years of the Whitlam government were something of a circuit-breaker, as issues of student access and equity came to the forefront of government concern. In 1956, one in ten persons in Australia completed secondary education; by 1976 it was one in three. There was a change toward viewing education as a right, not to be costed solely in economic terms. The short years of the Whitlam Government also produced many tertiary changes. In 1973, the

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<sup>70</sup> Professor Stephen Hill, *An Evaluation of the Commonwealth's Awards Scheme*, Australian Government Publishing Service, Canberra, 1983, Vol.1, p7. Most growth occurred in the years 1965-1969 (with around 100 new awards per year)

teachers' colleges were fully absorbed into the CAE system, which was by 1975 enjoying growth of 14% per annum (compared to 8% in the universities) and rivalling the university sector in size. In 1974, tertiary tuition fees were abolished. "Life-long" education became a catchword as unprecedented numbers of students, including those of mature age, enrolled in universities and colleges. Research centres enjoyed growth and overseas student numbers grew. For the first time, Aboriginal tertiary education assumed importance, significant numbers of women took advantage of fee abolition to begin tertiary study and tertiary student allowances were available to an increased number of students.

Degree and postgraduate courses in the CAEs proliferated in the CAEs, particularly in Victoria, where, by 1973, forty degree courses had been approved by the Victoria Institute of Colleges; ninety other degree and postgraduate courses had been submitted for approval and introduction by 1975. The masters courses proposed included those in engineering, applied science, management and business and the development of doctoral degrees was also canvassed.<sup>71</sup>

Australian female postgraduate numbers increased during the 1960s and early 1970s, albeit from a low base. Unplanned postgraduate expansion in the period from 1957 to 1975 did not lead to a great increase in female PhDs, however. In arts faculties, which enrolled most female undergraduate students, female research degree growth at most universities was still relatively slow. At doctoral (and masters) level during this period, most postgraduates were male.<sup>72</sup>

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<sup>71</sup> Australian University Graduate Conference, seminar, Whither Graduate Education, University of Queensland, 28 January 1973, p16

<sup>72</sup> See Alan Lindsay, "Doctoral Education: Continuity and Change", Proceedings of the 12th. Annual Conference of the Higher Education Research and Development Society of Australia, Sydney, Vol.9, 1987, pp 366-7. In 1974, 11.9% of doctorates awarded went to females. However, the proportion of females among students commencing doctorates rose over the 1970s - from around 15% to 25% by the end of the decade.

Nevertheless, at sub-doctoral level, increasing numbers of women began postgraduate studies across many disciplines.

By 1975, continued tertiary growth proved unsustainable, and with the fall of the Whitlam government, the universities entered upon a "steady state". Expectations had been raised, however, and the currency of the higher degree, while subject to fluctuations, still had value for an increasing number of students.

During the period of the Whitlam government, postgraduate studies received no thorough appraisal through the agency of government bodies. This was despite the fact that a Commonwealth education bureaucracy was burgeoning and statistics were kept more accurately. When the Commonwealth assumed total responsibility for tertiary education funding in 1974, most states relinquished fiscal input and hence, much influence upon their tertiary institutions - a move which was to have increasingly important implications in areas such as costs, ideology and accountability.

In the 1970s, postgraduates became a significant sub-group of the university population; in both real and psychological terms, critical mass had been achieved. The expansion of research and postgraduate studies was not, however, solely a result of the Murray and Martin Reports. In some ways these merely added momentum to existing trends.

### **SCIENCE AND PHD GROWTH TO 1975**

Science had led the push for the introduction of the PhD into the Australian university and it was in the science faculties that some oversupply became evident as early as the 1960s. In 1971, the Science and Industry Forum of Australia released a report, **PhD Education in**

**Australia - The Making of Professional Scientists.**<sup>73</sup> One of the authors, Professor Stephen Hill, had conducted a pioneering study into doctoral education (and doctoral oversupply) in 1966 at Sydney University within the Department of Chemistry. The authors of the 1971 study (all sociologists from UNSW) again examined this phenomenon which was new to Australia. It was a situation that, in the 1950s, would have been unthinkable.

As noted in Chapter Two, the PhD had become almost a prerequisite for employment for British chemists as early as the 1920s. Thus, credential inflation may have come to this field earlier than others. Some fields of chemistry, particularly, suffered from what was termed "self-perpetuation or chain reaction in a field of interest" as former students trained their students in the same field thus leading to an oversupply in certain fields (for example, co-ordination chemistry).<sup>74</sup>

By the mid-1960s in Australia, nuclear physics was also facing a PhD oversupply. In the 1950s, this had been an area where production of postgraduates had been encouraged. However, a finite employment market, narrow teaching specialization, and a disinclination on the part of newly qualified graduates for any employment other than research work, created employment problems. This led in part to the creation of post-doctoral positions, with post-doctoral research increasingly became part of establishing a scientific research career.<sup>75</sup> Similarly, postdoctoral research positions became common in other disciplines such as chemistry and biochemistry. A new credentialism was becoming increasingly significant in

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<sup>73</sup> Professor S.C.Hill, Professor P.J.Fensham, I.B.Howden. PhD Education in Australia The Making of Professional Scientists, No.7, March 1974, Griffin Press, Adelaide.

<sup>74</sup> *ibid*, p19

<sup>75</sup> At a symposium, Employment and training of postgraduate students in Australia at Adelaide in 1971, it was noted that during 1965-9 around 74% of new chemistry PhDs immediately left for overseas for postdoctoral study. Postgraduate Students Association, Symposium Proceedings, University of Adelaide, 21 August, 1971, p103. An alternative view of post doctoral study was given by a chemistry postdoctoral student of the early 1960s; he considered the post-doc "a hangover from overseas travel". David Liljegren, interview, Adelaide University, 26 August 1992

the postgraduate sector, with the growth of new knowledge also necessitating extended professional research.

In the mid-1960s biochemistry, a discipline given prominence in the 1965 Martin Report, experienced considerable postgraduate growth. The Report noted a likely boom in demand for biochemists (in such fields as food technology) along with the shortage of teaching staff. By

1966 there were thirteen Chairs in the discipline, which was also experiencing a drift of biochemists to overseas positions. At Melbourne, the pre-eminent department of the time, one third of biochemistry undergraduates went on to postgraduate study. This was an extraordinary number; however, biochemistry was not a first year undergraduate subject and thus probably had a higher proportion of able students.<sup>76</sup>

In the 1950s and into the 1960s, the Australian MSc degree in other fields had high status here as well as overseas; the MSc was still the basis for the award of many study scholarships to England and thus continued to be taken. However in the mid-1970s in some science disciplines, (like biochemistry) the MSc came to be regarded as "almost a failed PhD" and rarely taken.<sup>77</sup> A major feature of postgraduate study was poor student mobility. Unlike many other countries, Australia continued to have poor exposure to other teaching in scientific disciplines. In Australia in the 1970s, "it was not uncommon to work under the same supervisor for five or six years"; many overseas science postgraduates experienced more diverse supervision.<sup>78</sup>

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<sup>76</sup> Committee on the Future of Tertiary Education in Australia, Report. Australian Universities Commission, Government Printer, Canberra, 1965, Vol.3, pp 42-45

<sup>77</sup> Interview, Professor George Rogers, Biochemistry, University of Adelaide, 21 June 1991 (Adelaide awarded its last biochemistry MSc degree in 1977)

<sup>78</sup> S.C. Hill, PhD education in Australia, p14

In his study, **PhD Education in Australia, The Making of Professional Scientists**, Hill contends that the PhD was introduced to Australia specifically to staff universities.<sup>79</sup> This statement has particular validity for the sciences, where the qualification was well established, internationally; PhD students were instrumental in creating a research profile for Australian universities. The first Vice-Chancellor of Monash, one of the new Victorian universities established in the 1960s, frankly admitted that the postgraduate programs in science, which began at the same time as the first undergraduate programs, enabled staff to begin laboratory research. This was not the rationale most publicly given - which was that postgraduates would be useful demonstrators for undergraduates.<sup>80</sup>

Hill's 1971 study made a number of recommendations for future science postgraduate study. Among them was the suggested use of assistants rather than PhD students in order to overcome the over-dependence of staff on PhD students; another was for more multi-disciplinary research. One innovation proposed was a "less specialized doctorate degree where a greater body of coursework is offered".<sup>81</sup> Early socialization solely into academia could be diluted by closer contact with industry and by encouraging PhD students to enter high school teaching. As well, "an entirely new higher degree structure outside universities", more "vocational" in orientation, was mooted, to be located possibly in the CAEs.<sup>82</sup>

In contrast, in 1966 the Federation of Australian University Staff Associations (FAUSA) had recommended that there be fewer external PhD students (already some were in the CSIRO, for

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<sup>79</sup> *ibid*, p152

<sup>80</sup> Dr. J.A. Matheson, quoted by Lord Bowden, "The Universities", *Tertiary Education in Australia*, Australian Institute of Political Science, Angus and Robertson, Sydney, 1965, p58

<sup>81</sup> *ibid*, p159

<sup>82</sup> S.C. Hill, *PhD Education in Australia The Making of Professional Scientists*, pp158-160

example)<sup>83</sup> and that "supervision of research be retained by the universities".<sup>84</sup> Many of the innovative recommendations of the Hill study were not, however, implemented at the time - for example, coursework in PhD programs.

While the debate over the desirability of producing "excess" science postgraduates had begun in the mid 1960s, there was no formal government intervention; a common feeling was that many postgraduate issues were really an internal university affair. However, a Ministry for Education and Science was announced in 1966. In that year, the OECD International Year for Statistical Research and Development noted that Australia had no National Science Policy; this attracted some criticism. The creation of the special ministry was rather an ad-hoc response from government, if in the long term significant. By the mid 1970s, Australia was belatedly catching up with what was by then a mature postgraduate segment of the tertiary sector in other countries. Increasingly, postgraduate work followed American models, especially in the science faculties, where the decline of the masters degree was marked. Ties to the English tradition were slowly loosened, though in the arts, the masters degree retained much prestige.

During the 1960s and early 1970s, the absolute and relative rise in postgraduate numbers was an international phenomenon. While certain factors were specific to particular countries (in America the huge growth in male postgraduate numbers in the 1960s and early 1970s can be attributed in part to a corresponding exemption from the Vietnam war draft) others were similar, such as undergraduate growth, rising credentialism, the growth of new occupations and government encouragement of research for the national good.

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<sup>83</sup> In some scientific fields, by 1967 this had become a "regular and normal arrangement". CSIRO Advisory Council, Report of the Committee on the Relationship between CSIRO and the Universities, April 1967, p8

<sup>84</sup> Federation of Australian Universities Staff Associations, Report on Research in Universities, Recommendations, 7.1, 1967



## **SUMMARY**

Between 1957 and 1975, the first national reports into the state of tertiary education were made, the sector as a whole was expanded and reshaped, and a new relationship forged between the federal government and the universities. Most government attention, however (beyond scholarships and research infrastructure) remained focused on the undergraduate sector; the postgraduate sector was an elite sector and essentially considered self-regulating. Little attention was given to potential demand for postgraduate education as a result of increased participation in other education sectors, or to funding demands that would result from this. It was tacitly assumed the postgraduate sector would remain small.

However, science postgraduate numbers soon exceeded expectations and national demand. With increased need for advanced credentials in science and the increased popularity in other disciplines of the science PhD-based model of postgraduate education, postgraduate numbers continued to grow. For certain science disciplines in this period, the "post-doc" began to acquire the filtration function which was attributable to the PhD in other disciplines. With credentialism and growth, the trajectory of postgraduate education had acquired its own momentum, one that was to be maintained through the contractions of the next decade. The case study of postgraduate growth at the very different universities of Adelaide and New South Wales illustrates these developmental paradigms.

## **CASE STUDY: THE UNIVERSITIES OF ADELAIDE AND NEW SOUTH WALES 1957-1975**

In the previous chapter, the innovative role of the University of New South Wales, and the more traditional postgraduate research degree profile of Adelaide after World War Two, were documented. This case study further demonstrates the relatively "conservative" innovation of an established university, which introduced only a few new higher degrees and postgraduate diplomas in the period after 1957, and the more radical postgraduate innovations of the University of New South Wales, presaging change in the nature of Australian postgraduate education. During these years, most higher degrees at Adelaide were confined to research, with a substantial thesis component. At the University of New South Wales, the thesis, and research, were a much smaller part of many higher degree courses.

In this period, the sciences continued to attract most doctoral postgraduates at the two universities (as in the other Australian universities) further demonstrating the dominance of science as the pre-eminent postgraduate paradigm. Moreover, there was increased diversity of postgraduate science courses, with the rise of former sub-disciplines like biochemistry to full discipline status, and new technological higher degrees. The period was also characterized by the incorporation into higher degrees of a form of postgraduate education new to Australia - coursework. Despite the dominance of science, postgraduate doctoral numbers began to rise slowly in the other faculties, which also began to incorporate, to varying extents, the American "professional" or coursework model within higher degrees.

The structure of postgraduate education at Adelaide and UNSW in this period was indicative of the way Australian universities, generally, had developed and would continue to develop; in

particular, increased involvement with industry was presaged. The disciplines of biochemistry and geography are examples of new growth areas in arts and science postgraduate education. At Adelaide, in particular, the growth of the former sub-discipline of biochemistry led to it becoming one of Australia's first national research centres, with substantial postgraduate and industry research involvement.

## **ADELAIDE**

In 1958, Adelaide was a relatively small institution. The student population numbered 3,588, around half that of UNSW. Most of the 199 postgraduates enrolled, including twenty two women, were enrolled in research higher degrees, mainly in science. In that year, thirty three higher degrees were awarded and twenty two graduate diplomas.<sup>85</sup> Eleven PhDs were awarded (all in science) - the highest number awarded in science in Australia that year (Melbourne and UNSW each awarded nine).

The first Adelaide arts PhD was awarded in 1959, to Neil Alfred Nilssen (in English) with the first PhD to a woman awarded in 1960 (Gwendoline Fay Gilding [later Gale] in geography). Female doctoral candidates were few in the period beginning with the release of the Murray Report. On average, one MSc and one MA was granted annually to women in the 1960s, while during that decade, twenty women were awarded the PhD, mainly in science.

In contrast to UNSW, only one new postgraduate (diploma)course was introduced in the late 1950s - in nuclear power, through the Faculty of Mechanical Engineering, in 1958. Many of the best students continued the tradition of overseas postgraduate study. In this, despite an

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<sup>85</sup> The University of Adelaide Calendar, 1958, p.337

increase in postgraduate scholarships after the release of the Murray Report, the university was representative of the other older universities, which continued to encourage overseas postgraduate study for many of their best students.

As was the case with other Australian universities, the 1960s saw unprecedented growth. By 1965, the university had reached a new enrolment record, with 9,110 students enrolled. (This dropped in subsequent years, only rising to a similar level again in the mid 1970s). Five new higher degrees were instituted in this decade in response to student demand - the Master of Education and the Master of Business Management (the forerunner to the MBA) in 1960, the Master of Architecture and Master of Applied Science in 1964 and the Master of Town Planning in 1967. At Adelaide, unlike UNSW, most were research, rather than coursework, masters degrees.

The largest postgraduate enrolments continued to be in the sciences, with the rise of the strengthened discipline of biochemistry dating from this decade. At Adelaide, 1965 was considered the "take-off" year for biochemistry (which was to become one of the University's premier departments) with the arrival of the new professor, Bill Elliott from the ANU. Research before then had been "very flat... [Elliott had] specific research ideas, made important appointments... and developed first-rate honours and PhD courses."<sup>86</sup>

By 1966, the growing importance of postgraduate studies at Adelaide was for the first time acknowledged in the Calendar, which noted:

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<sup>86</sup> Interview, Professor George Rogers, Adelaide, 26 June 1991

The University regards the training of postgraduate students as one of its major contributions to the future development of the nation.<sup>87</sup>

Between 1958 and 1975, the number of postgraduates enrolled had shown a tenfold increase, with the biggest increase occurring up to 1970. By 1970, 10% of the total student population of over 8,500 were postgraduates and 105 higher degrees were conferred. In 1975, these numbers rose only marginally, although total student numbers increased to over 9,600. Many postgraduates were enrolled in science and agriculture, the University's traditional areas of postgraduate strength, although arts was increasingly represented. Overseas postgraduate students, particularly at the Waite, continued to comprise a small, but significant proportion. The University urged an increase in overseas postgraduate scholarships in 1970, as the end of the baby-boom surge was anticipated, noting:

Australian universities should balance the shrinkage of undergraduate places by provision of more opportunities for postgraduate study by overseas students.<sup>88</sup>

Indicative of the diversification of professional postgraduate courses occurring across Australian universities, was the institution at Adelaide of the Diplomas of Computing Science (1966) Librarianship and Applied Psychology (1971). Also offered were the Masters of Clinical Science, Environmental Science and Urban and Regional Planning (in 1975). Despite these innovations however, the postgraduate ethos at Adelaide in this period, particularly in the science faculties, remained linked to the research degree.

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<sup>87</sup> The University of Adelaide Calendar, 1966, p356 In that year, special grants were given by the Australian Universities Commission for postgraduate training and research, which led to the appointment of five senior research fellows and twenty seven postdoctoral fellows in science, as well as enabling money to be put into scholarships and equipment.

<sup>88</sup> The University of Adelaide Calendar, 1970, p1027

## UNSW

In 1958, in the aftermath of the Murray Report, there were around 6,000 students (including 293 higher degree students) at UNSW. While the pattern of postgraduate studies at Adelaide was in many ways typical of that offered at the older Australian universities in the 1960s (though it had fewer arts postgraduates than Melbourne, in particular) the University of New South Wales was a postgraduate innovator. One of its early innovations (in 1959) Unisearch, was the first commercial industry/university venture in Australia, and one which was to involve postgraduates in its research ventures. Industry was, from very early on, a major source of postgraduate funding at UNSW. Another innovation was the introduction of coursework to higher degrees. Paradoxically, during this period, the University also sought to achieve status and acceptance as a traditional research university, particularly in some science disciplines.

The dropping of "technology" from the university's title in 1960, as previously noted (Chapter Three) saw some reorientation to conventional faculty and degree delineation, with the changed status of the science faculty.<sup>89</sup> Conditions for the DSc were approved in 1959. Parity with the science faculties of the established universities was sought - especially through the traditional science research degree. The addition of medical and arts faculties by 1960 and the change of name to the University of New South Wales (an outcome of the Murray Report, which suggested such a name should be associated with a wide range of faculties) saw the

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<sup>89</sup> In 1960, the Faculty was much better staffed than Sydney, with 51 staff above lecturer level (Sydney had twenty at this level) and fewer students.

University attain the structure of a traditional university, with the first bachelors degrees in arts awarded through the affiliated college at Newcastle in 1958.<sup>90</sup>

The addition of traditional faculties and the dropping of "technology" from the University's title signified a desire for acceptance as a "real" university. This was presaged by the decision in 1958 to change the name of what was arguably the pivotal school in the Science Faculty - from that of Applied Chemistry to Chemistry. This was, "in view of the School's history, a highly symbolic act... from 1958 it regarded itself as an important centre of an international discipline."<sup>91</sup> The science research model, which relied heavily on international discipline esteem, had become the dominant paradigm at a time when another model (the coursework higher degree) was achieving prominence elsewhere in the University.

One of the terms of reference for the Murray Committee had been to enquire into technological education at university level and the University's own submission to the Committee, which concentrated on its unique role and need for increased funding, was sympathetically received. Despite their orientation to the humanities, Menzies and Murray nevertheless recognized the importance of Australia's sole technological university as did other technologists and scientists on the Committee. The Committee recommended the establishment of collaborative scientific research in universities as a cost saving measure. UNSW, with its tradition of innovation and connection to industry, was uniquely placed to do this. It subsequently established links with the Australian Atomic Energy Commission, setting

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<sup>90</sup> The UNSW was empowered under its founding Act to establish divisions and colleges outside Sydney. By 1960, there were 1,300 students at Newcastle University College, which was established in 1951. Other divisions were at Wollongong (300 students) and Broken Hill (95). Most were enrolled in technological areas, though arts subjects were available to students at Newcastle, in collaboration with the University of New England, (formerly a college of the University of Sydney) which achieved university status in 1954.

<sup>91</sup> Stanley Livingstone, A History of the School of Chemistry at the University of New South Wales, 1879-1975, UNSW Archives, 1991, p146

up a School of Nuclear Engineering in 1961 with the "specific object of filling the gap between scientific discovery and its application".<sup>92</sup>

The 1960s were a time of rapid postgraduate, as well as undergraduate, expansion at UNSW, which set aside a sizeable portion of the research monies granted by the Commonwealth on the recommendations of the AUC in 1964 for postgraduate scholarships. The first co-ordinator of the innovative Postgraduate and Extension Studies Unit (for external students) was appointed in 1960, and many short courses of all kinds were offered. By 1969, all but five of these courses were postgraduate, the words "and Extension" dropped from the title of the Unit, and a variety of media were used in courses, some of which were by correspondence.

In the Faculty of Technology, new postgraduate diplomas were introduced after 1963; these required no thesis and had less stringent entry requirements than the Master of Technology degree. They were popular and similar diplomas proliferated across other faculties. The Master of Technology degree spawned other higher degrees with a coursework component, such as the Master of Administration (1963) which became the Master of Business Administration (1967) the Master of Librarianship (1964 - the first in Australia) the Master of Surgery (1965) the Master of Education (1967, though also available by research) the Master of Optometry (1969 - another first for Australia) and the Master of Statistics (1969). A one-year Master of Chemistry was also proposed in 1969. Designed for students with industrial experience, it was a coursework degree with a small research component. Despite "misgivings that the award of the masters degree for one year of coursework would not help

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<sup>92</sup> The University of New South Wales, published by the University of New South Wales, Sydney, 1962, p15



the School's image as one of the leaders of the discipline in Australia", it was offered in 1971.<sup>93</sup>

Biochemistry, as it did at Adelaide and elsewhere, rose to prominence as a new discipline in the 1960s at UNSW. It had been taught within the Faculty of Applied Chemistry since the establishment of the University and its School of Biological Sciences (which began in 1956) was the first such school in Australia.<sup>94</sup> The first masters degree was awarded in 1953 and the first PhD in 1961. The Faculty of Biological Sciences was established in 1968, awarding one or two biochemistry higher degrees annually in the next two decades.

The 1960s saw the full range of traditional higher degrees instituted, including the MA in 1962 (the first arts PhD in geography was granted in 1963) and the DLitt in 1967.<sup>95</sup> The awarding of the first two arts PhDs in the discipline of geography (at both Adelaide and UNSW) is significant. Within the most traditional faculty, arts, it was a relatively new discipline (and "scientific") - thus perhaps less constricted by conservative attitudes, while research could be often more easily undertaken within Australia than in some other arts subjects). Moreover, at UNSW the School of Geography, when established at the University of New South Wales' central campus, was located within the Faculty of Applied Science; this, together with the School's deliberately "applied" focus, made it unique within the discipline in Australia.

During the 1960s, the Faculties of Professional Studies, Military Studies (later the Australian Defence Academy, Canberra) Biological Studies, Law and the Australian Graduate School of

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<sup>93</sup> *ibid*, p153

<sup>94</sup> Biochemical Graduates Association, *30 Years of Biochemistry at the University of New South Wales*, 1986, p7

<sup>95</sup> The first arts PhD went to Terence Burley, a member of the geography staff at Newcastle. (Two geography MAs from Newcastle are listed for 1960 in the Higher Degree Register)

Management were established. The first postdoctoral positions at the University were also inaugurated. Yet, while the University accrued the faculty and higher degree range of a traditional university, it also retained a tradition of innovation:

The University of New South Wales, conceived as some think on the wrong side of the blanket and certainly born in the humble circumstances of a technical college, does not seem to suffer from any inhibitions when new courses are being considered. Here one can study "doubtful" subjects which would elsewhere be regarded as too specialized for undergraduate courses if they were not condemned outright as being disreputable. The University has gone much further than others in offering part-time courses at under and post graduate level ... the reason must surely lie in its origins from which it absorbed an uninhibited attitude to the way in which it might discharge its duties... no technical college would be assailed by philosophical doubts; if it had enough students [who paid] the course would be laid on. The University of New South Wales started out without any preconceived notions of what it ought not to do; it set to work to meet a public need where it saw one. And a good thing too.<sup>96</sup>

By 1975, UNSW had over 18,500 students and nearly 3,000 postgraduates of whom 2,000 were higher degree students, many engaged in coursework programs. In comparison, Adelaide, at half the size, had 1,154 higher degree students, mainly research postgraduates. Many UNSW students were part-time and employed (in contrast, the majority of Adelaide's students were full-time, with the applied focus of the University apparent in many of the postgraduate courses offered. An increasing number of both undergraduate and postgraduate students at UNSW were overseas students (or overseas born) and in recognition of this, International House, a residential college, opened in 1968.<sup>97</sup> New postgraduate constituencies were emerging and the UNSW was one of the universities best-placed to meet their demands.

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<sup>96</sup> J.A. Matheson, "Australian Multiversities", *The Australian University*, Vol.13:1, May 1965, pp207-8

<sup>97</sup> In 1974, 17% of all students at UNSW who were Australian residents were born overseas. Douglas Magin, "The Social Composition of Students entering the University of New South Wales: Changes since 1974", *Proceedings of the 14th. Annual Conference of the Higher Education Research and Development Society of Australia*, Australian National University, Canberra, Vol.11, 1989, p206

In the 1960s, both Adelaide and UNSW grasped opportunities such as increased research and scholarship funding, which had flowed from the recommendations of the Murray and Martin Committees. The growth of postgraduate studies at these two universities was linked to the recommendations of the Reports. Science and the research model continued to drive this growth, to the extent of postgraduate oversupply and the beginnings of credentialism in some competitive science areas. At the same time, new disciplines began to enter the postgraduate field in response to workplace demands, and new courses; they included both diploma and higher degrees, offered by coursework as well as research.

While the older universities, exemplified by Adelaide, reiterated the primacy of the research degree in this period, they also began to offer a few new kinds of professionally-oriented postgraduate courses. UNSW in this area was the Australian pacemaker, as it had been with its introduction of the first coursework higher degree. At UNSW, the tensions between British and American postgraduate models were most clearly exemplified and an Australian response evolved. The student bodies at both universities (as at other universities, notably the Australian National University, which continued to show strength in the postgraduate research area) became increasingly international in composition. With their divergent emphases on research and professionally-oriented programs, the universities of Adelaide and UNSW in the period to 1975 offer the polarities of the Australian university experience, while converging toward a mean in the area of the research higher degree, the core of the research university.

## CHAPTER FIVE: CONTRACTION AND REACTION 1975-1987

### A HALT TO EXPANSION

The defeat of the federal Labor Party in 1975 signalled a halt to the expansionary years of the tertiary sector. Labor's unimplemented 1975 Budget froze Commonwealth tertiary expenditure and suspended triennial funding - a move which the incoming Liberal government supported.

A new mood was reflected in the titles of publications such as Edward Gross and John Western's (1981) **The End of a Golden Age: Education in a Steady State**.

The tertiary sector in the mid-1970s was larger than it had ever been. Total student numbers reflected the growth surge of the 1960s and 1970s in particular, with six times more students enrolled in the tertiary sector in 1977 than in 1946. In CAEs, higher degree numbers were negligible in 1975, with most postgraduates enrolled in diploma courses. (Table 5.1)

Table 5.1

#### STUDENTS ENROLLED AT COLLEGES OF ADVANCED EDUCATION BY COURSE LEVEL 1974 - 1977

		1974	1975	1976	1977
Master Degree	(PG2)	188	312	441	534
Graduate Diploma	(PG1)	6832	8432	9871	11702
Bachelor Degree	(UG1)	28904	37700	46197	57086
Diploma	(UG2)	62492	65522	69365	62489
Associate Diploma	(UG3)	8786	10591	8740	8501
	TOTAL	107202	122557	134614	140312

Source: Australian Bureau of Statistics

While postgraduates constituted under **1%** of the university population in 1946, they made up **11%** in 1975. (Table 5.2)

Table 5.2

NUMBER OF STUDENTS, AUSTRALIAN UNIVERSITIES,  
ACTUAL 1946 TO 1976, ESTIMATED 1977 TO  
1979

<i>Year</i>	<i>Higher Degree</i>	<i>Undergraduate</i>	<i>Total Students</i>	<i>Increase on Previous Year</i>	<i>Ratio Undergraduates to 17 to 22 Years Age Group</i>
				<i>per cent</i>	<i>per cent</i>
1946	151	25,434	25,585	19.1	3.5
1947	247	30,230	30,477	6.5	4.1
1948	305	32,148	32,453	-2.2	4.4
1949	329	31,424	31,753	-3.5	4.4
1950	496	30,134	30,630	3.4	4.2
1951	536	31,135	31,671	-6.4	4.4
1952	681	28,960	29,641	-2.9	4.2
1953	761	28,031	28,792	2.0	4.1
1954	855	28,519	29,374	4.8	4.2
1955	1,026	29,766	30,792	11.7	4.2
1956	1,120	33,286	34,406	6.3	4.6
1957	1,357	35,211	36,568	13.5	4.7
1958	1,672	39,820	41,492	13.6	5.1
1959	2,226	44,925	47,151	13.2	5.5
1960	2,770	50,621	53,391	8.0	6.0
1961	3,170	54,502	57,672	9.8	6.2
1962	3,814	59,503	63,317	9.1	6.4
1963	4,551	64,523	69,074	10.3	6.6
1964	5,383	70,805	76,188	9.4	6.7
1965	6,169	77,180	83,349	9.5	6.9
1966	7,560	83,731	91,291	3.5	7.2
1967(a)	9,181	85,328	94,509	6.1	7.0
1968	9,212	91,083	100,295	7.9	7.2
1969	10,535	97,720	108,255	6.8	7.5
1970	11,543	104,087	115,630	6.1	7.9
1971	12,458	110,210	122,668	4.1	8.5
1972	13,029	114,616	127,645	3.8	8.6
1973	13,760	118,797	132,557	7.4	8.8
1974	15,241	127,059	142,300	3.8	9.2
1975	16,653	131,101	147,754	3.9	9.4
1976	17,564	135,901	153,465	0.0	9.5
1977	17,795	138,450	156,245	1.8	9.6
1978(b)	18,170	142,820	161,020	3.0	9.7
1979(b)	18,375	143,520	161,925	0.6	9.6

(a) The smaller increase in undergraduate numbers in 1967 was due to the introduction of an additional year of secondary schooling in New South Wales

(b) Includes Deakin University.

Source: Universities Commission

Higher degree enrolments remained fairly stable at around 11.5% throughout the 1970s. More graduates, whether through opportunity, necessity (credentialism) or a combination of the two, wanted further advanced education. Despite stringencies, an increasing proportion of graduates found postgraduate study attractive. The Liberal government, under Malcolm Fraser remained in office until 1983, when the Hawke Labor government was elected. While policy was characterized by different emphases (such as containment of costs and expansion in the Fraser years and the commitment of the Labor government to increased educational participation and equity) a major feature of the period to 1987 remained the retention of the binary system. Cost cutting, whether under the nomenclature of accountability or efficiency, was another common feature, as the federal government (and associated bureaucracies) made increasing demands on the burgeoning tertiary system it funded. As in Britain, government and the universities grew more closely enmeshed.

The Whitlam government had intended to combine the Universities Commission and the Commission for Advanced Education into a single Commission, a move which was adopted by the incoming Liberal government with the creation of the Tertiary Education Commission (TEC, later CTEC) in 1977. This was to co-ordinate all post-secondary education in Australia. Educational control, which had passed increasingly from the states to the Commonwealth, was paralleled by a continuing shift in power from statutory authority to federal ministerial control. This was a move which had begun formally with the appointment of Gorton as federal Education Minister in the 1960s.

Australia's unique dependence among OECD countries on government, rather than industry, support for research further bound the tertiary sector to government, while at the same time science policy and higher education policy often diverged. The cherished concept of university

autonomy was under pressure, as the paymaster - the federal government - became increasingly less inclined to fund without input. In the tertiary sector, the major features of the period - the binary system, accountability, slowed growth, bureaucratization, participation and equity, the influence of directed federal research funding and the role of science - would all impact to some degree on the postgraduate sector.

### **THE FRASER YEARS 1975-1983**

A major concern of the new Liberal government, led by Malcolm Fraser, was that educational costs be contained or reduced. The seemingly endless expectation of more funding for, and growth in, the higher education sector was challenged. A Committee of Inquiry into Higher Education, chaired by Sir Bruce Williams, (a former professor of economics and Vice-Chancellor of the University of Sydney) was appointed in 1976 to examine a tertiary system which had changed markedly in the previous decade. As well, between 1976 and 1979 when the Report was released, Western Australia, Tasmania, South Australia and Victoria all conducted state inquiries into post-secondary education.

Higher education staff numbers had doubled between 1950 and 1960, again between 1960 and 1967 and yet again between 1967 and 1976. This growth halted, partly due to a slowing of the post-war baby boom, and partly due to funding restraints.<sup>1</sup> In 1976, the Federal Government required universities to stabilize enrolments for the next three years at 1976 levels, while CAEs also had to curb expansion. Student growth slowed, partly as a result of these constraints, and also because the graduate job market ceased to expand rapidly. There was less

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<sup>1</sup> Unlike Australia in the 1970's. British postgraduate numbers, while still continuing to rise, fell as a proportion of the total student body. As a result of these reports there was a reduced emphasis on postgraduate studies in Britain in the 1970's

prospective economic return on a degree, while at a national level, the correlation between increased tertiary education and national economic growth proved uncertain.

Despite limits to growth in the tertiary sector, postgraduate student numbers did not decrease markedly in the seven years of Liberal government, though the **rate** of growth slowed somewhat. The upward trend evident in postgraduate enrolments after 1950 continued, despite the "steady state" of the higher education sector generally, making Australia one of only a few countries in the world to have recorded steady postgraduate growth rates since 1950. Australia's relatively late entry to the "mature" postgraduate sector (PhD and postdoctoral education) made a certain amount of "catch up" inevitable, as Australians embraced a new and increasingly internationalist research culture. The embedding of relatively new constituencies, such as mature-age and female students into the universities and CAEs was to influence this rise. Furthermore, while higher education no longer correlated quite so automatically with high rewards, failure to participate in higher education brought greater penalties.

These rewards and penalties were perceived, increasingly, in terms of employment and salaries, where extrinsic rather than intrinsic outcomes (like the transmission of scholarly knowledge and values) were esteemed. The old ideal of general education within the university (often honoured more in theory than in practice) had already begun to die a genteel death, though the arts faculties in particular fought a valiant, if often muted, rearguard action. The fundamentally instrumentalist character of the Australian university was more evident and from the mid-1970s, the dominant discourse at the interface of education and government was to be increasingly couched in the language of economics.



Postgraduate education was linked to national workforce needs, while catering to individual, institutional and discipline demands. Balancing these needs (which did not always mesh) with resources, became a major governmental function, as did attempts to concentrate the focus of such needs, particularly in relation to employment.

Universities had been allowed relative autonomy in regard to their postgraduate sectors and it was only when the supply of postgraduates slipped from deficit to surplus in the 1970s, that postgraduate education began to be audited in a newly rigorous way. Increasingly, the functions and purposes of postgraduate studies came under review. From their rather small part in the totalities of the Murray and Martin Reports, discussion of postgraduate studies began to feature more prominently in government reports, journal articles and internal university reviews.

There was broad consensus about why postgraduate studies existed, though there were perhaps different emphases from government, institutions and individuals. Broadly, according to the argument, postgraduates existed because they were more interesting to teach (the institutional/departmental view) they were needed to help with research (government/institutional/individual view) and they were used for the training of future academics and other professionals (government/institutional/individual view). The ideal of the pursuit of knowledge for its own sake was often only uneasily acknowledged. As numerous surveys of postgraduates worldwide have shown (Rudd, Nightingale) this was a major reason for study.<sup>2</sup> It was a reason that governments however, did not willingly embrace, given their greater utilitarian and monetarist positions.

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<sup>2</sup> See for example, Ernest Rudd, The Highest Education and A New Look at Postgraduate Failure, Society for Research into Higher Education, Nelson, Guildford, Surrey, 1985, p33.  
Peggy Nightingale, "The Education, Employment and Training of Postgraduates", Papers from the Tenth Annual Higher Education Research and Development Society of Australia Conference, Sydney, Vol.7, 1984, pp217-8

After 1975 postgraduate education and funding became increasingly tied to national needs. Though this was not a new theme, it was expressed more explicitly. The Australian **Report of the Committee of Inquiry into Education, Training and Employment** (Williams Report) which was released in 1979 and the Commonwealth Tertiary Education Commission's **Review of Efficiency and Effectiveness in Higher Education** in 1986 set new parameters here. The wording of the titles of the two Australian Reports, where higher education was linked to training and employment, and where efficiency and effectiveness were paramount virtues, show how the language of accountability had crept into the academic bureaucracy. A rise in business studies courses occurred in this period, and the currency of business language permeated the interface between the tertiary sector and government.

## **THE WILLIAMS REPORT**

Much government policy in regard to certain postgraduate issues had been formulated prior to the release of the Williams Report. In 1977, postgraduate research award numbers were reduced from 900 to 800 a year, as were the very small numbers of postgraduate coursework awards. In the same year the government proposed that fees be charged for second and higher degrees but this was defeated in the Senate.

It was in the context of accountability and stringency that the Committee of Inquiry into Higher Education, which reported in 1979, was established by the federal government. Chaired by (Sir) Bruce Williams, Vice-Chancellor of Sydney University, the nine-member Committee contained only three academics, with three representatives of private industry and one unionist. In addition, two women, one a lawyer and one a director of education, were appointed. Williams, like Karmel, was another economist selected by the federal government

to head a major enquiry; his appointment presaged that of Hugh Hudson, also an economist, who would head another review eight years later. Overall, the Report recommended no major changes within the tertiary system - a not unexpected outcome in a climate of fiscal restraint.

While other sectors of the tertiary system received the bulk of the Report's attention, postgraduate studies were recognized as important, particularly in economic terms.

The Report stated it:

strongly supported expansion in postgraduate research [which] affects Australia's living standards and makes a contribution to the strength of the economy.<sup>3</sup>

Nevertheless, a major recommendation of the Report, to restore scholarships to at least 1975 levels, was not implemented by the government. In relation to other postgraduate issues, the Report was critical of highly specialized PhD programs and low rates of movement of postgraduates between universities. Recommendations were made for "inter-disciplinary research projects with a limited life", which would attract grants to develop postgraduate research and training.<sup>4</sup> Considerable increases were recommended in research in science, engineering and environmental problems.

In 1975 the visiting OECD Science and Technology Examiners had unsuccessfully recommended increases in federal research grants.<sup>5</sup> The Williams Report endorsed the Universities' Council recommendations that greater percentage increases in special research grants be given to six universities (Sydney, Melbourne, Adelaide, Queensland, New South

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<sup>3</sup> The Report of the Committee of Inquiry into Education, Employment and Training, Vol.1, Australian Government Printing Service, Canberra, 1979, p208

<sup>4</sup> *ibid.*, p208

<sup>5</sup> 1975 was designated an International Year of Science and Technology. The official OECD Examiners, in their Report on Australian science, recommended greater concentration of research effort in the universities.

Wales and Monash) in order to "develop concentrations of post-graduate training and research, to be known as special post-graduate centres." <sup>6</sup>

In 1975, 80% of higher degree students were in five of these universities (excluding Adelaide) though this proportion was to decline in subsequent decades. The decline reflected continuing strains between egalitarianism and excellence, strains which were to emerge more strongly as the newer universities matured, especially under a Labor government committed to greater equity in resource allocation.

In 1974, 70% of tertiary research expenditure went toward sciences, 20% to the social sciences, and 10% to the humanities. In this latter category, the ANU was singled out particularly by the Report to "give further emphasis to research on topics of national importance and to related policy studies", a return to its original social policy charter as envisaged in wartime. <sup>7</sup> Economic returns on expensive education were emphasized by the Report, something the government was only too willing to hear. Policy-oriented research, in its infancy in Australia, was to add to these returns. One outcome of this was a gradual strengthening in the research position of the social sciences in the mid-1970s, coinciding with themes of returns, relevance and applicability to national social needs.

In the 1970s higher education policy became more political. Tertiary institutions were seen to be directly in the service of the national good, with "accountability" a byword. Monographs and books were written, and conferences held, on accountability. The term, first used in Australia in an educational administration context around 1970, reflected the mood of the later

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<sup>6</sup> *ibid.*, p206

<sup>7</sup> *ibid.*, p208

1970s. In a tight economic climate, tertiary institutions were to become accountable to staff, students, regional communities and governments.

The unlimited promise which universities had seemed to offer the nation in the 1950s and 1960s was tempered with a harder edge in the late 1970s as a degree of disillusionment set in. As tertiary institutions came to be increasingly instruments of national policy and the term "manpower planning" was used once more, their outputs came under greater scrutiny. This influenced the kinds of postgraduate courses offered as well as numbers. In a period of restraint and new economic imperatives, the only major new postgraduate initiative of the federal government was the establishment of the Graduate School of Management at the University of New South Wales.

## **CHANGES AFFECTING POSTGRADUATE EDUCATION**

New patterns appeared in the fabric of postgraduate education in the Fraser years. While a major strand was resource contraction, this had mixed effects on postgraduate numbers. Between 1970 and 1976, research expenditure of the state universities had increased from \$20.5 million to around \$44 million. At the same time, staff above lecturer level increased by 41% and the number of higher degree students by 52%.<sup>8</sup> The expansion of the tertiary sector, particularly in research, had been great and perhaps unsustainably so. The Commonwealth government's deficit budget for 1974-75 was followed by Australian Research Grants Council funding cuts in 1976. Funding was pegged to student intakes, particularly undergraduate, and these would not grow again until 1985. This had some flow-on effect to postgraduate numbers. Funding for basic research did not increase but there was some growth in

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<sup>8</sup> The Report of the committee of Inquiry into Education, Employment and Training, Vol.3, Australian Government Printing Service, Canberra, 1979, p164

"mission-oriented" or applied research funding. However, the short-term nature of many such grants necessitated flexible research teams, with postgraduate students a cheap and committed source of labour. This inevitably caused some growth in both postgraduate and postdoctoral numbers.

A major factor underlying the overall trend of rising Australian postgraduate numbers since the 1950s has been the long-term influence of school retention rates, with the rate of growth outstripping predictions. The Williams Report of 1979 predicted that school retention rates (35.3 % in 1977) would rise to 50% in 2001. <sup>9</sup>Although retention rates in the period 1975-1982 were low by OECD standards, historically they were high for Australia. The long wave of contraction of traditional jobs for young people partly fuelled this retention rise. As mass changes, like computerization, deskilling and reskilling shaped the modern employment market, the necessity to be in the right pipeline to preferred employment often required a higher education. State, family and personal imperatives drove this trend.

Increased educational participation, with long lead times to measurable outcomes and immediate ability to "sop up" youth unemployment, had definite political advantages, increasingly so in the later 1970s and early 1980s as youth employment further contracted. These new political considerations were added to higher education's essential skilling functions (especially in the professional faculties).

The prolongation of education became a double edged sword. Despite pegging of university student numbers in the later 1970s, the educational opportunities afforded to many through the

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<sup>9</sup> In 1991 national rates were over 70% National Report on Australia's Higher Education Sector, Department of Employment, Education and Training, Australian Government Printing Service, Canberra, 1993, p47. Some states (such as the Australian Capital Territory and South Australia) recorded much higher rates.

removal of university fees in the Whitlam years had built up a graduate population with a desire for more, often postgraduate, education. This, coupled with the rise in retention rates and changing cultural sensibilities, was to prove a potent mix which even the austerities of the Fraser government were unable to completely contain.

While not a new feature of Australian tertiary education, part-time students became an increasingly significant group of students. In 1976, a third of postgraduate students were enrolled in coursework and/or part-time higher degrees. In 1977, 59% of all postgraduates were part-time. This trend was a feature of the years after 1975, as was external study. Historically, this did have precedents - the pursuit of a masters degree with often only minimal supervision was long established in Australian academia. However, the scale was different. With the financial stringencies of the later 1970s, full-time study became increasingly difficult and part-time study increasingly attractive, or necessary, especially with the reduction in postgraduate research scholarship numbers. Working and studying, preferably with employer assistance, became more common, if less satisfactory.

Postgraduate scholarships supported a declining proportion of full-time research students during the later 1970s, from a peak in support in the early 1970s. (Table 5.3) The Williams Report recommended a return to pre-1976 levels, though this did not occur until 1983, with the change of government. The scholarships were made taxable, and holders found themselves well below the poverty line. The lack of adequate support for postgraduates did see a slowing in demand for full time, research degrees, but not a reversal (witness the previously noted demand for postgraduates to assist on research projects with short-term funding).

There was also a reduction in expenditure on research workers, from \$7,400 per research worker in 1966 to \$3,800 in 1978.<sup>10</sup> Over 90% of chemistry research in the late 1970s, for example, was estimated to be done by postgraduates. A conundrum emerged - the thrust of government funding was for "relevant", applied (staff) research, which was considered to be less costly - yet postgraduates were still needed there. The nexus between staff and student research was not broken easily.

Table 5.3

Commonwealth Postgraduate Awards 1959-83  
Number and Value of Awards, Number in Training and Proportion of Scholars

Year	Value of** Award in \$	Total No.* of New Awards	Total No.* of Awards	Research New	Research in Training	Course New	Course in Training	Research Scholars as a proportion of all Enrolled Research Students	Postgraduate Award Scholars as a Proportion of H/D Students
1959	1400	100	100	100	100			4.50%	4.50%
1960	1400	100	173	100	100			6.20%	6.20%
1961	1400	100	217	100	217			6.80%	6.80%
1962	1600	125	266	125	266			7.00%	7.00%
1963	1600	225	340	225	340			7.00%	7.00%
1964	1800	225	469	225	469			8.70%	8.70%
1965	1800	300	634	300	634			10.30%	10.30%
1966	1800	400	874	400	874			11.60%	11.60%
1967	1800	500	1179	500	1179			12.80%	12.80%
1968	1800	500	1372	500	1372			14.90%	14.90%
1969	2350	650	1629	650	1629			15.50%	15.50%
1970	2350	650	1730	650	1730			19.40%	15.00%
1971	2600	800	1955	700	1857	100	98	19.20%	15.70%
1972	2600	800	2055	700	1930	100	125	19.70%	15.80%
1973	2900	800	2055	700	1931	100	124	19.60%	14.90%
1974	3050	875	2129	725	1953	150	176	19.40%	14.00%
1975	3250	875	2191	725	2006	150	185	18.80%	13.20%
1976	3250	875	2183	725	2001	150	182	18.10%	12.40%
1977	4000	780	2201	635	2006	145	195	17.50%	12.00%
1978	4200	680	2022	555	1840	125	182	15.70%	10.60%
1979	4200	680	1881	555	1717	125	164	14.30%	9.50%
1980	4200	680	1816	555	1652	125	164	13.50%	8.80%
1981	4620	775	1831	635	1665	140	166	13.40%	8.40%
1982	4620	753	1984	635	1798	140	186	13.90%	8.50%
1983	6850	900		735		165			

\* CAE Awards have been excluded.

\*\* Value converted to \$ for years prior to 1966.

SOURCE: AVOC, Table 3, p.13, unpublished submission to Dept. of Education, 'Review of Need for Postgraduate Awards', CAPA submission Table 6, p.174, 'Postgraduate Finance', a Submission to the AVOC Inquiry

<sup>10</sup> Tertiary Education Commission, Report for the 1979-81 Triennium, Vol.1, table 3, Government Printer, Canberra, 1977



The modified American coursework model continued to gain prominence. In 1968, 2,027 postgraduates were enrolled in course work masters degrees. In 1975, there were 6,029, predominantly in universities. By 1975, the AUC Sixth Report emphasized a rather instrumentalist attitude in its encouragement of coursework postgraduate programs:

In the first place, coursework degrees provide a practical job-oriented advanced qualification for many first degree graduates with generalist degrees who previously may not have been able to take advantage of higher degree study ... to improve employment prospects. Secondly, some coursework degrees are specifically designed as refresher or diversification courses and thus are closely related to the Commission's support of the development of continuing education at university level. Thirdly, growth in course work programs is likely to reduce the growth of research degree numbers by offering students an alternative type of higher degree course and thus permit a greater selectivity on the part of universities in accepting research students.<sup>11</sup>

In 1975, postgraduate higher degree numbers reached 16,600 and the AUC noted that most students who wished to pursue higher degree research and who were highly qualified, were able to obtain scholarships. Graduate diploma and coursework awards grew in number; however, enrolments in some PhD and research masters courses fell, possibly due to the perceived oversupply in some areas like chemistry.

## **GROWTH IN THE COLLEGES OF ADVANCED EDUCATION**

The nature of CAE courses continued to change, directly affecting non-university postgraduate numbers. While the most commonly awarded qualification remained the diploma, by 1977, over 40% of enrolments in CAEs were in degree courses, making the philosophy of the binary system increasingly untenable. Nevertheless, the Williams Report reiterated, endorsing the similar view of the Commission on Advanced Education:

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<sup>11</sup> Australian Universities Commission, *Sixth Report*, Government Printer, Canberra, 1975, p145

recurrent grants to CAEs should not be generally regarded as having a component for research... some could compete for grants or contracts of an applied research nature.<sup>12</sup>

In 1978, 17% of staff in CAEs and Institutes of Technology held doctorates.<sup>13</sup> It was inevitable that they, and other postgraduate staff, would bring the ethos of the university research culture with them. Furthermore, staff research, even when labelled as of "an applied research nature", often required the assistance of postgraduate research students.

While university enrolments remained fairly static in this period, those of CAEs increased and by 1977, CAEs granted similar numbers of postgraduate diplomas to universities. The inevitable academic drift within CAES and Institutes of Technology was toward parity with the universities, toward the prestigious enclave of the postgraduate degree. This was the beginning of what was to become a long-term decline in postgraduate diploma courses in universities, even allowing for the effect of cuts in funding for teacher education which saw education diploma numbers fall. Although masters degree enrolments in CAEs increased fivefold between 1975 and 1985, this was from a small base and was concentrated in coursework areas. Credential inflation, centred around the postgraduate research degree, relocated the binary divide.

## **ISSUES OF CONCERN**

One of the strong themes which arose in the ongoing debate about the purposes of higher education after 1975 was a new emphasis on the notion that a higher education was not a static thing - people did not necessarily finish learning after three years of tertiary education. Increasingly, there was the prospect of a world where full employment would possibly not exist, where old jobs would be made redundant and new ones arise. Reskilling would need to

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<sup>12</sup> Committee of Inquiry into Education, Employment and Training, Report, p227

<sup>13</sup> Fiona Carruthers, "Big Leap in Doctoral Levels at Colleges", *The Australian*, 15 September 1993, p15

occur and postgraduate education would here be of great importance. The growth in postgraduate diplomas in the CAEs in Australia, for example, was largely employment-linked. Government policy in Australia had long had an employment orientation, an orientation which was to strengthen beyond the 1970s. Yet the implications of a linkage between postgraduate education and a "leisure age" were often skirted.

Concern about postgraduate unemployment increased in the 1970s. In 1971, a national symposium on the Employment and Training of Postgraduate Students was held at Adelaide University and in 1974, the Professional Employment Service of the Department of Labour undertook its own survey, also in Adelaide. Increasingly, employment considerations were to the fore as was resource allocation. An un-named scientist at the Adelaide symposium declared:

The job potentiality must be considered before offering any university course. Expensive research has been undertaken without community need or desire, which should be the criterion. Funds for research should not be regarded as a right, but as a way of service to society...The golden age of the PhD is gone.<sup>14</sup>

Questions about the perceived over-supply of postgraduates continued to be asked in the later 1970s and 1980s. One major bottleneck to traditional postgraduate employment was the lack of staff positions in tertiary institutions, where many tenured staff had been recruited in the expansionary days of the 1960s. Short-term research employment continued to be an option for postgraduates and new PhDs, while the postdoctoral fellowship was an attractive alternative, though perhaps not as assiduously pursued in the later 1970s due to funding constraints. Australia had no national postdoctoral fellowships scheme such as had been established in Canada. Many newly qualified PhDs continued the "brain drain", as research

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<sup>14</sup> Employment and Training of Postgraduate Students in Australia. Proceedings of a symposium held at the University of Adelaide, August, 1971, p76

employment opportunities continued to be confined mostly to government instrumentalities in Australia and to positions in private research overseas, particularly the US.

Access and equity issues received new attention. In 1946, women comprised 24.4% of all tertiary students in higher education, whereas in 1977, they were 42.7%. While school retention rates undoubtedly affected the rise in female entrants to higher education, as did unemployment, mature women continued their entry to higher education, despite the tightening of Tertiary Education Assistance Scheme (TEAS) eligibility by 1981. Abolition of tertiary fees by the Whitlam government had seen a surge of female enrolments, as a major impediment to their attendance was removed. A new constituency had been tapped, with many part-time, mature age women beginning tertiary study.

Nevertheless, in the late 1970s the influx of older women to postgraduate study was relatively small. Although postgraduates were getting older (in 1976 the average age of all postgraduates was 29) most female students clustered in the undergraduate sector. Barriers to their postgraduate participation, such as childbearing, childcare and difficulties with resuming interrupted studies, remained formidable. However, a small rise in female postgraduate numbers, especially in the social sciences, was evident. While women were clustered predominantly in the arts areas, they were not strongly represented on their staffs. Lack of female role models and mentors often deterred female participation at postgraduate levels as did lack of adequate financial support.<sup>15</sup>

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<sup>15</sup> For a discussion of discipline-specific barriers, including mentoring, see Ingrid Moses, Barriers to Women's Participation as Postgraduate Students, Department of Education, Employment and Training Evaluations and Investigations Program, Australian Government Publishing Service, Canberra, 1989. This was the first large-scale investigation in this area; the noting of some barriers in 1989 would imply that similar barriers had existed previously.

While equity was an important issue in undergraduate education in the Whitlam years, this was not yet a major issue in postgraduate education. However, just as increased school retention rates for females were to feed through to tertiary enrolments, so too would their "retention" at undergraduate level later lead to increased participation at postgraduate level. Of all the tertiary equity issues, female participation rates received the earliest attention, and thus data can be examined over some decades.

Other groups with strong equity claims were poorly-represented in the tertiary sector until the late 1980s. Aboriginal and Torres Strait Islander school retention rates had long been abysmally low and university enrolments practically nonexistent; poverty, discrimination and cultural barriers were powerful disincentives to tertiary study. However, interventions such as Abschol, a scholarship system set up by the National Union of University Students in the 1960s, were to gradually increase Aboriginal student numbers at undergraduate level and diploma levels, though numbers were very small.<sup>16</sup> Participation at postgraduate level, however, was negligible. Similarly, few interventionist programs (or studies) existed for rural, low-income and disabled university students and thus no long-term data for these groups can be examined, especially at the postgraduate level.

Continuing concerns about credentialism were raised during the 1970s. The Williams Report devoted a section to this thorny issue, concluding however that "there was doubt about its analysis and measurement."<sup>17</sup> The number of postgraduate degree and diploma courses offered by Australian tertiary institutions did not contract. In 1977, for example, Adelaide University which designated itself as a "no growth university", offered eight postgraduate diplomas.

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<sup>16</sup> Aboriginal and Torres Strait Islander tertiary numbers rose 400% between 1975 and 1985. The Committee of Enquiry. Review of Efficiency and Effectiveness in Higher Education. Commonwealth Tertiary Education Commission. Australian Government Printing Service, Canberra, 1986

<sup>17</sup> Committee of Inquiry into Employment, Education and Training, Report, p466

seventeen masters degrees, the PhD and eight senior doctorates. In 1977, higher degree students comprised 11.7% of university, and 0.4% of CAE students, while 47% of CAE students were by this time enrolled in degree courses. In the same year, 2,356 postgraduate degrees were conferred, a tripling in number since 1965.

There was simultaneously an inflation in student and institutional demand for postgraduate degrees and diplomas, and deflation in the rewards some degrees offered. Tight employment prospects in academia in particular, drove the push for more and higher qualifications. Postgraduate education increasingly performed the filtering task - for society, government, employment - that undergraduate education had performed earlier. Greater numbers of higher degrees awarded in the humanities and social sciences saw these disciplines catching up to the sciences. Higher entry standards were required for academic employment and elsewhere (notably in government research institutions). However, persuading private employers to hire scientific staff with PhDs met with some resistance.<sup>18</sup>

## **FUNCTION AND REFORM IN POSTGRADUATE EDUCATION**

At the same time that credentialism was being deplored and required, derided and acknowledged, there was renewed examination of the purpose and practice of postgraduate education, particularly the "gold standard" of the PhD. At an internal seminar (which included industry participants) in 1978 on graduate education at the University of Adelaide, Professor Stranks, Vice-Chancellor at Adelaide, explained:

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<sup>18</sup> Historically, private industry took far fewer PhDs in Australia than did other OECD countries. Reasons cited were the supposed "over-specialization", poor communication skills and lack of fit" of PhDs with the objectives of commercial enterprise. As well, much research was often undertaken in the home country of large multinational corporations, thus limiting local research.

The PhD fulfils a role as, quite frankly, a cheap teacher, right across arts through to laboratory work in sciences. This teacher is often called an apprentice; an apprentice now without a good prospect of employment.<sup>19</sup>

Such sentiments became increasingly common within academia as graduate education began to be examined in a way unknown before in Australia. Ernest Rudd's **The Highest Education** (1975) an examination of British graduate education, was an influential investigation. The British government was concerned that its graduate sector had grown too large and the expected returns on investment had generally not materialized.

Although there was no comparable and comprehensive Australian postgraduate study across all disciplines at the time, there was increased system-wide discussion concerning the nature and purpose of postgraduate education. With growth came complexity, for postgraduate education had become increasingly international in orientation since the 1950s. The PhD, especially, had become an international "visa" in knowledge, with international benchmark standards informally set by each discipline. The desire of Australians in academia to take part in research at international standards continued to fuel research and higher degree expansion. However, constraints on funding in the late 1970s and early 1980s created tensions which led to internal and external inquiries about this expansion.

At the 1978 seminar, Stranks noted three areas of concern: continuing education for graduates, coursework in research degrees and diversity of programmes between arts and sciences:

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<sup>19</sup> Professor D.R.Stranks, "Graduate Education: Some Issues" in *Graduate Education*, a joint seminar, July, 1978, University of Adelaide Advisory Centre for University Education, p33

One of the functions which universities will be expected to fulfil will be the continuing education of graduates... to update and diversify... we should devise graduate education programmes. [There is a] lack of any significant formal coursework within the traditional PhD and Masters courses by research in Australia. The focus is the research project... the end result is a thesis assessed by examiners who rarely assess a candidate's general professional knowledge. This assumes a four year degree [with honours] is adequate to provide proper education for the graduate as he or she proceeds to postgraduate education. This assumption needs careful consideration. [Is this] satisfactory for the eighties? <sup>20</sup>

Stranks wanted research to be done in groups, rather than in isolation, in order to alleviate some of the difficulties, such as loneliness and lack of peer stimulation, faced by the lone arts researcher. He also wanted emphasis given to communication skills and personal development of PhDs (points backed by the industry representative at the seminar) and favoured supervision committees of three or more for each student, in order to provide a diversity of input and expertise.

Another seminar participant, Professor of Parasitology, W.P. Rogers, in a paper entitled **Postgraduate "Training": Education or Indoctrination ?** noted unease, distaste or confusion were evidenced for the concept of "training" as a function of the PhD, rather than **education**. The purpose of early PhD "training" had been to produce staff for universities and other research institutions:

The PhD training was then, and still is in science, an exercise in discovery - the accumulation of scientific knowledge. This may be too narrow an education for present needs when the PhD may be regarded simply as a qualification, an indication that the student has reached a certain intellectual standard. The **special** skills and experience of the student may not be required. The employer may be seeking qualities as a ... science manager rather than knowledge or experience in a particular area of research ... the education of PhD students should be broadened to meet those needs. <sup>21</sup>

Various topics, it was suggested, might be introduced to the education of PhDs in science.

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<sup>20</sup> Professor W.P. Rogers. "Postgraduate "training": education or indoctrination ?" Graduate Education, p28

<sup>21</sup> ibid, p45



These included help with selection of a topic, research organization, problem solving, social aspects of science and thesis writing. Rogers suggested that in postgraduate education too much emphasis was placed on "discovery" rather than education, the system of external examiners made change difficult, methods of examination were self-replicating and the use of only one supervisor led to "indoctrination". He, like Stranks, supported multiple supervisors, especially in biological research which was increasingly multi-disciplinary. Furthermore, he proposed that guidelines be drawn up for supervisors by the university, in matters concerning the education of postgraduate students.

By the 1970s more radical forms of the traditional doctoral dissertation were mooted. In a seminal article in **BioScience** (1978) the American scientist W. Malcolm Reid asked "Will the Future generations of Biologists write a Dissertation ?" arguing that a series of journal articles would be more widely read.<sup>22</sup> The dissertation, he felt, was a poor educational tool which did not teach essential skills such as writing for journals. Dissertations were seldom read or published and increasingly anachronistic, while a journal article was accepted as the professional international conduit for information exchange.

Another (British) article which was to influence Australian thinking was Stuart Blume's "A Framework for Analysis" in **The Future of Research**. Research, Blume said:

is now called on to be many things; to perform a complex variety of functions; for the educational process itself, for industry, government and so on. How compatible are these functions ? Can the university accommodate what may be entirely different, even conflicting, notions of research? Why are such demands made of the universities?<sup>23</sup>

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<sup>22</sup> W. Malcolm Reid, "Will the Future Generations of Biologists write a dissertation?" BioScience, American Institute of Biological Sciences, Vol.28, No10, October 1978

<sup>23</sup> Stuart Blume, "A Framework for Analysis", in The Future of Research, Society for Research into Higher Education, UK, 1982, p7

He noted that the rapid expansion in British scientific research was largely due to its **utility**. In the social sciences, funding for research growth had been achieved largely through the choice of the instrumental rather than the critical function of the disciplines. This could be extrapolated to Australia, where utility had always been a factor in higher education, and by the 1970s and 1980s, affected the award of some research funding.

Social research, particularly in areas of national interest, expanded in the 1970s along with the numbers of higher degrees awarded in the social sciences. This satisfied the demands of both government, who wanted relevant "useful" research, and to some extent academics, who had been highlighting the lack of policy research in Australia (though the funding of policy research critical of government could be problematic). With expanded research came an increased demand for postgraduates to assist with social research. This expansion, in Britain, as in Australia, corresponded to a fall in science PhDs awarded in the late 1970s and a rise in those of the social sciences. Disillusionment with science and its perceived employment difficulties were often cited for this fall.

Blume also highlighted "the potential conflict between science policy and higher education policy where expansion is not a shared objective", a view which was to be reiterated by some Australian researchers in the early 1980s. Attempts in the 1970s to reduce research costs were not easily achieved, for a research capability could not be cut back and then revived overnight.

Dampening postgraduate demand (by making scholarships taxable and harder to obtain, for example) while also expecting increased "relevant output" from research facilities were incompatible objectives. An awakening understanding of the inter-relation of science and higher education policies (and their shortcomings) was to become more evident in the 1980s.

Academic concerns regarding innovations in postgraduate education seemed to have little impact on government policy. "Overqualified" PhDs were often regarded with suspicion by industry and teacher employers, while "lifelong" education was never actively promoted by the Australian government. Despite what some Australian thinkers saw as a national streak of anti-intellectualism in the Australian psyche, a kind of benign neglect from government saw postgraduate enrolments continue to grow, if more slowly, even though full-time postgraduates were in the minority. In 1977, the Williams Report noted that nearly 60% of postgraduates in Australia were part-time.<sup>24</sup>

Commonwealth recurrent expenditure on university research fell to a new low in the 1970s. By 1976, only half the amount was spent per research worker than had been spent in 1966.

(Table 5.4)

Table 5.4

TOTAL IDENTIFIABLE RESEARCH EXPENDITURE PER UNIVERSITY RESEARCH WORKER\*

Year	1966	1970	1973	1976
	\$	\$	\$	\$
Expenditure	7,380	5,260	4,700	3,800

(\*This definition includes all academic staff, of lecturer grade and above and all Ph.D and higher doctorate enrolments.)

SOURCE: Tertiary Education Commission (1978) Report for 1979-81 Triennium Volume 1. Canberra, Australian Government Publishing Service

Late in 1981, the Fraser government announced the establishment of Research Centres of Excellence, a concept first mooted by the Universities Commission in 1975. These Centres were to be created "around existing individuals or nuclei of research activity" of national and

<sup>24</sup> Inquiry into Education, Employment and Training in Australia, Report, p166

often international eminence.<sup>25</sup> Ten proposals were chosen from over 300 applicants, with the successful Centres located in the Universities of Sydney, Melbourne, Adelaide, New South Wales, Monash, Western Australia and the ANU. They were to be funded by an initial triennial grant of \$16,000,000, an amount maintained by the incoming Labor government. Many of the disciplines selected involved new, "cutting edge" technologies. These centres were considered important as a focus for attracting good research postgraduates to departments and as a means of retaining them in Australia (as postdoctoral fellows). Key areas selected were gene technology, nerve muscle research, environmental fluid dynamics, plant cell biology, cancer research, microelectronics, policy studies, mathematics, neurobiology and immunology.

### **THE EARLY LABOR YEARS 1983-1987**

With the election of the Hawke Labor government in 1983, the higher education agenda was re-focused and themes of access and equity re-invigorated. While many of the issues in postgraduate education were recurrent ones, there were, however, some significant strengthening's of emphasis. Postgraduate participation rates in the later 1970s had to some degree been affected by lower undergraduate participation rates (in the early 1980s one of the lowest in the OECD countries) and demographic changes. Deliberate Labor government intervention was to accelerate the former, and older students partially compensated for the latter as the decade progressed. In 1984, 3000 extra undergraduate places were made available as the government fulfilled its commitment to return participation levels for 18-24 year olds to 1975 levels (and thus sowed the seeds for later postgraduate demand). Research into higher education in this period was to have an increasing influence on government policy.

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<sup>25</sup> Commonwealth Centres of Excellence Committee, Report, Government Printer, Canberra, 1981

The years after 1983 were characterized by an increased emphasis on tertiary education. New higher education research bodies, (such as HERDSA - Higher Education Research and Development Society of Australia) were formed, and conferences and publications gave attention to postgraduate issues. The Higher Education bureaucracy expanded, as did the sectors within it devoted to postgraduate education.

One of the major reports released in this period was the 1983 **Evaluation of the Commonwealth's Postgraduate Awards Scheme**, (also known as the Hill Report), which was begun prior to the change of government. Various "in-house" studies of the Scheme had been undertaken between 1976 and 1980 in the Commonwealth Department of Education and Youth Affairs and the Evaluation drew on and added to these. It was chaired by Professor Stephen Hill, who had undertaken the pioneering study of postgraduate education, **PhD Education in Australia: The Making of Professional Scientists**, a decade earlier.<sup>26</sup>

The Hill Report stated:

just as the research function (of universities) expanded with the growth in higher education, so now it is being reduced as a direct consequence of government policy. However this decline is occurring precisely at a time when demands on university research are increasing... new and growing demands on the university research system arising from science policy are emerging precisely at a time when its capability to respond is being reduced by higher education policy decisions... expansion is no longer a shared objective.<sup>27</sup>

The 1983 evaluation examined the operation of the scheme and gave an overview of the only real "philosophy" of postgraduate education (in terms of purpose) that had been articulated

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<sup>26</sup> See Chapter 3

<sup>27</sup> Stephen Hill, Ron Johnston, Elizabeth Smith, *An Evaluation of the Commonwealth's Postgraduate Awards Scheme*, Australian Government Publishing Service, Canberra, Vol.1, 1983, p2

over the previous twenty years - that which had informed the Commonwealth Postgraduate Awards Scheme. The CPRA scheme had been set up in 1959 with three goals:

- to develop postgraduate research schools.
- to maintain a flow of highly trained personnel to the workforce.
- to promote the full intellectual development of the most talented students.

The first objective, to increase postgraduate research schools, proved successful. In 1982, enrolments in higher degrees numbered 24,630, compared to 2,226 in 1959. The second goal had perhaps been too successful, given the increase in employment bottlenecks and unemployment (PhD enrolments increased to 7,021 in 1982 from 1,122 in 1961). The third area was more problematical and equity was a matter of concern; the typical scholarship holder in the early 1980s was young, white and male - and a scientist. Only some talented graduates had their "full intellectual development promoted". It was here that affordability of postgraduates became a factor. What kinds of postgraduates and research were to be subsidised and considered valuable? The British Swinnerton-Dyer Report of 1981 stated that the intrinsic value of higher education was subordinate to the need for trained manpower.

However, Australian government reports in the early 1980s were not characterized by such bald support of instrumentalist planning attitudes in regard to postgraduate education. The Hill committee urged an increase in both the number and value of postgraduate awards, and recommended that two categories of awards be established - for science and humanities. Other major recommendations were that a Standing Committee be established to ensure the

integration of higher education and research policies and that manpower planning **not** be a factor in the distribution of the awards.<sup>28</sup>

Other contemporary reports indicated that research into postgraduate issues was becoming more detailed and quantitative. Two government funded reports in particular, Macquarie University's **Postgraduate Evaluative Study** and **The Role of Postgraduates in Australian Research**, looked at changes over the previous decade.<sup>29</sup> Postgraduates in 1984 were increasingly older and increasingly likely to have spent at least a year in the workforce before postgraduate study, while more postgraduates were women. The numbers of postgraduate women in research rose 6% between 1976 and 1982; nevertheless, in 1982 they accounted for only 29.4% of total research students (25.6% of doctoral students and 34% of full-time masters research students).<sup>30</sup> Significant barriers to participation still existed at higher levels. In 1981, 75% of postgraduates were self-supporting and many continued to be part-time due to a dearth of scholarships.

The Powles Report recommended increasing scholarships and their value, with an aim of 5,000 full-time scholarships being awarded by 1989 and stipends immediately increased to \$10,000 per annum (plus increased dependant allowances). It recommended that part-time research be encouraged where "research and work interact beneficially" but not as a substitute for full-time research.<sup>31</sup>

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<sup>28</sup> Stephen Hill, Ron Johnston, Elizabeth Smith, An Evaluation of the commonwealth's Postgraduate Awards Scheme, Australian Government Publishing Service, Canberra, Vol.2, 1983, p196

<sup>29</sup> Peggy Nightingale, Macquarie University Postgraduate Evaluative Study, Macquarie University School of Education, Sydney, 1984. A recommendation was also made that the possibility of incorporating coursework into research degrees be investigated (p.13)  
Margaret Powles, The Role of Postgraduates in Australian Research, Council of Australian Postgraduate Associations, Melbourne, 1984 (A recommendation was also made that the possibility of incorporating coursework into research degrees be investigated (p13))

<sup>30</sup> *ibid.*, p63

<sup>31</sup> *ibid.*, p xxi

In 1981, 66.6% of CPRA holders were over 25 years of age and over 40% had dependent children. The trend toward an older student body was an ongoing phenomenon; in 1977, one-third of all students were over 25 and this contributed to an older postgraduate student body four years later. There was a disparity between CPRA and non-taxable university scholarships, which paid a lower stipend, set by agreement amongst all vice-chancellors at \$5,750 in 1983 (compared to the CPRA stipend of \$6,173).<sup>32</sup> Many other scholarships especially in science fields (for example those of the National Health and Medical Research Council) offered stipends closer to or higher than the estimated living costs of postgraduates (\$9,639 in 1983). The Report noted:

This technology loading ... may have the undesirable effect of changing the balance between basic research and short term [research] in the interests of the funding bodies... should this trend persist, differential funding for technological research may affect the balance between the sciences and the humanities.<sup>33</sup>

Poor stipend values "led to a devaluing of the actual role of postgraduate research in universities and its potential role in society".<sup>34</sup>

The Australian Research Grants Scheme indirectly supported many postgraduates through its grants to staff for research projects. However, the ability of the scheme to support postgraduates as assistants was impaired because in real terms, the average grant had dropped; in 1981 it had fallen to 35% of the 1970 level, with science research most affected. The Powles Report noted Australia's low level of private sector research funding and called for increased government funding for the ARGs. Poor research prospects continued to exacerbate the "brain drain" of postgraduates. In 1982, 30% of doctorates and 17% of masters graduates

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<sup>32</sup> *ibid.*, p66

<sup>33</sup> *ibid.*, p67

<sup>34</sup> *ibid.*, p134



left Australia, a high percentage, though not as high as it had been in some fields in the 1950s and 1960s. Some of those leaving were overseas students who in 1982 comprised around 9% of all higher degree students, generally in the technologies and engineering.

By the early 1980s, the decline in tertiary funding was increasingly problematic. Powles noted the statement of the incoming federal Minister of Education, Susan Ryan:

It has lately become fashionable to denigrate our institutions of higher education... This reflects in part an unpleasant streak of anti-intellectualism always present in Australian public life and in part a deliberate denigration by our predecessors... a denigration which was matched by a squeeze on their funds. The present government has no doubt about the central importance of these institutions ... our economic future [lies] in the level of education and skills of our people.<sup>35</sup>

The Powles Report endorsed this view, urging that "postgraduate education be perceived as an integral part of the larger economic, industrial and social programme, utilizing the excellent labour power Australia has potentially at its disposal".<sup>36</sup> The effect of the rise of feminism from the 1960s onward is evident in the transformation of "manpower" to "labour power"; the economic imperative underlying the inclusive terminology remained, however. Postgraduates, with their research value reaffirmed, were to gain increased recognition in the march toward the realization of Prime Minister Hawke's vision of Australia as the "clever country".

After 1983, postgraduate completion rates came under increased scrutiny, with evidence that doctoral candidates, particularly in the arts, took longer to complete than their British counterparts. The Macquarie study showed a mean time of 4.14 years for full-time PhD completion, with part-time candidature averaging over five years. These findings were probably applicable for postgraduates across Australia. Students over 40 took longer to

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<sup>35</sup> Senator the Hon. Susan Ryan MP, Commonwealth Minister for Education and Youth Affairs, Address to the 46th Meeting of the Australian Education Council, 6 May 1983.

<sup>36</sup> Margaret Powles, The Role of Postgraduates in Australian Research, p145

complete, males under 30 had the highest completion rates and females under 30 showed the highest dropout rate. Supervisory practices required revision.<sup>37</sup> The days when a few postgraduates could be “tucked into” a department, and given spasmodic attention, were disappearing. By the mid-1980s, the nature of the whole postgraduate structure was beginning to be examined more closely and critically.

One of the conundrums for Australian university research has been the appropriate recognition of excellence within an egalitarian society. For a long time, Australian research had been concentrated in a few universities. Throughout the expansion of the 1960s and even during the 1970s, when some of the research dollars were redistributed to newer universities, the older universities retained their research pre-eminence and prestige. By the 1980s, the CAEs had become new competitors for applied research funding. However, increasing costs, especially in the sciences, and a desire to encourage often new and potentially rewarding fields of research, led governmental advisers to recommend concentration of research effort within existing centres of research.

The election of a Labor government in 1983 exacerbated tensions between equity and excellence, between sharing or concentrating research funds. Many more demands were made on the research dollar, not the least from restive CAEs. An attempt to resolve these tensions, in the CAE sector especially, saw the establishment in 1985 of Key Centres of Teaching and Research, following CTEC recommendations. Ten centres were established, with priority given to those which would have direct national benefit. Though the emphasis was to be on undergraduates, the concept of a “research centre” would inevitably seed postgraduates.

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<sup>17</sup> Peggy Nightingale, *Macquarie University Postgraduate Evaluative Study*, pp 54-9

Government policy continued to be directed to funding of research seen to be "relevant to national development".<sup>38</sup>

By 1986, there were 2,000 masters students in CAEs compared to 25,000 higher degree students in universities. Though the figure was small, demand grew as degree courses proliferated. However, only thirty Commonwealth Scholarship awards were given to CAEs annually, compared to 900 for universities.<sup>39</sup> There was pressure for this number to be increased, especially in view of the applied scientific research which the sector was undertaking - strategic research of the nationally useful kind approved of by the government.

The Advanced Education Council argued in 1984:

The shortfall in applied research about which concern is felt by the government and community generally, would be significantly addressed by an expansion in research undertaken by colleges.<sup>40</sup>

The research divide was one many in the universities did not want breached, as they considered basic, rather than applied research, the province of the university. The CTEC in 1984 reiterated:

The primary role of CAEs is to provide vocationally oriented courses... masters' courses should be supplementary to this role; they should be of an applied nature and only available in selected colleges... doctoral studies should not be offered.<sup>41</sup>

This was increasingly hard to maintain as pressures grew within CAEs for postgraduate education. The Advanced Education Council argued:

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<sup>38</sup> Commonwealth Tertiary Education Commission, Report for 1985-87 Triennium, Australian Government Publishing Service, Canberra, 1985, Vol.3, p20

<sup>39</sup> Warren Jones and John Ainley, Research and Development in Colleges of Advanced Education, Australian Council of Educational Research Monograph No. 31, 1987, p17

<sup>40</sup> *ibid.*, p78

<sup>41</sup> Commonwealth Tertiary Education Commission, Report for 1985-87 Triennium, Vol.1, Part 1, p33

It may be more accurate now to describe higher education as both "plural" and "binary"; the term plural reflecting the variety of educational policies applied in the institutions with binary applying to differences between funding and co-ordination between universities and CAEs ... changes have resulted in a more diversified role for CAEs than first envisaged.<sup>42</sup>

The addition of nursing studies to the tertiary sector from 1984 (in CAEs) swelled undergraduate numbers. Nursing degree courses would lead inevitably to a demand for more postgraduate courses as nursing numbers increased.

### **THE 1986 REVIEW OF EFFICIENCY AND EFFECTIVENESS IN HIGHER EDUCATION**

Concern with the most efficient and equitable use of resources in a time of student growth and unchanged government funding in real terms led to this CTEC Review, which was chaired by the head of CTEC, Hugh Hudson, a former politician and economist. The title underscored the instrumentalist approach to higher education of the earlier government reports. "Outcomes" - of higher education - were examined over the previous decade, where overall tertiary numbers had increased by one-third. While the Report did not address postgraduate issues in detail, many of its findings had some relevance to the sector, especially the recommendation that institutions develop research management strategies.

The Review found that 70% of the total student growth had occurred in the CAEs since 1976. Nearly 70% of the increase was in part-time or external enrolments, though an increase in full-time study became evident after 1982. There was a movement away from teacher education toward enrolment in business, science and technologies. Participation rates for young males declined, while female rates continued to rise. Higher degree enrolments had risen at a faster rate than total enrolments in universities, mainly in coursework masters degrees, which

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<sup>42</sup> Warren Jones and John Ainley, *Research and Development in Colleges of Advanced Education*, p2

doubled over the decade. The smallest increase was in masters research degrees, while PhD enrolments increased by 64% in a decade. (Table 5.5)

Table 5.5

HIGHER DEGREE STUDENTS IN UNIVERSITIES AND CAEs			
1975, 1980 AND 1985			
Level of Course	1975	1980	1985
<b>UNIVERSITIES</b>			
Ph.D	4,986	6,127	7,779
Masters research	5,699	6,046	5,731
Masters coursework	5,968	8,365	11,002
TOTAL	16,653	20,538	24,512
<b>CAEs</b>			
Masters	312	1044	2,054
TOTAL	16,965	21,582	26,566

Source: University Statistics

Postgraduate enrolments by 1986 were 16.6% of total enrolments, having fluctuated over the decade between 15% and 17%. Postgraduate education was not only expanding (numbers rose 40% over the 1980s) it's composition and nature were undergoing fundamental change.

Many of the Review's findings influenced the tenor of the White and Green Papers, released after 1987. One major difference was that, whereas the Review considered that further scope for institutional rationalization and economies of scale were limited, an opposite position was taken after 1987.

### PHD GROWTH IN THE 1980s

While the masters research degree, especially in the sciences, showed small growth rates, doctoral education continued to enjoy steady, if occasionally erratic, growth. The PhD was firmly entrenched as **the** entry level qualification for many science careers and academia generally although in some disciplines, like law, few students undertook PhDs partly because

of favourable private employment conditions. The growth rate for PhDs was below 3 per cent during the 1980s, a far cry from the 15% per annum during the 1960s and less than the 5% rate prior to 1960. As well as the dearth of scholarships, variations in the growth rate may be linked to the fact that fewer university staff members (having completed their PhDs) were enrolled by the 1980s. Nevertheless, the trend was to growth.

Science PhDs continued to be the largest proportion (40% of the total). Humanities, engineering, technology and medicine graduated the next highest proportions. The fastest growing PhD group in the 1980s was the social sciences which in combination with the humanities made up 30% of total PhD enrolments. As these were the areas where women were concentrated, a proportion of the rise could be attributed to their increased participation (35% in 1982), a proportion more than double that of female science PhDs. Female participation rates at higher degree levels did not yet match undergraduate rates - but the trend to older candidature meant a significant pool of future postgraduates was forming. Women were approaching this dominant work site of the modern university - the research culture - and aspiring to cultural consanguinity.

## **SUMMARY**

Though by 1987 it seemed "demand is fragile and there are few pressures for growth" as Alan Lindsay wrote in a paper on doctoral education, the underlying trend within an increasingly educated society was still toward postgraduate study, if at a slower rate than twenty years previously.<sup>43</sup> The various permutations of postgraduate education in the period 1975-87, such as an increase in part time study, older students, the entry of women to the sector, and

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<sup>43</sup> Lindsay, Alan, "Doctoral Education: Continuity and Change", *12th Annual HERDSA Conference Proceedings*, Vol. 9, Sydney, 1987, p370

increased coursework, could not obscure the central phenomenon - the long-term trend toward growth in postgraduate participation rates.

In 1987, wrote Lindsay, paraphrasing the report of the moment:

Key policy questions concern the scale, balance and degree of concentration most appropriate for the effective and efficient provision of future doctoral education. Research training policies have received little direct attention in the past.<sup>44</sup>

Scale, balance, and degree of concentration were indeed key policy issues by 1987. These issues in relation to doctoral education or other postgraduate sectors had not been tackled adequately by governments; as micro-elements they had been largely subsumed in the macro-picture of overall postgraduate resourcing.

In the 1980s, the Australian tertiary sector was increasingly characterized by bureaucratization and ever more complex ties to government as its major source of funding, with the ancient concept of university autonomy under threat. By 1987, the binary system was philosophically and practically untenable.

Credentialism saw market value attributed to many postgraduate degrees. Propelled by the economic imperatives of government, the tertiary sector increasingly saw research directions determined by the requirements of the state and justified by appeal to national needs, many of which were scientific and only achievable through expansion in the relevant research and postgraduate sectors. The American professional postgraduate model made some inroad at masters and diploma level, though its centrepiece, the graduate school, was not adopted.

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<sup>44</sup> *ibid.*, p370

Science, as it had previously done, continued to provide the dominant (apprenticeship) model for doctoral education.

The Dawkins Green and White Papers which were about to be released, were to herald an era of turbulent change, one in which postgraduate issues came increasingly to the fore. Within the tertiary sector, the postgraduate stratum was to become the foundation of what was, in effect, a new, quaternary sector of education - a development wholly in line with world postgraduate trends.



## **CASE STUDY: THE UNIVERSITIES OF ADELAIDE AND NSW 1975-1987**

With the change of federal government in 1975, tertiary cutbacks slowed postgraduate expansion at Adelaide. In this period postgraduate numbers, particularly in coursework higher degrees, grew significantly at UNSW, while postgraduate diploma enrolments fell. There was little corresponding growth in this area at Adelaide. In many ways UNSW's experience was unusual, for this period at both Adelaide and UNSW (as elsewhere) was further characterized by diminished resources and a relatively static undergraduate base. Two different higher degree models continued to be prominent at the two universities - the research degree at Adelaide and the coursework higher degree at UNSW. Adelaide continued to position itself as a "traditional" research university, while UNSW retained the mantle of an innovative, technological institution (though at the same time, also increasing its research profile). Both universities continued to show strength in the area of international student enrolment and also illustrate the Australia-wide experience that, while undergraduate numbers remained relatively static, postgraduate numbers grew in the period between 1975 and 1987.

At Adelaide, most higher degrees remained confined to the research paradigm, with a thesis the substantial or only part of the degree. UNSW continued down the new path of the coursework degree, with its much reduced thesis component; there was also a continuation, if somewhat muted in this period, of its early emphasis on industrial collaboration in the higher degree area. Though the period was one of relative contraction overall, these two models of the higher degree, and some shift of emphasis to industrial and applied involvement, were to have important ramifications (along with the new concept of special research centres) for the direction of Australian postgraduate education after 1987.

In both universities, developments in the arts discipline of Geography and the science discipline of Biochemistry indicate some of these trends.

## **ADELAIDE**

In 1975, 122 higher degrees were conferred at Adelaide. In 1987, there were 137, only a slight annual increase. Postgraduate numbers showed little change, with 1,154 enrolled in 1975 and 1,201 in 1987. In contrast, undergraduate numbers fell; total university enrolments were 9,626 in 1975 and 7,319 in 1987.<sup>45</sup> Some postgraduate courses were instituted in this period and a few discontinued. Due to the popularity of masters degrees in clinical science and business management, postgraduate diplomas in these disciplines were discontinued after 1977. However, a postgraduate diploma in psychotherapy and a postgraduate BEd were instituted in 1981.

The research degree remained the postgraduate norm at Adelaide, as at the other pre-World War Two universities, despite the fact that coursework masters degrees were the predominant postgraduate growth area in Australia in this period. A coursework Master of Legal Studies and a Master of Agricultural Studies were early such degrees instituted at Adelaide (in 1980). At Adelaide, postgraduate courses were not generally oriented toward part-time, employed students, while it retained postgraduates in areas strongly linked to the research ethos.

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<sup>45</sup> The University of Adelaide Calendars, 1975 -1987

In 1977, 33.7% of Adelaide's enrolment was female (the Australian average was 39%).<sup>46</sup>

While females remained poorly represented in higher degree numbers at Adelaide, faculties which traditionally enrolled most female students were the first to achieve parity in higher degree enrolments (Music in 1981 and Education in 1982). By 1985, over 50% of higher degree candidates in the Arts faculty were female. In 1986, twenty-five of the 134 higher degrees awarded went to women, with females awarded 633 of the 1518 bachelors degrees.

Throughout the 1980s, total female numbers at Adelaide remained smaller than total male numbers. This reflected the university's science base, and, in the postgraduate area, to some extent the paucity of coursework higher degrees and diplomas - areas where women increasingly began enrolling elsewhere in Australia in the 1980s.

In 1982, both Adelaide and UNSW had above the Australian average number of overseas students. Adelaide's proportion of overseas students (10.9%) was a reflection of its early involvement with overseas postgraduates in science and agriculture. In 1982, overseas students, most of them non-fee-paying, comprised 9% of all Australian tertiary students.

The Sixth Report of the Universities Commission in 1975 recommended that the Waite Institute receive special research funding and be treated as a special postgraduate centre; however, subsequent funding restrictions prevented this.<sup>47</sup> In 1981, Adelaide was chosen as one of the first ten Australian Centres of Excellence (later Special Research Centres) in the

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<sup>46</sup> Committee of Inquiry into Education, Employment and Training, *Report*, p146. A 1980 student survey of fifteen universities asked students to rate their universities on five "student friendly" attributes. UNSW interestingly ranked last for men and twelfth for women. Adelaide was second to last for women and eighth for men. Melbourne, that bestower of the first, and first female, PhD, ranked last for women and second to last for men. New England for men and Newcastle for women ranked first.

See Phillip Coyte, *University Is it worth it?* Hale and Iremonger, Sydney, 1985, p25

<sup>47</sup> Universities Commission, *Report for the Triennium 1977-9*, p97

area of Gene Technology, and in 1986 was designated as one of the first seven Australian Key Teaching and Research Centres (in petroleum geology and geophysics).

Adelaide's strength in certain areas of scientific research in the period to 1987 was based on, and thereby consolidated, the supremacy of the research degree. Most funding was from Commonwealth sources, for basic research, with negligible industry input in this period. In this, it mirrored the experience of the oldest state universities.

The Geography Department at Adelaide (as at most other universities) remained quite small during the 1970s but in 1987, though a much smaller department than UNSW, it had nearly twenty full-time equivalent research students.<sup>48</sup>

Between 1975 and 1985 at Adelaide, the Biochemistry Department had eighty-six honours students, only three more than in the previous ten years; however, in those twenty years, 83 Phds were awarded.<sup>49</sup> The last MSc was to be awarded in the discipline was in 1977, with the MSc increasingly seen, in the biochemistry discipline at least, as a “second prize”.<sup>50</sup> By 1982, the Department had become a Centre of Excellence in Gene Technology and received considerable Commonwealth funding.

## UNSW

After 1975, total student numbers showed some decline; the enrolment of 18,000 was not reached again until 1988. In 1975, 2,354 postgraduates were enrolled in higher degrees.<sup>51</sup>

Between 1975-1987, the only sector of the University to show growth was the postgraduate

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<sup>48</sup> University of Adelaide, *Affirmative Action Report*, December 1987, p22

<sup>49</sup> V.A. Edgeloe, *Biochemistry and the Chemistry of Living Matter*, unpublished typescript, University of Adelaide Archives, 1988, p122

<sup>50</sup> Barry Egan, Department of Biochemistry, University of Adelaide, interview, September 7 1993

<sup>51</sup> University of New South Wales, *Statistics*, 1991, Table 5

sector, which grew by 50%. Coursework masters degrees were the main growth area, while postgraduate diploma enrolments fell by 35%. (Table 5.6) Engineering remained the largest faculty, followed by those of Commerce and Economics, and Arts.

MBA courses in Australian universities were first taught in 1963, at Adelaide, Melbourne and UNSW; in 1977, the first Australian Graduate School of Management was established at UNSW. It offered the MBA, while the Faculty of Commerce still continued to offer the Master of Commerce. From the first, the Universities Commission stated "in view of the tight financial situation, the School, when established, should be able to obtain additional support from the private sector"; this has continued to be a feature of postgraduate management education at UNSW and elsewhere.<sup>52</sup> Sir Rupert Myers (UNSW former Vice-Chancellor) in discussing the establishment of the School, and its precursor, the Institute of Administration, noted:

management training was an essential thing to provide... at the end of the Second World War, management education in Australia was negligible. The history of the University [of NSW] is one of education for the professions. The involvement of the University in the world of industry and commerce put it in a good position to prepare people for management by specific, as opposed to general, training. So management education relates to the very character of the University.<sup>53</sup>

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<sup>52</sup> Universities Commission, *Report for the Triennium 1977-1979*, Government Printer, Canberra, 1977, pp 95-6

<sup>53</sup> Sir Rupert Myers, Vice-Chancellor of the University of NSW 1969-1981, Interview with Sue Knights, University Archives, 9 December, 1990, p64

Table 5.6

## STUDENT ENROLMENT BY LEVEL OF COURSE, 1948-1991

YEAR	HIGHER DEGREE	POSTGRADUATE DIPLOMA AND GRAD CERT (1)	BACHELOR & ASSOCIATE DIPLOMA (2)	OTHER (3)	TOTAL
1948			46		46
1949			115	2	117
1950	6		245	5	256
1951	15		3754	304	4073
1952	56		3531	373	3960
1953	103		3263	351	3717
1954	169		3540	294	4003
1955	187		3572	275	4034
1956	238		4257	340	4835
1957	214		4541	331	5086
1958	293		5378	372	6043
1959	376	32	6070	434	6912
1960	495	63	7026	300	7884
1961	484	124	7863	367	8838
1962	559	187	7979	439	9164
1963	624	199	8689	363	9875
1964	697	242	9586	452	10977
1965	843	251	9497	685	11276
1966	1087	320	11130	799	13336
1967	1405	432	10232	771	12840
1968	1630	603	11560	913	14706
1969	1878	690	12332	1088	15988
1970	1970	583	13235	864	16652
1971	2027	724	13699	975	17425
1972	2036	738	14456	906	18136
1973	2009	716	15280	1006	19011
1974	2221	718	15141	514	18594
1975	2354	670	14595	509	18128
1976	2492	617	14675	594	18378
1977	2573	475	14920	552	18520
1978	2647	396	14954	565	18562
1979	2807	390	14746	523	18466
1980	2815	381	14608	555	18359
1981	2944	356	14870	674	18844
1982	3205	323	14748	740	19016
1983	3070	387	14336	583	18376
1984	3053	389	14060	534	18036
1985	3263	359	14156	572	18350
1986	3513	450	14339	627	18929
1987	3588	466	14192	554	18800
1988	3925	523	14722	610	19780
1989	3856	490	14976	533	19855
1990	4670	728	17692	878	23968
1991	5494	965	19795	1055	27309

Note: (1) Graduate Certificate first available in 1991.

(2) Associate Diploma first available in 1990.

(3) From 1990 'Other' includes Postgraduate Qualifying, Cross Institution and Non-Award.

Prior to 1990, 'Other' only included Postgraduate Qualifying and Non-Award.

1990 was the first year Cross-Institutional enrolment was reported to DEET.

Source: The University of New South Wales Statistics 1991

The MBA followed the "classic US tradition" and was "the only full-time Australian two year MBA".<sup>54</sup> A very significant pattern was set here, particularly in terms of industry involvement and industry-specific training. The School, established at a time of federal stringency, presaged much of the future direction of management education, particularly in its embrace of American models and close ties to business (including funding). The establishment of a similar school at Melbourne in the early 1980s and the later proliferation of MBA courses, were all influenced by the establishment of the AGSM.

In 1981, annual PhDs awarded fluctuated between 92 and 127 and MAs between 20 and 59, while MSc numbers dropped as the PhD became the preferred science higher degree. Of the 834 higher degrees awarded in 1987, 121 of them PhDs. Applied science masters degrees showed some growth, however. By 1987, over fifty different masters degrees were offered at the University. Many were coursework degrees, created in response to professional and industrial demand. In this area of postgraduate growth, however, few scholarships were available. Around 100 annual Australian Postgraduate Research Awards went to the University through the 1980s, much the same as at smaller Adelaide. This reflected the differing support available to the older universities with research postgraduates, and the problems for universities seeking to offer more postgraduate coursework degrees.

Between 1974 and 1987, the proportion of commencing female students grew from 32% to 47%, with the faculties of Professional Studies and Arts, which included Education, Nursing and Librarianship (as in many other universities) having the highest enrolments of females at the university.<sup>55</sup> (In 1977, the University had the lowest percentage (28.9%) of female students

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<sup>54</sup> Dean Ashenden, Sandra Milligan, Rod Quin, The Australian Good Universities Guide to Management Education, Mandarin, Port Melbourne, 1995, p218

<sup>55</sup> Douglas Magin and Helen Simpson, "The Social Composition of Students entering the University of New South Wales: Changes Since 1984", Papers from the Fourteenth Higher Education Research and Development Society of Australasia Conference, Canberra, 1989, Vol. 11, p205

in Australia).<sup>56</sup> Female postgraduates also largely came from these faculties. In these years the largest rate of female growth was in Commerce. Many of the University's female commencers were immigrants or had parents from non-English speaking backgrounds, and by 1987 nearly outnumbered similar background male commencers from similar backgrounds. (This was a result in part of the University's catchment area, where many of the University's foreign students subsequently settled). As previously noted, in 1982, UNSW had much more than the national average proportion of overseas students.

In 1982, two of the first research Centres of Excellence were established at UNSW (in nerve muscle research and microelectronics) confirming the University's national research standing in some areas, despite its applied focus. However, no Key Teaching and Research Centres were established at UNSW in 1986.

In the "no growth" period after 1977, the University faced the problem of diminishing real resources. Nevertheless, between 1981 and 1987 the University ranked third in Australia in terms of total Commonwealth competitive research grants. Unisearch continued to provide significant outside revenue while the introduction of a tax rebate for industry contributions to research and development saw ongoing commercial involvement with industry.

The period 1975 to 1987 at UNSW was a "phase of rapid expansion" in the Geography Department, with "about twelve full and part-time research students" at the end of the decade; the Faculty of Applied Science then faced financial problems, and the Geography Department lost "lots of staff through most of the 1980s... research numbers declined, but [it] was still big compared to other geography departments".<sup>57</sup>

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<sup>56</sup> Committee of Inquiry into Education, Employment, Employment and Training, Report, p148

<sup>57</sup> Morgan Sant, Department of Geography, UNSW, Interview 20 July, 1993



In the early 1980s, masters degree courses in environmental studies (an interdisciplinary course) and geographic information systems and remote sensing were established through the Geography Department at UNSW. The University, along with the Universities of Queensland and Western Australia, was one of the first to offer the latter course. The University's willingness to encourage interdisciplinary postgraduate study presaged directions which would be encouraged increasingly by government in the future.

At UNSW, an average of one or two masters and PhD degrees in biochemistry were granted annually until 1986 (a far smaller number than at Adelaide) with the first biochemistry DSc granted to the founding professor in 1978. From 1970 onward, the Department attracted significant funds, as did Adelaide, from Australian Research Grants; this gave a stimulus to research and postgraduate study, and staff numbers grew. However, these funds were cut back in 1975, resulting in staff shortages and a subsequent search for alternative funding sources. In 1982, a Committee of Review was set up to examine the organization of the science schools at UNSW; a proposal in 1985, for amalgamations of Schools in the Faculty of Biological Sciences, met resistance. These uncertainties had some effect on postgraduate growth, in contrast to Adelaide, where institutional and federal support remained steady.

Biochemistry (one of the pivotal sciences at Adelaide) is an example of how specialization and early expertise can create areas of postgraduate prominence even in small universities. Nationally and internationally, however, research in the discipline grew increasingly costly, making early success in attracting research grants, or designation as a research centre, crucial to ongoing support. Without such support, the establishment of expensive disciplines like biochemistry grew increasingly prohibitive to prospective new entrants to the field.

In 1987, the research model, even through times of funding constraints, continued to drive postgraduate education; this was particularly evident in the sciences. Federal postgraduate support, in terms of scholarships and funding for research, was largely linked to the research degree. At Adelaide, the research degree and the research model retained primacy. At the same time a competing professional postgraduate model rose to prominence in this period, characterized by coursework at diploma or masters level. However, this mode of study generally attracted little federal financial support. This model, linked as it was to professional and applied needs, was strongly identified with the University of New South Wales, which also championed the traditional research model in areas where it wished to achieve parity of esteem - and attract research funds.

Even in a period of contraction and stringency, the new postgraduate growth areas of the post-war years - the research university, the increasingly internationalized student body and the technological, professionally-oriented university - were not as affected by the constraints as the rest of the tertiary sector. The ascendancy of the research university in this period was to be further encouraged, if unwittingly, by the creation of the Unified National System.

## **CHAPTER SIX: THE PARTICIPATION REVOLUTION 1987-1993**

"Someone has to be the Bastard". (John Dawkins, May 1988)

"If you are stoking up the fires under the crucible of change, you are bound to get singed every now and again... I think that the best way of leading a quiet life is not to do anything, but that's not my choice". (John Dawkins, December 1988)

"The most dangerous man in Australia". (Higher Education Fighting Fund, 1991)

### **THE UNIFIED NATIONAL SYSTEM AND POLICY CHANGE**

After 1987, the pace of change in the postgraduate sector quickened. Despite the importance attached to research, and the research model, the professional postgraduate model attained new prominence. Government, students, employers and universities sought forms of postgraduate education which would suit the increased diversity of national and individual educational needs. The research model was no longer able to fully satisfy these divergent demands.

Between 1987 and 1991 particularly, the higher education system in Australia underwent dramatic change. Institutions were reconstituted and amalgamated into the Unified National System, bringing the tertiary sector more firmly than ever under federal control. Under the aegis of the reformist Minister of Education, Employment and Training, John Dawkins, the undergraduate and research sectors were opened up and reorganized. As higher education numbers grew by 30% between 1989 and 1992, Dawkins proudly termed his reforms the "participation revolution". Postgraduate education was affected both indirectly and directly by the thrust of change in the undergraduate and research sectors. During the years 1988-1993, the postgraduate sector grew at an unprecedented rate. Demand was fueled by a multiplicity of

factors, not all anticipated by the architects of change. Government demand was for a larger and more responsive research sector and its research base, the postgraduate sector, became a vital and growing component of the Unified National System. At the same time, there was concern that there was a steady decline in funding (in real terms) of the overall higher education sector. This was arguably the most significant change of all and a factor which significantly affected the impact of other tertiary changes.<sup>1</sup>

During the period 1987-1993, Australia had two federal Ministers for Employment, Education and Training, John Dawkins (1987-1991) and Kim Beazley. (1991-1993). From 1991-1992, Peter Baldwin was the Minister responsible for Higher Education. During the period, three ministerial documents had a major impact on policy direction: the Green and White Papers (1987, 1988) issued during Dawkins' incumbency and **Higher Education: Quality and Diversity in the 1990s, a Policy statement**, released by Peter Baldwin in October, 1991.<sup>2</sup> These documents shaped the direction and form of higher education and within it, the postgraduate sector. The major policy documents spawned a proliferation of reports, for example, those of the Higher Education Council on graduate studies, the DEET (Department of Education, Employment and Training) Higher Education Series as well as numerous other DEET-initiated reports, discipline reviews (for example in law, engineering, accounting and computing) reports of the AVCC and individual institutional reports. The volume of reports on the postgraduate sector was greater than at any other time in Australian history, an indicator of the sector's increased political importance and growing complexity.

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<sup>1</sup> In the research and postgraduate area, where there are considerable structural funding complexities, the extent of the decline is more problematic. Most recently, the Labor government claimed a rise in real funding for research between 1983 and 1995 of 317% (an average of 12.6% per annum) real funding for capital in the same period of 443% (15.1% per annum) and also a rise in real research funding in constant dollar terms, per equivalent full-time student, from \$303 to \$809 over the period. Against this must be balanced claims of a decline since 1983 of 13% per equivalent full-time student (of operating grant). See Crean, Simon, "ALP: Our record speaks for itself", *The Australian*, 28 February 1996 and Poole, Millicent, "Research policies blur under the microscope", *The Australian*, 28 February 1996

<sup>2</sup> Hon. J.S. Dawkins MP, *The Challenge for Higher Education in Australia*, Australian Government Publishing Service, Canberra, 1987  
Hon. J.S. Dawkins MP, *Higher Education: a Policy Discussion Paper*, Australian Government Publishing Service, Canberra, 1988  
Hon. Peter Baldwin MP, *Higher Education: Quality and Diversity in the 1990s*, Australian Government Publishing Service, Canberra, 1991

Research was encouraged in the 1987 and 1988 White and Green Papers as a direct arm of national economic policy. Greatest government-sanctioned growth of postgraduate numbers occurred in the 1991-1992 period, particularly after the **Quality and Diversity** statement. After 1992, some reining-in was applied to the higher education sector, albeit with mixed success in the postgraduate area.

In the period 1987-1993, these three major policy documents simultaneously reflected, stimulated and underestimated the strength of underlying demand from a variety of stakeholders, as postgraduate education further consolidated its position as a potent fourth tier of national and international education systems. The Green and White Papers, especially, provoked much debate concerning the aims and values of higher education. The Green Paper, in particular, was seen by many as a highly instrumentalist document. While the consequences of adherence to a potentially overly economic model of higher education were noted by many academics, these were unacknowledged by the authors of the various Papers and reports (indeed Dawkins, thinking the universities were long overdue for reform, was a passionate defender of the changes he had engendered).

Higher education policy, in the hands of so-called "economic rationalists", seemed to be seen as merely a subset of economic policy. Despite the loftier aims of the various documents, there was concern that reduction of unemployment (by shifting the young from the dole to higher education) was a major aim of the "reforms". Were the aims, some academics wondered, scholarly, educational, democratic, educational or, rather, to speed up the rate of economic change? Change perceived as imposed and non-consultative is more likely to raise ire, particularly when the fundamental philosophical underpinning of universities - the goals of the pursuit of knowledge for its own sake, scholarship and the advancement of critical

understanding - seemed either undervalued or non-existent in early documents. Pressure on staff and students, whether in terms of resources or that most essential need of the scholar - time for contemplation and research - was of concern in a new and possibly hostile milieu.

In deciding to structure this chapter around the major government documents, I am cognisant of two factors: first, the documents are the most comprehensive sources of postgraduate information available, and secondly, little else that is not journalism has so far been published concerning this period. Such a structure, moreover, follows the pattern of previous chapters. The documents and their effects are not, however, accepted as unproblematic. While the postgraduate area received new and in many instances, welcome, attention, resources were often spread more thinly, as funding did not keep pace with increased student numbers. Many libraries were forced to cut back on journals. Staff numbers did not increase at the same rate - many were under pressure, as supervision ratios increased and new courses were established. These were unacknowledged or unintended consequences of change. As strains increased, the changes found some trenchant critics within academia.

## **THE GREEN AND WHITE PAPERS**

In 1987, John Dawkins, federal Minister for Employment, Education and Training, issued the Green Paper, **The Challenge for Higher Education in Australia**. This was followed by the 1988 White Paper, **Higher Education: A Policy Statement**. Both Papers, and the subsequent reforms which followed, provoked intense debate, vituperation and polarization of views across the tertiary sector and beyond. Tertiary education was thrust to the forefront of the Australian consciousness in a new way.

The reforms of the higher education sector followed the direction of the Commonwealth Tertiary Education Commission's 1986 **Review of Efficiency and Effectiveness in Higher**

**Education.** The main structural changes were the abolition of the binary system with the merger of the colleges of advanced education and universities, creating the Unified National System (UNS) the establishment of the Australian Research Council (ARC) in 1988 (with responsibility for advising the Minister on the allocation of research funds) and administrative changes. In the latter case, the administrative functions of CTEC were transferred to the Department of Employment, Education and Training (DEET) and the Higher Education Council assumed CTEC's advisory function. With the abolition of the binary system, CAEs disappeared and many (often difficult) amalgamations occurred. The 78 tertiary Commonwealth institutions of 1982 were reduced to 38 in 1991; eight other institutions were funded by the Commonwealth outside the UNS.<sup>3</sup>

Larger institutions were necessary to achieve federal funding, while a base of 8,000 equivalent full-time student units (EFTSU) was mooted initially in the Green Paper for any institution wanting funding for research across its educational profile. The White Paper acknowledged that this would be too prescriptive, while reaffirming the view that 2,000 EFTSU would be the minimum size required for participation in the Unified National System. Few institutions wished to be funded as non-research institutions.

In **Higher Education: a Policy Statement**, the government sought "growth and quality enhancement across the whole of the education and training system" and to "identify national goals and priorities for the higher education system and ensure that system-wide resources were allocated effectively in accordance with those priorities".<sup>4</sup> While the Paper supported basic research, there was a strong push for more strategic research. Emphasis was given to

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<sup>3</sup> Department of Employment, Education and Training, National Report on Australia's Higher Education Sector, Australian Government Publishing Service, Canberra, 1993

<sup>4</sup> Hon. J. S. Dawkins, Higher Education: a Policy Discussion Paper, pp3 and 10

fields identified as having most national economic potential: technology, business, management, Asian languages and science and mathematics training for teachers. There was some softening of the economic rationalist stance of the earlier Green Paper, which had appeared to downgrade the value of research in the humanities and other disciplines which were less obviously tied to economic goals. This had unleashed the ire of many critics. In response to this criticism, the White Paper stated:

research will continue to be fostered across the entire range of academic and professional fields: in the arts, the humanities and the social sciences as well as the natural and physical sciences. But to be effective, support for basic research in all disciplines must be directed to excellence in outcomes as determined by careful evaluation procedures, including peer review...the Government reiterates its full commitment to maintain a strong basic research capability in higher education. In addition, however, increasing emphasis must now be placed on strategic basic research; that is, basic research in areas that hold potential for major developments of applications across a range of fields...Concentration and selectivity in research are needed if funding is to be fully effective.<sup>5</sup>

The White Paper announced a review of higher degrees, sought improved links with employers, and asked the Australian Research Council to produce a report on postgraduate awards. This unprecedented concentration (in comparison with the Murray and Martin Reports) on postgraduate issues was shown in the nine page chapter devoted to research and postgraduate education (with three pages on postgraduate education alone) which noted:

There is a need for greater flexibility in the nature of postgraduate education, including provision for shorter courses and more flexible admission and teaching arrangements. Postgraduate training is increasingly being viewed as an appropriate means of upgrading professional qualifications, retraining and gaining specialist technical skills. In addition, measures are needed to improve course completion rates, increase the proportion of female students, ensure an efficient spread of provision and make postgraduate education more attractive to high quality students in fields where there is a strong demand for first degree graduates, as reflected in the relatively attractive salaries offered by industry.

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<sup>5</sup> *ibid*, p90



Postgraduate education is central to the research undertaken in universities... and industry ... the CSIRO and defence... yet there is a view that current research-based postgraduate programs no longer provide adequate training even for a research-based career. There is a demand for postgraduates with multi-disciplinary training who are capable of the broad analysis needed in rapidly changing social, technological and economic circumstances.<sup>6</sup>

The American graduate school (or “professional”) model offered such breadth of training. During the initial two years of coursework in American graduate schools, postgraduates were exposed to a wide range of disciplines allied to their chosen fields. The traditional “apprenticeship” research model was characterized by early specialization (admittedly, as has been noted, Australian and British high school students and undergraduates were able to do this because they had studied subjects in more depth than was more generally the case in America) and little multidisciplinary exposure. Moreover, this model was not suited to employed students seeking short-course upgrading of professional qualifications, as it was based on research, lengthy candidature and the production of a large thesis. The professional model offered flexibility, while the prospect of raising much-needed funds through the provision of professional courses (as in America) was attractive to universities. Indeed, the raising of revenue, in hitherto untried forms, was to engage formidably the attention of universities and government alike.

## **THE HIGHER EDUCATION CONTRIBUTION SCHEME**

Underpinning the reform of the national university system was the establishment in 1988 of the Higher Education Contribution Scheme (HECS).

This was a "user-pays" scheme with equity considerations, as taxable earnings of students were to fund the expansion of more tertiary places. Student growth had increased 15%

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<sup>6</sup> *ibid*, p95

between 1982 and 1987. Between 1987 and 1992, there was growth of 47% particularly during 1990 and 1992. However, it was too early for the bulk of this growth in these years to be HECS-funded. Commonwealth money (partly savings from the "rationalization" of the tertiary system) was used for funding much of this growth. Postgraduate, as well as undergraduate, students were to be subject to HECS, though many exemptions were available for full-time, mainly research, students. (A feared large-scale deterrent effect on postgraduate studies did not, however, eventuate). Institutions were also encouraged to charge fees for a limited number of postgraduate courses which enabled professional upgrading or extension.

## QUALITY AND DIVERSITY

If "growth" and "equity" were the bywords of the late 1980s policy documents, "quality" and "diversity" were those of the 1990s. In October, 1991, a Policy statement, **Higher Education: Quality and Diversity in the 1990s** was released by The Minister for Higher Education and Employment Services, Peter Baldwin. The Foreword noted:

The statement sets directions for the development of Australia's higher education system through the 1990s... building upon growth and equity achievements that have been realized through the White Paper. They give priority to quality in diversity as the system responds to emerging challenges.

As well, the importance of postgraduate education within the system was further endorsed:

The Government will continue to fund strong growth in postgraduate, particularly higher degree enrolments. As well as accepting the importance of postgraduate education for the enhancement of Australia's knowledge base, the Government regards such a growth as essential to addressing the needs of the academic labour market.<sup>7</sup>

The **Quality and Diversity** document addressed concerns about future academic replacement in the 1990s as many academics hired in the 1960s reached retirement age. The **Study of the**

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<sup>7</sup> Hon. Peter Baldwin, Higher Education: Quality and Diversity in the 1990s, Foreword and p6

**Labour Market for Academics** in 1990 forecast a shortfall, predicting annual retirement rates of between 1,300 and 1,900 up to the year 2001, with science, health, administration and business and mathematics expected to be most affected.<sup>8</sup> The projections were based on the premise that new academics would need to have a higher degree. This the government rejected, on the basis of 1986 and 1990 surveys of existing academics' qualifications which showed many academics in some disciplines (such as law and accounting) did not have higher degrees. Institutional shift from undergraduate to postgraduate places within funded load was noted (without government disapproval) in the **Quality and Diversity** document, which made available more and better funded scholarships to local and some overseas postgraduates.

Postgraduate enrolments by 1991 exceeded 1989 projections, with higher degree enrolment showing most growth. The nation-wide economic recession was biting deeply and more graduates were electing to stay on for postgraduate study. Under these conditions, the urgency of academic replacement diminished somewhat.

The statement suggested institutions "might look at ways in which they can remove some of the barriers to women's participation as postgraduate students and in the academic labour market" acknowledging the relatively slight growth in enrolment for women in higher degree study.<sup>9</sup> Between 1988 and 1990, the proportion of women in higher degree study had grown from 37% to 39%.

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<sup>8</sup> Judith Sloan, Meredith Baker, Richard Blandy et al. Study of the Labour Market for Academics. National Institute of Labour Studies, Canberra, 1990

<sup>9</sup> *ibid*, p26

## QUALITY IN RESEARCH

In common with other contemporary higher education reports, notably in Britain, the 1991 statement addressed the issue of research quality. As the higher education sector in Australia moved from an elite to a mass system, the strain of accelerated and often under-resourced growth led to quality issues becoming ones of increasing concern for the government, universities and public.

The 1991 statement reiterated the Government's commitment to quality **and** diversity, underscored by increased attention to detailed research in the quality area. In 1989, a research group had been appointed by the Government to examine performance indicators (qualitative and quantitative) in higher education.<sup>10</sup>

An issue affecting quality was postgraduate mobility. Poor postgraduate mobility was considered detrimental to a diverse and developing research sector and the document initiated a review of, and increase in, relocation allowances, in an effort to improve this.

Another measure mooted to improve quality was that of the graduate school:

Improving the quality of research training is no less important than expanding the number of postgraduate places. Given the variety of institutions, a diversity of approaches to research training will be necessary. The concept of a graduate school is one type of strategy which can offer a range of possibilities and institutions are encouraged to explore this option. They can exist within a single ... or number of institution(s)... Some have already moved to establish co-operative postgraduate research institutions.<sup>11</sup>

The concept of a graduate school was placed firmly on the agenda by the **Quality and Diversity** policy statement. However, the existence of the Australian honours system (and

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<sup>10</sup> Professor Russell Linke, *Performance Indicators in Higher Education*, Australian Government Publishing Service, Canberra, 1991

<sup>11</sup> *ibid.*, p36

whether to place it within the undergraduate or "graduate" school) makes it difficult to fully graft the American organizational model on to the Anglo-Australian one. Nevertheless, the first Australian graduate schools were established in the early 1990s.

## **DIVERSITY**

While this section of the policy statement contained no subsection relating to postgraduate education, the statement refers to lifelong learning, noting that "undergraduate education should be seen more explicitly than at present as a rigorous foundation for lifelong learning ... specialization via postgraduate study might be deferred until after individuals have spent some time in the workforce"; the statement then quoted the Higher Education Council, which had asserted that the higher education system should be seen "less as a resource for 17 to 19 year olds, and more as a community resource for participants ... at different stages of careers".<sup>12</sup>

Diversity in the higher education sector was to be further encouraged, with the statement recording that Aboriginal and Torres Strait Islander numbers had increased by 40% between 1988 and 1990 and that numbers were projected to further increase by 80% between 1990 and 1993. Female students, until recently under-represented in tertiary institutions, comprised 53% of the higher education population in 1990, though they were still under-represented at the higher degree level. Other disadvantaged constituencies such as persons with disabilities, rural students, and low socio-economic groups were also targeted for ongoing federal support, generally at undergraduate level. Though these implications were not enlarged on in the statement, the much more diverse student population envisaged would ultimately have some flow-on effect to the profile of the postgraduate sector.

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<sup>12</sup> *ibid.*, p43. Higher Education Council, *The Challenges Ahead*, National Board of Employment, Education and Training, Australian Government Publishing Service, Canberra, 1990

## **Alternative Delivery Modes and Industry Links**

The statement noted:

recent developments in communications and information technologies have the potential to improve both the quality and efficiency of higher education provision ... [there are] opportunities for alternative delivery modes to enhance quality and increase diversity.<sup>13</sup>

Higher education and industry links had been a national priority area for funding since 1989 and industry links were further encouraged in the statement. Co-operative Research Centres, and higher stipend Australian Postgraduate Research Scholarships (Industry) introduced in 1990, had successfully encouraged postgraduates to undertake industry research. The statement announced a new program of collaborative research grants which was to be established through the ARC, further strengthening postgraduate research opportunities. The dynamics of collaborative and co-operative research ventures would impact significantly on the landscape of postgraduate research (particularly in science and engineering) in the 1990s.

## **HIGHER EDUCATION COURSES AND GRADUATE STUDIES**

A number of other reports and reviews appeared during 1988-1993 which examined various aspects of postgraduate education. Foremost among them was **Higher Education Courses and Graduate Studies**.<sup>14</sup> In July 1988, the Department of Employment, Education and Training was asked by the government to undertake an examination of postgraduate education in Australia, and sought the assistance of the Higher Education Council in this. The terms of reference were: advise on the maximum standard length and nomenclature for award courses including recognized professional courses and undertake a review of the scope, structure, quality and spread of postgraduate education in Australia.

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<sup>13</sup> *ibid.*, p46

<sup>14</sup> Higher Education Council, Higher Education Courses and Graduate Studies, Australian Government Publishing Service, 1990, p125

In July 1989, an interim report was released and a final report in September 1990. In all the submissions received, the HEC noted an "overwhelming endorsement of the principle of postgraduate education, a notable exception being the Commonwealth Department of Finance which suggested that consolidation and rationalization would be more appropriate than further expansion".<sup>15</sup>

In regard to course length, the Council considered "maximum lengths for individual award courses would impose unnecessary rigidity on the system" but "saw advantages in having a consistent national approach to both length and nomenclature" through enlisting the aid of the Register of Australian Tertiary Education.<sup>16</sup> Professional coursework degree times had begun to lengthen to an extent unacceptable to the Council and standard professional award times were listed. While variation in research degree times was acknowledged, nominal lengths of one year for a research masters degree after a four-year first degree, and three years for a doctorate, were recommended.

Other issues covered by the Report included gender, overseas students, industry links, scholarships, growth and future directions in postgraduate education. The Report also recommended that as part of the educational profiles of institutions, postgraduate study should be concentrated in areas of strength and quality resources should be assured to cover such courses. Subsequent government policy in all these areas was influenced strongly by this Report's recommendations.

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<sup>15</sup> *ibid.*, p125

<sup>16</sup> *ibid.*, p3

The 1990 Report also recommended that institutions establish professional doctoral degrees in accounting, law, engineering, education and nursing. It also "strongly encouraged greater links between postgraduate programs and industry".<sup>17</sup> This would have a marked effect on the development and structure of some doctoral programs, particularly in engineering.

In 1987, institutions were encouraged to develop further a wide range of short (from one-semester full-time) fee-paying postgraduate certificate programs in order to meet both individual, industry and national needs for higher level professional upgrading and expertise. As an incentive, institutions could charge fees, which would provide them with new and valuable revenue. In an August 1989 speech, John Dawkins had remarked with some asperity:

Before 1988... the Government effectively removed the prohibition of charging full fees for some postgraduate programs and also removed the prohibition of setting salaries in excess... of the industrial award. Now, almost two years later, I am surprised that so little use is being made of these extensions of institutional flexibility... particularly ... when a small number of institutions are earning significant amounts of extra revenue through postgraduate programs in just those areas where additional resources are required to pay salaries widely out of line with market rates.<sup>18</sup>

Although many universities protested that they had not been given the resources to pay market salaries, the gauntlet had been thrown down. Universities had to become more creative in finding new sources of funding for certain postgraduate programs as the government wanted to rein-in federal expenditure. Some institutions merely used existing courses and charged for them rather than developing new courses, a practice which angered many fee-paying students who enrolled. In 1990, the government encouraged institutions to delineate as fee-paying courses those which led to professional upgrading; these were designed for professionals, not

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<sup>17</sup> *ibid.*, p28

<sup>18</sup> Hon. J.S. Dawkins, speech to the Australasian Institute of Tertiary Administrators, Auckland, 30 August 1989



undergraduates proceeding directly to postgraduate study.<sup>19</sup> By 1991, over 10,000 students were enrolled in such courses.

The concept of making money from postgraduate courses was one that was embraced at first tentatively, and then enthusiastically, by many institutions.<sup>20</sup> The enthusiasm was tempered with some qualms - for example, concerning equity, and the movement toward a much more American-style, market-driven postgraduate system. This was a direct contradiction of the government's proclaimed equity and diversity commitment. Nevertheless, a fundamental change had occurred, one which will be examined in detail later.

By 1991, the tertiary system had undergone the most rapid period of change. "Reformed", universities were to become much more overt instruments of national policy. In this, the policy documents were major catalysts for the pace, scale and nature of system growth.

## **GROWTH IN THE SYSTEM**

A major outcome of the reforms and Reports was tertiary growth. Fuelling this growth was growth in year 12 retention rates, which was to be one of the main legacies of Dawkins' years as Employment and Education Minister (though greatly accelerated by the recession of the late 1980s and early 1990s). More girls (and some other previously poorly represented groups) stayed on to year 12 level. Equity goals were espoused by Dawkins and the previous Labor minister, Susan Ryan; coupled with rising youth unemployment, equity initiatives were important in speeding this growth in retention rates. In two decades, many of the (generally

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<sup>19</sup> Hon. Peter Baldwin, *Quality and Diversity*, p23

<sup>20</sup> By 1994, only James Cook University had the bulk of its postgraduate courses not subject to fees; at ten universities, including Macquarie University, UNSW (21%) and Monash, the proportion was over 20%. Adelaide and Melbourne had 15% and 18% respectively. Department of Employment, Education and Training, *Statistics 1994*, Australian Government Publishing Service, Canberra

unskilled) jobs for youth had disappeared, and the need for further training and credentialling became crucial for employment. The government had aimed in 1986 for a retention rate of 65% by the year 2000. However by 1991, the national rate was over 70%.

At the same time, the tertiary system also grew at a faster rate than had been expected (again, the recession was a factor) and at a rate twice as fast as labour force growth.<sup>21</sup> The government increased higher degree places in the 1992-94 triennium by 14,000 and increased funding for these places. The education juggernaut had needed some persuasion to "kickstart", but by 1992 it was seemingly unstoppable.

Growth in the tertiary and undergraduate sectors would provide demand for postgraduate education as the tertiary system moved from an elite to a mass system. With increasing numbers of the relevant school-age cohort becoming eligible for university, sites of employment selectivity moved increasingly to university and individual undergraduate courses, and further, to the postgraduate sector.

Growth in the higher education sector was compounded by the effects of national recession in the late 1980s and early 1990s. Increased numbers of young graduates chose postgraduate study and further qualifications in the face of, or as shelter from, an uncertain job market. At the same time, increased numbers of mature age students and "returners" to postgraduate study swelled the ranks of postgraduates. The changes of the Dawkins years had impacted strongly on the postgraduate sector in both direct and indirect ways. The sheer scale of this growth needs detailed examination.

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<sup>21</sup> Richard Sweet, "Size isn't everything when the system is unbalanced", *The Australian*, 25 November 1992

As Table 1 and Figure 1 show, the growth in student numbers from 1988 to 1993 was indeed remarkable and certainly revolutionary; the degree and nature of the "participation revolution" was more problematic. New entrants, particularly school leavers, were the prime targets of "participation", yet their numbers did not increase markedly as the system grew quickly to an enrolment of over half a million by 1992. Overall, total student enrolments grew by 60% between 1982-1992, with most growth after 1987.

Between 1982 and 1987, there was 15% growth in student numbers, with 30% of growth occurring between 1989 and 1992 alone. In 1991, 3.1% of the Australian population was enrolled in a university and university attendance was becoming more a part of the mainstream of Australian life.<sup>22</sup> 94% of the growth between 1988 and 1992, however, came from within the system and from overseas students.<sup>23</sup> Fewer students dropped out of their courses (this was influenced by the recession and compulsory repayment of HECS charges even if courses were not completed - a powerful disincentive). More students undertook second degrees, whilst the rate of growth of postgraduate numbers after 1988 was greater than that of undergraduate enrolments.

While both coursework and research higher degree enrolments increased after 1988, coursework enrolments increased at a faster rate despite some drop occasioned by the introduction of HECS. (Figure 6.1) The 103,000 postgraduates enrolled in 1992 represented an increase of **70%** on the 1989 figure, with much of the increase in the years 1991-1992.<sup>24</sup> Undergraduate newcomers in that year fell by seven percent from a peak in 1991, with 11,000 fewer admitted, as many universities sought to rearrange their undergraduate and postgraduate

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<sup>22</sup> In 1939, 0.2% of the population were enrolled.

<sup>23</sup> Richard Sweet, "Size isn't everything when the system is unbalanced", *The Australian*, 25 November, 1992

<sup>24</sup> Stephen Matchett, "School leavers left out", *The Australian*, 10 June 1992

load in favour of the postgraduate sector. The "Dawkins Years" heralded a surge in all forms of postgraduate study. However, the growth in postgraduate numbers was unforeseen and by 1993, problematic.

As a **proportion** of total student numbers, postgraduate growth had been relatively slight between 1980 and 1989 - only 1%. While 16.5% of all students were postgraduate in 1985, there was a fall to 15.9% in 1989. By 1991 however, the proportion had increased to 17% and by 1993, 20% of students were postgraduates. Many institutions, in their strategic plans for the 1990s, had aimed for postgraduate proportions of between 20% and 25% as research capability was seen as vital to national and international status and viability. Student demand meshed neatly with institutional objectives.

In 1988, when the White Paper was tabled, the 30,000 higher degree postgraduates were about equally divided between research and coursework higher degrees (around 15,000 each - Figure 6.1). Around 38,000 were "other" postgraduates - generally in diploma or certificate courses. In 1989, despite a low in postgraduate proportional numbers (as undergraduate enrolments increased) the number of research higher degree commencers rose by 17% - this was 12% more than the government had predicted. By 1990, there were over 70,000 postgraduates. Many full-time, mainly research, higher degree students were exempted from HECS in response to lobbying from the universities; there were concerns about Australia's research capabilities and the need to replace retiring staff who had been hired during the 1960s.

In 1991, 23% of all new enrolments in universities were postgraduates (this grew in 1992, with 27% of new enrolments postgraduate).<sup>25</sup> In 1991, coursework postgraduates (25,000) outstripped those in research (19,000) and other enrolments also grew (49,000). In 1992, research higher degree enrolments, however, increased at a faster rate than coursework, while other postgraduate enrolments, though more numerous, showed a much slower rate of growth. In 1992, research degree places grew by 20%, coursework places by 16% and other postgraduate enrolments by 4%.<sup>26</sup> 60% of higher degree students were aged 30 and over.<sup>27</sup>

In 1993, 20% of students (110,000) were postgraduates. Of these, 53,000 were enrolled for higher degrees. Coursework enrolments grew by 17% in 1993, while in the same year research enrolments grew by 25%. Table 6.1 shows that enrolment in research degrees in Australia nearly doubled between 1982 and 1992, while growth in enrolments in coursework higher degrees over the decade was most spectacular (12,000 to 29,000). This growth in coursework numbers was most pronounced after 1988, with enrolments nearly doubling over the next four years.

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<sup>25</sup> Stephen Matchett, (quoting a press release from the Minister for Education, Employment and Training, Kim Beazley) "Unis enrol 5pc more school leavers", *The Australian*, 7 May 1993

<sup>26</sup> Eric Aubert, "New student places down 12,000, but still numbers rise", *Australian Campus Review Weekly*, 23 April, 1992

<sup>27</sup> Grant Harman, "Postgraduate study may mask hazy future", *The Australian*, 14 November 1990

Table 6.1

Total Students, by level of course, 1982 - 1992

Year	Total	Higher Degree		Other Postgraduate	Other than higher degree		Non-award
		Research	Coursework		Bachelor	Other	
1982	341390	12990	11857	30965	222980	59624	2974
1983	348577	13015	12092	32056	227847	59866	3701
1984	357373	13266	12522	32797	234368	61088	3332
1985	370016	13552	13056	34685	242355	63082	3286
1986	389968	13896	13998	36795	256118	66078	3083
1987	393734	14567	13401	35745	264177	60310	5534
1988	42085-	15289	14936	37803	283463	63139	6220
1989	441076	14751	15981	39263	305706	61603	3772
1990	485075	16535	19782	42445	340598	60709	5006
1991	534538	19280	24985	48638	380590	55452	5593
1992	559365	24286	29275	49894	413321	35212	7377

Source Selected Higher Education Statistics, 1992

Higher degree Enrolments at Australian Universities, 1982 - 1993

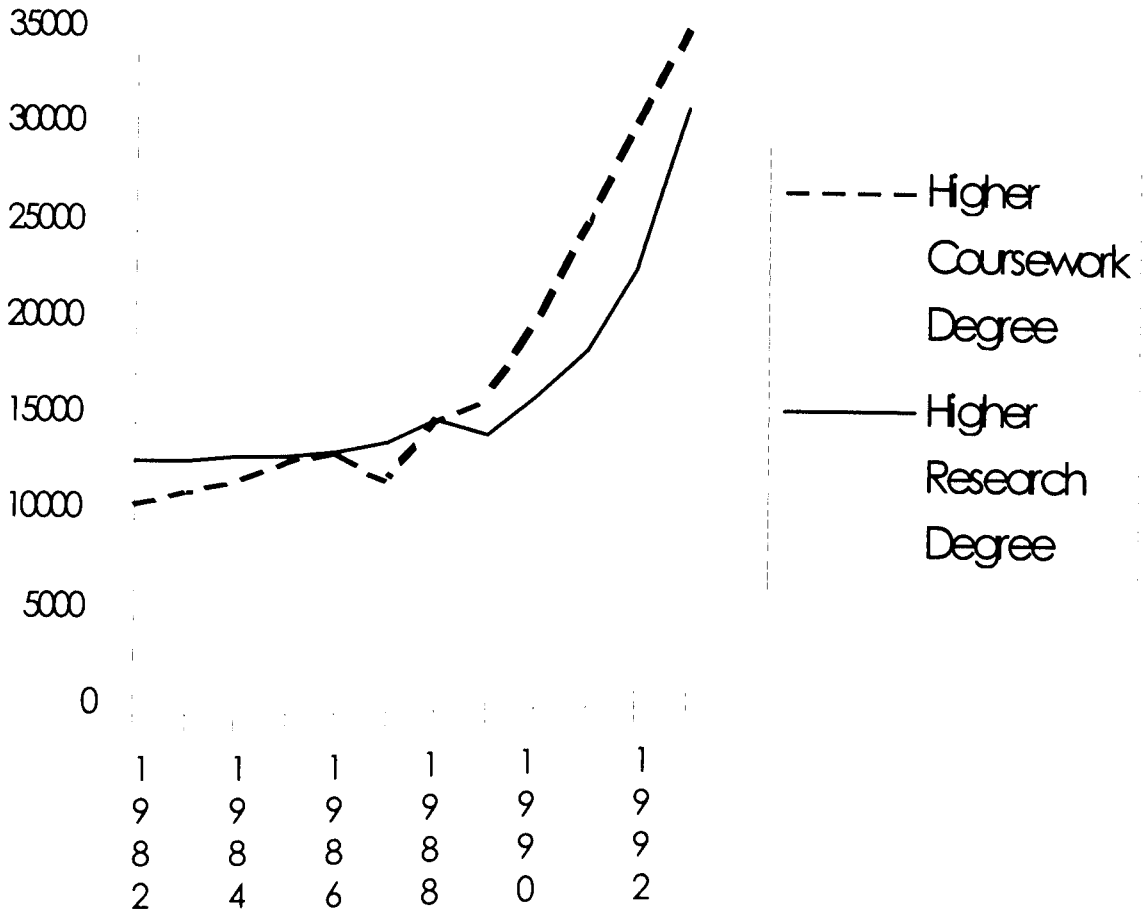


Figure 6.1

## **OUTCOMES OF THE REPORTS**

The growth and equity goals of the Green and White Papers were only addressed partially in relation to postgraduate studies. The thrust of reform was directed to the undergraduate sector and failure to anticipate or adequately fund postgraduate demand after 1989 led to particular difficulties in the areas of postgraduate growth and equity. The Papers' emphasis on increasing tertiary research capability did, however, lead to renewed attention to the engine of research growth, postgraduate studies. A major outcome was that specific postgraduate issues were addressed in more detail than ever before. The following section will consider these issues and associated research.

## **POSTGRADUATE MOBILITY**

As noted in earlier chapters, concerns had been expressed for many years about the immobility of the Australian postgraduate population. Compared to Britain and the US, few undergraduates moved to another city; Australian undergraduates generally live at home. Postgraduates tended to stay at their "home" university for a variety of reasons including distance, family responsibilities and employment prospects. The establishment of the (at first solely postgraduate) ANU with residential accommodation, somewhat changed postgraduate immobility.

Nevertheless, there was a perception in the 1990s that immobility was still endemic. However, a 1992 DEET report (which excluded overseas students) showed that significant change had occurred. Two-thirds of commencing postgraduate students were enrolled at an institution other than the one at which they had taken their first degree (although the new institution

might be in the same city).<sup>28</sup> No difference was noted between the sexes, with mobility higher amongst older, part-time, and external students. There was also a difference according to the level of study, with commencing **higher** degree students, and especially higher degree research students, generally less mobile.

Field of study was an important variable, with business, law, agriculture and science students showing most mobility. As new universities were created through the Unified National System, more choices were offered to postgraduates. New delivery modes and new short professional courses were also factors. A re-examination of the cost of relocation led the government to increase travel allowances within postgraduate scholarships in an effort to improve mobility. Perceived "prestige" or "quality" may be factors affecting postgraduate immobility, as postgraduates from the older universities were found in the Report to be least mobile (for example at Sydney University in 1990, 86% of commencing postgraduates had completed their first degree there).

## **OVERSEAS POSTGRADUATE STUDENTS**

As a result of the Dawkins changes, between 1989 and 1990, income from fee-paying students in higher degree institutions more than doubled (to \$139 million). In 1991, this had grown to \$216 million. Total overseas student numbers increased from over 17,000 in 1987 to 40,000 in 1992 and 42,000 in 1993. While only 1,000 were fee-paying in 1987, three-quarters were fee-paying in 1992.<sup>29</sup> These were major changes in a relatively short time. Fee-paying overseas students became an essential part of the Australian universities' structure and an important source of funds.

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<sup>28</sup> Department of Employment, Education and Training. "Postgraduate Mobility". Higher Education Series, Report No.15, August 1992, p1

<sup>29</sup> Department of Employment, Education and Training, National Report on the Higher Education Sector, p60



Traditionally, most overseas postgraduate students came to Australia from Asia. In the period 1988-1993, most postgraduates still came from Asia, notably Malaysia, Hong Kong (which recorded a big growth in numbers between 1989 and 1992) Singapore, Indonesia and China. By 1992, just over a quarter of overseas students were postgraduate students, with 17% enrolled in research higher degrees.<sup>30</sup> A similar proportion was enrolled in 1993.

In 1988, the government announced that from 1990, all new overseas students were to pay full fees. The number of Australian International Development Assistance (AIDAB) and Overseas Postgraduate Research Scholarships were increased, a minimum course fee set and universities instructed to seek approval for new places, in order that local students were not displaced. There was a fourfold increase in overseas postgraduate numbers between 1982 and 1989, to over 6,000. In 1989, overseas students accounted for 9% of total postgraduate enrolments, and one-tenth of research higher degree students.<sup>31</sup> There were also proportionally more overseas students at postgraduate than at undergraduate level. Overseas research higher degree students clustered in agriculture, veterinary science and engineering, though there were also large numbers in masters coursework programs in agriculture and veterinary science.

Between 1992 and 1993, the total number of full fee-paying overseas students rose by 20%.<sup>32</sup> However, growth in enrolments in higher degrees by research slowed compared to the rate of growth for local students.<sup>33</sup> In 1993, concentration of overseas postgraduate students was greatest in engineering, health and science, while undergraduates were spread more widely, with business courses popular with many. The needs of overseas students began to play a significant part in shaping some course structures; this ensured comparability with other

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<sup>30</sup> *ibid*, p61

<sup>31</sup> Higher Education Council, *Higher Education Courses and Graduate Studies*, pp81-82

<sup>32</sup> Department of Employment, Education and Training, *Overseas Student Statistics 1993*, Australian Government Publishing Service, Canberra, 1994

<sup>33</sup> Carolyn Jones, "Overseas student increases outpace local growth", *The Australian*, 9 June 1993

overseas institutions also wishing to enrol postgraduates (for example, "sandwich" courses where part of the research could be done in a student's own country).

However, overall research postgraduate overseas numbers showed a proportional decline, largely related to the imposition of fees and the difficulty of gaining scholarships. Between 1989 and 1992, the number of overseas research students increased 38%, far less than the 70% rate of increase for local research students.<sup>34</sup>

There was nevertheless a perception that overseas students were taking the places of local students throughout the system. While this growth was outside funded load, concerns were expressed about the adequacy of universities' infrastructure at a time of rapid expansion.

The predominance of overseas postgraduate students in science, engineering and technological fields, was linked to the availability there of research grants, which made part-time demonstrating often possible (unlike the humanities). Also, World Bank and other organizations offered scholarships mainly to "relevant" science or business areas rather than to the humanities.

The full cost of postgraduate course fees ranged between \$9,000 and \$15,000 in the humanities in 1992, thus making additional support imperative; such fees were often as costly as those in prestigious US or UK universities and a further disincentive to Australian humanities study for postgraduate students.<sup>35</sup>

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<sup>34</sup> Eric Aubert, "Fears that overseas students taking local PhD places unfounded", *Campus Review*, 1 July 1993

<sup>35</sup> Eric Aubert, "Fees cut appeal of Australia as a destination", *Campus News*, 13 February 1992

Universities which had long had significant numbers of overseas students and vigorous recruitment campaigns (such as Monash and UNSW) increased efforts to attract foreign postgraduates. Many other universities and colleges also made new efforts in this area after 1990.

Some unforeseen consequences, such as the failure of a few private English-language colleges, and visa overstays, led to criticism of poor regulation. There was also distaste for the idea of an education "industry", both here and in Asia. As a consequence of deregulation, today the bulk of overseas students are from relatively wealthy families. While the number of overseas undergraduates has grown, the establishment of new universities in many Asian countries poses long-term questions about reliance on Asian fee-paying undergraduates, as the postgraduate overseas student "market" has become increasingly important worldwide.

## **POSTGRADUATE SCHOLARSHIPS**

While scholarship support has come from both government, institutional and private sources, most of these awards have come from the Commonwealth. Only 15% of research students had Commonwealth scholarships in 1987, with 17% of commencing postgraduate students receiving such scholarships during the 1980s. The number of government scholarships awarded had failed to keep pace with the rise in postgraduate numbers.

The 1989 Smith review of the Commonwealth postgraduate awards scheme recommended increasing the number of awards, raising the basic stipend and introducing special industry-linked scholarships. In 1990, when the APRA (Australian Postgraduate Research Awards) Scheme superseded the Commonwealth Postgraduate Research Awards Scheme,

new scholarships awarded increased from 745 in 1989 to 1,200 in 1992 and in 1993 to 1,500. APRA Industry priority awards were included within this.

These priority awards attracted a higher stipend and were designed to retain computing and engineering postgraduates (who might otherwise have taken up more lucrative jobs outside of academia) in key strategic areas. In 1990, the HEC recommended an increase in Industry awards from 60 to 100 for 1991. All scholarships were made non-taxable and increased in value while the number of HECS exemption scholarships was increased by an additional 2,000 over the previous year to 17,000. Overseas Postgraduate Scholarships (mainly for students from developing countries) were also increased from 150 to 300 annually. The ARC was asked to monitor postgraduate scholarship demand in the light of changing research needs.<sup>36</sup>

By 1991, APRA awards had increased, with 23% of higher degree research commencers supported by a Commonwealth award. Coursework awards were available, but as numbers of these were small (only 171 total awards in 1992) and competition keen, few coursework students were supported. In contrast, in 1992 1,812 new **research** postgraduates were supported by non-APRA Commonwealth and institutional awards (many of which were worth much less than APRA).

By 1992, one national newspaper's headlines warned "Postgraduate intake crisis looming" and "Research call to arms".<sup>37</sup> The push toward the "clever country" had almost been too

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<sup>36</sup> New issues, such as the assignment of intellectual property rights and the rendering of service in ways that might be construed as more those of an employee rather than researcher, would later engage the attention of the Tax Office.

<sup>37</sup> The Australian, 28 March, 20 May 1992

successful. In 1992, 600 first-class honours science students failed to gain scholarships - an unprecedented number - and this became an issue of ongoing concern.

The status of postgraduates is clouded with some ambiguity. Are postgraduates already researchers or in training to be researchers? The Smith Committee recommended (and had accepted) a move away from administration of awards under the Student Assistance Act to administration by the universities. The focus moved toward the recognition of postgraduates as an integral part of the research process rather than seeing postgraduates as students in need of assistance while "in training" as researchers, a fundamental shift. Nevertheless divergent, and sometimes dual, views of postgraduates are held. Perhaps some postgraduates are seen as more valuable than others (particularly those in the laboratories of joint university/industry research centres). In the 1990s, (some) postgraduates and industries were linked as never before through the new industry scholarships. The issues of strategic, applied and co-operative research assumed new and redefining importance for postgraduates and postgraduate scholarships.<sup>38</sup>

## **CHANGING SITES OF POSTGRADUATE EDUCATION**

Increasingly, research in Australian universities has shifted from the department to the research centre, where around 50% of all university research now occurs (a move that mirrors the changing American model, for much research in the sciences, especially, now occurs in centres and consortia under joint industry and university control). Since the government introduction of the Research Centres Program in 1982, many new such specialist centres, both federally and institutionally-initiated, have been established. Added to the centrally and

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<sup>38</sup> Government support has shifted somewhat from schemes providing student support toward schemes to attract the brightest students toward a research career, manifested by research centres paying "top up" funds to government scholarships. Tim Turpin and Sue Curtis, *Research Training in Australia: Policy, Practice and Directions in the 1990s*, Paper for the OECD Workshop on Research Training, Amsterdam, March 1992

competitively funded Special Research and Key Centres for Teaching and Research were the Co-operative Research Centres, first established in 1990.

By 1993, fifty such centres had been established. These applied research ventures, funded through partnerships with government research institutes, universities and industry, were primarily to be found in the areas of science and engineering. In 1992, an additional program was initiated to create six national centres for engineering innovation.<sup>39</sup>

The 1992 Government White Paper on Science and Technology (**A Blueprint for the 1990s**) encouraged research innovation, applied research and closer industry links, thereby reaffirming a role for research in national economic development.<sup>40</sup> Perceived benefits for postgraduates in CRCs included real-life industrial challenges, use of modern equipment and close collaboration with possible employers. More innovative higher degree programs have been seen as a benefit of such liaisons (for example, the professional doctorate) as well as the learning of business skills during research training. One of the aims of the CRC program was to:

stimulate education and training, particularly in graduate programs, through the active involvement of researchers from outside the higher education system in educational activities and graduate students in major research programs.<sup>41</sup>

During the 1990s, university/industry research programs were established by universities in order to attract additional funding through research collaboration. This provided increased research opportunities for research higher degree students, often across disciplines, faculties

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<sup>39</sup> *ibid*, p5

<sup>40</sup> Hon. Ross Free MP, Developing Australian Ideas: A Blueprint for the 1990s, Australian Government Publishing Service, Canberra, 1992

<sup>41</sup> Department of Employment, Education and Training, National Report on Australia's Higher Education Sector, p263

and institutions. These new sites of research training accommodated greater numbers of postgraduates in the early 1990s.

### **COURSEWORK HIGHER DEGREES**

With governmental encouragement, coursework higher degrees (as well as graduate certificates and diplomas) proliferated after 1988. Coursework postgraduates typically were older than other postgraduates, employed - and fee-paying. As has been noted, total coursework higher degree enrolments were higher than research higher degree enrolments between 1982 and 1992, though in 1993 the **rate** of growth for research enrolments was faster than for coursework. Nevertheless, coursework programs had become firmly imbedded in the postgraduate sector by 1993.

In the late 1980s, four-fifths of female coursework postgraduates were in arts, humanities, social science and education or business, administration and economics, though female enrolments in the health field showed greater subsequent growth after 1989. In 1989, two-fifths of male coursework postgraduates were in the business area. As universities established new coursework degrees, common complaints from the Council of Australian Postgraduate Associations and students in some universities were that undergraduate courses were being recycled in new courses and that universities did not have the resources to cope with such expansion.

The 1989 introduction (with the imprimatur of government) of professional doctorates marked a significant move towards the adoption of the full American professional model. (For an examination of training and research conundrums implicit in this model see **Professional Doctorates**). In 1989, the University of Technology, Sydney (UTS) introduced an Australian doctoral degree with a large coursework component. This was the SJD (Doctor of Juridical

Studies) in Law. Candidates at Sydney University enrolled in a similar degree in 1991. The doctoral degree (though in structure like a masters degree) takes three years of study and has a thesis of 70,000 words (smaller than the usual PhD length). Course units are also taken, thus making the degree a mixture of applied research and theory:

The degree, based on American and Canadian models, has the same status as a PhD... in America, it is extremely rare for legal practitioners to hold a PhD - they usually hold a doctorate in judicial studies... there is a lower drop-out rate and the attraction is that you get no dilution in academic standards. At Sydney, we have exactly the same standards and processes for examining the SJD as ... the PhD.<sup>42</sup>

When introducing the degree, proponents suggested it would take note of changing aspirations of legal postgraduates, with few becoming academics and many requiring a more applied degree. The attraction of completing a doctorate with a minimum of a year's leave from work was another factor. Critics, notably CAPA (The Council of Australian Postgraduate Associations) argued at the time that the move at UTS was made to attract overseas students and that "degrading the research component of the PhD would degrade the quality and standing of Australia's doctoral graduates".<sup>43</sup>

While coursework masters degrees traditionally had an over 50% coursework component, coursework was not usually part of a research degree.<sup>44</sup> Adding coursework to a doctoral degree was a radical break. Research degrees, often seen as more prestigious, had been delineated by their lack of coursework. Combining coursework and doctoral research, as was the case in the US, had been unthinkable. The introduction of the American-style professional doctorate challenged this; however, its general introduction was resisted strongly in many universities.

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<sup>42</sup> Professor Terry Carney, Professor of Law (Sydney) quoted in Janet Fife-Yeomans, "Doctorate of Law tipped to replace PhD", The Australian, 4 May 1994

<sup>43</sup> Matthew Allen, President, Australian National University Postgraduates Association, in William West, "Row over PhD Coursework", The Australian, June 7 1989

<sup>44</sup> The return to coursework in the masters degree was a return, essentially, to the old tradition.



The recommendation for professional doctorates (in response to the needs of some professional bodies) came from the HEC in 1989 and had the Government's support.<sup>45</sup> The Commission's encouragement of a pilot program of professional (coursework) doctorates led to some universities (for example, Monash, Sydney and UTS) inaugurating such doctorates in the 1990s. Where professionally acceptable (as was the SJD) they were popular and returned valuable revenue to the universities.

Doctoral postgraduates in such courses typically were employed and often employer-sponsored. At UNSW, as previously noted, some science PhDs were undertaken primarily in industrial laboratories; this had the support of the CSIRO.<sup>46</sup> The addition of a coursework component to doctorates was, however, a new development. Actual distinctions of theory and substance between research and professional doctorates are often unclear, when, as previously noted in the case of the SJD, it is desired that there be no "dilution of academic standards" in the award of the degree (as against the PhD) and that the standards and processes for examining theses in both kinds of doctorates are "exactly the same". At doctoral level, the distinctions may devolve to a somewhat shorter thesis and discrete coursework components (which are often perceived as more relevant or manageable by busy professionally-employed students). The rigour of the PhD remains a defining yardstick.

## **FEE-PAYING POSTGRADUATE COURSES**

Along with the growth in coursework programs came a rise in fee-paying courses, a rise encouraged by the government, who wanted tertiary institutions to diversify funding sources. A mid-1992 set of guidelines placed an upper limit on such postgraduate student places "at 20% of the system", allowed universities to admit some non-fee-paying students to fee-paying

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<sup>45</sup> Higher Education Council, *Australian Graduate Studies and Higher Degrees*, National Board of Employment, Education and Training, Australian Government Publishing Service, Canberra, 1989, pp28-29

<sup>46</sup> See Chapter 4

courses (under the universities' own criteria) and compelled annual certification of compliance with the guidelines.<sup>47</sup> In 1993, a CAPA survey found that the number of fee-paying courses rose 43% over 1992 with the proportion of such courses charging in excess of \$6,000 rising from 13% to 19%. The proportion of middle-bracket courses (defined as those with annual fees of \$3,000 to \$6,000) rose from 50% to 67% of courses for which fees were charged, while 36% of all fee-paying courses were at masters level. By 1993, the only university in Australia to offer all postgraduate courses through HECS only was James Cook University.<sup>48</sup>

This survey also found that in 1993 the University of Technology (Sydney) and Melbourne University had the highest number of fee-paying courses. In order, business, health, science and the arts comprised the bulk of fee-paying Australian courses. The cost of an MBA varied from HECS alone at three Australian universities, to \$45,000 at Monash. Such costs had certain equity implications. As undergraduate courses such as arts and science became rather more generalist, postgraduate specialist study increasingly was necessary for initial employment, although the cost of many courses became prohibitive for some students. The Government's earlier desire that most fee-paying courses be directed at students already in employment, came under pressure. The recession which occurred in Australia in the late 1980s and early 1990s further fueled pressure for employment-related postgraduate courses. Universities were responding to demand, particularly from government, in instituting these courses which generated considerable revenue. In the process, however, both government and universities were grafting private sector imperatives (upfront "postgraduate user-pays" charges) onto a more equitable deferred fee undergraduate system. As few scholarships were

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<sup>47</sup> Fran Ferrier, "Fees change the postgrad profile", *Campus Review*, 3 September, 1993

<sup>48</sup> CAPA, *Even Less Rhyme or Reason*, in Eric Aubert, "CAPA reveals 43% jump in fee-paying postgraduate courses", *Campus Review*, 2 October 1993

available, only the wealthy or those supported by their employers could afford to undertake an MBA.

## POSTGRADUATE DIVERSITY

Between 1981 and 1991, enrolment of women in all higher degrees trebled. In 1987, 50% of all completed higher degrees were awarded to women. By 1992, this had risen to 52%. However, in 1991, only 33% of higher degrees by **research** were completed by women. (Table 6.2) Females clustered in the traditional fields of health, education and arts and were predominantly coursework postgraduates.

Table 6.2

Proportion of Women completing Higher Degrees by Field Research - 1987 & 1991

Field of Study	Percentage of Women 1987		Percentage of Women 1991	
	All Higher Degrees	Research Higher Degrees	All Higher Degrees	Research Higher Degrees
Agriculture	27	23	29	27
Architecture	23	14	23	19
Arts/Humanities	63	40	63	46
Business/Administration	27	29	33	28
Education	62	42	67	49
Engineering	6	5	10	9
Medicine/Health	63	37	68	41
Law/Legal Studies	42	22	44	32
Science	32	24	32	30
Veterinary Science	33	21	34	35
Total	50	27	52	33

Source: Department of Employment, Education and Training, Selected Higher Education Statistics, 1988 and 1992

The 1988 White Paper had stated that institutions would need to:

address measures to increase participation by women in honours and postgraduate programs, research activities and areas such as the technologies where women's participation has generally been low.<sup>49</sup>

<sup>49</sup> Hon. J.S. Dawkins, Higher Education: a Policy Statement, p56

While the **Quality and Diversity** statement noted a general rise in female student numbers, it did not address female postgraduate issues. The 1989 HEC Report, **Australian Graduate Studies and Higher Degrees** devoted five pages to gender statistics in postgraduate education. However, it stopped short of making specific future recommendations.

During the latter half of the 1980s, a number of studies centred on gender and equity issues in postgraduate studies in Australian universities. While not all of the studies can be considered an outcome of the Dawkins' changes, others were. Many of these studies were funded by the Department of Education, Employment and Training, which also released its own reports.

While a majority of undergraduate commencers since 1985 were female, as were a majority of coursework certificate, diploma and masters students, women were under-represented at the research higher degree level. In 1987, CTEC funded a study, **Barriers to Women's Participation in Postgraduate Studies** to enquire into the reasons for this, and to investigate ways of overcoming such barriers.<sup>50</sup> Eight disciplines across the sciences and humanities were studied and the main barriers identified were: the structure of degree programs (and isolation in research in humanities areas), low participation rates in honours programs, lack of confidence, lack of female role models/maleness of discipline, difference (from men) in career aspirations, family/career conflict, small female numbers in some disciplines, supervision problems, lack of information and financial support and poor career prospects.

Recommendations were made to the government to review the adequacy and distribution of scholarships and coursework awards, increase funding for childcare, and innovatively review

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<sup>50</sup> Margaret Powles, Barriers to Women's Participation in Postgraduate Studies, Department of Employment, Education and Training, Australian Government Publishing Service, Canberra, 1989

career positions for women. Similarly, more detailed recommendations were made to institutions and departments.

Equity strategies for women were set out in the 1989 government report **A Fair Chance for All**, which argued for increased representation for women at postgraduate level.<sup>51</sup> As previously noted, female enrolments in coursework postgraduate studies had risen markedly, though some of the identified barriers still exist at this level and at the research level. Greater availability of research scholarships and increased encouragement helped to raise the proportion of female postgraduates. However, stratification of women postgraduates both at level and type of course continued after 1987, though some gain was evident. Increasing undergraduate enrolments after 1988, in non-traditional areas like engineering and business, showed potential for increased flow-through to postgraduate study.

Prior to 1987, the typical postgraduate (and particularly scholarship holder) was still a young, male, research scientist. By 1990, this had changed. Many postgraduates were older, and more were women.<sup>52</sup> There was clear demarcation between fields, however. In areas which effectively allowed little in the way of a break in a research career (many sciences) and in the more expensive coursework programs (for example, the MBA) which were often paid for by employers who might have few women in executive employee positions, many women, effectively, were debarred from equal participation.

While in totality gains have been evident, ambivalence has sometimes greeted affirmative measures, which were not always taken deeply into the university culture. Numeric equality

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<sup>51</sup> Department of Employment, Education and Training, A Fair Chance for All, Higher Education that's within Everyone's Reach: a discussion paper, Australian Government Publishing Service, Canberra, 1989

<sup>52</sup> Department of Employment, Education and Training, Postgraduate Students, Higher Education Series, AGPS, June 1990, p1. Over the 1980s as a whole, postgraduate enrolments rose 40%. In the same period, male postgraduate enrolments rose by 19%, while female postgraduate enrolments rose 75%.

was achieved in the mid-1980s between the sexes at undergraduate commencement level; at the postgraduate commencement level, this was achieved in 1993, when 51% of commencing postgraduates were female. At research higher degree levels, however, this has not yet occurred.

**A Fair Chance for All** also targeted disadvantaged groups such as Aborigines, rural students, persons with disabilities and students from low socio-economic backgrounds. Aboriginal and Torres Strait Islander enrolments in higher education increased by 40% between 1980 and 1990. An 80% increase in enrolments from 1990 to 1993 was anticipated in **Quality and Diversity**, with increased enrolments of Aboriginal students a priority of most institutions after 1992. In 1990, Aboriginal enrolments made up only 0.7% of all enrolments, while postgraduate numbers remained miniscule. By 1991, just under 1% of total tertiary students were Aboriginal. Eight percent of Aboriginal tertiary students were postgraduates, with three percent enrolled in higher degrees.<sup>53</sup> In 1989, the first doctorate by thesis was awarded to Eve Fesl in Linguistics, at Monash; in 1990, five higher degrees by research and eight by coursework were awarded to Aboriginal students in Australia. Adequate support services and culturally sensitive courses and course delivery are necessary to further improve these numbers.

Recent indications are that equity programs in universities have, with the exception of females and some migrant groups, largely failed to meet their objectives.<sup>54</sup> It is here that the Dawkins' changes have not had all their desired outcomes, as many groups still remain seriously under-represented even at undergraduate level. However, many of the causes of inequity lie at

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<sup>53</sup> Department of Employment, Education and Training, Aboriginal and Torres Strait Islander Students, Higher Education Series, Australian Government Publishing Service, October 1992, pp1-3

<sup>54</sup> Sian Powell, "Federal plan fails to redress inequity", The Australian, 17 August 1994

the pre-university level of education and universities may have limited success in redressing them.

## OPEN LEARNING

Though "open learning" has a relatively long history in some institutions in Australia, due largely to the problem of distance from widely dispersed tertiary institutions, delivery of tertiary education via Government-sponsored agencies became a significant feature of higher education after 1987. The underlying principles of open learning were cost-effectiveness and equity. A national federally-funded undergraduate TV Open Learning Project began transmitting in 1992, through a consortium of five universities. After this pilot program, the Open Learning Agency of Australia began through Monash and the ABC in March, 1993 with over thirty-one study units. There were no educational barriers to entrance and most study was undertaken at home.

In early 1993, expressions of interest were called by Wollongong University and television network SBS for a postgraduate Open Learning Centre, with communications, health and management subjects the first to be transmitted. Over seventeen universities expressed interest in joining the consortium. Stakeholders expressed the view that:

The postgraduate sector of the open learning market - which Monash's OLAA also intends to exploit - is regarded as considerably more lucrative than the undergraduate as it is not subject to the HECS cap.<sup>55</sup>

Intending postgraduate students through the Wollongong consortium needed to have "completed the prerequisites standard to on-campus postgraduate study"; some programs would be bought from outside Australia.<sup>56</sup> The targeting of well-paid, busy professionals was

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<sup>55</sup> Guy Healy, "More players sought by Wollongong/SBS broadcast postgrad consortium", *Campus Review*, 25 March 1993

<sup>56</sup> *ibid*

evidenced in the choice of initial programs. The provision of expensive studies via new technologies is not only one of the most radical new developments in Australian postgraduate education, it also opens up a new site of equity consideration. While equity is a stated objective of undergraduate delivery within the Unified National System, this objective has not been promulgated at higher levels, and certainly not in postgraduate open learning. The wider use of television has the potential to enable marginal groups to participate in higher education and thus promote equity. However more sophisticated new technologies (such as modems and electronic mail) may paradoxically entrench educational divisions due to cost. These new technologies will be used more widely in future, particularly by professionals able to afford them. One unexpected outcome of the reforms of the late 1980s is that a technological binary divide may arise in the area of postgraduate open learning.

## **GRADUATE SCHOOLS**

An outcome of the **Quality and Diversity** statement in 1991 was the promulgation of the concept of graduate schools, in order to improve the quality of Australian postgraduate education. The American graduate school model was seen to have the twin virtues of efficiency (both in economic terms and in terms of improving completion rates) and relevance (the American model was considered by some to be more innovative, linked as it was to the requirements of professions and the technological, research and economic imperatives of government). The sheer size of the American postgraduate sector, the largest in the world, made the American postgraduate model the pre-eminent world model. In introducing the graduate school concept, Australia was emulating this successful and dominant model.

In 1990, the first graduate school in Australia with a Dean of Graduate Studies had been established at the ANU. Postgraduate studies had, of course, largely been the university's



original function prior to its reconstitution as a more conventional university with undergraduate courses. Adelaide's Graduate School was established in 1991, while such schools were established at a small number of other universities over the next three years. There was no separate campus or building for these schools; they worked closely with faculties and departments, taking on much of the administrative work associated with graduate studies, as well as fostering institution-wide change.

In 1989, the Graduate School of Management at Melbourne University became largely privately funded and by 1991 had over 3,000 students in short and conventional postgraduate courses. In 1993, Melbourne University proposed the establishment of a university-wide graduate school (which was established in 1994). The school was to be housed separately and, as well as overseeing programs, would conduct courses in communication, management and leadership skills as part of the PhD degree. A Certificate of Achievement was to be awarded, to "equip (graduates) for entry to the upper echelons of government, industry and academia", while a target of 15% for on-campus postgraduate students was mooted for 1994, with 22% projected by the year 2000.<sup>57</sup>

After 1988, many of the older universities wished to enhance their postgraduate, rather than undergraduate, sector. In 1992, the oldest universities in each state and the ANU had 33% of the nation's postgraduates (despite a fall of 2% over the previous year as the newer universities sought to build their own postgraduate sector). In 1993, over 80% of Australia's research students were (still) found in just eight universities: Melbourne, Sydney, ANU, Adelaide, UNSW, Queensland, Monash and UWA. Strengthening institutional research was seen as a way of establishing an international profile for research excellence and for Melbourne at least,

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<sup>57</sup> "V-C's bold vision for world class learning centre", *Uni News*, The University of Melbourne, 19 February 1993, pp2-3

a graduate school designed to attract discerning fee-paying students was part of this enhancement.

Other universities did not establish graduate schools as such, often due to departmental objections, as at UNSW, though some form of centralized administration for postgraduate studies was adopted gradually in most institutions. However, given the growing internationalization of universities, and Melbourne's historic establishment of the nation's first PhD program, perhaps other universities will also follow suit and establish their own programs.

## **LIBRARIES**

In 1993, few Australian university libraries had the number of volumes of the prestigious British and American libraries. In the wake of the Dawkins' changes, library funding was now spread across an expanded system, with many new institutions expecting to engage in research. Some observers considered this funding manifestly inadequate for research purposes:

How many world-class academic libraries should Australia maintain? Certainly not 35. To maintain internationally competitive best practice in research we need at least two or three prestigious libraries with an efficient network, such as AARNET, for others to benefit.<sup>58</sup>

The 1991 Ross Report on Australian University Libraries estimated that library resources per postgraduate student cost ten times that for an undergraduate.<sup>59</sup> While new research places had been funded by the federal government for this amount, many universities in the early 1990s had converted undergraduate funded load to postgraduate. In 1992, after the release of the

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<sup>58</sup> Frank Larkins, Deputy Vice Chancellor (Research) Melbourne, "Research elite the key to a clever country", *The Australian*, 6 June 1993

<sup>59</sup> Professor Ian Ross, *Library Provision in Higher Education Institutions*, Australian Government Publishing Service, Canberra, 1991

**Quality and Diversity** document, postgraduate research places grew at a faster rate than undergraduate places (18% compared to 1.6%). This strained the capacity of libraries to cope with the additional research numbers.

Good libraries, which today no longer mean only books and journals but computers and new technologies, are as essential for research as laboratories and crucial in an information-dependent society. It is in the area of libraries that equity and selectivity meet head on, as Government funding is apparently unable to cover all universities equally. State-of-the-art libraries are linked to the aspirations of some institutions to world class status.

In a user-pays economy, however, AARNET and other technologies may not be available equitably to the rapidly expanding number of postgraduates. As in Open Learning, an expensive and knowledge-based technological divide may arise, particularly between the better, and the less well-equipped, libraries.

## **THE NATURE, STRUCTURE AND FUNCTION OF RESEARCH DEGREES**

In the wake of the Dawkins' changes, new and deeper attention was given to these matters, as in other countries with mature postgraduate sectors. Much of the ongoing debate concerning the nature, structure and function of research degrees has centred on the PhD, with pressure exerted within some disciplines for "professional" or coursework doctorates. Though the term "training" in connection with research degrees was disparaged by many, there is ambiguity. While some think the primary function of the research degree is training (in research skills) others consider that postgraduates are already part of the research community of the university by the very fact that they are engaged in research (as the Smith Committee argued). The terms "education" and "training" are often used interchangeably, either uneasily or unconsciously. During the 1990s, there was uncertainty about whether the research degree was training for

the profession of research, or had a purely educative function for the individual. As the number of destinations to which a research degree might lead diversified, so, too, did pressures to alter the functions and purposes of the degree. By 1993, the nature and purpose of postgraduate education had multiple definitions.

The nature and structure of the PhD thesis itself has long been debated in the sciences. It is in this area particularly, where the prototype of the twentieth century PhD emerged, that the nature of doctoral degrees is changing. The concept of a PhD thesis as a collection of articles on a topic (as occurs overseas in some science areas, especially biochemistry) instead of a traditional thesis, has been mooted in Australia, but has not found general acceptance (though Monash University makes provision for the award of such degrees). Concern for uniformity of standards in Australia maintained the supremacy of the conventional dissertation, though the debate is ongoing.

## **PROFESSIONAL DOCTORATES**

The issue of "training" was often more straightforwardly addressed in relation to professional doctorates (though given the fact that many included a quite large thesis component and were undertaken by professionals of seniority and expertise, the exact nature of the "training" was and is problematic - there is blurring at the inexact boundary of the research and professional doctorate).

In **Higher Education: a Policy Discussion Paper**, the chapter on postgraduate education referred interchangeably to "education" and "training". While the **Quality and Diversity** document did not comment in this area, **Higher Education and Graduate Studies** was more detailed. It referred to the 1988 Review of Engineering which had recommended a "more

applied doctoral degree", noting that employers saw the PhD as a "science" degree which was linked to basic or "pure" research.<sup>60</sup> The introduction of a Doctorate in Technical Engineering (DTechEng) would show the more applied nature of this doctoral degree, which would "train" students and fit them to their employment requirements. High level course work which was not undertaken in the increasingly crowded undergraduate degree, as well as other advanced work, could be included in a "professional" degree.

The Engineering Review recommended that institutions:

augment traditional doctoral programs ... by broadening existing PhD guidelines or ... introducing, on a pilot basis, professional doctoral degrees which require advanced applications of existing knowledge and technology.<sup>61</sup>

## COMPLETION RATES

Completion rates were of concern to the government, as concern about costs associated with postgraduate study and research training grew after 1987. The Higher Education Commission's Report in 1989 noted that the usual completion time of a PhD should be three calendar years. As well, the Commission opined:

Students are using some of their most productive years preparing for their profession rather than in practising it...The PhD should not become unattractive to our best students because of poor design or unrealistic expectations provided that reasonable international comparability is retained.<sup>62</sup>

The Report noted that the perception of the "timely completer" as a young male was "discriminatory, [and]... not in the interests of quality, innovation and diversity".<sup>63</sup>

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<sup>60</sup> Commonwealth Tertiary Education Commission, Review of the Discipline of Engineering, (Chair: Sir Bruce Williams), Australian Government Publishing Service, Canberra, 1988, p60

<sup>61</sup> *ibid*, p29

<sup>62</sup> Higher Education Council, Australian Graduate Studies and Higher Degrees, p26

<sup>63</sup> *ibid*, p73

Punitive measures for slow completion were not advocated by the HEC. There was recognition of research differences between disciplines and the need for better support to reduce times. However, the three year completion recommendation was often to become the basis of institutional "requirements" for completion, as well as the basis for Commonwealth PhD scholarship duration (with an additional six month extension possible).

In the 1950s, **undergraduate** completion rates were the subject of much concern. With the advent of HECS, lengthy undergraduate completion became expensive for students. Many full-time postgraduates in non-fee-paying courses during 1988-1993 had HECS exemptions and fee-payers were often employed, so financial pressure for some postgraduates was lessened. Nevertheless, by 1993, there was renewed concern about completion rates, coupled with the new phenomenon of postgraduate waiting lists in some disciplines.

Concern over postgraduate completion rates is a world wide phenomenon, and international studies had broadly shown the same pattern - a high rate of "timely" completion in the sciences, where students are generally full-time and there is much more team research, and a low, or rather, slow, rate in the humanities, where part-time study is more common and individual research the norm. There is a fundamental difference between non-completion and completion over a longer time than that taken for a science PhD. The 1990 AVCC Report, **The Progress of Higher Degree Students**, showed 39% of all full-time PhD candidates completed within forty eight months (disallowing for periods of candidature suspension). Only 18% of part-time PhD students completed in this time, with completion rates for research masters degrees particularly unsatisfactory".<sup>64</sup> A number of Australian studies

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<sup>64</sup> Australian Vice-Chancellors' Committee, *The Progress of Higher Degree Students: 1983 Australian University Cohort*, Australian Vice-Chancellors' Committee, Canberra, 1990, pp106- 108. Completion rates within the standard time of two years for research masters degrees were only 20%.

considered this issue in some detail during the 1980s and early 1990s.<sup>65</sup> A multiplicity of factors were cited for poor completion, such as poor supervision, personal and financial problems, gender issues, research difficulties, isolation (often discipline specific) and intermission.

As attention became focused increasingly on quality during the 1988-1993 period, these issues received increased consideration at institutional level, with codes of practice for postgraduate studies drawn up. Supervision quality and the hitherto neglected question of training for supervisors have been more closely addressed.

DEET's reduction of scholarship tenure to three and a half years has been a major instance of Government intervention in the postgraduate sector. Too much inflexibility in the area of completions could well be counterproductive, however. If theses are to be completed within rigid parameters, expectations of what has come to constitute a research degree and thesis may well have to be correspondingly scaled down. As one supervisor quoted by Margaret Powles in her study on completion rates, **How's the Thesis Going ?** noted, "higher degrees are not sausages", and not able to be produced to order.<sup>66</sup>

## QUALITY ISSUES

The rapid expansion in the tertiary sector after the Dawkins changes generated concern about the quality of the education offered. After 1988, a number of documents were released which, directly or indirectly, had quality implications for postgraduates. **Higher Education: a Policy statement** had supported the development of a range of qualitative and quantitative

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<sup>65</sup> Peggy Nightingale, Postgraduate Evaluative Study, Macquarie University, CTEC, 1984. Jan Whittle, Postgraduate Participation and Performance, unpublished MEd thesis, University of Adelaide, 1991. Margaret Powles, "The Problem of Lengthy PhD Candidature", in Assistance for Postgraduate Students: Achieving Better Outcomes, Australian Government Publishing Service, Canberra, 1988. Margaret Powles, "How's the thesis going?", Centre for the Study of Higher Education, Melbourne, 1989.

<sup>66</sup> Margaret Powles, How's the thesis going?, p52

performance indicators as well as a series of discipline reviews in order to evaluate system performance. In 1990, the HEC supported an academic standards panel set up by the AVCC to monitor honours courses, one of the main routes to postgraduate study. The following year, the HEC was asked by the government to investigate the characteristics of "quality in higher education" and a report on this was issued in 1992.<sup>67</sup> While "quality" was tackled more specifically as an issue in the undergraduate and research areas in the early 1990s, nevertheless this had an effect on postgraduate education. Good undergraduate teaching and selection of able students underpinned postgraduate education, while research capability was predicated on a steady supply of quality postgraduates.

The 1991 **Quality and Diversity** Report noted that the ARC had developed a strategy to monitor and support quality in research and stated: "the internationalization of research has major implications ... for the quality of research in the higher education system".<sup>68</sup> Improving the quality of research training was also discussed, with graduate schools and co-operative postgraduate research programs favoured as ways of improving quality. Extra funds were provided for relocation of graduates, as lack of mobility was seen as an impediment to improved quality in research training.

As a stimulus to individual institutional codes of practice, during 1988-1993, both the AVCC and CAPA produced guidelines for maintaining academic quality and standards in the higher degree area. In 1992-93 the problem of inadequate infrastructure in newer universities was of increasing concern, as this affected the quality of their postgraduate research. Expectations of greater research funding in the former CAEs had perhaps been raised too quickly; there was

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<sup>67</sup> Higher Education Commission, *Higher Education: Achieving Quality*, Australian Government Publishing Service, Canberra, 1992

<sup>68</sup> Hon. Peter Baldwin, *Higher Education: Quality and Diversity in the 1990s*, p36



also a concern that money was spread too thinly across the institutions of the Unified National System. This created a quandary for the government.

The issue of quality in postgraduate education was closely tied to research funding. Postgraduates were often attracted to the older universities where infrastructure and national and international reputation had been built up carefully through research funding. Compatibility of equity with growth, and quality with diversity, became matters of increased debate. Attempts to create research centres of excellence, particularly in areas where expensive equipment was used, ran counter to efforts to distribute resources more equitably across the system. A major concern for the later 1990s will be the resolution of quality and equity issues, both legacies of the Dawkins changes.

## **SUMMARY**

The period from 1987 to 1993 saw great change in the postgraduate sector, exemplified by the tension between two vigorous strands - the American professional, and the entrenched British-influenced research, models. While promoted by government and universities as structurally, and even philosophically, different, in certain ways the models showed points of convergence. This was especially the case in the professional doctoral area, where research standards (such as a substantial thesis) often provided the academic benchmark of excellence. Experimentation with new structures, and the investiture of professional doctorates with rigour and relevance, began in this formative period.

The new ascendancy, if not primacy, of the professional model was reflected in the growth of non-doctoral postgraduate courses. At the same time, research strength, predicated on substantial research postgraduate enrolments, became a powerful determinant of both status

and funding. The nostrum of economic viability, as never before, underscored postgraduate development in the Australian university.

This development was tied to funding, with the Commonwealth (the major provider) encouraging both funding, and course, diversification. As part of this, it moved toward deregulation of postgraduate coursework programs and made fee-paying guidelines more flexible. As a consequence, the number of fee-paying postgraduate courses in Australian universities tripled between 1990 and 1993.<sup>69</sup> Melbourne and Sydney, research-based universities, offered seventy-nine and twenty-five respectively. UNSW offered seventeen by 1993, the majority in business; Adelaide, despite its positioning as a research-based university, offered thirty, mainly in agriculture and science.<sup>70</sup> With prestige and funding linked to strong research profiles, after 1988 nearly every university attempted growth in this sector, while simultaneously expanding fee-paying courses for both local and overseas students. Fee-paying courses tailored to market demand helped fund some other research areas, staff costs and infrastructure.

By 1993, balancing, funding and creating research and coursework postgraduate profiles were issues which engaged universities nationwide. The tertiary sector was more competitive, simultaneously market-driven and research-oriented, with the postgraduate sector underpinned by two internationally accepted postgraduate models - the 'apprenticeship' research and 'professional' models. With increasing student demand, differentiation and growth, the postgraduate sector (as in the US, especially) was becoming effectively a quaternary sector of education.

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<sup>69</sup> Kate White, "Cute likely to reduce subsidised positions", *Weekend Australian*, 25 September 1993

<sup>70</sup> A Guide to Full-Fee Paying Postgraduate Courses, *Weekend Australian*, 25 September 1993

## **CASE STUDY: ADELAIDE AND UNSW 1988-1993**

One of the significant features of the turbulent Dawkins years was, paradoxically, that powerful research concentrations were not adversely affected or greatly changed. At Adelaide in this period, higher degree study continued to be defined largely by the research higher degree (with its substantial thesis component) which attracted the bulk of postgraduate enrolments, while UNSW continued to pursue both the research and the coursework model, with its smaller thesis component. Between 1990 and 1993, UNSW became committed to building up its postgraduate research profile after years of growth in the course work sector.

<sup>71</sup> The importance of the research university, internationalization and technological and professional education in the national tertiary sector is exemplified by developments at Adelaide and UNSW during this period.

### **ADELAIDE**

In 1987, 1,200 students (16% of the total student population) at Adelaide were postgraduates. In 1993, this had more than doubled to nearly 2,500, with particular growth after 1990 (in common with other universities). However, undergraduate numbers also rose and the proportion of postgraduates in 1993 was 19%, in a total population of 13,000. Of this total, 8% were enrolled in higher degrees and half of all postgraduates were research students. The majority of postgraduate enrolments were in science, agriculture and arts (which had the largest proportion of postgraduates. Enrolments rose from 7% (1987) to 11% in 1993.

In 1993 Adelaide offered thirty full-fee postgraduate courses, either diploma or coursework masters. Eight were offered in agriculture, seven in science, four in arts, five in health, three in business, two in law and one in engineering.

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<sup>71</sup> In 1991, it ranked first in total coursework enrolments for Australia, while Adelaide was sixteenth

Amalgamations occurred with the implementation of the Unified National System. Part of a former South Australian CAE at an adjacent campus was incorporated into Adelaide, as was the agricultural college at Roseworthy. Neither institution had a postgraduate research profile and higher degrees were less common among staff. A certain amount of "catch up" occurred, as the dominant university research ethos prevailed.

Increased availability of research scholarships (Commonwealth, University and Industry) and some extra coursework scholarships, enabled more students to consider postgraduate study, especially in a time of economic recession. Competition was keen, with first-class honours generally required. In common with many other universities, there was a rise in coursework enrolments (though not to the extent of UNSW) fee-paying postgraduates and overseas postgraduates.

During this period, the Research and Graduate Studies Branch was set up under the Dean, resulting in initiatives such as a Code of Supervisory Practice, grievance procedures, intellectual property policy and a supervisory induction program for new staff. In 1991, the Branch reiterated the thrust of University goals enunciated in the 1988 Strategic Plan, by stating that higher degree students would comprise 25% of the student population at Adelaide in the late 1990s.<sup>72</sup> In 1993, a trial induction course for new postgraduates was set up, and a structured entry program formulated for PhD candidates:

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<sup>72</sup> Dr. Ian Davey, Dean of Graduate Students, *University of Adelaide Diary News*, 18 March 1991 agriculture and natural resources, where plans for "split" PhDs (enabling research to be undertaken in home countries) and an expansion in masters coursework degrees, made postgraduate study attractive.

We expect to see completion rates improved, a better use of supervisory resources and a more equitable and effective guarantee of quality. [Many] students require some preliminary ... research techniques before they embark on research. We will now enrol them directly into the PhD rather than a qualifying course ... with a structured program to address perceived weaknesses in their training.<sup>73</sup>

Male postgraduate enrolments continued to outnumber female enrolments in every faculty except Arts by 1991. In that year, Adelaide had the third lowest female enrolment of total commencing students in Australia. While the Australian average for female students was 55% of total student population, at Adelaide it was 47%. In the same year, the university had lower than average female commencing postgraduate numbers, with Adelaide having the third lowest proportion in Australia (26% - the University of Western Australia was lowest with 20%). It also had the lowest number enrolled in non-higher degree postgraduate study.<sup>74</sup> Adelaide's strong science orientation and relative paucity of traditional "female" disciplines was reflected in its postgraduate profile.

Adelaide saw a rise in full-fee paying overseas students, as well as overseas scholarship holders, after 1988. In 1992, 107 new full-fee postgraduate students enrolled, many, as before, in agriculture and natural resources, where plans for "split" PhDs (enabling research to be undertaken in home countries) and an expansion in masters coursework degrees, made postgraduate study attractive.

## **THE DISCIPLINES OF GEOGRAPHY AND BIOCHEMISTRY**

Developments at both universities show, in microcosm, postgraduate responses to changes after 1988. In geography, both universities offered new kinds of courses in addition to the traditional research degree. Recently, multidisciplinary and interdisciplinary research had been

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<sup>73</sup> Dr. Ian Davey, *Adelaidean*, 16 August 1993

<sup>74</sup> Department of Employment, Education and Training, *National Report on Australia's Higher Education Sector*, Australian Government Publishing Service, Canberra, 1993, p367

encouraged by the federal government. This area, which shows potential for further postgraduate expansion, is one geography at both universities is well-placed to enter. Biochemistry, a science growth area, is a discipline in which the traditional research degree is paramount, though at UNSW some diversification occurs with coursework degrees. In common with other science disciplines, it is expensive and funding constraints are evident, particularly within the newer department at UNSW. Growth in fee-paying courses, for both local and increasingly, international students, was evident in both disciplines.

## **GEOGRAPHY AT ADELAIDE**

The range of courses at both universities became more alike in this period, with similar postgraduate research and coursework degrees and diplomas available. By 1993 at Adelaide, research degrees, diplomas and MA coursework degrees were available in geographic information systems (GIS) remote sensing, population studies and human resources. This was largely the result of the arrival in 1990 of the new Professor, Graeme Hugo, who built up coursework and overseas student programs. The Department in 1993 had forty-four postgraduates, fourteen of them PhD students. More than half were male (26 to 18). Twenty-four were overseas students, many fee-paying, with fourteen, mainly from Indonesia, enrolled in a coursework Master of Population Studies degree. (The degree is highly structured, to cater for differences in language and tertiary modes of study).

Long-term areas for research of national benefit noted by the ARC in 1989 included "the advancement of Australia's geo-political interests" and "understanding and managing the environment". Within these areas, priority was later given to "Australia's Asian Context"

(1991) with "international links" (1992) considered a benefit of higher education research.<sup>75</sup>

At both Adelaide and UNSW, many areas of research, and increasingly, new coursework masters and diploma courses in geography, fitted these criteria.

The age range of students was wide (unlike biochemistry), with some postgraduates in their forties; there was also some part-time study (again, unlike biochemistry). Postgraduate study in geography can be undertaken later in life and combined with employment. Unlike biochemistry at Adelaide, the PhD is not the only degree taken, with the research masters degree popular as the PhD is not essential for employment in many fields of geography in Australia. Fee-paying coursework degrees and diplomas were offered, in response to the opening up of the postgraduate sector after 1988.

Overseas students were a mix of fee-paying and scholarship students, with Australian International Development Aid Bureau (AIDAB) United Nations Family Planning Association (UNFPA) and the World Bank major sponsors, as well as various (mainly Asian) governments. Strong regional links were established, particularly in the case of Indonesia, and seem likely to be a continuing source of postgraduates.

In 1993, constraints related to postgraduate "over-enrolment" in the Arts Faculty saw limitations on the postgraduate intake. Sources of funding were problematic, particularly for expensive technological courses like remote sensing and GIS. The place of this newly technological discipline within the Arts Faculty may need revaluation as the discipline may benefit, like its counterpart at UNSW, under the aegis of a science faculty.

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<sup>75</sup> Department of Education, Employment and Training, National Report on Australia's Higher Education Sector, 1992, p249

## BIOCHEMISTRY AT ADELAIDE

At Adelaide, Biochemistry continued to be a premier research department, remaining largely untouched by federal reform. Throughout this period, it attracted federal and industry funding and the highest proportion of ARC grants in the University. In 1988, the biological sciences received the second highest level of government funding nationally in the natural sciences, after medical research.<sup>76</sup> Of the six universities receiving the highest overall ARC grants, Adelaide received the highest percentage of research grants for the discipline. The Department fitted an important national criterion for research in 1989:

It is expected that most research in the higher education sector will continue to be basic in orientation and by far the greater proportion of ARC grants will continue to be used to support basic research.<sup>77</sup>

Of the thirty-three postgraduates (sixteen male, thirteen female) all were PhD students. Most were local students, with only three from overseas, and most were in their twenties; the lack of language barriers was considered helpful to team research. The Department was strongly aligned to the research model, with no coursework programs proposed, although some staff trained in America considered them beneficial. However, staffing such programs was considered a problem. While completion rates were satisfactory, completion in under four years was "rare", though Commonwealth scholarships were tenable for less than this:

For most students, the PhD is a chance to work out something for themselves. It's important for the psyche, they're their own audience. They should determine when to finish, though sometimes you have to say "that's enough". It's important they're satisfied - it's good for the idea of responsibility.<sup>78</sup>

In 1993, Departmental concerns centred on the paucity of scholarships available to first-class honours students in the discipline. There were more postgraduate students competing across

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<sup>76</sup> Department of Employment, Education and Training, National Report on Australia's Higher Education Sector, p269

<sup>77</sup> John Dawkins MP, Research for Australia: Higher Education's Contribution, Australian Government Publishing Service, Canberra, 1989, p3

<sup>78</sup> Barry Egan, Department of Biochemistry, interview, 7 September 1993



disciplines than available scholarships - a national phenomenon.<sup>79</sup> A significant problem was research costs, especially of materials, which reflected the problem of funding research equitably across disciplines.

Most postgraduates proceeded to postdoctoral positions (often overseas). The Department was well-regarded as a postdoctoral destination, with twenty postdoctoral fellows in 1993. It participated in the Cooperative Research Centre for Tissue Growth and Repair and worked in close cooperation with the biotechnology company, Bresatec, which was established initially by the Department.

In 1993, the Department's national and international research reputation was firmly established. It retained the research PhD as the only higher degree, though some other science departments in Australia, like UNSW, instituted some coursework higher degrees, and yet was able to link successfully government-approved entrepreneurial and industrial activities to this basic-research model. Emulation of this, however, is difficult for many universities, due to the nature of some disciplines or infrastructure impediments. The Biochemistry Department is a prime example of how early specialization, research expertise and sustained federal funding have combined to promote areas of excellence even within a small university.

## **THE UNIVERSITY OF NEW SOUTH WALES**

At UNSW, system growth and amalgamations with CAEs swelled numbers, particularly after 1990, with the number of postgraduates almost doubling between 1990 and 1992.<sup>80</sup> After 1988, there was a continued proliferation of postgraduate vocational coursework degrees and

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<sup>79</sup> In 1993, there was a shortfall of 500 scholarships for full-time higher degree research students. (17,000 research scholarships were available for over 17,500 research students). Bruce Juddery, "HEC call for scholarship, postgrad load changes", *Campus Review*, 10 June 1993

<sup>80</sup> Fiona Carruthers, "Postgrad enrolments jump 9pc" *The Australian*, 7 July 1993. (In 1991, 12.4% of students at UNSW were postgraduates, compared to 21.2% in 1992)

diplomas. When DEET relaxed strictures on fee-paying postgraduate courses and encouraged universities to expand in this area, UNSW was quick to respond. With its tradition of postgraduate innovation as well as its applied science base, the University:

had an unparalleled ride through the Dawkins years. It was almost the university designed to thrive then.<sup>81</sup>

New higher degrees were instituted, though professional doctorates, as suggested by the HEC, were not offered. The coursework Master of Laws was introduced in 1989, and a science PhD by external study and research was implemented in 1990, after concern was expressed that good students were being lost to the superior laboratories of industry. Disquiet was expressed that the PhD might be devalued by this, but it was argued that increased industry links would prove invaluable and that there were international (and local) precedents.<sup>82</sup> Moreover, such an external MSc was already available. A coursework doctorate, however, was firmly rejected, "as all the objectives of the [professional doctorate] can be obtained through existing doctoral programs".<sup>83</sup>

An internal review of the PhD in 1988 examined the issues of external degrees, supervision and reviews of student progress, as there was great variation in doctoral programs across the University. The Tertiary Education Research Centre (one of the first of its kind in the world when established in the early 1960s) was also involved. By 1990, many of the Review's proposals were adopted, including a review of regulations, co-supervision for all PhD students

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<sup>81</sup> Gavan Brown, Vice-Chancellor, The University of Adelaide, interview, 28 May 1993. As a former academic of many years standing at UNSW, and a recent arrival at Adelaide, Brown was uniquely placed to comment

<sup>82</sup> The CSIRO noted in 1967, "Regulations in many Australian universities permit a research student to spend part of his time in an external laboratory...though very few complete courses in this way, it has become a normal arrangement in one or two fields". CSIRO Advisory Council, Report of the Committee on the Relationship between the CSIRO and Universities, April 1967, p9

<sup>83</sup> Postgraduate Studies Committee of the Academic Board, University of New South Wales, 20 September 1989, R.3:1:1

early and mid-candidature reviews of work in progress, supervisory responsibilities, the appointment of postgraduate co-ordinators, induction programs and revaluation of goals. The appointment of a Dean of Postgraduate Studies was rejected, partly on financial grounds and partly through a "fear of interference from senior administration".<sup>84</sup> Instead, an Office of Postgraduate Studies was set up under a Director.

While UNSW had an enrolment of 28,000 in 1993, with a quarter of these postgraduates, most (70%) were enrolled in coursework higher degrees. In 1993, UNSW offered seventeen full-fee postgraduate courses; ten in law, three in business, two in education, and one each in arts and law. Concerns were expressed about disproportionately low numbers of research award holders. This was a reflection of low honours enrolments and relatively low research higher degree numbers; despite a total population of more than twice that of Adelaide, a slightly smaller percentage (7%) was enrolled in research higher degrees than at Adelaide (8%). Few scholarships were available in the coursework area, where many students (or their employers) paid fees.

By 1993, there were 1,500 research students, nearly the same as in 1986, despite student growth of 10,000 between these years. Despite the dominance of UNSW in ARC and Medical Research Grants, the University's postgraduate research profile was not as strong as might have been expected. While many Industry scholarships were offered to students in applied areas, the number of research scholarships offered did not show strong growth, although research higher degree commencements doubled between 1990 and 1993. UNSW in this instance would seem to be a victim of its strong technological profile.

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<sup>84</sup> Minutes of the Postgraduate Studies Committee of the Academic Board, UNSW, 13 April 1989, 2:3

In 1991, UNSW had the second lowest female enrolment of total commencing students in Australia (47%), though it was just under (at 41%) the Australian average of 43% of females commencing higher degrees.<sup>85</sup> In 1992, female commencing students in higher degrees outnumbered males in arts, social science, biological sciences, fine arts, law, medicine and professional studies. They also numbered more than half of commerce bachelor commencers, while the proportion of female science bachelor commencers (5,000 to 6,000 males) was the Australian average. This would have future postgraduate ramifications. In the period to 1993, a new source of female postgraduates had also emerged - fee-paying or scholarship overseas students.

Overseas student numbers escalated after 1988 and by 1993, comprised nearly 16% of total enrolments, the third largest number in Australian universities. Most were enrolled in engineering, science, architecture and business; 500 were scholarship holders, from twenty-two countries. Most were undergraduates, though a third of overseas students were postgraduates in 1991, with higher degree students divided fairly evenly between research and coursework degrees.<sup>86</sup>

## **GEOGRAPHY AT UNSW**

In 1988, the Geography School was still producing the largest number of honours graduates (20-25 annually) in Australia and was the largest School in the country. In 1993, there were over 100 postgraduates, including thirty-one enrolled for research masters degrees, nearly sixty in masters coursework programs and twenty-five PhDs. There were roughly equal numbers of male and female students.

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<sup>85</sup> Department of Employment, Education and Training, National Report on Australia's Higher Education Sector, Australian Government Publishing Service, canberra, p367

<sup>86</sup> The University of New South Wales, 1991 Statistics, p104

Research degrees offered include the PhD, MSc and MA while masters coursework degrees and postgraduate diplomas are offered. Collaborative research with industry and government is strong, notably through the CSIRO. The Centre for Remote Sensing, sponsored by the Faculties of Applied Science and Engineering, is an important research arm of the School, of national importance. The applied, professionally-focused nature of many of the School's postgraduate courses has been maintained and it is a source of pride to the School that few enter teaching. Postgraduate strengths include arid land management, remote sensing and geographic information systems, all of which are offered as coursework degrees of one to two year duration. The focus of the University on overseas postgraduate students was reflected in the School, which saw an increase in fee-paying courses and students. Students came from new sources (with a contingent in 1993 from Iran).

The move toward more fee-paying postgraduate courses aligned with DEET and government objectives. At UNSW, schools were urged to expand their sources of funding. In attempting this, the School faces quandaries similar to other departments and schools of geography, as some courses would not easily attract fee-paying students. Remote sensing and GIS are, however, exceptions to this and attract many fee-paying postgraduates.

The School's unique focus and location as an applied science discipline is probably its greatest strength. Adaptability and market orientation will continue to mark its postgraduate offerings, though the lack of coursework scholarships is a disincentive to many local students.

The evenly balanced gender distribution evident at the two universities in this discipline highlights the increased participation of women in postgraduate study (with institutional and

government encouragement) in the 1990s throughout Australia. The move to more fee-paying courses could have equity implications, however, particularly if scholarship numbers are not increased. At both universities, there is resistance to fees being charged to local students for research degrees - the traditional kind of geography (and arts) postgraduate degree.

## **BIOCHEMISTRY AT UNSW**

In 1993, there were forty-two postgraduates. Twenty-two were enrolled as PhD students, with the rest masters degree and graduate diploma students. The gender breakdown was roughly equal. As at Adelaide, most were aged in their early twenties, with one overseas student aged thirty-two. Twelve were overseas students, most enrolled first at graduate diploma level and upgraded if progress was satisfactory. No degrees were by coursework, though there was some pressure for this at other levels of the University; this was a contentious issue. Funding was problematic, partly due to escalating costs, though the Department did "fairly well" in APRA allocations. Biochemistry costs were:

increasing faster than inflation - molecular biology is very expensive ... research grants are harder to get. The School would like DEET to earmark funds for students' consumable work as the quality of postgraduate education will suffer unless this is addressed.<sup>87</sup>

As each postgraduate needed around \$12,000 for consumables, lack of extra funding would mean fewer students; encouraging more fee-paying students, especially local students, was difficult - highlighting the problem of extensively broadening higher degree models in some science disciplines. By 1993, postdoctoral positions were considered harder to obtain. Completion rates were also an issue; most PhD students took between three and three and a half years to complete, a rate midway between the UK rate (three years) and the US (five to six). All students had co-supervision (a University requirement). Training in research grant

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<sup>87</sup> Professor Ian Dawes, Department of Biochemistry, UNSW, interview, 23 July 1993

proposal writing was mooted, a reflection of current competitive realities and perhaps a pointer to future practice.<sup>88</sup>

Between 1987 and 1993, the postgraduate landscape changed, yet existing research concentrations were not diminished. In this, Adelaide and the University of New South Wales exemplified the Australian experience. At the same time, they also represented the internationalization and retreat from insularity that flowed from the implementation of the Unified National System. The response of the two universities to systemic problems in the postgraduate sector was, and will continue to be, coloured by this changing dynamic.

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<sup>88</sup> *ibid.*

Table 6.3  
HIGHER DEGREES CONFERRED

	ADELAIDE	NSW
HIGHER DOCTORATES	8	16
PhD	82	149
MASTERS RESEARCH	20	90
MASTERS COURSE WORK	96	966
HIGHER DEGREE TOTAL	206	1221
ALL POSTGRADUATES ENROLLED	2055	6549

Source: University of Adelaide Annual Report

Table 6.4

Institution	Higher Degree Research Commencers					No.	Difference 1990-1993 (%)
	1990	1991	1992	1993(2)			
University of Southern Queensland	5	16	118	170	165	3300.0	
Australian Catholic University	2	4	9	18	16	800.0	
Charles Sturt University	8	7	37	46	40	666.7	
Victoria University of Technology	29	49	119	215	186	641.4	
Edith Cowan University	45	109	180	153	108	240.0	
Royal Melbourne Institute of Technology	104	163	291	337	233	224.0	
University of Western Sydney	66	85	124	196	130	197.0	
Swinburne University of Technology	60	103	143	173	113	188.3	
Queensland University of Technology (3)	58	114	135	283	169	148.2	
University of New England	124	183	219	272	148	119.4	
University of New South Wales	269	367	495	571	302	112.3	
Monash University	313	364	424	638	325	103.8	
University of Melbourne	430	592	726	862	432	100.5	
Murdoch University	74	106	148	148	74	100.0	
James Cook University of North Qld	74	115	155	147	73	98.6	
Total Australia	4323	5803	7672	8502	4179	98.7	
University of Central Queensland	18	22	30	35	17	94.4	
Deakin University	59	81	232	114	55	93.2	
University of Canberra	34	64	50	103	49	90.7	
Curtin University of Technology	116	188	211	212	96	82.8	
Latrobe University	152	253	317	267	115	75.7	
Australian National University	132	171	190	231	99	75.0	
Griffith University (3)	64	73	132	126	53	72.6	
University of South Australia (4)	36	79	130	136	57	72.2	
University of Sydney	452	680	777	774	322	71.2	
University of Tasmania	101	119	151	164	63	62.4	
Macquarie University	164	178	234	239	75	45.7	
Flinders University of South Australia (4)	81	96	118	139	43	44.8	
University of Queensland	414	477	600	599	185	44.7	
University of Wollongong	98	97	138	138	40	40.8	
University of Newcastle	102	141	187	143	41	40.2	
University of Technology, Sydney	136	149	167	190	54	39.7	
University of Adelaide (4)	152	210	261	274	64	30.5	
University of Western Australia	228	257	323	292	64	28.1	
Batchelor College	0	0	0	0	0	0.0	
Northern Territory University	64	45	52	42	-22	-34.4	
Ballarat University College	12	14	8	5	-7	-58.3	

Source; Selected Statistics 1993



## CONCLUSION

Within an historical context, this thesis has argued that the early form of postgraduate education in Australia was one that was shaped largely by a British model, itself based on a model of undergraduate education which mingled features of Oxbridge, London and the civic universities. In Britain, and Australia, the graduate sector was for many years marginal, with the undergraduate sector pre-eminent. Though the British model still has influence and prestige, since the 1960s, and more notably, since the late 1980s, American models have provided the impetus for changes in graduate practice and procedure in Australia (and indeed, worldwide).

If the British postgraduate model is characterized by small size, high level of state funding, selectivity and an apprenticeship/supervisory relationship, the American model represents the furthest end of the graduate spectrum. Components of the American “professional” model include, at doctoral level, a standardized process of admission, coursework, examinations and dissertation, undertaken by PhD as well as other doctoral candidates. Graduate schools, formalized teaching, critical mass (in terms of student and departmental size) and vastly diverse resources characterize a very different system. The popularity of the model, at student level, has been driven by credentialism and the need for retraining and specialization. Research-based models do not provide adequately for (often employed) students seeking more accessible and flexible courses in professional areas. (In Australia, the term “professional” has a somewhat narrower definition, applying to doctoral degree alternatives to the research PhD [as well as applying to a range of other taught graduate courses] rather than to the entire postgraduate model).

The American model has become an increasingly-favoured model in Australia and elsewhere, for a multiplicity of reasons:

The ideology that is driving graduate education and research policy and that is expressed in reform efforts, is increased efficiency and relevance. Efficiency sometimes takes on clear cost efficiency connotations in concerns about non-completion and completion rates... the prevailing ideology calls for utilizing higher education as an engine of high technology and economic redevelopment. There is... a powerful and pervasive belief that American universities are more innovative and responsive.<sup>1</sup>

However, the most persuasive reasons may be because it is the model which underpins the largest, most powerful, ostensibly successful and competitive graduate system in the world. As such, it is an international pacemaker.

The British model is now often seen as unsuited to new postgraduate demands. The current operational paradigm in Australian postgraduate education sees the grafting of an American model onto a system based on a British model of not only postgraduate, but also undergraduate, education. Here lie future challenges and complexities.

A major difference between American and Australian postgraduate models lies in the area of resource funding. While the Australian postgraduate system, in a centrally-unplanned manner, seeks to adopt many of the features of a system which is substantially better-resourced, it faces great difficulties. These are due in some part to a smaller population and wealth base. In the

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<sup>1</sup> Gary Rhoades, "Graduate Education", in Altbach, PG (ed.) International Higher Education: An Encyclopedia. Garland, New York, 1991, p143

latter half of the century, the funding of the higher education sector has moved under tighter state control in Britain and Australia. In both countries, governments (and industry) have increasingly determined the direction of research and scholarship funding. Funding streams for the two sectors of higher education in these two countries are not easily co-mingled.

An American tradition of the endowment of research through vast foundations (such as the Carnegie Foundation and other philanthropic institutions) as well as a plethora of other funding sources, has seen great wealth underpin American higher education. Much private and public endowment and funding is ostensibly for the undergraduate sector. However, at university level there is skilful blending of funding streams so that the undergraduate sector substantially subsidizes the postgraduate sector, both in terms of resources and faculty funding and time. In Australia, this is often not possible to anywhere near the same extent. Furthermore, private funding of the higher education sector, let alone the graduate sector, forms a relatively small part of university income compared to the US.

The various political economies (state, professional and industrial) which shape international graduate education operate at the sites of student selection and resource input and in relation to labour market imperatives. Postgraduate education has become a desired “positional good” as the streaming function of credentialism has become entrenched in society.<sup>2</sup> Following the American pattern, professional graduate education has burgeoned in Australia, with coursework masters, and latterly, doctoral, degrees increasingly popular due to demand in the professional workplace.

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<sup>2</sup> Simon Marginson, *Education and Public Policy in Australia*. Cambridge University Press, Melbourne, 1993, p174-5. Marginson considers (in Australia) that postgraduate education and private schooling are the main forms of educational “market development” where positional differentiation is important, especially as educational participation becomes universalized.

In the American model, organizational relationships, such as those between the undergraduate and post graduate sectors, and their resourcing, shape the topography and growth of postgraduate education. Even more important are the micro-levels, such as the department. It is here that modern analysts of graduate education situate functions critical to the determination of graduate form and vitality.<sup>3</sup>

The major organizational structure which has moulded the graduate sector of the American university, the large department, was an outcome of new academic specializations and professionalization in the nineteenth century. The development of a powerful overarching administrative structure, was a crucial, (and in Australia, not easily fully replicable) factor in the formation of the American graduate school. In European models, which vest power in a chair, doctoral research operated in a less formal administrative milieu. Though this model was weakest in England, university administrators there (and in Australia) traditionally had less power than those in America. Within this enabling organizational structure in America, the department remains the basic academic unit, generating:

a more formalized system of graduate education. At least two features reduce individual professors' control of ... the curriculum and students... the department spreads responsibility among various faculty and not just among full professors. Probably more important is the dispersion of significant powers not only outside the hands of individual professors but outside the department. One such level of influence ... is the graduate school, of which, with few exceptions, all graduate programs are part.<sup>4</sup>

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<sup>3</sup> See, for example, Gary Rhoades, "Graduate Education", in Burton Clark, Places of inquiry: research and advanced education in modern universities, University of California Press, Berkeley, 1995

<sup>4</sup> Gary Rhoades, "Graduate Education", p131

At the approach of a new millenium:

the most critical question that can be posed about modern systems of higher education is: How do they interrelate the production and dissemination of knowledge? ... The transfer of research-generated new knowledge and technique may well be the most important form of knowledge transfer... the intellectual moment favours ... universities that best integrate research activity and research training with teaching and study.<sup>5</sup>

The best site for such integrated activity is the graduate school where and if critical mass exists.

This critical mass is often missing at graduate level in many Australian universities, due to the smaller size of institutions and departments.<sup>6</sup> As has been noted previously, most Australian graduate schools emerged in the early 1990s; the first British graduate schools also emerged in this period. Universities in both countries, desirous of expanding postgraduate programs and attracting foreign students, were influenced by the American graduate school model. Generally however, these early schools have been relatively small compared to US schools.

The American model of professional postgraduate education has created some tension at doctoral level in Australia, particularly between new practice-centred and traditional research degrees. Students, professional bodies, universities, governments and providers have somewhat diverse interests. Dissertation requirements vary, and real differences between the two types of doctoral degrees may be ambiguous. The thrust is often toward the apparent

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<sup>5</sup> Burton Clark, *Places of inquiry: research and advanced education in modern universities*, p15

<sup>6</sup> However, large size may not be all; a study of completion rates in American doctoral programs noted that "one of the most important findings of the study" was that the scale of graduate programs affected completion rates, with smaller universities earning "appreciably higher" numbers of PhDs. WG Bowen and NI Rudenstine, *In Pursuit of the PhD*, Princeton University Press, Princeton, 1992, p144. The reasons are speculative, but the finding may have some comfort for well-run small Australian programs

prestige of the practice and procedures of the research degree, a matter of increasing concern. (A provocative suggestion has also been made that the PhD is itself a professional degree, as it is essential for most academic employment).<sup>7</sup>

Rhoades (1991) in his analysis of the international forces which impinge on educational systems, contends that competition for international students is a major driving force within the graduate sector. <sup>8</sup> As state economies seek revenue, economic rejuvenation and “knowledge workers”, the competitive American model is emulated. This is certainly true in the Australian context, where the older British model seems inadequate for such a global “marketplace”. Furthermore, as both faculty and knowledge move increasingly frequently across state borders, information concerning apparently successful graduate models can be transmitted quickly.

While many Australian universities have adopted, in varying degrees, features of the American model, there are further constraints. A fundamental difference has been the lesser degree of Australian institutional competition, exacerbated by a heavy reliance on government funding. The most internationally influential models of postgraduate education (Germany in the nineteenth century, America in the twentieth) arose in conditions of internal competition. In America, particularly, institutions enjoyed great freedom, and competition for staff, students and prestige remains intense. Whether this in fact is desirable or possible for Australia gives rise to an interesting conundrum. Nevertheless, Australia has entered the global education market and further institutional differentiation will occur as institutions compete strongly. With nearby developing nations expanding their undergraduate systems,

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<sup>7</sup> TW Maxwell & PJ Shanahan, Introduction, Which Way for Professional Doctorates? Faculty of Education, Health and Professional Studies, The University of New England, Armidale, 1996, p2

<sup>8</sup> Gary Rhoades, “Graduate Education”, p142

competition for their undergraduate and postgraduate students will intensify. (Malaysia has announced it aims to be a net exporter of education by 2000).<sup>9</sup>

The creation of the Unified National System saw total enrolments grow to 560,000 in 1992 - growth far in excess of that anticipated even a decade earlier. In the postgraduate sector, research was most affected. The former CAEs, particularly the larger institutes of technology, were major beneficiaries, as their access to university status brought increased research funding. The undergraduate sector, the sector most strongly affected, fared poorly, despite improved access and equity initiatives, for student numbers increased without matching funding. School leavers moreover did not comprise the bulk of system growth.

By early 1993, postgraduate education itself was neither Unified, National nor a System. The goals of the White Paper - growth with equity - were not met simultaneously in the postgraduate sphere. Similarly, quality and diversity were fraught with practical difficulties, given tight government funding control. The major policy documents sought to address the problems of two systems - undergraduate and graduate - one of which was increasingly international in orientation. The two systems were characterized by mass versus relatively elite participation, generalized versus specialized curricula, and differing levels of student support (with HECS and Austudy designed primarily for undergraduates).

While over-arching state policy often suffered from ambiguity of differentiation, definition and application in the area of postgraduate education, it was in the area of "minor" policy (often institutionally-based - such as new courses, codes of practice, training for supervisors)

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<sup>9</sup> Richard Salmons, *The Australian Financial Review*, 29m May 1996, p16

that real changes, in line with American models, were implemented. Here, the mimetic force of academic internationalization was evident.

Some system unification is achievable in areas such as course length, nomenclature, supervisory codes and intellectual property issues, though great differences in fees and course content in professional degrees continue to exist and admission criteria for similar professional doctoral courses varies greatly.<sup>10</sup> Competition between universities for research funding is however often inimical to system unification. Equity in research funding was and is not possible; funding constraints, differential performance, the large number of institutions and escalating infrastructure costs in many disciplines continued to make competition part of research.

While the White and Green Papers had made improved scientific research a cornerstone of national economic performance and science was a major beneficiary of the reforms, greatest relative postgraduate growth in commencements in 1992 occurred in health, engineering and social science/humanities. The growth of professional and vocationally-oriented research degrees in these areas was, as has been noted, directly influenced by the American model. Interdisciplinary research, familiar in the US, was also encouraged in the White Paper but attracted few Australian Research Council grants. This inhibited new types of humanities and social science research, as there were few sources of non-government funding, unlike America. Scientific and medical research grants largely continued to be awarded to institutions with existing strengths in those areas.

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<sup>10</sup> TW Maxwell & PJ Shanahan, PJ "Professional Doctorates other than the Doctor of Education in Australian universities: some comparative data", in TW Maxwell & PJ Shanahan, Which Way for Professional Doctorates? Faculty of Education, Health and Professional Studies, The University of New England, Armidale, pp13-29



Government attitudes to the postgraduate sector in recent years have been both proactive and reactive, with much policy making driven by short term considerations rather than long term planning - for example, the government-sanctioned push for postgraduate growth in 1991 and in contrast, the 1993 redirection of resources, in mid-triennium, toward undergraduate load. The government-sanctioned American model of “user-pays” postgraduate courses in professional areas introduced a new kind of binary divide; ability to pay became a prime determinant for entry to some courses. The renamed Australian Postgraduate Awards, introduced in 1993, included reduced numbers of coursework and HECS-exempt scholarships, further aligning government policy toward the US model. A parallel can be drawn to current British “models” of short-term economically-driven funding here, though the governments of Britain and Australia were ideologically different. Despite this, in terms of funding higher education, the largely state-supported British and Australian systems seem to have certain economic sympathies of approach.

Government assessment of the “quality” of tertiary outputs and environments was a feature of both British and Australian national systems in the 1990s - derived essentially from international business management ideologies. Assessing quality in the postgraduate sector is fraught with problems, both subjective and objective. There are also, inevitably, associated equity and resource allocation problems. The allocation of scholarships to institutions on the basis of the “quality” of their postgraduate environment (for example completion rates and infrastructure) has obvious negative implications for newer universities wishing to build postgraduate profiles, unless other funding sources are found. Industry linkage, strategic research and industry-partnership scholarships, all features of the American model, were adopted increasingly.

Embracing only some features of an American postgraduate model is problematic without a similar macro-context: a prevailing ideology of university free-market competition and diversified funding. Nevertheless, by 1993, many features of the American model had been adopted. At the same time, however, the selective British postgraduate model was the one generally considered appropriate for research funding.

In 1993, Australian postgraduate education, as in the past, was largely institutionally-managed, though largely government-funded. Identification with discipline (national and international) moreover outweighed identification with an institution, or a national system. The Australian postgraduate research sector mirrored the international experience. In this context, understanding, let alone centrally managing, the postgraduate sector became more difficult, for:

It is particularly in the domain of graduate education and research training, where operational diversity most strongly inheres, that organic development runs counter to the norms of unified system.<sup>11</sup>

## **THE POSTGRADUATE FUTURE**

Post-1993, the postgraduate sector in Australia (and elsewhere) confronts new complexities. Proliferating coursework programs face issues, amongst others, of relevance, rigour, access and funding. In terms of the direction of doctoral research, various future options for PhD “output” exist. Within Europe, Sweden and Britain offer very different responses. The Swedish government has announced plans to double PhD output by the year 2000, the expenditure of two billion dollars on strategic research in technology, science and medicine, and a drive to place as many PhDs as possible in industry. A swing to lifelong education is

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<sup>11</sup> BR Clark, “Graduate Education and Research Training”, Research and higher education: the United Kingdom and the United States, Society for Research into Higher Education? Open University Press, Guildford, Surrey, 1992, p147

seen as the “only answer to the besetting curse of advanced societies - high unemployment”.

<sup>12</sup>To pay for this, a scheme was proposed, comprising joint contributions from individuals, government and employers, in order to “maintain motivation and productivity” and move the economy toward a knowledge base. In contrast, a British White Paper (**Realizing our Potential**, 1993) in response to unemployment of PhDs, supported moves to cut PhD scholarships in many areas and redirect students towards the masters degree.

A problematic feature of all national models of postgraduate education is that the elite status and autonomy of the postgraduate research sector has left postgraduate methodologies and purpose centrally undefined. At the heart of what is the distinguishing feature of the research university, doctoral education, the PhD is:

beset by a curious paradox. On one hand it has now become the explicit objective of policy concern. On the other hand its purpose no longer seems clear.<sup>13</sup>

Is it an “apprentice exercise”, an acknowledgement of time spent in research training or the attainment of almost higher doctorate standards, which, as the AVCC noted with concern, marks the award criteria of many Australian universities? <sup>14</sup> In contrast to the US model, Australian universities specifically require a substantial and original contribution to knowledge for the award of the PhD. Additionally, intellectual property issues have become more prominent for student researchers internationally, especially in industry-funded research. The imperfectly-resolved issue of ownership of postgraduate knowledge is linked inextricably

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<sup>12</sup> Dr. Hans Forberg, cited in Julian Cribb, “Sweden takes gold for knowledge”, *The Australian*, 27 August, 1994

<sup>13</sup> Blume, Stuart, “The Development and Current Dilemmas in Postgraduate Education”, *European Journal of Education*, Amsterdam, Vol.21:3, p221

<sup>14</sup> Australian Vice Chancellors Committee, *The Progress of Higher Degree Students*, University of Queensland Printery, St. Lucia, 1990, p104

to philosophical conceptions of process and purpose in doctoral education, which are fertile areas for new research.

The issue of “lifelong education” has often been espoused by Australian governments.<sup>15</sup> This raises economic issues which sit uncomfortably with competitive models, and is an area where the interests of government, industry and students do not necessarily converge. There is no reason to expect demand to taper off at first degree level; mass primary and secondary education, with government encouragement and credentialism, created demand for tertiary education. A great social change has occurred (not only in Australia but also other OECD countries) with higher education, following the American experience, becoming a mass system of education. In 1993, postgraduate enrolments exceeded that of the total number of students in the whole of the higher education sector in 1967. High levels of education are seen as a private and social good. Specialization and credentialism underscore the need for further, often postgraduate, education. Attempts by governments to restrain postgraduate growth through funding and short-term “planning” mechanisms may not curb underlying demand, as Australia and other OECD countries follow the trajectory of the American graduate model. As Susan Davies notes, “the market, not government, will determine the development of graduate education at doctoral level”.<sup>16</sup>

Vocationally-specific professional training after an initial degree, following the American model, has become more common in Australia. This may take the form of one-year programs,

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<sup>15</sup> See “Lifelong Education”, Peter Baldwin MP, Higher Education: Quality and Diversity in the 1990s, a Policy Statement, Australian Government Publishing Service, Canberra, 1991, pp43-44. A Report, Developing Lifelong Learners through Undergraduate Education, was commissioned by the HEC and released in 1994. It’s Chair, Ian Chubb, noted: “Universities must do more to enable their graduates to learn through life” by introducing and funding policies on lifelong education. See Sian Powell, “HEC confirms lifelong learning lead”, The Australian, 30 November 1994

<sup>16</sup> Susan Davies, “Doctoral Education in Transition”, in TW Maxwell & PJ Shanahan, Which Way for Professional Doctorates?, p68

such as those in law, teaching and nursing (where prospects of full-fees and changes to HECS liability may engender some volatile situations) other full-fee professional programs of varying length, or the locus of training may sometimes shift toward TAFE. While Australian **undergraduate** education is largely aligned to British models, types and forms of **graduate** entry will reflect both British and increasingly, American models of graduate education. New kinds of work, new kinds of students and the reality of international competition make the adoption of many of the features of American models inevitable.

In a milieu where an Australian Minister of Employment, Education and Training can describe some postgraduates as “marketable product” and therefore a good loan risk to banks and universities, the future of postgraduate education enters interesting times.<sup>17</sup> Hybrid models of postgraduate education are evolving which will transform the sector, though they will continue to be modified by public and private imperatives. Moreover, the graduate school model is no longer the only American model, especially in the area of research training. New sites of advanced scientific research training, combining university and industry resources, are to be found in centres on and off campus in the US, and constitute an alternative, already partly-adopted model for Australia. Such complexity and size ensures that postgraduate education can no longer adequately be described as simply “tertiary”, but rather “quaternary”. It is now a sector in its own right - multi-sited, multi-purposed and multi-structured, one in which the research-teaching-study nexus finds new significance.

The history of Australian postgraduate education spans only a relatively short period of the millenium during which the Western university system evolved. These years have seen the primacy of the British model of postgraduate education shift to that of the American model.

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<sup>17</sup> Simon Green, Meet the Press, Channel 10, 18 October 1994

As cyberspace, the virtual university and new kinds of competition provide as yet unknown challenges and concomitant opportunities for the sector, the next century may see the emergence of a distinctive new Australian model of postgraduate education.

The traditional goals of the university, the pursuit of knowledge for its own inherent value, the advancement of scholarship and the provision of professional training find continuing resonance, if problematic balance, in this evolving sector, as British, American and Australian models themselves transmute to a global model. Near the close of a research century where the models from two countries have been paramount, the diverse system of postgraduate education in Australia is ineluctably both quaternary and liminal.

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## APPENDIX I

### Postgraduate Time-line 1850-1939

Postgraduate time line 1850 - 1939

DEGREE	1850's	1860's	1870's	1880's	1890's	1900	1910	1920's	1930's	2nd World War Begins
MA	1st M.A. [Australia and Melbourne] George Henry Green 1858 1st 7 MA's [Sydney] 1859 - Includes William Charles Windeyer [1st Aust BA]	2 [Sydney] in Physics and Maths	3 [Sydney] 1 in classics 2 in maths	Melbourne 1885 Bella Guerin, 1st female MA Adelaide 1889 First 2 MA's granted	1st MA Tasmania 1898 1st MA Tasmania Female 1899 1st MA Sydney Female 1891	1901 [Adelaide] First female MAs granted [2] MA's Awarded - 1900 Sydney 200 Melbourne 400 Adelaide 7 Tasmania 2	Doctorates in Veterinary Science granted in Melbourne [1909] and later Sydney  1910 University of Queensland founded	1925 1st MA[UWA] First M.Commerce and M. Economics degrees inaugurated at Melbourne and Sydney		
	Many MA's not examined degrees. Degrees often taken two years after BA upon payment of fee		University of Adelaide founded 1874		University of Tasmania founded 1891	MA's Awarded - 1893 Melbourne 19 [some honorary]				
MD	University of Sydney founded 1851	1862 [Melbourne] Medical School established with 3 undergraduates	1870 [Sydney] 1st 2MD's granted [AEG] 1871 Melbourne 1st MD	Medical School Established Sydney 1883 Medical School est. [Adelaide] 1884	1st MD [Adelaide] 1891 By 1889 [Sydney] five female Chm awarded 1st University earned MD [1895] Sydney		1911 founded University of Western Australia [U.W.A.]	U.W.A. awards only two Masters [in any discipline] degrees in first 4 decades Very few awarded at Queensland in first 3 decades		
D. Laws	University of Melbourne founded 1855	1st D.Laws granted Sydney 1866 [No chair in Law until 1890] 1862 - Melbourne Law school established - 1st 3 law undergraduates	1876 [Melbourne] 1st Sir George Bowen 1870's 6 D.Laws granted - Sydney	[Sydney] 6 D.Laws granted in 1880's	Melbourne and Sydney average one doctorate per year at each university 1890 - Sydney Law school established		Postgraduate Diploma in Public Health 1910/Melbourne	Postgraduate diplomas inaugurated in Psychiatry [Sydney & Melbourne] Anthropology/Tropical Medicine [Sydney] Radiology Dietics [Melbourne] Metallurgy, Electrical & Mining Engineering [Adelaide]		
ChM [MSurg]				1888 [Sydney] 6 ChM. granted 1885 [Melbourne] first M.Surgery for [Aust] granted at Melbourne		1st MSurg [Adelaide] 1902		1927 ChM at Sydney becomes MSurgery and truly postgraduate		
DMus		1st D.Mus [Melbourne] George Torrance [1879]				1902 [Adelaide] Edward Davies	1918 [Adelaide] Ruby Davies 1st female D.Music in Australia 1st female Doctorate at Adelaide			
DSc				1887 1st DSc [2] [Melbourne] David Masson, Frederck McCoy		1902 [Adelaide] 1st DSc Clinton Farr 1904 [Sydney] 1st Dsc Walter Woolnough 1904 [Melbourne] 1st female DSc in Australia and first woman to receive a Doctorate in Australia Georgina Sweet		M.Sc. instituted [Adelaide.Sydney] 1926 [Adelaide] 1st M.Sc awarded 1927 [Adelaide] 1st female M.Sc 1927 [UWA] 1st MSc 1924 1st 2 Msc [Sydney] including first female MSc	1st DSc [UWA] 1935	
MLaws				Melbourne [1881] M.Laws 3 granted				Adelaide, Melbourne, Sydney institute doctorates in Dental Science	1st LLM Adelaide 1934	
MSc					First MSc degree established in Australia [Melbourne] 1st MSC Melbourne 1893 1st Female Mac [Melbourne] 1894	MSc established at Tasmania 1907 [Tasmania] 2 MSc awarded		Postgraduate Diplomas in teaching [Sydney, Melbourne, Adelaide] M.Ed. established [Melbourne] 1926 Postgrad BEd 1938 [Melbourne] M.Ed. established [Sydney]	1930 1st Masters degree in Bacteriology [Phyllis Rountree] [Melbourne and Australia] 1933 1st MAgSc [Adelaide] 1935 1st MAgSc [Sydney]	
MCE		1864 [Melbourne] 2 enrolled for B.Eng [both B.A's]		1883 [Melbourne] 1st MCE John Booth 1885 [Sydney] 1st undergraduates in Engineering						
DLitt	Not conferred in nineteenth century in Australia.					Only 2 conferred at Sydney until 1944	Adelaide 1 to 1940 Melbourne 18 conferred to 1940 [Honorary]			

## APPENDIX II

Ordinary Examination for the MA Degree

The University of Sydney Calendar 1890

PHYSICS I.

QUESTIONS.

Time, Three Hours.

HONOURS.

1. Deduce the laws of reflexion and refraction from the undulatory theory.
2. Explain exactly under what circumstances light can "go round a corner."
3. Explain the general principles on which the spurious achromatism of the Huyghens's eye piece is attained.
4. Explain what is meant by the term "circular polarisation," and describe exactly the various means whereby it may be produced.
5. Explain exactly the theory of the production of colour by mica plates in polarised light.
6. What is a "diffraction grating?" Show how the absolute wave length of any particular kind of light may be determined by the help of this apparatus.

PHYSICS II.

ACOUSTICS.

Time, Three Hours.

HONOURS.

1. How was it established that a sound of any kind is due to aerial motion, and that a musical sound is produced when the motion is regular and periodic?
2. Give in short the laws regulating the dependence of pitch on the physical properties of vibrating elastic strings.
3. What is Helmholtz's theory as to the nature of "quality" of tone?
4. Why is a tuning fork and resonator combination generally used for the production of pure tones?
5. Give a description of some method for the optical comparison of the periods of two tuning forks.
6. Describe one of Tyndall's experiments to illustrate the reflexion of sound waves at the boundary of layers of air of different density.

M.A. EXAMINATION.

LOGIC AND MENTAL PHILOSOPHY, &c.

THE PHILOSOPHICAL DEVELOPMENT FROM BERKELEY TO

KANT.

Time—Three Hours.

1. State briefly the main points in Berkeley's analysis of the sense of Sight, and examine his account of the relation between the senses of Sight and Touch.
2. "A relation, Berkeley virtually admits, is neither a feeling nor felt." (*Green*.) Discuss this criticism.
3. "Should the Idealist be right, the doctrine of Evolution is a dream." (*Spencer*.) Explain and comment on this remark. What does Spencer mean by *Idealism*?
4. Discuss the meaning and importance of the following quotation—"There are two principles which I cannot render consistent, nor is it in my power to renounce either of them; viz., that all our distinct perceptions are distinct existences, and that the mind never perceives any real connection among distinct existences." (*Hume*.)
5. How does Hume account for the genesis of the conception of space? Are there any contradictions in his theory?
6. Explain accurately Hume's use of the following—Idea, Perception, Reflection, Sensation.
7. "An unrefuted sensation cannot amount to a fact." (*Green*.) Explain and illustrate this remark by reference to the various steps of Kant's argument.
8. Explain Kant's use of the word *Experience*. Is there any ambiguity in his account?
9. Write a short note on each of the following quotations—  
(a) "The idea of Substance is one which we neither have nor can have by sensation or reflection." (*Locke*)  
(b) "The very existence of ideas constitutes the soul." (*Berkeley*.)

- (c) "Arithmetical judgments are always synthetical." (Kant.)  
 (d) "The analytic unity of apperception is possible only under presupposition of a certain synthetic unity." (Kant.)  
 (e) "Just as phenomena have no existence at all, apart from a subject that has senses, so there exist no laws in phenomena, apart from a subject that has understanding." (Kant.)

SCHOOL OF LOGIC, &c.  
 HISTORY OF PHILOSOPHY.

TIME—THREE HOURS.

1. "Philosophy first begins where man experiences and acts upon the necessity of explaining phenomena by means of natural causes." (Zeller.) Explain and illustrate from the history of Greek philosophy.
2. Discuss the saying of Socrates that "Virtue is Knowledge," and shew how it influenced the ethical theories of Plato and Aristotle.
3. How far is it true to say that Plato may be called both a Realist and an Idealist?
4. Explain Aristotle's theory of the relation of Matter and Form, and discuss his application of it in his account of the soul.
5. How did the Sceptics try to prove the impossibility of Knowledge? What fallacy is involved in their argument?
6. State briefly the different senses in which the doctrine of Relativity has been held by modern philosophers. Which opinion would you regard as most satisfactory? Give reasons for your answer.
7. "Bacon held that Science should be founded on experience, but he mistook the true mode of using experience, and in attempting to apply his method, ludicrously failed. . . . It is a great mistake to say that modern science is the result of the Baconian philosophy." (Jevons.) Explain and comment.
8. Give a brief account of the different meanings with which the word "idea" is used by ancient and modern philosophers.
9. Trace the influence of Kant on recent philosophical speculation.

SCHOOL OF LOGIC, &c.

MODERN ETHICS.

TIME—THREE HOURS.

1. Estimate the value of the contributions made to Moral Philosophy by (a) Shaftesbury, (b) Bentham.
2. Compare the views held by Hobbes, Clarke, and Butler, as to the nature and ground of Moral Obligation.
3. "Live according to Nature," "Live according to Reason." Is it possible to reconcile these principles? Is Butler's account satisfactory?
4. What modifications have been introduced into the Hedonistic Theory by (a) J. S. Mill, (b) Bain?
5. What are the various ways in which Kant states his fundamental ethical formula? Is it possible to unify them?
6. How would Kant's conception of "Humanity as an end in itself" be criticised by (a) Comte, (b) Herbert Spencer?
7. State and criticise Comte's use of the word *Metaphysical*.
8. State and examine the main points in the evolutionary theory of Ethics.
9. "Casuistry is the science of conflicting duties." On what principles would you venture to decide a case (take any one you please) of apparent conflict of duties?
10. What ethical principles are involved in the questions of (a) vivisection, (b) marriage with a deceased wife's sister?
11. "A man ought to pay his debts." Discuss the interpretation of the "ought" by (a) Hume, (b) Kant, (c) Herbert Spencer.
12. "Science grows, but morality is stationary." Examine this statement.

SCHOOL OF LOGIC, &c.  
 POLITICAL PHILOSOPHY.

TIME—THREE HOURS.

1. "Society advances from *status* to *contract*." Explain and illustrate.
2. "The rights of man." What is the primary condition of the existence of rights?
3. Examine the relation of Ethics and Politics with special reference to Hobbes' theory of the State.

4. Write a short note on one of the following—  
 (a) The moral value of the sense of Honour,  
 (b) The moral value and limits of Patriotism.
5. "To every man one vote." Taxation the basis of representation." Discuss the principles underlying these statements.
6. "Great nations are never impoverished by private prodigality." (*Adam Smith*.) Examine this statement.
7. State and examine Locke's interpretation of the "State of Nature," and the "Law of Nature."
8. "The true State is a Social Organism." Examine this with special reference to the existing industrial organization of society.
9. Discuss briefly the relation of Ethics to Economic Theory.
10. Discuss the grounds of the right of the State to Punish, with special reference to the Retributive Theory of Punishment.

SCHOOL OF LOGIC, &c.

PSYCHOLOGY.

TIME—THREE HOURS.

1. What is meant by the "Veracity of Consciousness?" Discuss the value of Introspection as a Psychological Method.
2. "Generalization is impossible without Abstraction." "Abstraction is possible without Generalization." Discuss these statements.
3. Is Distance an original perception? What help is derived from the Evolution Theory on this question?
4. What elements are involved in the simplest act of (a) Cognition, (b) Volition?
5. How would you distinguish Desire from Will?
6. Discuss the attempts made to give a physical basis of explanation of the laws of the Association of Ideas.
7. Give an account of the various methods employed to determine the relation between Sensation and Stimulus. What modifications have been made in Fechner's Law?
8. State exactly what you understand by an "Illusion of the Senses." What do you consider the ultimate test of reality?

LOGIC AND MENTAL PHILOSOPHY.

ESSAY.

TIME, THREE HOURS.

- Write a short essay on any one of the following subjects:—
1. The basis of Moral Freedom.
  2. The philosophical influences at work in England during the Eighteenth Century.
  3. The conditions under which Federation is possible generally. The problem to be discussed also with special reference to (a) England, Scotland, Ireland and Wales, (b) The Colonies, (c) India.

POLITICAL ECONOMY.

I. MILL.

TIME, THREE HOURS.

1. Are Wages paid out of Capital? What modifications were introduced by Mill into the old Wages-Fund Theory.
2. What are the conditions which determine the increase or decrease of Value and Price? Illustrate your answer by reference to (a) the Melbourne Land Boom, (b) the recent Depression of Trade in New Zealand, (c) the Lancashire Cotton Famine.
3. State briefly the main arguments for and against a "Double Standard of Value."
4. What factors must be taken into account in estimating the cost of a nation's imports? State precisely what is meant by the Law of International Values.
5. "When a country, wisely or unwisely, has burdened itself with a debt, is it expedient to take steps for reducing that debt?"
6. What objections may be urged against a system of taxation on commodities? In what cases may such taxes fall on producers?
7. How does Mill limit the Functions of Government? What objections would be made to the scheme of State Socialism advocated by Hismunck?

## APPENDIX III

Ordinary Examination for the MA Degree

The University of Adelaide Calendar 1890



IN O V E I M B E R R , 1 8 8 9 .

EXAMINATION FOR SIR THOMAS ELDER'S  
PRIZES IN PHYSIOLOGY AND CLASS  
EXAMINATION.

(For Students not studying for a Degree.)

E. C. STIRLING, M.A., M.D., F.R.C.S. (Eng.)

Time—Three hours.

[N.B.—It is not expected that candidates will attempt more than five questions.]

- I. What are the various uses and functions of the skin ?
- II. What are the ultimate products of digestion, and how does each enter the blood circulation ?
- III. How are sounds conducted from the air to the internal parts of the ear ?
- IV. An emotion may cause a blush, pallor, or a fainting fit; explain the sequence of events that has probably taken place in each of these events.
- V. In what consists the value of milk as an article of diet ? What happens to milk when taken into the stomach, and to what industrial use is a knowledge of these facts applied.
- VI. Draw a diagram, with explanations where necessary, of a model that would aid you in demonstrating the main physical facts of the circulation of the blood to a class of young students. What are the facts in question ?

D E C E M B E R , 1 8 8 9 .

ORDINARY EXAMINATION FOR THE DEGREE  
OF M.A.

BRANCH I.

CLASSICS AND COMPARATIVE PHILOLOGY.

(Authors specified.)

HERODOTUS III., IV., AND THUCYDIDES HISTORIES I., II.

PROFESSOR KELLY, M.A.

Time—Three hours.

Translate—Herodotus iii., 32—

Ἄμφι δὲ τῷ θαλάτῃ αὐτῆς διζῆς, ὡσπερ περὶ Σιφῆδος, λέγεται λόγος. Ἐλλήνες μὲν λέγουσι, Καμβίσιον σιμβάλειον σκῆνον λέοντος σκύλακι κινῶν. Θεωρεῖν δὲ καὶ τὴν γυναῖκα ταύτην. νικημένου δὲ τοῦ σκύλακος, ἀδελφῶν αὐτοῦ ἄλλων σκύλακα, ἀπορηγῆσθαι τὸν αὐτῶν, παρυγενέσθαι οἱ. διὸ δὲ γενομένοις οὕτω οἱ τοῖς σκύλακος ἐπιμαρτυροῦν τοῦ σκῆνον. καὶ τὸν μὲν Καμβίσιον ἦδου θαι θεώμενον τὴν δὲ, παρημένον διακρίειν. Καμβίσιον δὲ θαλίονα ποῖον, ἐπίσθαι οὐτι δακρυῶν. τὴν δὲ εἶπειν, ὡς ἴσονται τὸν σκύλακα τῷ ἀδελφῷ τιμαρτυροῦντα, ἀεσπυρεῖν, μνησθεῖν τε Σιφῆδος, καὶ θαλίονα ὡς κίεω οὐκ εἶναι ὅ τιμαρτυροῦν. Ἐλλήνες μὲν δὲ διὰ τοῖτο τὸ ἔτος φασὶν αὐτὴν ἀποχέσθαι πρὸ Καμβίσιον, Διχίτιον δὲ, ὡς τραπεζῆν περικυπημένην, λαβοῦσαν θηῖακα τὴν γυναῖκα περὶθαυ, καὶ ἐπαυεσθῆναι τὸν ἀνδρα, κότρεον περὶταλμένην ἢ θηῖαξ ἢ ἀουεῖα εἶναι καλλίαν. καὶ τὸν φάναι, θασίαν. τὴν δὲ εἶπειν. "Ταύτην μὲν τοῖ κορε σὺ τὴν θηῖακα ἐπιμαρτυροῦν τὸν Κῆνον οἶκον ἀποφιλύσας."

Also—Herodotus iv., 73—

Οἷτος μὲν τοὺς βασιλείας θάπτοισι. τοὺς δὲ ἄλλους

καὶ τὴν ἐν τῷ μεγάλῳ λιμένι ναυμαχίαν, οὐκ ἐν πολλῷ  
πολλῶν ναυῶν ὄσταν, πρὸς ταῦτων ἐσθλαὶ ἀντίπαλοι  
γὰρ ταῖς ἐμβολαῖς χρωμένοι ἀνηρῆσεν τὰ προμάχων  
αὐτοῖς, στερήσους καὶ παχέσι πρὸς κοίλα καὶ ἀδύνη πει-  
οντες τοῖς ἐμβύλοις.

### COMPOSITION AND GRAMMAR—LATIN AND GREEK.

PROFESSOR KELLY, M.A., AND D. J. BYARD, B.A.

Time—Three hours.

For Latin Prose—

A soldier from his earliest youth, Moore thirsted for the honours of his profession, and feeling that he was worthy to lead a British army, hailed the fortune that placed him at the head of the troops destined for Spain. As the stream of time passed, the inspiring hopes of triumph disappeared, but the austere glory of suffering remained, and with a firm heart he accepted that gift of a severe fate. Confiding in the strength of his genius, he disregarded the clamours of presumptuous ignorance, and opposing sound military views to the foolish projects so insolently thrust upon him, by the ambassador, he conducted his long and arduous retreat with sagacity, intelligence and fortitude; no insult disturbed, no falsehood deceived him, no remonstrance shook his determination; fortune frowned, without subduing his constancy; death struck, but the spirit of the man remained unbroken, when his shattered body scarcely afforded it a habitation.

For Greek Prose—

—Napier.

Slowly and stealthily the Indians advanced, while the Christian camp, hushed in profound silence, seemed to them buried in slumber. But no sooner had they reached the slope of the rising ground, than they were astonished by the deep battle-cry of the Spaniards, followed by the instantaneous apparition of the whole army, as they sallied forth from the works, and poured down the sides of the hill. Brandishing aloft their weapons, they seemed to the troubled fancies of the Tascalsans, like so many spectres or demons hurrying

to and fro in mid air, while the uncertain light magnified their numbers, and expanded the horse and his rider into gigantic and unearthly dimensions. Scarcely waiting the shock of their enemy, the panic-struck barbarians let off a feeble volley of arrows, and offering no other resistance, fled rapidly and tumultuously across the plain.

What do you consider to be the best explanation of the use in Greek of singular verb with Neuter Plural Nominative?

Write a short description of the origin and constitution of the Athenian Boule and Ecclesia, mentioning the special duties of each.

Illustrate by quotations the uses of *adeo*, *ergo*, *scilicet*, *utpote*, and *quin*.

Comment on the constructions in the following:—

- (1) *Judice quo nosti populo.*
- (2) *Cercus in vitium flecti.*
- (3) *Pars ingenti feretro.*  
*Triste ministerium.*
- (4) *Ipsæ dixit cum aliquot principibus capivintur.*
- (5) *Deum invocantes cujus ad sollemne venissent.*

### GREEK AND ROMAN HISTORY AND COMPARATIVE PHILOLOGY.

D. J. BYARD, B.A.

Time—Three hours.

- I. Illustrate the importance of geographical situation with reference to the history of Rome, and of Athens.
- II. Give an account of the constitution and social life of Sparta.
- III. How did the Roman provincial system arise, and what were its ultimate effects on Rome herself?
- IV. Give reasons for the success of Macedonia in Greece, and trace briefly the career of Alexander the Great.
- V. Give, with dates, a short sketch of the Second Punic War, and account for its issue.
- VI. How did Athens gain her supremacy, and how lose it?
- VII. Explain and illustrate the terms—Dynamic-change, phonetic decay, labialism, predicative root, pronominal root, stem.

- VIII. Analyse completely the forms—*σθελ*, *ἰψήθυ*, *εἰσπύκτειν*, *πατήρ*, *divom*, *aperustis*, *humulus*, *anabam*, *paciscor*.
- IX. What traces are there of the Ablative in Greek and of the Optative in Latin?
- X. Write down the original forms of all comparative and superlative suffixes in Greek and Latin; and discuss the forms—*minus*, *sinister*, *satis*, *κέρτατος*, *sollicitum*, *θέρων*.
- XI. Give evidence to show what sounds had a tendency to disappear in Greek and in Latin.
- XII. What light does Philology throw on the origin and syntax of Prepositions? Give examples.

BRANCH II. MATHEMATICS.

MATHEMATICS. PART I.

A. NEWMAN, Esq., M.A.

Time—Three hours

- I. Find the relation which must hold between  $a, b, c, d, e, f, g$  in order that  $ax^2 + bxy + cy^2 + dx + ey + f$  may be able to be resolved into rational factors of the first degree.
- II. Solve the equations

(i.)  $\frac{\sqrt{1+a^2} - a}{\sqrt{1+x^2} - x} = a$ ,

(ii.)  $x^2 + a(2x + y + z) = y^2 + b(x + 2y + z) = z^2 + c(x + y + 2z) = (x + y + z)^2$ .

III. Explain what is meant by a determinant, and prove that a determinant is not altered in value by adding to all the elements of any row the same multiples of the corresponding elements of any other row.

Show that  $\begin{vmatrix} 1 & a & a^2 - bc \\ 1 & b & b^2 - ca \\ 1 & c & c^2 - ab \end{vmatrix} = 0$ .

IV. Show that

(i.)  $\sin 2A = 2\sin A \cos A$   
 (ii.)  $(2\sin A + \sec A)(2\cos A - \operatorname{cosec} A) = (\sin A - \cos A)(\sin A + \cos A)(\cot A - \tan A)$ .

V. Find the radius of a circle inscribed in a given triangle. If  $r$  be this radius, and  $R$  that of the circumscribing circle, prove that  $2r + 2R = e \cot A + b \cot B + c \cot C$ .

VI. Sum the series

$\sin \theta \cos \theta + \frac{\sin 2\theta \cos^2 \theta}{1 \cdot 2} + \frac{\sin 3\theta \cos^3 \theta}{\sqrt{3}} + \dots$  to infinity.

VII. Show that all points whose co-ordinates satisfy a linear equation  $Ax + By + C = 0$  lie on a straight line.

What is the geometrical meaning of  $Ax + By + C$  when it is not = 0?

Show that the locus of either focus of an ellipse which touches two straight lines, and has its centre at a fixed point is a rectangular hyperbola.

VIII. Find the equations to a straight line passing through two given points.

Show that the straight lines joining the middle points of opposite edges of any tetrahedron all meet in a point and bisect one another.

IX. Prove that  $f(x+h) = f(x) + hf'(x + Oh)$  where  $\theta$  is a proper fraction, mentioning the conditions which limit the truth of the assertion.

Expand  $e^{\frac{x}{a}} \left(1 + \frac{x}{a} + \frac{x^2}{a^2}\right)$  in powers of  $x$  and find the general term.

X. Show that if  $y$  is a function of  $x$  which is a minimum when  $x = a$ ; then, when  $a$  is substituted for  $x$ ,  $\frac{dy}{dx} = 0$ , and  $\frac{d^2y}{dx^2}$  is generally positive.

Find the maxima and minima values of  $x^2 + px^2 + qx + r$  distinguishing between them. Consider especially the case when  $q^2 = 3r$ .

XI. Evaluate (i.)  $\int e^x \cos 2x dx$ ,

(ii.)  $\int \frac{e^x - x^2}{(x^2 + x)^2} dx$ ,

XII. Find the volume and surface generated by the revolution about the initial line of the curve  $r = a(1 + \cos \theta)$ .

APPENDIX IV

LLD Examination

The University of Sydney Calendar 1890

5. Write out the fourth section of the Statute of Frauds. How far has such section been modified or altered by statute with respect to a guaranty?
6. Define the term "consideration" as one of the requisites of a contract.
7. Can the following persons, in any, and if so, what cases, make a valid contract—
  - (1) Infants;
  - (2) Married women?
8. The acceptor to a bill of exchange induced the defendant to an action to indorse the bill, telling him that it was a guaranty. The plaintiff was a subsequent *bona fide* indorsee of the bill for value. Is the defendant liable to the plaintiff on such indorsement?
9. With regard to a contract, what representations amount to fraud?
10. What is the law with regard to the validity or invalidity of wagering contracts?
11. What difference is there between the rules of Common Law and Equity as to the assignment of choses in action?
12. A and B each deposit £500 with C to abide the decision of two scientific men as to the shape of the earth. The scientific men decide against A, but before money is paid over A claims it back from C, who subsequently pays it over to B. Can A successfully sue C for his deposit of £500?
13. Define the following—
  - (1) Maintenance.
  - (2) Champerty.

## LL. D. EXAMINATION.

## ROMAN LAW.

TIME, THREE HOURS.

## SPECIAL SUBJECT.

[*N.B.*—Candidates are not expected to answer every question, as more weight will be given to a few well-arranged and complete answers than to a larger number of fragmentary ones.]

*De Pactis.*—Dig. II, 14.

*De Obligationibus et Actionibus.*—Dig. XLII, 7.

1. In what kinds of obligations does the liability to pay interest arise without special agreement? And what restriction does Roman Law impose upon interest?
2. Define the pact called *Consilium* shewing in what respect it differs from *fidejussio*.
3. In what cases does the mistake of (a) one party, (b) both parties invalidate a contract? And on what grounds?
4. Describe the ordinary steps in an action (a) under Hadrian, (b) under Justinian.
5. Frame a *formula* in any action.
6. Advise in the following cases, giving reasons for your advice—
  - (a) "Dedi tibi Stichum ut Pamphilium manumittas: manumisti: evichus est Stichus."—II, 14, 7.
  - (b) "Trajectioe pecuniae nomine, si ad diem soluta non esset, poenae (uti adsole) ob operas ejus qui eam pecuniam peteret in stipulationem erat deducta: is qui eam pecuniam petebat parte exacta petere desinat, deinde in interposito tempore interpellare instituat."—XIIIV, 7, 23.
  - (c) Si is cui rem commodavero eam subripuerit."—II, 7, 34.
7. Explain the historic relation between *Stipulatio* and *Pactum*.
8. In what cases can a third party benefit by the pacts of another?
9. Classify *actiones*, explaining the grounds of difference between the various divisions.
10. Explain fully, giving illustrations, the following terms—*Dies, conditio, modus, ncessio in obligationibus, consumptio actionum, obligatio naturalis, obligatio civilis.*

## ROMAN LAW.

TIME, THREE HOURS.

1. Give a sketch of the opening, the course, and the issue of a trial to execution, according to the law of the Twelve Tables.
2. By what means was the power of the Comitia Curiaata restrained.
3. State the provisions of the following—"Lex Publilia," "Lex Æluria," "Leges Valeriae."
4. What important changes in the laws and constitution of Rome were introduced during the reign of Emperor Hadrian?
5. What consequences arose from the distinction made in Roman Law between *res mobiles* and *res immobilis*?
6. Give an account of the modes of legislation under the Republic.
7. Shew that the distinction between *delictis* and *quasi delictis* was merely historical and not real.
8. Give an historical sketch of the law of execution of judgments.
9. What important changes in Roman Law may be attributed to the influence of Christianity?
10. Give an account of the changes in the law of criminal procedure from the Monarchy to the Empire.
11. State the principles upon which Roman contracts were based and the order of the development of the different forms of contract.

## ROMAN LAW.

TIME, THREE HOURS.

## GENERAL PAPER.

1. Trace the growth in Roman Law of the rules respecting the rights and liabilities of a principal in a contract made by an agent.
2. Describe in detail the operation of *Litis contestatio* upon the rights and liabilities of the parties to a suit.
3. By what steps could a Debtor in the time of Justinian relieve himself of his obligation to his creditors?

4. What illustration does Justinian give of the *Lex Aquilia*? Explain the principles on which the Romans define liability for negligence arising in cases of *Delict* and *Contract* respectively.
5. Give a brief outline of the law relating to Principal and Surety in the time of Justinian.
6. Give an account of the enactments preceding the *Lex Falcidia* which aimed at the object finally achieved by that statute, and shew how they failed or were evaded.
7. What is the nature of the remedy called *Missio in possessionem*? When, and under what conditions, is it granted?
8. Give some account of the principal jurists of the second Century, A. D.
9. What indications are there of a desire among Romans to avoid dying intestate? What explanation is offered by the jurists?

## FACULTY OF MEDICINE.

## THIRD PROFESSIONAL EXAMINATION

## OPHTHALMIC MEDICINE AND SURGERY.

TIME, THREE HOURS.

1. Mention the diseases of the eye due, directly or indirectly, to Syphilis, and describe fully the symptoms, signs, and treatment of any one of them.
2. What are the conditions necessitating Iridectomy? Describe the operation of Iridectomy for Glaucoma.
3. Explain accommodative and muscular Asthenopia.
4. What are the diseases of the ciliary region? What circumstances give them great importance? Mention the characters in which diseases of this region agree. Give the prognosis and treatment of the several diseases.
5. Give the clinical varieties, prognosis and treatment of Retinitis.
6. What are the optical conditions of clear sight? How would you detect feigned blindness of one eye?

APPENDIX V

Regulations for the PhD Degree

The University of Sydney Calendar 1949

# THE UNIVERSITY OF SYDNEY CALENDAR 1949 PHD REGULATIONS

## BY-LAWS OF THE UNIVERSITY.

if his thesis be reported by the examiners to be of outstanding merit, a candidate who has obtained his junior degree without honours may, on the recommendation of the examiners, if approved by the Professorial Board, be excused from other examination than on the subject of his thesis or any branch of knowledge with which the thesis is connected.

This by-law shall not apply to the Faculty of Medicine.

9. The examiners shall be three in number, namely, a professor of the Faculty and two other examiners, of whom one at least, unless the Senate otherwise directs, shall be an external examiner approved by the Senate on the recommendation of the Faculty.

10. In any Faculty in which there is the degree of Master, it shall not be necessary, unless the by-laws of the Faculty so provide, for the candidate to obtain that degree as a preliminary to the degree of Doctor.

11. The date of the examinations for the degree of Doctor shall be in Michaelmas Term, and candidates must apply for admission to the examination not later than the thirty-first day of August, unless at the discretion of the Dean of the Faculty other dates are permitted.

12. Five printed or typewritten copies of the thesis shall be in the hands of the Registrar at the time when application for admission to the examination is made.

13. The fee for the degree of Doctor shall be twenty pounds. The fee shall be paid to the Registrar at the date of application and shall not in any case be returned to the candidate. A candidate who fails to pass the examination shall be required, upon presenting himself for any further examination, to pay a fee of ten pounds.

### CHAPTER XIXc.—DEGREE OF DOCTOR OF PHILOSOPHY.

1. The degree of Doctor of Philosophy may be granted by the Senate on the recommendation of the Professorial Board to a candidate who has satisfied the conditions of the following By-laws and of regulations made in accordance with these By-laws.

2. The Professorial Board shall appoint a permanent Committee, the "Ph.D. Advisory Committee," to advise the Board and the Faculties on matters pertaining to the award of the degree of Doctor of Philosophy.



## DEGREE OF DOCTOR OF PHILOSOPHY.

This Committee shall consist of the Vice-Chancellor, the Chairman of the Professorial Board and the Deans of the several Faculties.

3. A candidate for the degree of Doctor of Philosophy must
  - (a) be a graduate of the University or of some other university recognised by it for this purpose;
  - (b) submit a proposed course of advanced study *and* research to be undertaken by him in a department of the University, and approved by the Head of the Department concerned;
  - (c) give satisfactory evidence of adequate training and ability to pursue the proposed course;
  - (d) be of such standing as may be required by the Professorial Board for graduates in his Faculty;
  - (e) be accepted as such by the Professorial Board on the recommendation of the Head of that Department;
  - (f) on being accepted pay to the Registrar a fee of three pounds for the entry of his name in the University books as a candidate for the degree, and, in addition, fees as a research student.

4. Subsequent to being accepted, he must pursue for at least two calendar years a course of advanced study and research under a supervisor or supervisors appointed by the Board. The course shall be wholly pursued in the University save that a candidate may be granted special permission by the Board to spend a period of not more than one year in research at another institution under conditions approved by the Board.

5. The candidate shall be required during the course to devote his whole time to his advanced study and research, save that a candidate who is engaged in teaching work in the University may, with the approval of the Board, be allowed to proceed to the degree after a period of not less than three calendar years from the date of his registration as a candidate.

6. A candidate may be required during his course to attend lectures and practical work in subjects prescribed by the Board.

7. On completing the course of advanced study and research the candidate shall present a thesis embodying the results of his research.

## BY-LAWS OF THE UNIVERSITY.

He must state, generally in the preface, and specifically in notes, the sources from which his information is derived, the extent to which he has availed himself of the work of others, and the portion of the work he claims as original.

He shall submit to the Registrar four copies of the thesis, one of which must be bound in a form approved by the Board, and four copies of a summary about 300 words in length.

He may also submit any work he has published, whether or not bearing on the subject of the thesis.

8. A candidate may not present as his thesis any work for which a degree has been conferred on him in this or another university, but he will not be precluded from incorporating such in his thesis provided that in presenting the thesis he indicates the part of the work which has been so incorporated.

9. On receiving the thesis, the Board, on the recommendation of the Faculty concerned, shall appoint three examiners, at least one of whom shall be external. One may be the supervisor under whom the work was carried out.

Each examiner shall make a separate report on the merits of the thesis and supporting papers, which shall be sent in the first instance to the Ph.D. Advisory Committee.

On receipt of these reports the Ph.D. Advisory Committee shall require the candidate to sit for such written, oral or practical examinations as may be required by the Board. They shall then submit the reports of the examiners, together with their own report, to the Faculty concerned, which shall, in turn, transmit its recommendations to the Professorial Board.

10. The date of the examination for the degree of Doctor of Philosophy shall be in Michaelmas Term, and candidates must apply for admission to the examination not later than the thirty-first day of August, unless at the discretion of the Ph.D. Advisory Committee other dates are permitted.

11. The fee for the degree of Doctor of Philosophy shall be twenty pounds. The fee shall be paid to the Registrar at the date of application and shall not in any case be returned to the candidate.

12. The Professorial Board may make regulations on any matter incidental to the application of these By-laws.

## APPENDIX VI

Regulations and Application Form for the PhD Degree

The University of Melbourne 1949

## INFORMATION AND APPLICATION FORM FOR DOCTORATE OF PHILOSOPHY

The degree of Doctor of Philosophy represents the satisfactory completion of a course of training in research, and is generally held to signify that the holder has proved his capacity to embark on independent research. As distinct from the senior doctorates, such as D.Sc. or D.Litt., which are awarded for original and sustained contributions to branches of learning or science apart from any question of training, an essential element in the Ph.D. qualification is the spending of a definite period in training under academic supervision, and candidates are therefore required to enrol as post-graduate students of the University. The degree may be gained in any Faculty.

Intending candidates must be accepted by the Professorial Board on the recommendation of the Head of the Department in which they wish to work, and must apply for such acceptance on the attached form. They are advised, however, before submitting a formal application, to communicate with the appropriate head of department direct, in order to ascertain whether a favourable recommendation is likely to be made by him in their case. Applicants from other Universities should attach to their applications supporting letters from their academic teachers.

The academic standing required of candidates entering on the course differs according to the Faculty of their degree. (See footnote to section 1 (d) of the Regulation). Candidates who are graduates of a University other than Melbourne must have their degree recognized by the Professorial Board. To do so they must apply for admission *ad eundem statum* on a separate form, submitting formal evidence of their degree; if recognition is granted, they will be allowed to matriculate without further fee.

The duration of the course of research and advanced study will normally be two years, each of four terms, after which the candidate may present his thesis for examination. The candidate will be expected to devote the whole of his time to the course during this period. Provision has been made in the regulation for the course to be taken, over a longer period, by part-time students who are engaged in another regular occupation, but this may be done only by special permission of the Professorial Board, and the Board has resolved that it will not normally grant such permission at all in the early years of the establishment of the degree.

As the degree implies completion of a course of supervised research, it is required that candidates should perform their work at the University under the direct supervision of University officers. This does not, of course, debar a candidate whose work is based on a University department, from undertaking field study or library work away from the University under such supervision. In special circumstances, a candidate may be granted permission to take part of his course at another institution (e.g., a University in another State), which has special facilities for his research, but no candidate will be admitted to the degree unless he has at some stage carried out research for two years at this University.

After acceptance, a candidate may enrol for the course, when he will be assigned to a teaching officer of the University as supervisor for his research. The extent of the supervision and the nature of the training given in research will differ from department to department, but the candidate is advised to keep closely in touch with his supervisor at all stages of his work.

### Fees

The following fees are payable:—

On entering as a candidate (payable with the application for acceptance) . . . . .	£5 5 0
On applying for admission <i>ad eundem statum</i> (for graduates of other Universities) . . . . .	2 2 0
For supervision, payable each year on enrolment for that year, whether as part-time or full-time student . . . . .	10 10 0
Laboratory fee (if research requires practical work), each year . . . . .	10 10 0
Examination fee (payable on lodging thesis) . . . . .	10 10 0
Further fee for degree . . . . .	5 5 0

In addition, Union fees (£2/2/- entrance, £2/2/- per year), and Sports Union fees (£1/10/- per year), are payable by full-time candidates, and if a candidate is required to attend lectures or practical work in any subject of an undergraduate course, he must pay the ordinary "single subject" fees.

All fees (except the acceptance fee of a candidate from another country, which may be sent in a remittance direct to the Registrar), must be paid into the University's account at the head office of the National Bank of Australasia or at one of its branches. A branch of the bank will be found at the north end of the building in which the Registrar's Office is situated.

Application for acceptance as a candidate for degree of Doctor of Philosophy

(To be lodged with Registrar before course is commenced, together with a bank slip for the acceptance fee of £5/5/-. If the application is rejected by the University, the fee will be returned.)

Personal Particulars:

Name in full.....

Present Address.....

Place and Date of Birth.....

Present and Recent Occupations (with dates).....

Academic Standing (Graduates of other Universities must attach formal evidence and personal recommendations).

Degree(s)	Dates(s) of Graduation	University

Professional, technical and other qualifications held.....

Proposed Course:

In the Department of..... Date at which it is proposed to begin.....

Advanced study and research proposed (fuller details <sup>should</sup> ~~may~~ be attached).....

Is it intended to spend part of period in course at another institution? (Give particulars).....

Previous Training:

Give particulars here (supported by evidence of responsible teachers), of previous training relevant to ability to pursue proposed course.....

If any period previously spent in research at this University, give particulars.....

Other Occupation:

Is applicant able to devote whole of his time to work of course?.....  
If not, state what proportion, indicating extent of other commitments

If engaged during course in another regular occupation, give full particulars.....

Is it proposed to undertake any University teaching or outside work during course?.....

I, the abovenamed applicant, apply to be accepted as a candidate for the degree of Doctor of Philosophy.

Date.....

Signature.....

REGULATIONS

Chapter III, Regulation LIV—DEGREE OF DOCTOR OF PHILOSOPHY

1. A candidate for the degree of Doctor of Philosophy must
  - (a) be a graduate of the University or of some other University recognised by it
  - (b) submit a proposed course of advanced study or research to be undertaken by him in a department of the University
  - (c) give satisfactory evidence of adequate training and ability to pursue the proposed course
  - (d) be of such standing\* as may be required by the Professorial Board for graduates in his Faculty
  - (e) be accepted as such by the Professorial Board on the recommendation of the head of that department.
2. Subsequently to being accepted, he must pursue for at least two years a course of advanced study and research under a supervisor or supervisors appointed by the Board. The course shall be wholly pursued in the University save that a candidate may be granted special permission by the Board to spend a period of not more than one year in research at another institution under conditions approved by the Board, but in no case shall a candidate be admitted to the degree without having spent a total period of two years in research at the University, whether before or after acceptance.
3. The candidate shall be required during the course to devote his whole time to his advanced study and research, save that
  - (a) the Board may allow a candidate on application to undertake a limited amount of University teaching or outside work which in its judgment will not interfere with the continuous pursuit of the proposed course of advanced study and research, and
  - (b) in special circumstances† the Board may accept as a part-time candidate for the degree, a person engaged in another regular occupation in which case it shall prescribe for the duration of his course of advanced study and research a minimum period, which, in its opinion, having regard to the proportion of his time which he is able to devote to the course in the appropriate University Department, is equivalent to the two years ordinarily required.
4. A candidate may be required during his course to attend lectures and practical work in subjects prescribed by the Board.
5. On completing the course of advanced study and research a candidate must present a satisfactory thesis‡ embodying the results of his research. The thesis shall be examined in manner provided in Statute XVI, Division IV—Examination of Theses for Higher Degrees. The candidate must also satisfy the examiners in such written, oral or practical examinations as may be required by the Board.
6. A candidate may not present as his thesis any work for which a degree has been conferred on him in this or another University, but he will not be precluded from incorporating such in his thesis provided that in his application for acceptance he has stated his intention of doing so and in presenting the thesis indicates the part of the work which has been so incorporated.
7. Candidates who have fulfilled the prescribed conditions may be admitted to the Degree of Doctor of Philosophy.

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\* Agriculture: M.Agr.Sc. or B.Agr.Sc. of one year's standing and experience in research.

Arts: M.A. with first-class or second-class (Division A) honours.

Dental Sciences: B.D.Sc.

Economics and Commerce: M.Com.

Education: M.Ed., or B.Ed. with first-class or high second-class honours or with equivalent performance.

Engineering: M.Eng.Sc., Master in some branch of Engineering, or Bachelor in some branch of Engineering with one year's post-graduate training in research.

Law: LL.B. with final honours or (in special cases) its equivalent.

Medicine: M.B., B.S.

Science: M.Sc. or B.Sc. with two years' experience in research or approved scientific work.

† Part-time candidates will not in any circumstances be accepted in departments connected with the Faculty of Science.

The Professorial Board has also resolved that, for the time being (until the degree is properly established), it will not normally accept part-time candidates in any department.

‡ Three copies must be lodged.

# THE UNIVERSITY OF MELBOURNE CALENDAR 1949

## New Regulation for Ph.D. Degree--

### *Explanatory Note:*

The proposal for the establishment of the degree of Doctor of Philosophy is made after prolonged consideration of the question by the Professorial Board and the Faculties of the University. At present this degree is not awarded anywhere in Australia, although it is generally available in English and American Universities. Hitherto it has been the policy of this University to urge its students to look to overseas institutions for their main research training; but now, while as many students as possible will undoubtedly continue to be encouraged to go abroad for further study after graduating here, it is felt that the time has come when the University itself must be prepared to provide post-graduate training for students of research calibre who cannot go overseas, and to give them more adequate recognition than the Master's degrees which it at present awards. The development of post-graduate schools in the various departments of the University is being planned, but for their success it is necessary that there should be a steady stream of research students to whom can be offered a similar incentive to that available in similar schools overseas.

The degree of Ph.D. is well established in Universities outside Australia. It is a junior doctorate, and does not rank with the full doctorial degrees such as D.Sc. or D.Litt., which usually denote that the holder has made an original and sustained contribution to a particular branch of learning or science. The Ph.D. degree represents rather the satisfactory completion of a course of training in research under supervision, and is generally held to signify that the holder is fit to embark on independent research. It can be gained in any Faculty.

It is hoped that Ph.D. students will come to this University after taking their first degrees in another University, in Australia or elsewhere; correspondingly, if the degree is also instituted in other Australian Universities, that Melbourne graduates will go on to appropriate post-graduate schools elsewhere in Australia.

It is intended that candidates for the degree should be required in the first place to gain admission to the course, and that the Professorial Board should define the standing which graduates in particular Faculties should have before being so admitted. For instance, a candidate who has taken a first degree in Medicine and Surgery might well have the clinical work performed in the final three years of his medical course recognized as sufficient preliminary training to entitle him to become a Ph.D. candidate immediately, while a Bachelor of Arts or Science might on the other hand be required to complete his Master's degree before embarking on the Ph.D. course.

As the degree implies completion of a course of supervised research, it is intended that candidates should perform their work at the University under the direct supervision of University officers. Provision is made, however, for an approved candidate to spend part of his course at another University with special facilities for his work, in which case, however, it is still intended that he should work there under a supervisor appointed by this University; and for suitable candidates who are engaged in other regular work to be granted permission to take the course on a part-time basis. It is not proposed, however, that persons who are employed by other institutions to do research, should be allowed to present their work for this degree. In special cases a candidate may receive permission to take the course on a part-time basis, but such cases will be allowed in certain faculties. It is proposed that a footnote should be inserted to section 3 clause (b) in the Calendar indicating in what faculties the granting of this special permission will be considered.

Each candidate will be required to submit a thesis at the end of his course, and to undergo such other examination as the Professorial Board (which will be in charge of the requirements for this degree) may require.

If this new regulation is adopted, consequential amendments to other regulations to provide for such matters as fees for the course, academic dress, etc., will be submitted.