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AUTHOR Williams, Bruce
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ABSTRACT

This report, one of a series of country studies on higher education and employment particularly in the humanities and social sciences, looks at employment prospects for social science and humanities graduates in Australia. An opening section describes government studies and initiatives and changes in the Australian higher education system since 1961. A following section looks at distribution of higher education students across fields of study. This is followed by a discussion of projected changes in enrollment, demographics, and the labor market. An examination of the employment of graduates looks at trends since the 1960s as well as current patterns. Starting salaries are evaluated and compared with other fields and with trends since 1977. A review of relative salaries after several years in the work force shows differences between fields. Further sections explore employment opportunities as projected over the coming decade in an analysis of the factors likely to influence labor market trends. Also examined are the effect of technological change on international trade, economic growth and the role of various fields. A final section gives a detailed analysis of skills learned in various humanities and social science degree fields, expectations for job skills, and a comparison with Japanese education and expectations. (JB)

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HIGHER EDUCATION AND EMPLOYMENT: THE CHANGING RELATIONSHIP

THE CASE OF THE HUMANITIES AND SOCIAL SCIENCES

COUNTRY REPORT - AUSTRALIA

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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HIGHER EDUCATION AND EMPLOYMENT: THE CHANGING RELATIONSHIP

Project ii): Higher Education and Employment: The Case of the Humanities and Social Sciences

COUNTRY STUDY: AUSTRALIA

This report is one of a series of country studies prepared in the framework of the OECD Education Committee activity on Higher Education and Employment: The Changing Relationship. It deals with one of the three main topics covered by this activity, Higher Education and Employment: The Case of the Humanities and Social Sciences. Together with other country studies on this topic, it provides the background information for the preparation of a Secretariat general report that will be published by the OECD in 1992.

Country studies and general reports are also being made available for the other two projects included under this activity: The Flows of Graduates from Higher Education and their Entry into Working Life; Recent Developments in Continuing Professional Education.

The present country study on Higher Education and Employment: The Case of the Humanities and Social Sciences has been written by Sir Bruce Williams, former Vice-Chancellor, University of Sydney, Consultant to the National Board of Employment, Education and Training, Canberra, Australia. The views expressed are those of the author and do not necessarily commit the national authorities concerned or the Organisation.

EMPLOYMENT PROSPECTS FOR GRADUATES IN AUSTRALIA

There have been major changes in the Australian system of higher education since the publication of the Commonwealth Government's policy discussion paper Higher Education in 1987 and its policy statement Higher Education in 1988.

Following the report of the Martin Committee, which had been appointed by the Commonwealth Government in 1961 to consider tertiary education in relation to the needs and resources of Australia, a binary system of higher education was established. The committee recommended a major expansion in participation rates in higher education, but judged it unrealistic to think that the Universities could provide for the necessary range of abilities, interests and motivations that the planned expansion implied. It proposed that by 1975 approximately half of the much larger numbers of higher education students should be in universities and half in non-university institutions.

The broad outlines of the proposals of the Martin Committee were adopted by the Commonwealth & State Governments. The non-university institutions become Colleges of Advanced Education or Institutes of Technology, and by 1975 the number of students and their distribution between the two sectors were close to those proposed by the Committee. The plan was that the Colleges and Institutes would be teaching institutions which would provide a broad range of sub-degree vocational courses, while the Universities would abandon sub-degree courses and concentrate on first and higher degree courses and research. However, from the late sixties the Colleges and Institutes were empowered to give the degrees of Bachelor and Master, though they were required to maintain their emphasis on vocational courses.

During the nineteen seventies and eighties the differences between the two sectors were gradually reduced. In 1989 there were still substantial differences between the two sectors -- the universities were financed to teach and research and attracted almost all of the grants of the Government's Research Councils, the proportion of postgraduate students in the College sector was around one tenth of the proportion in the university sector, and while sub-degree students in the universities were less than 1 per cent in Colleges there were about 30 per cent -- but there were strong pressures from the Colleges and their political supporters to end the binary system. Two Institutes of Technology had been granted university status, one Institute and one College had gained the power to give Ph. D degrees in fields not available in universities, and in fields such as engineering, accountancy and social work, where both Universities and Colleges accomodated the views of professional associations on curricula, because recognition of their degrees is important for the employment of their graduates, first degree courses had drawn closer together.

The decision to end the binary system and to reduce the number of institutions of higher education is so recent that it is not possible to say how what is called "the unified national system" will affect courses, the

distribution of students between the main disciplines, and the employability of graduates.

The Universities that were in existence before the change in the system have become more dominant parts of the system. In Queensland, New South Wales, Victoria and Tasmania, where the arrangements for amalgamations are almost complete, the number of their students has been increased by 50 per cent.

New universities formed from the amalgamation of former Colleges and Institutes in the advanced education sector will have just under 30 per cent of the total, whereas before the change students in the Advanced Education sector were a little over 50 per cent. Whether that will lead to a decline in the more directly vocational courses in the humanities and social sciences will depend on policy in the universities in which former Colleges of Advanced Education and Institutes of Technology have been incorporated, and on the way in which the provisions for educational profiles -- agreements between the Commonwealth Government and institutional members of the unified national system -- are administered.

Policy in the expanded universities may vary with the nature and location of the Colleges and Institutes that they have incorporated. Where such Colleges and Institutes bring fields of study not previously provided in the university -- e.g. paramedical studies and performing arts -- and are located some distance away, there may not be much change in courses offered. Where however there is not an extension in the range of studies and the former Colleges or Institutes are nearby -- e.g. former Teacher Education Colleges -- the traditions and current practices in the University Faculties may be generalized.

If the Minister judged that the range of courses and the degree of emphasis on vocational relevance that characterized courses in the advanced education sector were being significantly reduced, it would be possible for him to extend the range and restore the emphasis on vocational relevance by changing the educational profiles required for Ministerial approval, or by a closer monitoring of programs after the Minister and the Universities had reached their agreement on the profile that would provide the basis of government grants.

Fields of Study

The distribution of higher education students between the broad fields of study in 1979 and 1989 is shown in Table 1. The percentage of the first three fields of study that are often grouped as "the humanities and the social sciences" (H & SS) were 44.4 per cent in 1979 and 46.5 per cent in 1989. The percentage in the first group fell by 10 per cent, and that in Business/Administration/Economics rose by just over 30 per cent. The marked fall in the percentage in Education explains a considerable part of the rise in the second group, as Colleges that had specialized in Education diversified into the fields of Business and Administration.

The levels of courses in the different fields of studies is shown in Table 2. The outstanding feature of this table is the high percentage of sub-degree students in Education, Agriculture and Health/Medicine. That is

explained by traditions in the preparation of school teachers in the Colleges of Education that become Colleges of Advanced Education, by practical farm courses in the Agricultural Colleges and by para-medical studies (notably Nursing -- a late arrival from Hospital training schemes to the formal higher education system) in other Colleges.

Course completions are shown in Tables 3 & 4. In Table 3, course completions are shown for the two sectors of higher education for 1981 and 1986 when there were published statistics for the two sectors, and 1988 when there were not. In 1981 completions in the H & SS group were 37 per cent of the total, and in 1988 they were 41 per cent. In 1987 students completing degrees in the H & SS group were 48 per cent of the total, and also 48 per cent of the total of Bachelor degrees.

Table 5 compares Bachelor degree enrolments in 1967 when only universities provided degree studies, and 1989. Between 1967, when enrolments were 78 825, and 1989, when they were at 305 447 almost four times greater, the percentage of students in the Humanities and Social Sciences rose by a percentage point only, though the percentage of business/administration and economics in that group rose from 24 per cent to 45 per cent. That was one of the main effects of the introduction of degree studies in the Advanced Education Sector. The other main effect was the increase in Education from 3.6 per cent to 9.3 per cent. Whereas in the Universities most of the intending teachers took a degree in Arts, Economics or Science and then a post-graduate Diploma in Education, in the Colleges of Advanced Education the education component and the other subject studies were all part of a Bachelor of Education Degree. Combining the Health and Medicine percentage disguises a major fall in Medicine and Dentistry which were 9.2 per cent of the total in 1967 but only half that in 1989 as a consequence of restrictive quotas which at the urgings of Health Authorities reflected predicted needs for Doctors and Dentists.

Bachelor degree enrolments, and graduations, rose at a greater rate than the labour force. In 1971 members of the labour force with at least a first degree were 2.4 per cent of the employed population. By 1988 that percentage had risen to 10.3, though not all of that increase was due to graduations from the higher education system in Australia. The migration of graduates from other countries contributed significantly to the rise in the percentage of graduates in the labour force.

There is not sufficient information on foreign graduates in the labour force to make possible reasonably accurate estimate of how much their fields of graduation differ from those of Australian graduates. Migration policy has been more encouraging to graduates in engineering and science than in other fields, and that probably reduced the graduates in the H & SS group in the labour force below the 53 per cent and 54 per cent of Australian graduations in that field. A further adjustment is needed for the graduates not in the labour force. In 1987, 23 per cent of female graduates were not in the labour force, compared with 11 per cent of the male graduates (Labour Force Status & Educational Attainment in Australia ABS, February 1987).

Necessarily rough adjustments for the greater percentage of female graduates not in the work force and for the fields of graduation of Australian females and immigrants bring the proportion of graduates in the H & SS group in

the labour force to a little below 45 per cent.

Prospective changes

The percentage of Australian children who completed secondary education did not reach thirty until 1971. The percentage rose to thirty five in 1975, to fifty three in 1987, and is expected to rise to sixty five before the mid nineties. Given that the percentage of those completing secondary education who proceed to higher education has been stable at around forty, it seems likely that there will be (at least) a corresponding increase in the proportion of the relevant age group who enrol in higher education.

In the absence of substantial increases in immigration, the numbers in the relevant age group will however fall by 10-12 per cent during the first half of the nineteen nineties and not recover to the earlier levels for another 7 or 8 years. The Australian Government's target (given in its Green Paper, Higher Education, issued at the end of 1987) of a 25 per cent increase in enrolments in higher education between 1986 and 2001 depends not only on the planned increase in school retention rates but also on the projected continued increase in the size of the population age 25 and over. Enrolments in higher education of those in that older age group rose to 42 per cent of total enrolments by the mid eighties, and though they declined to 38 per cent by the end of the eighties, the enrolments of mature age students are expected to increase substantially.

Significant margins of error attach to labour force projections even 10 years ahead, particularly in countries such as Australia where the migrants entry to the labour force is both considerable and variable. What at this time seem like reasonable projections put the labour force in 2001 at around 25 per cent higher than in 1986. The projected percentage increase in the labour force is therefore the same as the Government's target increase in enrolments in higher education.

It does not follow from the similar projected increases in enrolments and in the labour force that graduates as a percentage of the labour force will remain constant. Excepting the 15-24 age group, the percentage of graduates in the later age groups has been rising. In the 25-34 age group it rose from 10.2 to 11.7 per cent between 1982 and 1987, in the 35-44 age group from 8.2 to 10.5 and in the 45-54 age group from 5 to 6.5 per cent. If graduation rates remain the same as in recent years and the labour force and enrolments are as projected, graduates as a percentage of the labour force will rise from 10.3 in 1988 to around 13 by 2001. That was the percentage reached in Japan in 1980 and in Canada in 1981 though very little more than two third of the US percentage in 1981 (as reported in Human Capital and Productivity Growth, EPAC, Canberra, 1986).

The implication of those projections is that within the graduates in the labour force the percentage of H & SS graduates is likely to increase beyond the (estimated) 45 per cent at the end of the nineteen eighties. Because of the demographic changes referred to earlier, the graduations in Education are not likely to rise significantly, and as a proportion of the growing number of graduations are likely to fall. In recent years, trends in the choice of school subjects have raised serious doubts about the capacity of universities

to enrol a sufficient number of students with reasonable chances of success in the sciences and technologies to maintain the proportion of graduations in those fields. Government plans to increase the number of teachers of maths and science, to improve the teaching of maths and science, and to persuade more females with the relevant academic qualifications to enrol in science (in addition to biology) and engineering, may check the recent tendency to a small reducation in the proportion of students in the sciences (other than biology) and the technologies.

Another factor likely to be of significance in raising the proportion of graduates in the H & SS group in the labour force is the projected increase in the labour force participation rates of females, particularly in the 25-34 and 35-44 age groups. That projected increase in labour-force participation rates includes graduates and at least until the end of the century is likely to bring a significant increase in the proportion of H & SS graduates in the graduate labour force.

The combined effect of these three factors seems likely to increase H & SS graduates to 6-7 per cent of the labour force by the end of the century.

The employment of graduates

Unemployment rates in Australia were low in the nineteen sixties and early seventies. The rates rose during the second half of the seventies and early eighties. Unemployment rose to 8.5 per cent in 1982, peaked at 9.9 per cent in 1983, and fell to 8.1 per cent by 1988. The unemployment percentage for graduates was 46 per cent of the general rate in 1982, 51 per cent in 1983 and 46 per cent in 1988. Rates of unemployment were only a little less for men than for women, but the unemployment rates of male graduates were distinctly lower than for female graduates. In 1983 3.6 per cent of male graduates and 8.1 per cent of female graduates were unemployed and in 1988 the respective percentages were 2.6 and 5.4.

There is no reliable statistical series on unemployment by types of degree. However, there is such information on the employment of new graduates 4 to 5 months after the completion of their final examinations by the Graduate Careers Council of Australia. The unemployment rate of new graduates so soon after graduation is of course considerably higher than the rate for all graduates, but as the annual fluctuations in the two rates are similar, the Graduate Careers Council's statistical series provides valuable information on the relations between the supplies of and the demands for graduates from the different fields of study. The Graduate Careers Council also publishes the results of its surveys of the fields of employment of new graduates from 11 broad fields of study.

This published information on employment is complemented by information on the starting salaries of new graduates compiled by the Careers and Appointment Service of the University of Sydney in association with the Graduate Careers Council.

Table 6 records the activities of new First Degree Graduates seeking full-time work in 1984 and 1988. In 1984 when the general unemployment rate at the end of April was 9.4 per cent and the general underemployment rate 2 per

cent -- just below the peak rates of 1983 -- the unemployment rate for new male graduates at the end of April was 7 per cent and the underemployment rate 5 per cent. For new female graduates the unemployment rate was 9 per cent and the underemployment rate 13 per cent. By 1988, when the general unemployment rate at the end of April had fallen to a little below 8.0 per cent and the underemployment rate was still around 2 per cent, the unemployment and underemployment rates for male graduates were down to 4 per cent and 3 per cent respectively and for female graduates to 5 per cent and 9 per cent.

The report of the Graduates Careers Council for 1988 gives the greater concentration of females in "the less directly vocational fields of study" as a strong contributory factor in the higher unemployment and underemployment rates for new female graduates than for male graduates. In recent years the percentages of male students enrolled in Bachelor degree Courses in Arts, Humanities and Social Studies has been around 17 per cent of Bachelor enrolments whereas the percentage for female students was twice as high. Graduates from the less directly vocational courses may only take longer to get placed in full-time employment, and that possibility will be considered below.

Changes in the percentages of employment in the government, private, and teaching sectors provide evidence of quite rapid adjustments by employers and new graduates, most notably in the growth of full-time employment in the private sector in that short period from 24 per cent to 30 per cent. The growth in employment in industry and commerce of graduates in "non vocational" or generalist areas has been strong throughout the eighties.

The significant rise in full-time employment in the government sector (other than teaching) from 18 per cent to 22 per cent -- from 15 to 21 per cent for new female graduates -- is partly explained by the rapid growth of bachelor degree courses to replace diploma courses, and qualifications in e.g. nursing previously provided outside the higher education sector in health and related fields.

Information on the employment of new graduates in the Graduate Careers Council's selected fields of study is given in Table 7. A high percentage of graduates from directly vocational fields of study such as Accounting and Pharmacology were in full employment very soon after graduation, as were graduates in Computer Science after 1984. But less than 90 per cent of graduates were in full employment in Civil Engineering in 1984 and 1987, and in Electrical and Mechanical Engineering in 1984 and 1985, and in Social Work and Education in all years. In Psychology which is less directly vocational than Engineering but more so than Humanities for those not intending to teach, the percentages of graduates in full employment was little higher than that of graduates in Humanities.

The strength of demand for new graduates has a considerable influence on new enrolments. In directly vocational fields such as Chemical, Civil, Electrical and Mechanical Engineering the level of demand for the new graduates in the year after graduation has a considerable effect on the quality of entry in the following year, and in turn on graduation rates 4-5 years after that. In the Australian system, where the migration of engineers has a considerable influence on the number of engineers in the labour force and where there are entry quotas in the large engineering schools, a reduction in the demand for engineers affects later graduation rates rather than current enrolments.

Enrolments in Education, particularly enrolments in Bachelor of Education courses, are much more directly affected by the demand for new graduates as can be deduced from the marked decline in the percentage of enrolments in Education between 1979 and 1989 (Table 1). That sharp decline was due mainly to the dominance of State Departments of Education as employers of teachers and the influence of their estimates of needs on the attitudes of school leavers, the diversification of former Teacher Colleges into the provision of vocational courses in "business" and "administration", and the general view that employment prospects would be better in courses that included instruction in computing techniques, contributed to the growth of enrolments in the business/administration/economics groups, as well as in computer science courses within Faculties or Schools of Science.

Starting Salaries

In 1977 the starting salaries of graduates were equal to the average earnings of the labour force. Between 1977 and 1984 there was a steady fall in the starting salaries of graduates to 87.8 per cent of average earnings. After 1984 the starting salaries of graduates gradually increased to 92.4 per cent of average earnings. In 1988 the median starting salary of male graduates was 95.6 per cent of average earnings and of female graduates 89.2 per cent.

Between 1977 and 1988 when graduations increased by approximately one third and graduates as a percentage of the labour force doubled, the real starting salary of a graduate fell by 3 per cent.

In 1988 the median starting salary of bachelor degree graduates in full time employment was $23 000, with a range from $30 700 in Dentistry to $15 900 in Pharmacy. Graduates from the directly vocational subjects ranged from salaries of $30 700 in Dentistry and $28 000 in Medicine, through $24 800 in Engineering, $23 000 in Veterinary Science, $22 900 in Accounting and $22 500 in Education, to $21 100 in Law, $19 400 in Architecture and $15 900 in Pharmacy. The median starting salaries in the semi-vocational subjects of Economics and Psychology were $22 500 and $21 700 respectively, and in Humanities and other Social Sciences $21 300 and $21 500.

In the "Humanities and Social Sciences" group as defined earlier, the median starting salary was $22 000, which was $1 000 below the median starting salary for all bachelor degree graduates in full time employment.

Fluctuations in salary relativities are shown in Table 8. The greatest fluctuations were in Social Work, Veterinary Science, Earth Sciences, Maths and Physical Sciences. Fluctuations in rankings were much more obvious than trends in ranking. There was however a reduction in the range of relativites between 1977 and 1988. The smallest increases were in Dentistry, Medicine and Social Work (which were ranked 1, 2 and 3 in 1977) and the highest in Law, Earth Sciences and Accounting (ranked 20, 8 and 17 in 1977).

One clear trend over the period 1977 to 1988 was the rise in salaries paid in the private professional practice, and industry and commerce sectors, relative to the salaries paid by employers in the government and education sectors. From 100 in 1977 the index of starting salaries paid by employers in professional practice rose to 273 and in industry and commerce to 251, but in

government to 231 and in education to 224 only.

In that same period the percentage of new graduates in the General Careers Council's sample employed in industry and commerce grew from 25 to 39 per cent and in professional practice from 16 to 21 per cent, while the percentage employed in government and education fell from 38 to 28 per cent and from 20 to 9 per cent.

From 1977 to 1988, general unemployment averaged 7.5 per cent. In that context the employment of such a high proportion of an increasing number of graduates was an indication of the strength of demand for graduates and of the responses of students to the types of employment available or likely to be available. An increasing proportion of graduates were employed in areas of employment which were once regarded as "non-graduate jobs" by both graduates and employers, and that doubtless had an influence on the starting salaries of graduates. But the apparent influence of "manpower absorption" -- i.e. the employment of graduates instead of school leavers because the pool of school leavers of ability had been progressively reduced by increased participation rates in higher education -- was not confined to "generalist" graduates from within the Humanities and Social Sciences group.

The median starting salaries of graduates fell relative to average weekly earnings between 1977 and 1984, and although relative starting salaries rose thereafter they had not recovered to the levels of 1977. In 1988 the median starting salaries in the humanities and social sciences (other than those in the business/administration economics group) were 7 per cent below those for all graduates, but they were similar to those in the Biological Sciences and above those in Pharmacy.

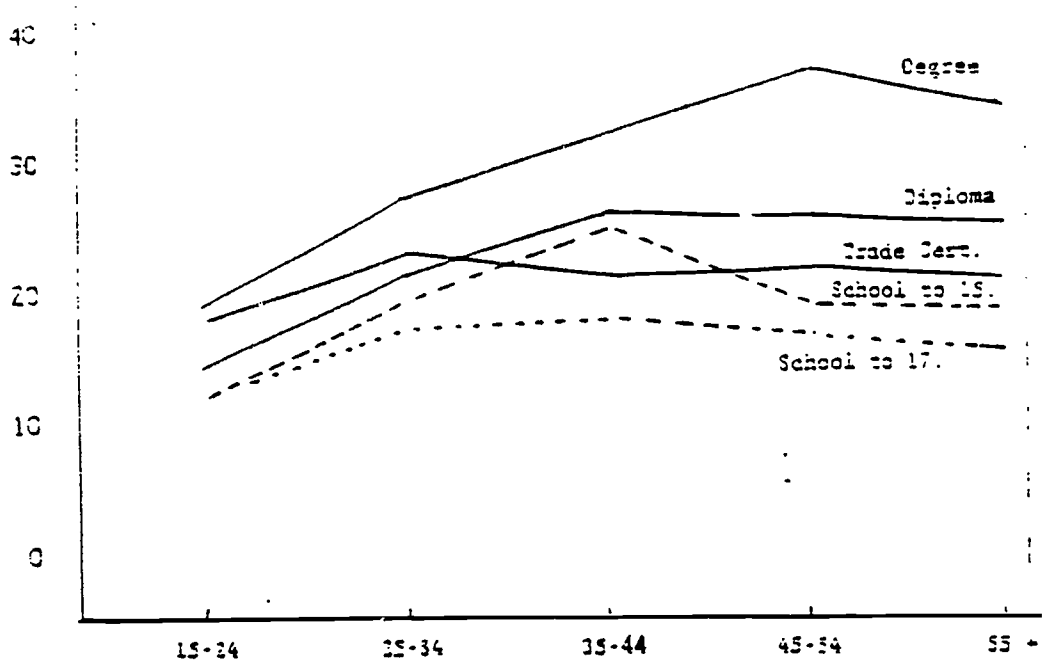
The growth in median starting salaries between 1977 and 1988 was highest in Law, Earth Sciences and Accounting. The growth in Economics was similar to the growth in Maths, Computer Science, Engineering and the Physical Sciences, while the growth in Humanities and other Social Sciences was similar to the growth in the Biological, Agricultural and Veterinary Sciences and Pharmacy. The growth was least in Dentistry and Medicine.

The view that there should have been a higher proportion of graduates in engineering and science was not given strong support by either the relative starting salaries or the changes in relative starting salaries between 1977 and 1988. The market signals to encourage such a change were certainly not strong.

Later Salaries

That the starting salaries of graduates increased less between 1977 and 1988 than average weekly earnings does not imply that the salaries of graduates in the labour force increased less than average weekly earnings. Earnings classified by age and educational qualifications derived from the 1985-1986 Income Distribution Survey conducted by the Australian Bureau of Statistics are summarised in the chart below.

Income by Age and Education ($1000)



Nor are the relative starting salaries of graduates from the various disciplines a good guide to relative salaries after some years of employment. That is particularly the case for graduates in fields such as architecture, law and pharmacy where starting salaries are depressed by the period of training after graduation required for professional status.

The Careers and Appointments Service of the University of Sydney conducted a survey of 1979 graduates from 6 universities after five years in the labour force. The median starting salaries in 1979 in the different fields of graduation differred significantly from their median salaries by field of graduation in 1984.

The changes in rankings are shown in Table 9. Medicine and Dentistry remained in the first two positions. Most of the H & SS Group gained significantly in rank -- law from 20 to 3, economics from 12 to 7, accountancy from 15 to 9, humanities from 16 to 10 and other social sciences from 17 to 11. Psychology stayed at 14, but Social Work fell from 7 to 17. The median salaries of the H & SS group rose considerably more than those in Education, Physical Sciences, Agriculture and biological sciences which lost rank respectively from 4 to 15, 8 to 13 and 13 to 18. Engineering and Computer Sciences lost rank a little, but along with earth sciences which gained rank, their median salaries were still a little above those in Economics and Accountancy.

Employment Opportunities

The author of Graduate Starting Salaries 1988 observed that jobs for those graduates in the H & SS group who had not taken vocational courses "had not been difficult to find", though because competition for their services was not as marked as for other more directly vocational disciplines their starting salaries were low. To judge from the survey of earnings of 1979 graduates in 1984, they either displayed skills that their employers had not expected or they soon developed them on the job.

In a note by the OECD Secretariat on the changing relationship between higher education and employment in the humanities and social sciences, it is argued that the growth of service occupations and orientations in the economy are of particular importance to H & SS graduates because first, the demographic changes and economic policies have reduced their traditional outlets in teaching and other forms of public sector employment, and second, the low employment value of H & SS degrees has reduced the quality of students entering them, so exacerbating the downward spiral of status and resources. In Australia changes in demography and economic policies have reduced the traditional employment for H & SS degrees in teaching and other public sector employment, but the employment value of H & SS degrees has been in the middle of the range and there is no evidence that it has reduced the quality of students entering them, though there has been an increase in the more directly vocational subjects in demand within the H & SS disciplines.

The distribution of employment between government and local authority departments and authorities, education, private professional practice, and private sector employment in primary and secondary industry and services is shown in Table 10. The fields of employment were not classified in a way that makes possible a clear separation of primary, secondary and tertiary activities. Some of the activities of Commonwealth and State authorities are industrial and some of "private professional" activities of engineering and science graduates are the provision of designs to industrial firms which in other firms is provided "in house" and classified as industrial. However, it is clear that apart from engineering the great majority of graduates were employed in tertiary activities. It is worth noting that the percentage of science graduates in primary and secondary fields of employment was only 33 even if, as is unlikely, all their employment in commonwealth and state authorities was in those fields, and that the proportion of them in the sample employed in education and in private sector tertiary activities was similar to the proportion of "arts/humanities/social science" graduates in those fields.

In 1986 when for OECD as a whole 6 per cent of civilian employment was in agriculture, 30 per cent in industry and 64 per cent in services, the Australian percentages were 6.1, 26.8 and 67.1 respectively. Details of the distribution in 1990 are given in Table 11. At that time agriculture and mining provided 6.7 per cent of employment, industry 24.8 per cent and services 68.5 per cent. It follows of course that the main opportunities for graduate employment are in services. In 1987, as shown in the final column of Table 11, 3.1 per cent of graduate employment was in primary, 12.1 per cent in secondary, and 84.8 per cent in services activities. Health and education services provided for around 35 per cent of graduates, and finance, property and business services another 18 per cent. In both fields graduates are high percentages of employment (column 2 of Table 11), and these percentages have

grown significantly in recent years -- in health services because of a trend towards graduate qualifications for para professionals and in education because of a policy shift towards graduate qualifications for primary school teachers, and in finance and business services because of the impact on the nature of work of micro-electronic technologies, and greater competition following deregulation of the financial sector from the early eighties.

The proportion of employment in services is not likely to rise in the next ten years, and may actually fall as the proportion of employment in secondary activities increases as a consequence of cyclical recovery and government measures to reduce balance of payments problems. But a fall -- which is not likely to be large -- in the proportion of employment in services need not check the further growth in the proportion of graduates in the employed labour force nor darken the prospects for the continued rise in the employment of H & SS graduates.

The Nature of Technology

Technological change is a decisive factor in competitive strength in international trade and in economic growth. The role of scientists and engineers in generating new and improved products and processes of production is of critical importance. But the creation of new and improved technologies requires much more than the research and experimental development and design activities of scientists and engineers. Much new technology is embodied in new plant and equipment, and the transition from laboratory discoveries and experimental development and design work to the installation of new plant and equipment therefore depends on "investment in innovation".

There are great differences between the output per worker that firms within a country, and firms in different countries, achieve from apparently similar plant and equipment. Such differences are due to the social -- not the hardware -- component of technology. The output per worker achieved from given plant end equipment depends on production planning and control where the organisation of work and the mental and manual skills of the work force are fitted to the nature of the hardware; on design and price policies relevant to market pressures and opportunities; on human relations and reward systems that motivate the work force to use their skills effectively and to co-operate in retraining and/or changes in work organisation when better ways are found of using the existing hardware or when new hardware is acquired; and in general on the integration of well-designed production, marketing, research and capital expenditure plans and activities.

In the last fifty years there has been a great increase in the numbers employed in research and experimental development. Expenditure on R & D was a very low percentage of gross domestic product in the OECD countries before the second world war. It rose rapidly during and after that war and in 1950 was around 1 per cent of gross national product in the USA and 0.8 per cent in the UK, and less than 0.5 per cent in West Germany, France and Japan. By 1987 the percentages in the US, Japan and West Germany were between 2.7 and 3, and in the UK and France just under 2.5.

Between 1950 and 1987 real GDP (as calculated by Maddison in The World Economy in The 20th Century, OECD, 1989) in OECD countries grew by a factor

of 4. The growth of R & D as percentage of GNP and the growth in GNP in the USA and UK, West Germany, France and Japan was such that real expenditure on their R & D grew by a factor of at least 10 between 1950 and 1987. Between 1950 and 1973 growth rates in GNP in those countries were historically high, as indeed they were throughout the world as a consequence of technology diffusion in a context of national and international policies directed towards freer trade and greater capital movements as contributors to higher growth rates. Growth rates were halved by the recession that followed the collapse in 1971 of the Bretton Woods system of fixed exchange rates, the "oil shocks" of 1973 and 1979, and the new Government policy measures to bring down inflation, but even during this recession growth rates have remained higher than in earlier periods.

A considerable part of that greater expenditure on R & D was relevant to new and improved products and processes of production and created the possibilities of higher rates of technological change and growth in GNP. A condition of that big increase in R & D was a big increase in the number of scientists, engineers, technicians and craftsmen, the possibilities of higher rates of change in plant and equipment only became actualities when funds were made available to invest in them, and just how much rates of growth in GNP then increased -- i.e. just how much levels of technology, another name for the practical arts of production, were raised -- depended on how well the work force used the new hardware.

The relative importance of the social components in technological change has been increased by a higher rate of technical change and by a greater emphasis on "learning curve" and incremental improvements in technology which has followed the more widespread and faster international diffusion of "state of the art" technologies. Changes in mental and manual skills, product designs, marketing, planning and control systems, and in work organisation to maintain competitiveness, have become more frequent and more critical factorsin success than they used to be.

In recent years many Japanese Companies have demonstrated the critical importance of the social components of technology, even to the extent of operating profitably some plant and equipment that British and American Companies had written off as hopeless.

The skills acquired from courses in science and engineering are of course critical in R & D and in installing and maintaining plant and equipment. But they are much less relevant to innovations and improvements in the social components of technology. That is clear from the high proportion of engineers in the enrolments of management schools in Australia, the UK and the US, and from the complaints of engineers in Australia that many management positions in large organisations that used to be the preserve of engineers are now often given to H & SS graduates.

The greater frequency and complexity of technological change is relevant to the view quoted in the OECD secretariat's note of 3.XI.89 on Higher Education and Employment: The Changing Relationship that because of the growth in ill-defined, ambiguous, open ended and "messy" problems and situations which are increasingly common in work situations, rather than more clear cut scientific or technical engineering problems, degrees in the humanities and social sciences provide an invaluable preparation for the world of work.

The OECD note queried at least the generality of that view on the grounds that programs in H & SS tend to concentrate at the two extremes of the spectrum -- on the discipline-centred preparation for advanced degrees and the narrowly vocational -- which do not generate skills in dealing with "ill-defined", ambiguous, open-ended and messy problems and situations.

Whether there is a tendency in Australia for H & SS courses to concentrate at the two extremes of the spectrum, and whether discipline-centred courses designed as steps towards advanced degrees and subsequent employment in the higher education system deprive the graduates from them of those "open-ended skills and approaches which employers in certain occupations increasingly require", will be considered in the next section.

Skills learnt from degree programs

There is a great range of degree qualifications in the H & SS, and it is not always possible to classify them as vocational or non vocational, specialized or general.

Some degrees, as for example, Accounting, Law and Social Work look specialized and vocational in that the graduates may work as accountants, lawyers and social workers because their degrees are recognised as evidence that they have the requisite skills, or will have after a short period of training on the job. But not all graduates from those fields are so employed, and from the nature of the employment they have chosen or accepted they may be classified as generalists. Many graduates in accounting and law may start as practising accountants and lawyers but soon move into more general activities in management or management consultancy, and the original training and then some professional experience as in accounting are regarded as excellent preparations for such activities.

Some degrees, as for example Economics and Psychology, may lead to professional employment as economists or psychologists for some of the graduates, though the numbers of such positions are too few to make possible such employment for all in such professional work. Indeed many, if not most, of the enrolled students do not expect to become professionals, and that and their choice of fields of study to complement economics or psychology majors would justify the classification of their degrees as non vocational and general.

Other degrees look to be non-vocational and general -- as for example degrees in classics, or in history and English -- but may be directly vocational for students who intend to teach and become subject teachers in those fields, and for the education authorities that later employ them.

Such complexities make it difficult to isolate the least employable degree studies in a period when although graduates in the humanities and in the least vocational of the social sciences took somewhat longer to find their first employment and did so at less than the average starting salary, almost all of them soon found employment and increased their salaries faster than graduates from some of the sciences and vocational courses.

In the group classified as "arts, humanities, social sciences" by the Graduate Careers Council of Australia -- a group that does not include accountancy, business, economics and law -- there was a very wide range of employments. Their main occupations of "teaching" (16 per cent), "clerk" -- including government/administrative assistant not employed in research work" (13 per cent), "management various" (9 per cent), "social/welfare, counsellor" (7 per cent), "sales" (6 per cent), "social science researcher, including government/administrative assistant employed in research work" (4 per cent), "journalist" (4 per cent), "library work" (3 per cent) and Computer professional (2 per cent), only accounted for 64 per cent of those employed. The range of occupations was so wide that 35 per cent were classified as "all other". In the "business, administration and economics" group, 80 per cent were employed as "accountants", "business professional", "management", "clerical" or "computer professional", and 20 per cent were grouped as "all other".

In "law, legal studies", 19 per cent were grouped as "all other". In "science", 29 per cent were grouped as "all other" and in "engineering, applied science and technology" where 58 per cent were employed as professional engineers, 9 per cent as "building, professional", and 6 per cent as "computer professional", 28 per cent were grouped as "all other".

In view of the oft-expressed, though seemingly not fully justified, doubts about the employability of H & SS graduates classified as generalist or non-vocational, it is now time to consider what employers judge to be their skills or skills potential.

The first factor is the place of degrees as such in the basic screening process. Students in higher education must have been sufficiently disciplined and capable of learning and expressing themselves to complete secondary education and gain entry to degree studies, or having failed to complete or gain entry were sufficiently motivated to obtain a "second chance" entry. Those who graduated did so because of their ability to learn, to demonstrate that ability in written tests and to complete a program stretching over many months. That they completed the degree requirements despite what may have seemed tedious and even "out of date" degree requirements set by "the authorities", provided a further indication that they could probably "fit into" organisations producing goods or services.

As part of a recent review of the engineering schools in Australia (Review Of the Discipline of Engineering, Australian Government Publishing Service, 1988), employers were asked to comment on the strengths and weaknesses of Australian Graduate Engineers. Two of their strongest criticisms were that the skills of graduate engineers in oral and written communications were poor, and that their skills in human relations in management situations were even weaker. In most courses in the H & SS there is a greater need to display skills in written communications and tutorial periods in such subjects are more likely to promote oral skills than laboratory periods in engineering and science.

Many law graduates are not employed as lawyers. They were recruited by employers partly because it is useful to have employees around who have a knowledge of the law, but mainly because graduates from most law schools have oral and written skills of communication and have developed a capacity, which

can be turned to good account in business or public administration, to find a coherent and expeditious way through masses of information on complex problems.

Arts graduates from popular courses such as history and English also have skills in communication and they have been trained to handle and make sense of a mass of material. Such training can be turned to good account in "the world of work".

Many organisations, particularly large organisations, that recruit generalists are not worried by the tendency of staff in some universities to encourage their students with good academic records to do honours and then postgraduate graduate work of a type that could lead to academic careers. For honours courses and post graduate studies require an d cultivate high standards and a pride in working to capacity.

In How the Japanese Learn to Work (Routledge, 1989), Dore and Sako refer to the importance for economic growth in Japan of the Confucion tradition in fostering "the kind of moral feeling, the Japanese have about needing to be good at their jobs" and "the belief that self-development, self-cultivation are desirable in themselves and a condition for citizen self respect". That kind of moral feeling and belief in self development is frequently strengthened, and sometimes generated, by honours and postgraduate work in higher education in Australia.

It is because "good honours" and research degrees indicate high levels of ability, stamina and an ambition to perform well, in addition to high levels of ability, that the Australian Public Service recruits such graduates, often without specifying fields of graduation, for administrative positions and/or for further training in fields such as programming.

Some employers in the business sector when recruiting generalists, pay more attention to achievments in competitive sports than to the grades of degrees because they expect those who have excelled in competitive sport to make better use of their higher education in competitive and pressure situations than could "the more academic types".

The attitudes of staff in the non vocational H & SS subjects and the attitudes of students enrolled in them have a considerable effect on employability. Between 1950 and the mid 1970's in Australia, there were many staff and students in the H & SS group who were very critical of activities and attitudes in the business sector -- even of those sections which could not reasonably be classified as part of the "military industrial complex". After the Vietnam War ended, economic growth and employment rates fell and the rise in public-sector employment was no longer sufficient to absorb generalist H & SS graduates, attitudes changed and that change made such H & SS graduates more employable in the private sector.

The pattern of University degrees in the humanities and social sciences in Australia is more Scottish than English. Because "honours" requires additional time, and the English single-honours type of degree is not common. students have considerable freedom in the choice of main and minor subjects. The increase in unemployment from the mid seventies and the greater need to seek employment opportunities in the private sector induced changes in the choice of subjects within arts and social science Faculties.

More students in Arts Faculties combined the study of courses in history or english or philosophy with courses in computer science (if they had a sufficient knowledge of maths; otherwise courses in, say, psychology or linguistics which required the use of computers) or in economics. More students in Economics Faculties chose combined courses in economics and accounting, or gave greater weight to the more quantitative options in Economics.

Staff in the Arts and Social Science Faculties also re-acted to the increase in graduate unemployment. They had a concern for the employment situation of their former students and for the continued enrolment of students in their courses. In some cases the response took the form of changing methods of teaching to make greater provision for experience in types of group work emphasized in management schools and therefore presumably capable of producing employable skills, or of discussing with students these options that were most likely to provide a basis for postgraduation learning, as for example programming on the basis of courses in formal logic within departments of philosophy. In other the emphasis within existing courses was changed to provide, for example, a greater emphasis on quantitative methods in history courses, or new options added such as "business history" options within economic history, and "industrial organisation in Australia and Japan" options within economics or industrial relations.

The greatest adjustments to changes in the employment opportunities of students were in the colleges of Advanced Education, where the sharp decline in the demand for newly trained teachers greatly reduced the employment opportunities for the staff of the Colleges unless they could diversify their activities. There was a major shift in the activity of many Colleges in quite a short period of time. Enrolments in teacher education were sharply reduced and courses in business, administration and health studies were substituted. That was made possible by the retirement of some staff, the retraining of many retained staff, and the recruitment of new staff with appropriate skills and experience.

At the time, new degrees in Colleges of Advanced Education required the approval of Higher Education Boards and approval depended on evidence that the new degrees would be vocational and attract a sufficient enrolment. Because of the emphasis on the provision of vocational education, the Colleges had very much closer links with employers' organisations and large local employers than had the universities (other than in medicine and dentistry), and they explored with employers the needs for vocational education that their staff could provide. Based on those consultations the Colleges developed a range of courses to provide graduates who would be immediately useful in various types of employment.

The response of the Colleges to changes in the employment opportunities for students (and the staff in the Colleges) was the major factor in those macro changes in enrolments shown in Table 1.

Graduate Labour Markets

The main features of Graduate labour markets outlined above are as follows:

i) Between 1970 and 1990 graduates increased from less than 3 per cent of the labour force to just over 10 per cent. H & SS graduates are around one half of the total and are expected to be one half the estimated 13 per cent in 2001.

ii) Between 1977 and 1988 when graduates as a percentage of the labour force doubled, the median starting salary of graduates fell by 3 per cent in real terms. The median starting salary of graduates fell from 100 per cent of average weekly earnings in 1977 to 89 per cent in 1984, but recovered to a third of the loss in the next four years.

iii) Once established in employment the salaries of graduates rose well above average weekly earnings.

iv) Starting salary relativities have not been stable, and they do not provide a good guide to relative earnings in later years.

v) There have been considerable fluctuations in unemployment rates of graduates from the different disciplines 4 to 5 months after graduation, though the highest unemployment rates at that early stage have been in the humanities.

vi) The unemployment rate of graduates has averaged less than half the general unemployment rate. In February 1987 the Australian Bureau of Statistics estimated that the graduate unemployment rate was 3.5 per cent, and ranged from 2 per cent in Medicine, and Administration/Business Studies/Commerce, 3 per cent in Science/Maths/Veterinary/Agriculture Science and Engineering, to 5 per cent in Architecture and 6 per cent in Arts/Humanities/Social Science.

vii) The rise in unemployment and the reduction in the growth of employment in government offices and teaching from the mid 1970's had a strong influence on available courses and on the choice of subject combinations and options by students. The change was greatest in the advanced education sector where there was a switch from vocational B. Ed courses to other vocational courses in business and administration and health occupations. (Although there is more than one variable, it is worth noting that the more directly vocational courses in advanced education did not make their graduates more immediately employable than the university graduates.)

viii) The absorption of increasing numbers of new graduates has depende on employers offering and graduates accepting what used to be regarded as "non-graduate jobs". That move into new fields of employment was not restricted to generalist or non-vocational H & SS graduates.

ix) Technology has technical and social components -- the plant and equipment and the ways in which they are used by the labour force. The role of the social component in technological change has been increasing and is likely to increase further. That has led to pressures to give more attention to developing oral and written skills of communication and a greater understanding of human and industrial relations in engineering courses, and has also created new opportunities for the employment of H & SS graduates outside education and the public service which used to dominate opportunities.

Staff in Careers Services in institutions of higher education recently reported "an increased emphasis on skills, including the so called personal skills -- communication, ability to work with others, and problem solving (1987 Australian Graduates in 1988). Of course some 'problem solving' requires skills that graduates in the sciences and technology bring with them, and some the technical skills that accountants, economists or psychologists bring with them. But there are many other problems that call for collaboration between such specialists, and still others which require skills and understanding that graduates, including H & SS graduates, must learn on the job.

There is a very significant difference between employers in Japan and in Australia. Although higher education in Japan is no more vocational than in Australia, and in many respects less so, Japanese employers rarely criticize universities for failing to provide vocational training to make graduates immediately useful in specific jobs. Employers in Japan put a greater emphasis than Australian employers on a demonstrated ability to learn rather than on particular job competences already acquired. Japanese employers assume that they have the responsibility for job-oriented training.

It is therefore at first sight very puzzling that so much credit has been given to the role of internal labour markets and training in Japanese firms, yet the reported expenditure on training on the job and man hours spent in formal off-the-job training is very low by comparison even with Australia. "By such criteria as training expenditure and man hours in formal off-the-job training, Japanese firms would come rather badly out of any international comparison" (Dore & Sako, How the Japanese Learn to Work, p. 133).

An important part of the explanation appears to be the very high retention rates to the end of secondary school and the high levels of achievement in general education. There is a marked similarity between the credit requirements for students who wish to enter Arts Faculties in Universities and those who wish to enter Science Faculties. The positi on is summarised in the Table below.

Twelfth Grade in Japanese Senior High Schools

	Credit points required for	
	Arts entry	Science entry
Modern Japanese language	3	4
Classics	3	
Social Studies	6	4
Algebra & Geometry	2	2
Basic Math Analysis	2	2
Calculus	3	
Science	4	6
Physical Education	3	3
Foreign Language: English 2	3	3
English 2C	4	3

Source: Dore & Sako, op. cit., pp 8-9.

Because of the generally high levels of literacy and competence in maths and science and the continued power of confucian traditions, employers are able to rely on a highly effective process of self-directed training activities of their workers, including their involvement in quality circle activities and it appears that "training departments interpret their role as primarily to facilitate and catalyse such efforts" (Dore & Sako, p. 113).

There has been little systematic research into workplace organisation in Australia and because of that not much is known of skill-acquisition processes at the workplace. It does however seem reasonable to assume that because there is much more specialization in the last two years of schooling, more specialisation in the first half of many degree courses, in Australia than in Japan, the process of learning while working will be much less effective in Australia than Japan. That on average there is a higher level of unemployment among Australian arts graduates may be a consequence not of the non-vocational character of their degrees but of that lack of adequate breadth in their secondary education which reduces their capacity for relevant further learning in changing work situations.

Table 1

Higher education students in 1979 & 1989
(Percentages)

	1979	1989
Arts/Humanities/Social Science	25.7	23.0
Business/Administration/Economics	15.8	20.8
Law/Legal Studies	2.9	2.7
Education	25.0	16.5
Agriculture/Forestry	1.4	1.7
Architecture/Building	2.2	2.2
Engineering/Surveying	7.0	7.5
Health/Medicine	5.7	10.9
Science	13.3	13.6
Veterinary Science	0.5	0.4
Non Award	0.5	0.6
Numbers of Students ('000)	316.4	441.1

Notes:

i) Legal studies in the Advanced Education sector were included in Business/Administration/Economics.

ii) In most Universities it was customary for students intending to teach to do a degree in Arts, Economics or Science and then to do a postgraduate Diploma in Education, whereas in Colleges of Advanced Education they took a B.Ed degree (or sub degree Diploma or Certificate) in which the "teaching subjects" were mixed with the professional education component.

iii) The growth in the percentage in Health/Medicine was largely due to the shift of the training of nurses into the "higher education" sector.

Source: Department of Employment, Education & Training (DEET)

Table 2

Types of courses in the different fields of study, 1989

	Doctorate	Master	Diplomas	Bachelor	Sub-degree
Arts/Hum./Soc.Sc	2.0	4.7	5.4	81.7	6.3
Bus./Admin/Econ	0.4	5.8	7.2	81.4	5.3
Legal Studies	0.7	8.1	12.5	74.1	4.6
Education	0.7	5.8	22.7	39.5	31.3
Agric/Forestry	4.6	5.5	4.6	52.7	32.6
Arch/Building	0.7	6.6	8.5	81.4	2.9
Eng./Surveying	2.7	5.8	5.2	79.2	7.1
Health/Medicine	2.4	3.5	4 9	49.1	40.1
Science	4.4	3.9	7.0	78.5	6.1
Veterinary Science	9.0	5.9	1.3	83.8	0.0
Overall	1.9	5.1	9.0	69.3	14.8

Source: Selected Higher Education Statistics, DEET, 1989.

Table 3

Course completions in 1981, 1986 and 1988 by sector and field of study
(percentages)

	1981		1986		1988
	Adv.Ed	Univ	Adv.Ed	Univ	AE & U
Arts,Human & Soc.Sciences	13	31	15	30	22
Business Admin & Economics	13	12	17	14	15
Law, Legal Studies	-	5	-	6	4
Education	53	13	43	12	26
Agriculture & Forestry	2	2	2	1	2
Architecture & Building	2	2	2	2	2
Engineering, Surveying	4	5	6	7	6
Health, Medicine	6	7	6	6	11
Science	7	20	9	20	12
Veterinary Science	-	1	-	1	0.3
Not Stated	-	2	-	1	-

Source: Selected Higher Education Statistics, DEET 1989.

Table 4

Course completion by level of degree: 1987
(Percentages in each group)

	Ph D	Masters	Bachelors	Sub Degree
Arts, Humanities & Soc.Sc.	1	4	76	19
Business Admin & Economics	0.3	8	73	19
Law & Legal Studies	0.2	4	64	32
Education	0.2	2	37	61
Agriculature & Forestry	0.4	6	44	50
Architecture & Building	0.3	4	83	13
Engineering & Surveying	2	6	76	16
Health, Medicine	1	2	50	47
Science	4	4	77	15
Veterinary Science	6	6	88	-
Overall	1.2	4.0	61.3	33.4

Source: Selected Higher Education Statistics, DEET, 1988

Table 5

Bachelor degree enrolments 1967-1989

	1967 *	1989
Arts/Humanities/Social Science	35.6	27.1
Business/Admin/Economics	12.6	24.4
Law	5.1	2.8
Education	3.6	9.3
Agriculture/Forestry	2.0	1.3
Architecture/Building	2.7	2.6
Engineering/Surveying	9.8	8.7
Health/Medicine	9.2	7.7
Science	18.1	15.6
Veterinary Science	1.3	0.4
Numbers	78 825	305 447

* In 1967 University degree students only

Source: Tertiary Education Commission and DEET

Table 6

Activities of new first degree graduates seeking full-time work, 1984-1988
(Percentages)

	Work Full Time			Work P.T. Seek F.T.	Unemployed
	Govt	Private	Teaching		
Males					
1984	22	35	30	5	7
1988	23	43	27	3	4
Females					
1984	15	16	46	13	9
1988	21	20	44	9	5

Source: 1987 Australian Graduates in 1988
(Graduate Careers Council of Australia)

Table 7

First degree graduates working full-time, as a % of those available for full-time work in Australia, 1984-1988

	1984	1985	1986	1987	1988
Accounting	92.8	95.8	98.2	97.7	97.1
Civil Engineering	88.5	91.6	92.0	87.8	91.6
Computer Science	81.9	97.1	95.2	96.3	94.7
Education	80.2	84.1	89.7	84.5	87.0
Electrical Engineering	83.9	88.3	95.5	94.5	90.7
Humanities	79.2	75.7	80.7	77.8	74.5
Mechanical Engineering	83.3	88.2	93.0	91.7	95.0
Pharmacology	93.3	94.1	97.6	97.9	98.6
Psychology	73.2	78.0	82.1	81.1	75.8
Social Work	82.8	87.9	89.9	89.6	88.0

Source: 1987 Graduates in 1988
(Graduate Careers Council of Australia)

Table 8

Disciplines ranked according to level of starting salary, 1977-1988

	'77	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88
Dentistry	1	1	1	1	1	1	1	1	1	1	1
Medicine	2	2	2	2	2	2	2	2	2	2	2
Earth Sciences	8	8	9	4	5	10	7	8	4	3	3
Optometry	-	-	-	-	-	-	-	-	-	-	4
Engineering	3	3	3	3	3	3	3	3	3	5	5
Computer Science	5	5	4	5	4	4	5	5	5	4	6
Mathematics	10	8	12	8	7	7	8	7	6	6	7
Paramedical	-	-	-	-	-	-	-	-	-	-	8
Veterinary Science	9	6	7	11	11	11	14	15	12	10	9
Physical Sciences	12	8	9	7	9	8	10	9	9	8	10
Accounting	17	15	17	17	14	14	14	16	16	11	10
Social Work	3	7	5	8	10	5	5	4	7	7	12
Education	6	4	7	6	6	5	4	6	8	9	13
Economics	15	12	13	12	12	12	11	14	13	13	13
Agricultural Sciences	7	8	5	10	8	9	8	10	11	12	15
Psychology	12	14	15	15	13	14	12	11	14	13	16
Biological Sciences	12	13	14	14	15	13	13	12	10	15	17
Other Social Sciences	9	17	18	15	16	17	16	18	15	16	17
Humanities	15	16	16	18	18	16	16	17	17	19	19
Art & Design	-	-	-	-	-	-	-	-	-	-	19
Law	20	20	20	20	20	19	19	19	19	17	21
Architecture	17	17	11	13	17	18	18	13	18	17	22
Pharmacy	19	19	19	19	19	19	20	20	20	20	23

Source: Graduate Starting Salaries 1988, (CAS, The University of Sydney & the GCC of Australia, 1989)

Table 9

Ranked salaries in 1984 of 1979 graduates compared with their starting salaries

	Salary in 1984	1984 rank	1979 rank
Medicine	$34,994	1	2
Dentistry	$33,050	2	1
Law	$27,400	3	20
Earth Sciences	$27,000	4	8
Engineering	$26,501	5	3
Computer Science	$26,250	6	5
Economics	$25,999	7	12
Veterinary Science	$25,300	8	6
Accounting	$25,002	9	15
Humanities	$25,000	10	16
Mathematics	$24,999	11	8
Other Social Science	$24,999	12	17
Agricultural Science	$24,966	13	8
Psychology	$24,500	14	14
Education	$24,224	15	4
Physical Science	$24,000	16	8
Social Work	$23,994	17	7
Biological Science	$23,002	18	13
Architecture	$22,506	19	17
Pharmacy	$21,017	20	19
All Graduates	$25,690		
Average Weekly earnings	$19,600		

Source: Graduate Starting Salaries 1988 (CAS, University of Sydney & GCC of Australia)

Table 10

First employment of 1987 graduates

	Arts/ H/SS	Bus/Ad/ Econ	Law	Educ	Eng	Science
Govt Depts & Local Gov.	24	14	19	4	12	14
Defence	1	1	-	1	4	1
Com & State Authorities	11	5	4	2	8	13
Education	19	3	3	88	2	18
Private Professional	4	29	61	0	15	5
Private Sector Tertiary	27	34	9	3	10	26
Private Sector Primary & Secondary	8	14	2	1	48	20
Private Unclassified	6	-	1	1	-	1

Source: 1987 Australian Graduates in 1988 (GCCA)

Table 11

Employment by sector of activity

	Employment per cent	Distribution of graduate	Graduates as per cent
Agriculture & Fishing	5.4	2.7	1.7
Mining	1.3	9.1	1.4
Manufacturing	15.5	5.1	8.5
Electricity Gas & Water	1.4	7.7	1.5
Construction	7.9	2.9	2.1
Wholesale & Retail Trade	21.0	3.8	7.9
Transport & Storage	5.0	3.8	2.1
Communication	1.7	4.7	0.9
Finance, Property & Business Services	11.7	17.1	18.0
Public Admin & Defence	4.5	15.2	7.6
Community Services *	17.1	25.7	45.2
Recreation, Personal & Other Services	7.6	4.4	3.1

* Community Services is dominated by Health (6.8 per cent of employment) and Education (6.6 per cent)

Source: Column 1 - The Labour Force Australia, February 1990 (ABS, 62030) & Labour Force Status & Educational Attainment Australia, February 1987 (ABS 62350)