

Rewriting the 'research assistant' in an era of innovation & knowledge

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Abstract

The higher education sector in Australia over the past 15 years has undergone massive expansion, restructure, and alteration to funding mechanisms for research programs and higher research degree training. As universities have responded to policy changes and pressures from government, industry and students, the profile of university staff has changed, although research staffing has not come in for any sustained national attention. The research assistant has traditionally been part of the fabric, if not the structure, of university research efforts. How is the research assistant role occupied and carried out in a research landscape involving distributed systems of knowledge production? What opportunities are there for a flexible and talented pool of researchers and how might they be connected to knowledge transfer between universities and industry?

This paper reports on the first phase of a wide ranging investigation into the research assistant. The study involves the collection of three types of data:

1. Web based anonymous survey of research assistants
2. Face to face interviews with research assistants, together with those responsible for research policy and management
3. Position descriptions for research assistants from advertised job vacancies.

By exploring, at one OECD site, Australia, the features, the extent and the significance of the research assistant experience, the study will provide a description of both broad characteristics of the research assistant workforce and a description of the experience of doing research assistant work, focusing on contributions to knowledge and innovation in readiness for the investigation across OECD higher education sites.

This paper reports only on the first in the set of three data sources, providing a preliminary analysis of the web based survey. A picture of research assistants is sketched from a number of vantage points: demographically; the conditions under which they are employed; how such work fits into an individual's overall life; and the nature and extent of the contribution made to the research, teaching and administration of universities.

While preliminary, the data is tending to confirm that despite the extent of the contribution, the breadth of skills and the depth of qualifications often brought to the position of research assistant, there is no professional pathway articulated and that this is a gendered role.

The larger study's aim is to contribute policy responses and consider future staffing practices in a globalised knowledge economy by providing current data on research assistants that is relevant for the development of policy and planning strategies for research, including the delineation of equity issues that require addressing in employment practices associated with research assistants, and institutional relations with professional contract researchers and independent scholars.

1. Introduction

Research and innovation and their role in cultural, social, economic, and environmental development have been the focus of significant attention in developed and developing countries over last 5-10 years. There has been significant investment by industry and universities in developing infrastructure and support mechanisms to further research and innovation, although the picture is uneven across OECD countries. For example, while in Finland significant industry investment in communication technologies means that a country of 6 million has a global player in Nokia, Australia – with more than double the population has no comparable global industry and imports 97 per cent of its information technology. Australia's global impact is diffused through its over-representation in SMEs, together with a disproportionate investment in agricultural research and development, according to the Chief Scientist. The investment in agriculture brings Australia to 4th position in a ranking of R&D investment in OECD countries, but when it is taken out of the equation, 'Australia's public R&D effort would stand at only 0.64 percent of GDP in 2000-01, below the international average of 0.66 per cent' (Batterham 2000:28-29). According to the Australian Bureau of Statistics (2002), 'Australia's ranking reflects the low R&D expenditure to GDP ratio of the Business Sectors. However, Australia's Government and Higher Education sectors have a high ratio compared with other OECD countries'.¹

Universities' role in research and innovation is again under scrutiny in Australia with opportunities for change being driven by the Prime Minister's championing of an agenda staked on science and technology and a drive to have at least one Australian university in the world top fifty (Department of Science Education and Training 2002:24). Following the current review, sweeping changes are expected to funding mechanisms and reductions in government investment. As at 2000, dependence on government subsidy was approximately 64.7% across the Australian higher education sector, ranging from 54% to 85%. The older established universities had a median need for government funding of 69.80% (Department of Education Science and Training 2002:82).

Targeted funding for research projects and research infrastructure goes to individuals with research profiles and track records but their success is intimately tied to research workers who do not have profiles, and who are not recognised or acknowledged as delivering research outcomes and who may have little opportunity to have input into the policies that affect their careers. Recognition forms part of social support for research work. Such support is demonstrably effective in increasing research productivity (Bailey 1999). The focus in this study is, therefore, not on the obvious and overt research workers in the system, rather it is on the silent partners of research endeavour. Within Australia, these silent and invisible research workers are characteristically 'research assistants'.

2. The study in this context

Our study is an attempt to explore what arises in the current context. It asks: does the kind of responsive high powered innovation system being developed and imagined by OECD countries require a labour pool of flexibly available, talented and highly trained researchers? If so, how will such a labour pool be generated? How research workers will move through and emerge from research training structures and what kind of research landscape they will be equipped to work in? How will such a labour pool be rewarded and supported in the role that it will play in the innovation system? In other words, if a flexible and highly trained pool of labour is a good response to the needs of the system, how can that labour pool be best managed for both the benefit of individuals that make up that labour pool and the system?

The overall aim of the study is to explore the contribution and place of research assistants to knowledge and innovation throughout higher education systems, and to identify key issues for policy and action. This first phase seeks to:

- collect data on research assistants as a category of research worker across the Australian higher education sector ;
- identify strengths and weaknesses of current employment practices with respect to research productivity outcomes; and
- identify key issues relating to the role of research assistants for future policy and action.

Defining research assistant

The research assistant (RA) in industrial terms is normally categorised as a Higher Education Worker (i.e. not an academic) and classified hierarchically through a set of levels (1-10), which ostensibly articulate with qualifications and experience. As research assistants can be also classified as postdoctoral or academic staff, this study preferred to define the research assistant through a positional relation to research work. So, in the first instance, a research assistant role is defined through its being a research worker involved in research not of the researcher's own conception. This definition is problematic however. Research assistants may initiate, generate, write and carry out research proposals, although their institutional position often makes it impossible for them to be considered research investigators. There are restrictions placed on 'non-academic' staff to be named investigators on grants, for example, if a research assistant is employed under a temporary contract (fixed term), they could not be named as a investigator on an Australian Research Council grant, if the employment contract is less than the term of the grant.

3. The Higher Education Sector

There has been structural change within the higher education sectors of many OECD countries and, as a result, there has been significant change in the context in which academic work is being done together with the way academic work, including research, is done. Historically, the Higher Education Sector (HES) has been shaped by a series of intense pressures acting on it over the past decade and a half. Since 1987, the sector has experienced rapid change, moving from an elite higher education system to a mass higher education system with 31.6 million Australians under the age of 30 years participating in higher education (Department of Science, Education and Training 2002); reductions in staff numbers; and pressures generated through a gap in expectations on academic staff and expectations of academic staff.

As a function of changes to institutional funding formula, there has been an overall demand for increases in research productivity. In many research fields there have been demands to generate research partnerships with industry and community players, simultaneous with expectations to maintain or expand other kinds of community engagement. The more difficult challenge posed is the policy vacuum within which these events are taking place. The need for policy to manage and develop research staff arises, in part, because, as in the US and the UK, the pathway and outcomes for a research degree are no longer a linear trajectory; the traditional apprenticeship of higher research degree into a postdoctoral² position and from there into an academic teaching and research position is increasingly rare. It is a reality, however, that is at odds with the expectations of PhD graduates and postdoctoral fellows, most of whom desire a traditional academic position but do not obtain one (Hey 2001, Thompson et al. 2001).

Active policy development is also needed because there is little understanding of the way in which traditional higher education workers, academic staff, postdoctoral fellows, research assistants and general staff, might be involved in transforming their work environments; what the nature of their contribution to knowledge production and innovation is, and how it might, particularly through career movements, contribute to the expansion and solidification of what Gibbons (1998) has nominated 'distributed systems' of knowledge production and innovation.

4. Meanwhile, up in the lab

There are other significant historical and social factors impacting the research assistant, together with knowledge production and innovation. One of the most significant changes is the shape of human resources in higher education in the last decade, in particular, the extent to which it has been casualised (Maslen 2002). Casualisation provides a flexible pool of labour but may have negative quality assurance effects. While there has been no study of research standards, a 1994 report showed that the proportion of contract research employees in universities had increased from 28 percent in 1980-84 to 62 percent in 1991-93 (Collins 1994).

Many research staff work on a piecemeal basis from research project to research project. The UK has formalised this context with the development of a new category of higher education worker – Contract Research Staff (CRS). Since 1998, a Concordat acknowledges the existence of a large pool of research staff who do not come under traditional staffing structures. Under the Concordat universities are expected to implement training and development resources to facilitate careers for CRS. This industrial relations approach to CRS codifies aspects of the research worker role – the project based nature of it, for example – focusing on the responsibilities of employers.

The UK Concordat is an acknowledgement of the unlikelihood of traditional academic careers as an outcome for postdoctoral graduates but only tangentially responds to the way in which knowledge production is a distributed system and that there are multiple social relations involved. Taking an IR tack to research staffing does not necessarily explore how CRS fit into the multiplicity of sites where research and innovation is going on; nor does it describe what it is that contract research workers do, how that activity might differ across disciplines or in the context of interdisciplinary research; and how the contributing individuals may benefit from the system – which is essential

for any growth and development of the system. In industrial relations, Burton (1988) argues, 'what is being measured is a job's relative value, in relation to contributions or organisational objectives' while nothing is measured as to the objectives of the research workers (p.17).

There are other social dimensions to the research worker's experience. The interests of CRS and Research Assistants are intertwined with those of senior academics responsible for administering grants and overseeing employment of research staff (NTEU 2001). The academic staff union in Australia, the National Tertiary Education Union, suggests that while senior staff 'recognise that poor morale and lack of opportunities for career progression among their junior colleagues represent an immediate and long-term threat to the quality of research' they remain to be fully 'educated as to the industrial and professional rights of research staff' (p.1).³ In formalising the impermanence of CRS, it might well be asked whether or not this is an outcome and position that highly trained researchers would aspire to and desire to occupy? Will they feel like 'remaindered' academics?

Hey (2001) offers some insights into the effects on individual CRS, taking the vantage point of a contract researcher (ironically in a paper published after she had been appointed to a continuing academic position). By considering certain social dimensions, Hey presents arguments about the casualised face of research. Citing a 31.5% rise in contract staff between 1978-1994 (70% of whom were female) cf 2% rise in teaching staff, casualisation she argues has been accompanied by its feminisation (p.70). Is the research assistant a position that is also, in an unacknowledged way, a gendered role? For example, at Australia's premier medical science research institute – The Walter and Eliza Hall Institute - 88 per cent of the research assistants are women (Moyal 1994). If this is a picture across the higher education sector, what are its implications?

One of the things we know about the research assistant is that they 'work at th[e] coal face doing experimental work and ... often may come up with very important research findings' (Moyal 1994:71).⁴ The work of a research assistant may in this way contribute to someone's career – but not necessarily the research assistants'. Experimental immunologist Sir Gustav Nossal has described how his mentor, Nobel Laureate Sir Macfarlane Burnet, had 'a lot of very gifted and highly esteemed technical assistants, and indeed what we call research assistants, namely people who'd had a university training rather than a technical college training. And I'm afraid to say he tended to use these women, he did not hold them in as high an esteem as I hold their latter-day equivalents' (p.72). However, holding research assistants in high esteem does not necessarily translate into career pathways unless opportunities are structured into organisations and barriers to employment pulled down.

The absence of women in the historical record of 'discovery' also tells us that a prominent role in scientific research does not necessarily translate into appropriate acknowledgement or a career path for women. Opportunities for research assistants to have a career pathway with relevant rewards intersect with how 'career' is understood as well as the constraints in the institutional context of higher education. There are any number of reasons why a career in science might be a difficult pathway for women. The blame for women's difficulties in pursuing a career in science is sometimes placed on time demands and uncertainties related to grant funds (Bhathal

1999). A job in science, however, is something rather more easily managed. Benchwork between babies rather than the kind of hours, travel and competitive activity involved in chasing funds, discovery and recognition might hold considerable attraction to some women. The questions for this study were not only what is the picture with respect to science but in social sciences and humanities?

Moving ahead of any policy setting that would impact on research careers is the tendency for funding structures to now 'decouple' research and teaching (Coaldrake and Stedman (1999). Funding for universities is strongly linked to student enrolments, rather than research activity. While strong positive correlation is usually attributed by academics to the nexus of teaching and research, we know nothing about the research assistant's contribution to teaching or their contribution the teaching work of academic staff.

Accompanying the decoupling of research and teaching is the tendency to locate research in research centres rather than teaching academic units. An important change in the way work is done is occurring in these sites, according to Pickersgill, van Barneveld, and Bearfield (1998). They suggest that in research centres there are considerable challenges to the functional distinctions between academic and general staff. Blurring these distinctions is, Coaldrake and Stedman (1999) suggest, an important element to academic work in the twenty-first century and 'will continue to grow in significance', requiring appropriate institutional responses (p.16). They champion rewarding staff on the basis of their 'skills, performance and potential rather than on the basis of job classifications', although they note that among the many challenges posed moving away from the historical differences between general staff is the traditional loyalty academics give to their discipline, not to their institution or organisation (p.16). This, in particular, they warn 'can work against easy transition to and from academic work and non-academic work' (p.16). These distinctions are deeply embedded and normally remain invisible. This state of affairs is underlined by Sullivan (1999) in a review article of a set of studies concerned with gender equity in the higher education sector. Sullivan argues that despite the appropriate attention the four studies give to general staff women, distinctions between academic and non-academic staff are emphasised, for example, through 'special and separate headings clearly labelled "General Staff" (p.428). In emphasising differences, Sullivan says, 'none ...even considers the possibility, let alone the expectation common to other industries' award restructure, of career articulation between general and academic staff. The divide which privileges 'academic' over 'non-academic' rests unchallenged' (p.428).

Each of the issues briefly introduced above intersects with the research careers of individuals, potentially impacting with knowledge production. How might the constraints, opportunities, motivations, qualifications and career aspirations of research assistants contribute to knowledge production and innovation across university and industry and business sectors?

5. The project's key intention

This study seeks to provide a 'snapshot' of research support workers, normally known as research assistants. A focus on the research assistant examines a category of higher education research worker not previously described. The study expects to obtain demographic information about this group; to be able to outline the relevant industrial

relations picture; to provide an account of the perceptions of those workers of their working conditions and the extent to which their contribution is recognised; report on the reasons for their choice to be a research assistant, for example, as a career option, a short term choice and/or a pathway towards a further career; and to be able to describe the kinds of work that research assistants do.

Key issues to be examined and reported here are based on preliminary data analysis of a comprehensive survey of research assistants:

- To what extent does the research assistant population consist of persons who have been trained to carry out research and would wish to pursue research careers but are not doing so or are not able to do so, at present?
- To what extent is the research assistant population made up of particular groups of individuals (women, people from NESB, graduate students)?
- To what extent are current employment practices with respect to research assistants contributing to solidifying a casualised class of researchers?
- What are the conditions for acknowledgement, recognition and reward of research assistant contributions to knowledge production?

The design and administration of the questionnaire was separated into two stages, as follows:

- Stage 1 Established a methodology for studying research assistants in the Australian unified national higher education system through testing of research assistant employment in research areas in the University of Western Sydney
- Stage 2 A national survey of current and former research assistants.

5.1. Ethics clearance

Endorsement of the project was sought and received from the University of Western Sydney Human Ethics Committee and the Macquarie University Ethics Review Committee (Human Research).

5.2. The Survey

The questionnaire was developed as a web based collection instrument. Once the respondent completed the questionnaire, they were instructed to click on a 'Submit' button, at which time the data was uploaded into a secure fileserver established for the survey by the University of Western Sydney Information Technology unit.
http://matthau.uws.edu.au/vip/sandi/resassist_update.phtml

There are 5 strands to the data collection: demographic, current and previous employment, tasks and activities, research publications, attitudes and perceptions. Information about current and previous employment included the position title, research field, funding source and what year they first worked as a research assistant. Information was sought about the range of tasks being carried out in 6 areas of activity: responding to possible 'client/customer' groups (students/academic staff etc.); writing and publishing activities; administration and management roles; research specific tasks – e.g. literature search, data collection or analysis, etc; formal and informal supervisory roles; and other, e.g. doing their own research. The next section sought details of publications they had been involved in producing as part of their role as a research assistant and whether their contribution was acknowledged.

A Likert scale was used to test respondents perceptions and understanding of attitudes towards their work within their academic unit, their research team, their university and the higher education sector in Australia with text boxes providing opportunities for respondents to expand on their views more fully. Respondents were also given the opportunity to submit contact details indicating their willingness to participate in the next phase of the study - a one to one semi-structured open ended interview designed to elicit their reflected account of their experience of being an research assistant.

5.3. Locating research assistants

A key aspect of the survey was to identify and locate as much of the current Australian population of research assistants as possible and all universities in the unified national system were therefore targeted. The strategy formulated to recruit and obtain data was implemented through electronic mail. It was expected that most research assistants had high levels of email and internet literacy, enabling access to a very large target population. This proved to be a fast, efficient method for administering the questionnaire.

In order to identify current research assistants publicly available university telephone / email directories were used. As titles and classifications were not necessarily expected to be consistent across the unified national system, the collection strategy was expansive, including the email addresses of any of the following titles:

- research assistant
- research officer
- senior research assistant
- research fellow
- senior research fellow
- technical officer
- project officer

The breadth of this capture strategy picked up individuals who were not currently research assistants but as the study is interested in both current and historical contexts, in order to explore career pathways and trajectories, this was considered a benefit. Staff employed for short periods of time on a casual basis may not be listed on any telephone or email directory – as is the policy at UWS, for example. One likely group of casual research assistants is the graduate student population, so a national postgraduate student organisation was approached and agreed to distribute the recruitment email to their members. In this way it was hoped that some of the short term research assistants missed through email directories might be recruited.

6. Findings

The data analysis presented in this paper is based on 610 responses. This is currently interim as the survey is live at the time of writing. It amounts to a 14.25 per cent response rate (4629 emails sent - 350 returned messages as either ‘undeliverable’ or ‘away on leave’).

The preliminary data analysis reports on the following characteristics:

Demographic	Current Employment	Activity
Gender	Type of employment contract	Publications contribution
Age	Hours	Supervision

Qualifications

Recent types of
employment contract
Funding source

6.1. Demographic features

This preliminary analysis confirms the gender bias with 69 percent of respondents being female (errors in using the form have resulted in some blank entries, which mean that the total count does not necessarily match the total entries) (see Table 6.1).

Sex	Count	Percent
Female	406	69
Male	184	31
Total	590	100

Table 6.1 Sex of research assistants

The data is showing a strong spread of ages - interestingly 38% are over 35 years of age - and a dispersed spread of disciplines - our sample shows a strong mix between medical and biological sciences - 45% - and other sciences, social sciences and humanities (see Table 6.2 and Table 6.3)

Age range	Count	Percent
18to25	115	19
25to30	131	22
30to35	124	21
35to40	70	12
40to45	67	11
45to50	47	8
50to55	30	5
55to60	14	2
65to70	2	
Total	604	100

Table 6.2 Age ranges of research assistants

Research Fields, Courses and Disciplines Classification (RFCD) codes were used to ascertain disciplines.

RFCD Code	Count	Percent	Field
320000	178	32	Medical Sci.
270000	74	13	Biological Sci.
220000	54	10	Soc. Sci, Hum & Arts
300000	33	6	Ag, Vet & Env Sci.
330000	25	4	Education
380000	24	4	Beh & Cog Sci.
250000	22	4	Chemical Sci.
290000	21	4	Eng & Tech
260000	17	3	Earth Sciences
210000	16	3	Science (General)
340000	15	3	Economics
240000	13	2	Physical Science
350000	13	2	Comm, Mgt, Tourism
280000	9	2	Info.Comput &Comm
390000	9	2	Law, Justice
370000	7	1	Human Society

420000	7	1	Lang & Culture
230000	5	1	Math Sci.
310000	5	1	Arch.Urban Env, Blding
360000	4	1	Policy & Pol Sci.
430000	4	1	Hist & Archaeology
410000	2		The Arts
Total	557	100	

Table 6.3 The Research Fields, Courses and Disciplines Classification (RFCD) codes in which research assistants are working

The results – while preliminary – are confirming they are a well qualified group, 91 percent having degrees, 54 percent having research qualifications, with 65 percent of those with degrees having undergraduate research qualifications (Hons) and 35 percent of those with degrees having graduate research qualifications (MHons/PhD) (see Table 6.4).

Qualification	Count
BAHons/BscHons	215
MHons/Phd	115
Total	330

Table 6.4 Research qualifications among research assistants

6.2. Current Employment

The recruitment process was successful in capturing current research assistants with 84 percent of the total respondents either currently occupying roles titled ‘research assistant’ or have done so in the previous 12 months. Of those currently working, not a few had been in their role for a substantial period of time. 48 percent (296) had worked in the field for more than three years – which is the normal duration of an Australian Competitive Grant.

Current Contract Type	Percent
Temporary	57
Casual	15
Permanent	20
Other	8
Total	100

Table 6.5 Type of employment contracts among research assistant

Lengthy time frames are also evident with 13 percent (84) currently a research assistant who had commenced work as a research assistant more than 10 years ago.

Lengthy time frames were specifically commented on by respondents.

“Suits family arrangements and lifestyle and find the work extremely interesting. I have worked with the same Academic for 20 years, moving from one university to the other (10 years at each university) with him.”

Responses suggest why the role is ideal for some:

I have been either an RA or technical officer for my entire career (since 1975). This type of job suits me ideally. While I was bringing up my family as a sole parent (since 1981) I was able to work part time, in hours of my own choosing, on project

Others defended their choice:

I really enjoy my position as a senior technical officer, I find it challenging and rewarding. However I do find it offensive that it is presumed that it is a stepping stone or a temporary position while attempting to find something else.

There were different benefits for others:

flexible work hours, suits lifestyle, involved in research projects that allow me to do the components that I like and are my strengths while others do the bits I'm not so good at.

Currently suits my lifestyle and allows me time to gather my thoughts post PhD

Prefer project based work, intend to study towards PhD next year for a fulltime career in research which I enjoy

The employment conditions are less suited to others:

Great job, lousy pay

Funding is very uncertain - does not extend more than 4 months at present. I have 2 part time positions within the same institute. Am not properly involved in either research project cos of the part-time funding.

The restrictive classificatory system of university staffing was commented on:

I would love to see more flexibility for general staff across Australian Universities to be incorporated into the academic/teaching roles. I have three degrees and need to get a PhD to go upwards.

6.3. Contribution to Research Outputs

The findings are confirming research assistants are actively involved in publication. Responding to the following proposition: “In your working life as a research assistant, you may have contributed to publications or other disseminations arising from the research you are involved in. Please provide details” research assistants are claiming involvement in more than 1000 research publications, including books.

Count	PUB1	PUB2	PUB3	PUB4	PUB5	PUB6	PUB7	PUB8	PUB9	PUB10	Total
A1 Books	10	11	8	2	3	2	2	4	2	1	45
B Book Chapter	11	11	1	4	1	2	5	2	2	2	41
C1 Journal	202	78	63	38	37		41	39	33	25	418
Conference Report	32	20	15	9	6	17	5	2	3	5	114
E1 Refereed Conference Paper	121	37	27	13	8	6	29	15	12	9	277
H1 Refereed design	0	1	1	1	0	11	0	1	0	0	15
I Patent	1	0	3	0	0	2	0	0	1	0	7
J1 Major original creative work	4	5	4	3	2	0	0	0	0	0	18
Total	381	163	122	70	57	40	82	63	53	42	1073

Table 6.6 Involvement in research publications, by category, of research assistants

The findings are confirming that research assistants are actively involved in research supervision. There is a significant unacknowledged and unpaid contribution being made. Some 45 percent of respondents are carrying out informal supervision of others staff, honours students and higher research degree students. Such informal processes raise quality assurance issues and underscore that research assistant remuneration and conditions may not be commensurate with their activity.

Informal supervision	Count	Percent
informal_other_staff	68	24
informal_honours	59	21
informal_higher_degree	45	16
informal_honours,informal & other_staff	11	4
informal_higher_degree & informal_ot her_staff	21	8
informal_honours & informal_higher_degree	25	9
informal_honours & informal_higher_degree & informal_other_staff	51	18
Total	280	100

Table 6.7 Involvement in informal supervision of research assistants

6.4. Perception of contribution and recognition

While many research assistants are acknowledged individually and find satisfaction in their experience, many would like to undertake their own research. In the area of research publication, their involvement was acknowledged via authorship in 709 instances – i.e., in this preliminary data, 72 percent of the time. As the largest proportion of respondents are from science fields and involve multiple authors, it is difficult to determine if the level of contribution matches the research assistant's position in author list. Many, however, are not satisfied with the level of recognition they receive. The results are confirming that this may be an unwritten, unrecognised career with 37 percent of those who considered themselves to having contributed to a publication not having that contribution acknowledged via authorship or otherwise, eg: in footnote or preface. Some 63 percent agree or strongly agree they are satisfied with their experience as a research assistant overall, although only 51 percent agree or strongly agree that they are satisfied with the level of recognition they get.

7. Conclusion

As a category of research worker in the higher education sector, the Research Assistant is not acknowledged as a professional category. However, this does not necessarily match with the perception of those occupying the role. While some see the role as a temporary position, a 'stepping stone' to another position in the near or further future, it is clear that for many respondents, the position has sufficient merit both in and of itself and the activities involved in the employment to warrant a long-term commitment. At this early stage in the study, there is no reason to not continue to expect that such positions are also a way for women with children to have a part-time or flexible job in their chosen field.

Contributions to knowledge production and gender is a nexus that provides an important strand to the study to be teased out in the continuing data analysis and as part of the second, interview, phase. Interview data will provide information highlighting the varied perspectives on the role and duties of research assistants, the

kind of career support they receive and identify further career issues. The text obtained from the survey and the interview material will be used to develop a rich account of the experience of research assistants, and will be subject to a critical discourse analysis (Halliday 1978, 1994; Fairclough 1995). Critical discourse analysis (CDA) is an established tool, involving detailed analysis of discursive features of language that enables interviewee's talk about their experiences to be interpreted within the social contexts that construct them. For example, how do female research assistants construct their experience in relation to culturally specific gender identities?

Disciplinary differences are anticipated. Science, humanities, and the social sciences are carried out in different ways. Science involves material action, running experiments in a laboratory, for example. Social science is also labour intensive with the application of the 'survey' instrument or doing participant observation. Arts/humanities research is considerably less 'material' in its activity, involving much more cognitive and perceptual kinds of 'doing'. These methodological differences translate into different demands on the physical and psychic labour of the researcher. While the scientist may require another pair of hands to carry out the experiment, the philosopher's main tools are their own critical faculties and the 'pen'.

It appears that the research assistant in the Australian context provides a significant workhorse for the generation of knowledge. There is an opportunity to consider how that labour is harnessed, recognised and developed in the context of contemporary modes of knowledge production across multiple sites.

In order to explore the larger research question, we envisage a future multi-site study with other OECD researchers, in particular, the UK, Canada and the Netherlands. The 6 years experience in the UK of the Contract Research Staff (CRS) Concordat provides a point of evaluation and comparison with the Australian context. What has been the experience of movement through the system by CRS? We would want to ask, do those research workers feel more rewarded in the UK now? How has this kind of institutionalising relations impacted on the levels of recognition; on expectations as to future career paths; on levels of resourcing and on the individual's positioning as a higher education worker. How do CRS see themselves and how are they seen as subjects in the university context? For Australia, Canada provides a good site for comparisons given certain historical and cultural similarities and the Netherlands, provides good size and sector comparisons.

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¹ With a Gross Expenditure on Research and Development/GDP ratio of 1.53, Australia is ranked well below countries such as Finland (3.31%), United States of America (2.76%), Germany (2.46%) and France (2.15%) (Australian Bureau of Statistics 2002).

² A recent external review of its research activity initiated by the University of Western Sydney identified postdoctoral fellows as the central drivers of research productivity, pushing new knowledge and generating interdisciplinary modes of research production (*UWS Research Landscape: External Review of Research Report*, November 2001 http://www.uws.edu.au/uws/research_services/).

Thompson et al. (2001) suggest that this driving role of postdoctoral researchers is not acknowledged in the Australian institutional and funding environment, although this is not the case 'in the United States, the United Kingdom, Japan and Singapore, where there has been national recognition of postdoctoral researchers as drivers of national research productivity, substantially increased funding for postdoctoral researchers, and growing university and grant agency recognition of the need to resolve issues about postdoctoral researchers and structures for research careers' (p120).

³ Coaldrake and Stedman (1999) point out that prior to 1983, academic work was considered a special case not suited to normal industrial relations arrangements. Opportunities to reconceptualise approaches to human resourcing in universities offered by enterprise bargaining were missed (p.6, citing Hoare 1995:72). Those opportunities have been reduced further by the environment provided by the Howard Government's frameworks for industrial relations, they point out, and there has been little 'genuine progress on ... fundamental issues to do with changes in academic and general staff work' (ibid).

⁴ In an oral history project involving significant Australian scientists, Moyal (1994) briefly explores the role of the research assistant with a number of interviewees.