QPR 2010

Quality in Postgraduate Research

9th

QUALITY IN POSTGRADUATE RESEARCH CONFERENCE:

Educating Researchers for the 21st Century

Conference Proceedings

Adelaide, South Australia,
April 13–15, 2010

Edited by Margaret Kiley

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Proceedings of the
2010 Quality in Postgraduate Research Conference

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Editorial

Margaret Kiley
The Australian National University and
Conjoint with University of Newcastle, Australia

Regular attendees at the QPR conferences and readers of the proceedings will notice a difference this year, and that is, Gerry Mullins in not a co-Editor. Those who like to speculate will probably argue that this explains why the proceedings are a month or two later than usual, and they are probably right! Still, this has given me plenty of time to reflect on the conference presentations that make up the proceedings.

For many years now the conference organisers have sought to invite international speakers and this year conference participants were enormously fortunate to hear Dr Wilhelm Krull, Secretary General of the Volkswagen Foundation. Firstly sit back in awe at the foresight of the decision makers who decided to enter into an agreement that the Volkswagen Company would become a public company and from the proceeds, a Foundation would be set up. As you read Dr Krull's paper you will see that 'Since 1962, the Volkswagen Foundation …has funded more than 29,000 projects with a total of more than 3.5 billion Euros.' Secondly, having heard Dr Krull I think most participants were enormous grateful to those who made the decision to appoint him as Secretary General.

Dr Krull's paper painted a very broad canvas of research and research education that provided a rich background for the papers that followed. But please, read his paper to see what can be achieved by the sensitive, ethical and intelligent use of funding to support research and development.

A plenary session of a different kind was that organised by Alistair McCulloch, Mandy Thomas and Celine McInerney on research integrity. Mandy Thomas from the Australian National University began with a thought provoking overview of research integrity and why it is so critical, particularly in the research education environment. This overview opened the way for Celine McIntyre to act as MC for a hypothetical related to case studies outlining various ethical issues. A panel of experts were called upon by Celine to give their opinions:

- Ms Tammi Jonas, President of the Council of Australian Postgraduate Associations
- Dr Suzanne Morris, University of Queensland
- Dr Michelle Picard, University of Adelaide
- Associate Professor Howard Harris, University of South Ausrtalia
- Professor Andrew Doutney Flinders University
- Professor Barbara Evans University of British Columbia, Canada
- Professor Dick Strugnell University of Melbourne.

It was interesting to see ethical issues as a significant focus of discussion at this QPR both in plenary and in several presentations – they barely rated a mention in the earlier conferences.

Back to a more traditional keynote address on the third day with a presentation by Professor Harlene Hayne of the University of Otago, New Zealand. Professor Hayne spoke of the research quality assessment exercise in New Zealand outlining the pros and cons as she saw them. Her paper was particularly

pertinent for the Australians in the audience given the current implementation of the Government's Excellence in Research Assessment (ERA) process.

Professor Hayne's keynote address was followed by a plenary session introducing the Three Minute Thesis (3MT) competition. The competition requires research candidates to present their thesis in three minutes in manner understandable to an intelligent lay audience. The aim of the competition is to encourage candidates to be able to synthesise their argument and present it in engaging ways without trivialising the research. The conference was fortunate to have staff from the University of Queensland (UQ) Graduate School (Zlatko Skribis and Tony Miscamble) who inaugurated the competition and one of their recent winners David MacDonald. David reflected on the benefits of the 3MT from his perspective and then repeated his winning address to rapturous applause. Staff from the University of Otago, New Zealand (Charles Tustin and Chris Stoddart) reflected on their experience of having used the UQ guidelines to implement the 3MT at Otago. The completion has 'gone trans-Tasman' for 2010 and we were extended an invitation to take it further by the time of the 2012 QPR conference.

These proceedings are formatted with the keynote/plenary addresses first followed by papers, extended abstracts and abstracts. Following the conference each presenter was invited to take his/her abstract and revise as a paper or extended abstract (up to two pages). For those who chose neither of the options, we were able to include their abstract. The papers, extended abstracts and abstracts are published in the order in which they were presented.

As readers will find, the papers and extended abstracts are on diverse topics. Talking of diversity, several papers addressed issues of diversity, widening participation and research culture. Chirgwin addressed issues related to research training for future indigenous researchers, Grant *et al.* examined cultural differences and supervision, and Guerin, and Ranasinghe took a different slant by examining what it is that encourages undergraduates to move into research degrees. Thomas and McCulloch discussed the widening participation agenda, particularly as it is playing out in the UK. Finally in this cluster of papers there were Govendir and Govendir who examined research culture, Zeng and Webster the research students' experiences, and Wisker and Robinson reporting on 'doctoral orphans'.

Five of the papers and extended abstract has a focus on researcher and research supervisor training and development, (Turner et al.; Hill; McCulloch; Tennant et al.; Mitchell; and Kroner) with one addressing doctoral pedagogies (Grysell et al.) and another addressing doctoral curriculum (Boud et al.). From the supervisors to the candidates and we find papers on assisting candidates with writing and other academic support (Ford, Behrend, Bastalich et al., and one which examined the genre of the 'How to get a PhD literature'.

A final handful of papers provide some fascinating insights into current debates in doctoral education for example: accountability; working with industry; ethics; critical and creative thinking; evidence of research student learning; the inter-disciplinary PhD; and finally the pathways that student take to, through, out of and from a doctoral award.

The variety of the many abstracts demonstrate that research into research education is alive and well, in fact flourishing with conference presenters coming from New Zealand, UK, Hong Kong, South Africa, Germany, Sweden, Canada, Indonesia, Ireland and Australia it suggests that it will continue to flourish.

The conference ran smoothly with no *apparent* hitches, a situation that was, in no small measure, due to the tireless, creative, and professional work of Janice

Orrell. Jan had agreed to act as the conference project officer in a rare moment when she had some time. That moment passed very quickly and Jan found herself trying to fit the work of the conference around an ever increasing workload on other matters. However, despite all that Jan managed to provide us with one of our best QPRs yet.

Following the usual discussions related to 'where should the next one be?' it was decided that the 2012 conference would be in Adelaide (same place, approximately the same time) but with thoughts of moving further east in 2014. We await the decision with excitement.

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September 2010
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Keynote Addresses

The future of the doctorate: Vision, challenges, and new opportunities

Wilhelm Krull
Volkwagen Foundation
Germany

Let me begin by saying how very honoured I feel to give the opening keynote speech at this conference! It is my first visit to Australia – but it certainly will not be my last: So far, I have only had the chance to get a first impression of the country by looking through the window of my plane and by visiting some of the very beautiful sights of Adelaide. I was indeed so impressed by what I have seen that I have already decided to come back for a longer visit sometime soon.

When studying the programme of this conference I was very impressed by the fact that so many different aspects of doctoral education will be addressed in the next couple of days. We will hear about the professionalisation of the doctorate, about the doctoral curriculum, doctoral orphans, and about the Ph.D. student-supervisor relationship. While looking at the wide spectrum of topics covered during this conference and reflecting on the title of my own speech assuming that one might address a vision for the future in about 45 minutes, it was not merely by chance that a remark by the Austrian writer Karl Kraus occurred to me. He once said: "The closer you look at a word, the farther away it looks back at you."

So, I wondered which particular perspective I could bring to this discussion, and came to the conclusion that, as most of you come from universities in Australia or the UK, it is my perspective as a policy-maker (e.g., as a member of a committee advising the French government on how to introduce graduate schools into the French higher education system), a board member of several universities and Max Planck Institutes, and last but not least the head of a private research foundation from continental Europe which might be of interest to you.

Introduction

So let me first say a few words about the Volkswagen Foundation whose Secretary General I have been since 1996. Although the name of the foundation suggests otherwise it is not affiliated to the car manufacturer of the same name. However, the foundation owes its existence as well as its name to a contractual agreement between the Federal Government and the State of Lower Saxony which put an end to the controversy concerning the ownership of the Volkswagen Company after 1945. After lengthy disputes in the 1950s, the Federal Republic of Germany and the State of Lower Saxony finally agreed to turn the company then known as Volkswagenwerk GmbH into a public company listed at the German Stock Exchange and to set up a Foundation from the proceeds.

Since 1962, the Volkswagen Foundation whose current capital amounts to 2.4 billion Euros has funded more than 29,000 projects with a total of more than 3.5 billion Euros. The Foundation's purpose of supporting higher education and research is accomplished by concentrating on funding initiatives which it develops itself, usually in an interactive process with respective researchers. Whereas the overall strategic concept remains stable, the scope of actual funding is changing constantly. Individual funding initiatives are terminated once they have achieved their goal in generating the originally sought for impetus. This makes way for new ideas and initiatives.

The Foundation's aim is both to identify new and significant areas of investigation as well as to make contributions toward resolving existing problems. There is a continuous focus on topics and issues which may otherwise be receiving too little attention from the government or other research funding institutions. Notwithstanding the fact that support is given mainly to fundamental research, the Foundation's approach also reflects a commitment to take account of the demands and expectations placed on higher education and research by society at large.

The Foundation is particularly interested in improving opportunities for young researchers, e.g. in the late 1980s by introducing structured doctoral programmes ("Graduiertenkollegs"), and in the course of the 1990s by offering new opportunities for some of the most talented young researchers to become independent group leaders early on in their career. The German higher education system has long been a very hierarchical world where young researchers had to struggle hard – and sometimes struggled in vain – to gain independence from the more or less benevolent tutelage of their academic teachers. By offering talented young researchers the opportunity to set up their own research groups, the Foundation was at the forefront of a movement starting in the mid-1990s which aimed at allowing young researchers to gain independence earlier on in their academic careers. Today, the German Research Foundation and the European Research Council offer similar programmes such as the Emmy Noether Programme and the ERC Starting Grants which allow excellent postdocs to pursue their own research interests. Moreover, the German "Initiative on Excellence" with its three funding lines Graduate Schools, Clusters of Excellence, and Strategic Concepts has offered further opportunities for young researchers in Germany.

During the last decade, much has changed in the German and European higher education and research systems – not only because of the Initiative on Excellence, but also because of the so called Bologna Reforms. Though the implementation of new degrees and curricula is the most widely perceived consequence of these reforms, the doctoral education, too, has undergone considerable changes.

In my speech, I will address five main points: Firstly, I want to talk about the challenges of change – not only with regard to doctoral education, but more generally with regard to higher education and research in a globalised world. Secondly, I want to look at the past, the present, and the future of the doctorate, and to hint at some initiatives for the reform of doctoral education. Thirdly, I shall take a closer look at false dichotomies which seem to shape current views of the doctorate. Fourthly, I will address the international dimension of doctoral education, and lastly I want to suggest ways to move towards a culture of creativity, in several respects the most important point when it comes to opening up career prospects for researchers in the 21st Century.

The Challenges of Change

Change and talking about change and the challenges that go with it are as old as European thinking. The Greek philosopher Heraklitos once said: "*Change is the only thing in the world which is unchanging*." And yet, when we look back at the fundamentally new developments of the past twenty-five years, we cannot help but recognize that the speed, as well as the impact, of change have increased quite dramatically. Since the late 1980s, we have been witnessing dramatic changes in the political landscape and the economic map not only of Europe, but

of the world at large. We have become part of a dynamic ongoing process only loosely characterized by the term 'globalisation', a process that involves

> the inexorable integration of markets, nation-states, and technologies to a degree never before witnessed, in a way that is enabling individuals, co-operations, and countries to reach around the world further, faster, deeper, and cheaper than ever before.[1]

Some of the side-effects of this process, the increasing limits and limitations of national policies, become even more obvious when we take a closer look at the so-called 'big picture'. A rapidly growing world population, among them more than one billion people suffering from malnutrition and starving to death; inefficient energy practices and the global environmental crisis; the decline of freedom and democratic governance in several countries situated in the least developed parts of the world. All of these and many other challenges make it imperative for us to re-think, re-configure, and subsequently re-align our approaches as well as to develop a truly transnational perspective. If our globalised world is becoming increasingly "hot, flat, and crowded", then it is time for us to develop a sense of urgency and to act accordingly, or as Thomas Friedman (coming close to Barack Obama's rhethoric) puts it:

> We have been living for far too long on borrowed time and borrowed dimes. We need to get back to work on our country and on our planet. The hour is late, the stakes could not be higher, the project could not be harder, the pay-off could not be greater.[2]

Universities and other research institutions play a decisive role in this battle for the future of our planet. At the beginning of the 21st Century the contribution of RTD to economic growth and competitiveness as well as to a socially, culturally and ecologically sustainable development of our planet has become even more important than in the last decades of the 20th Century. Today, more or less all RTD institutions are confronted with:

- The change from traditional ways of acquiring and producing information towards the digitalisation of knowledge,
- The turning away from predominantly disciplinary structures towards problem-oriented, transdisciplinary approaches,
- The move from bi-, or trilateral internationalisation towards global approaches and strategic alliances in higher education and research,
- The changing public private interface and the need for new partnerships,
- The move from input-related planning processes towards output-oriented assessments and new approaches to priority-setting.

Moreover, three concurrent developments – the fiscal constraints of the public domain, the great challenges posed by globalisation, and the ongoing transition from an international division of labour concerning hands, tools, and production lines to a division of labour concerning brains, computers, and laboratories – make it imperative for researchers, and policy-makers as well as for industry and politics to enter into a process of assessing strengths and weaknesses of each national as well as the international RTD system, reviewing funding modes and institutional structures, and subsequently adapt to the changing environment of knowledge production.

[1] Domininique Moïsi: The Geopolitics of Emotion. How Cultures of Fear, Humiliation, and Hope are Re-Shaping the World. London 2009, p. 9.
[2] Thomas L. Friedman: Hot, Flat, and Crowded. Why the world needs a green revolution – And how we can renew our global future. London 2008, p. 25.

The current situation – as seen from a European perspective – is as follows: Though the EU is the world's largest "producer" of scientific publications as well as graduates, and PhDs, it has been loosing ground in the field of basic breakthroughs. Fifty years ago, European scientists dominated the lists of the Nobel Prize awardees and of other prestigious prizes as well. Today, Nobel Prizes and similarly renowned awards are mainly won by scientists working in the US (and sometimes also by someone in Australia). And the gap in R&D investments per capita between the EU and the US is steadily increasing. Apart from a few research areas such as astrophysics, space research, nuclear physics, and molecular biology, Europe suffers from an almost total lack of transnational support of basic and strategic research. In particular, risky, open-ended frontier research is not supported sufficiently, and it still remains to be seen whether the newly established European Research Council (ERC) will be able to substantially change this picture.

With respect to top ranking elite institutions, most European countries find that few or none of their universities appear at the top of such lists. For example, in the ranking of the world's best universities published by Shanghai Xiaotong University in 2009, only two of the top twenty universities were European (= British), while 17 were American. The best Australian university – according to this ranking – occupies place 59 The Australian National University, followed by the University of Melbourne (rank 75) and the University of Sidney (rank 94). Of course, one could – and should – discuss the basis for such rankings and the explanations for their results at length, but it seems that they basically reflect the fact that in Europe we have tried to spread higher education institutions more or less evenly across the respective country, and thus developed many good universities in various parts of Europe. Over the last three decades we have largely considered higher education as a tool for regional development, and not really focused on creating high-class, internationally competitive universities. The result is not only reflected in these rankings, but also in many other benchmarking studies.

With respect to achieving major breakthroughs, to implementing radically new paradigms and basic innovations, European research policy makers have reasons to think about, and indeed make use of opportunities to improve productivity and performance by reforming the institutional structure of the higher education and research systems, and by establishing new cultures of creativity (to which I will come back at the end of my talk).

However, so far there has been a clear discrepancy between the rapidity of technological and societal change and the slowness of the institutional responses in higher education and research: this applies to the European as well as to the national and regional levels. Overall, European universities and research facilities remain fragmented between and even within countries. The higher education sector is still largely insulated from industry, and unattractive career patterns encourage young talents to seek independence and rewarding salaries outside academia, and often also outside the EU. In many European research systems a structural conservatism of institutions, processes, and funding modes prevails. Over-regulation of university life hinders curricular reform, interdisciplinarity, and efficiency. There is thus a strong need for reform – at the European, the national, and the institutional level.

One of the areas where change is most urgently needed is doctoral education. And this for more than one reason: As a response to the changes of the global labour market we need a diversity of doctoral programmes which takes into account the fact that a PhD is not only a necessary qualification for an academic career, but can also be a prerequisite or at least an important plus for a career outside academia. More and more companies and public institutions tend to

make the research experience of a doctorate, the attempt at deep drilling in at least one area, an essential requirement when it comes to recruiting their future leadership personnel. There is a market and an increasing demand for professional and transnational doctorates. At the same time, doctoral education still usually is the first formative – and thus also decisive stage – of every research career.

Past, present, and future of the Doctorate

In February 2005 a conference on "Doctoral Programmes for the European Knowledge Society" was held in Salzburg, Austria, on the initiative of the Austrian Federal Ministry of Education, Science and Culture, the German Federal Ministry of Education and Research and the European University Association. The main outcome of this conference was the agreement on "ten basic principles" with regard to doctoral programme reform. The so-called "Salzburg Principles" are:

1. The core component of doctoral training is the advancement of knowledge through original research. At the same time it is recognised that doctoral training must increasingly meet the needs of an employment market that is wider than academia.
2. Embedding in institutional strategies and policies: Universities as institutions need to assume responsibility for ensuring that the doctoral programmes and research training they offer are designed to meet new challenges and include appropriate professional career development opportunities.
3. The importance of diversity: the rich diversity of doctoral programmes in Europe – including joint doctorates – is a strength which has to be underpinned by quality and sound practice.
4. Doctoral candidates as early stage researchers should be recognised as professionals – with commensurate rights – who make a key contribution to the creation of new knowledge.
5. The crucial role of supervision and assessment: in respect of individual doctoral candidates, arrangements for supervision and assessment should be based on a transparent contractual framework of shared responsibilities between doctoral candidates, supervisors and the institution (and where appropriate including other partners).
6. Achieving critical mass: Doctoral programmes should seek to achieve critical mass and should draw on different types of innovative practice being introduced in universities across Europe, bearing in mind that different solutions may be appropriate to different contexts and in particular across larger and smaller European countries. These range from graduate schools in major universities to international, national and regional collaboration between universities.
7. Duration: doctoral programmes should operate within appropriate time duration (three to four years full-time as a rule).
8. The promotion of innovative structures: to meet the challenge of interdisciplinary training and the development of transferable skills.
9. Increasing mobility: Doctoral programmes should seek to offer geographical as well as interdisciplinary and intersectoral mobility and international collaboration within an integrated framework of cooperation between universities and other partners.
10. Ensuring appropriate funding: The development of quality doctoral programmes and the successful completion by doctoral candidates requires appropriate and sustainable funding.

These 10 principles are not just proposed like Groucho Marx once said: "These are my principles. If you don't like them, I have others." Rather they tell us something, not only about the envisaged future, but also about the past and the

present of the doctorate. A past where a PhD was mainly seen as the necessary qualification for pursuing an academic career, and a present where the vital matters of time to degree, completion, attrition, and future employability need to be urgently addressed. The explosion of knowledge and the fast accessibility of new knowledge have turned completing a PhD into an intellectual adventure from which only the boldest seem to return with a title – and a treasure of new knowledge.

The Carnegie Initiative on the Doctorate launched by the Carnegie Foundation for the Advancement of Teaching at the beginning of the 21st Century represents another attempt aimed at rethinking the future of doctoral education and helping universities to restructure their doctoral programmes in order to better prepare graduates for their future careers inside and outside academia.

The major results of this initiative are comprised in two volumes. The first volume is entitled "*Envisioning the Future of Doctoral Education: Preparing Stewards of the Discipline – Carnegie Essays on the Doctorate*" and was published in 2006, the second volume, published in 2008, bears the title "*The Formation of Scholars: Rethinking Doctoral Education for the Twenty-First Century*".

The Carnegie Foundation stresses that "the importance of doctoral education to the future of the U.S. cannot be overestimated. PhD holders educate undergraduates and future scholars, create new knowledge, develop life-saving medical interventions, and shape social programs and policies". This is obviously also true for PhD holders in other parts of the world, and there is a lot to learn from the findings of the Carnegie Foundation's initiative. Over a period of five years, the Foundation examined the challenges—shifting student demographics, new kinds of competition, growing pressures for accountability, and shrinking public investment—which doctoral programmes in the United States have to face. It also explored the challenges facing the students of those programmes such as high attrition rates and disillusionment. George E. Walker, the director of the Carnegie Initiative on the Doctorate, stated: "When half of today's doctoral students drop out and many who do persist find that they are ill-prepared for the work they choose, it's time that all doctoral programs face fundamental questions about purpose, vision and quality."

The volume "Envisioning the Future of Doctoral Education" lays out the concept of "Steward of the Discipline". According to the authors, the development of students as "stewards of the discipline" should be the main purpose of doctoral education. A steward, they claim, is a scholar in the fullest sense of the term – someone who can imaginatively generate new knowledge, critically conserve valuable and useful ideas, and responsibly transform those understandings through writing, teaching, and application. True stewardship means more than a mere collection of useful skills and accomplishments. A steward, so the authors say, is someone to whom the vigor, quality, and integrity of the field can be entrusted. But how do we turn our PhD programmes into an apprenticeship for becoming a true steward of the discipline?

Among many recommendations for the future of the doctorate *The Formation of Scholars* emphasises three imperatives:

- "Faculty members have a responsibility to deliberate about the purpose of the doctoral program, in order to better guide students' transition from experience to expertise.
- Students must be responsible, active, intentional agents in their own learning.
- Real improvement must be a joint venture in which faculty and students are genuine partners."

Lee Shulman, the president emeritus of the Carnegie Foundation, draws the following conclusion from the Foundation's Initiative on the Doctorate: "*The best doctoral programs attempt to discover the 'sweet spot' between conservation and change by teaching skepticism and respect for earlier traditions and courses while encouraging strikingly new ideas and courageous leaps forward*."

However, there are obviously many doctoral programmes in the US and elsewhere which fail to achieve this goal, and in which consequently many students fail to complete their theses.

The US Council of Graduate Schools (CGS) addresses this problem with its "Ph.D. Completion Project". In the course of this seven-year, grant-funded project, the Council of Graduate Schools (CGS) provided funding to 29 major U.S. and Canadian research universities to create intervention strategies and pilot projects, and to evaluate the impact of these projects on doctoral completion rates and attrition patterns. Special attention has to be paid to those who seem to get lost in the labyrinth of research with their heroic failures.

Previous studies about US PhD programmes suggest that even under highly favourable conditions, only three-quarters of PhD students complete their degrees. These studies show that completion rates are higher in the physical and life sciences than in the social sciences and humanities; higher for men than for women; higher for majority than for minority students; and higher in smaller than in larger doctoral programmes. However, the ultimate success of a Ph.D. student mainly depends on six institutional and programme characteristics which are

- Selection
- Mentoring
- Financial Support
- Programme Environment
- Research Mode of the Field
- Processes & Procedures.

One of the institutions which has participated in the „Ph.D. Completion Project" is the Graduate School of Arts and Sciences at Yale University. In its attempt to attend to the project's main objectives of increasing retention and completion rates in doctoral programmes while reducing attrition and time to degree, the Yale Graduate School has implemented a series of programmes and interventions such as launching the 2-4 Project, hiring a "Writing Tutor", establishing a "Diversity Recruitment Coordinators Program", and hosting "Dissertation Boot Camps". I do not want to go into any more detail here, but I can highly recommend visiting the "Ph.D. Completion Project" website in order to read more about best practices in doctoral education.

While US universities aim at improving their PhD programmes, even the concept of such programmes is quite new to Germany and to many other European countries. For a very long time, PhD students were lone fighters who depended solely on the goodwill of their supervisors who, in Germany, still bear the title of "Doktorvater" or "Doktormutter" – "Vater" and "Mutter" meaning "father" and "mother". Whilst the "Ph.D. Completion Project" wants to gain more detailed information about completion and attrition rates and causes, in Germany it used to be almost impossible to gain reliable data on these issues as doctoral candidates were not necessarily enrolled as students and as departments failed to keep track of the failure or success of their PhD candidates. Structured programmes and doctoral schools have only very recently – and against considerable opposition – been introduced to the German higher education system. The same is true for several of the other Bologna countries.

At the Second EUA Council for Doctoral Education (EUA-CDE) Workshop in December 2009, Daniel Denecke of the Council of Graduate Schools pointed out "Structures and Best Practices for Fostering Success in Doctoral Programs". In order for an institution to improve its PhD completion rates and the future success of its PhD graduates Denecke suggested the following structural approaches:

- Collect institutionally comparable benchmarking data on completion rates and attrition patterns,
- Foster dialogue within universities about possible weaknesses or anomalies,
- Consider the impact of "time limits" (structure vs. creativity, fairness vs. contextual nuance),
- Progress tracking (paper, online, signed off by all),
- Frontload research experience; committee must have a stronger role,
- Partner with employers,
- Address full range of roles and responsibilities, not just research.

Many of these considerations are quite new, not only to German universities. Though structured PhD programmes are now being introduced at almost all "Bologna universities", this reform which aims at more transparency still meets – at least in some faculties – with considerable opposition. This brings me to my third point:

False dichotomies

In higher education and research policy-making we still tend to think all too often in terms of binary oppositions (black vs. white, big vs. small, etc.). This mode of thinking in many respects implies that we end up in controversies about false dichotomies which usually neglect the manifold interdependencies and the permeability of existing boundaries. A prominent example of such a false dichotomy which I am not going to deal with today, is the recurring debate (in particular in times of economic crises) about the question: Should we support basic or applied research? – Instead I will focus on three false dichotomies that are closer to the heart of the future of the doctorate. The first one is:

Transparency versus autonomy

Critics of the reform of doctoral education claim that the gain in transparency leads to a loss of autonomy. Autonomy in this case being the freedom of the prospective student to contact the professor of his or her choice, and the autonomy of the individual professor to choose his or her PhD students, and to act as their sole thesis supervisor. In Germany, it is still the rule in several subject areas that a PhD student has only one supervisor. Even the idea of a written agreement between the doctoral candidate and the professor in which the rights and duties of each partner in the often complicated student-supervisor relationship are laid out is new—and rather foreign—to the German higher education and research system. Most PhD students in Germany are still very much at the mercy of their respective supervisor who at the same time acts as their examiner.

The reform of doctoral education which is currently underway aims at more transparency by moving admission procedures from a personal to an institutional level and by introducing PhD agreements, PhD committees, and regular progress reports. Some professors see this as a threat to their professional autonomy. However, this "autonomy" has often left the dependent PhD student in the lurch. The move towards more transparency should thus be welcomed by all those who take the interests of PhD students at heart. At the same time, this newly introduced transparency should not lead to an overregulation of the admission procedure. Bachelor and Master examinations often favour those students who

are good at reproducing existing knowledge, and not necessarily good at producing new knowledge. So excellent grades should not be the only, nor the most important admission requirement for PhD programmes. Also, while the introduction of thesis committees is a necessary step in the process of reforming – and improving – doctoral education, still every PhD student should have one mentor who takes a particularly defined interest in his or her work and its progress.

In short, transparency and autonomy should not be seen as mutually exclusive, but as two necessary ingredients of good doctoral research and education. The same is true for another false dichotomy: solitude versus teamwork.

Solitude versus teamwork

In Germany we still have – and suffer from – the ideal of the doctoral candidate who produces in the solitude of his study a work of original scholarship. Whilst the contribution to our knowledge base should always be and remain at the heart of each and every PhD programme, this contribution is certainly neither made greater nor more valuable by cutting off the doctoral candidate from the outside world and keeping him or her in 'splendid isolation'. However, in Germany, especially in the humanities and social sciences, PhD students often worked in such isolation: In most cases, the infrequent contacts with a more or less dedicated supervisor were one of the few opportunities for a PhD student for intellectual exchange about progress made in his or her research.

In science and engineering, where teamwork is an integral part of PhD studies, quite a different problem posed—and still poses—itself: When many researchers contribute to a publication, the contributors list often rather reflects the hierarchy within a research group than who actually did the experiments. This can make it difficult for PhD students to gain recognition for their ideas and their work.

Thus, neither solitude which is more isolation than intellectual autonomy, nor teamwork which does not allow for the individual talent to blossom and shine can be the future of doctoral research and education.

Intellectual exchange between and with PhD students should be fostered in interdisciplinary Graduate Schools, PhD candidates should be encouraged to pursue and to discuss their own ideas—and they should receive recognition for the fruits of their work.

There is one more false dichotomy I want to address. I have called it "Third Cycle versus Research", and it alludes to a debate which not all of you may be familiar with.

Third Cycle versus research

The debate on this presumed dichotomy is the result of the implementation of the Bologna Reforms and is thus rather particular to the European context. At higher education policy forums in Europe it has been and is being hotly debated whether a doctoral candidate is a student in the so called third cycle (the Bachelor being the first and the Master the second cycle) or whether he or she is an early stage researcher. Again, I believe this is a false dichotomy.

Proponents of the third cycle concept have a tendency to over-regulate and overload PhD programmes with all kinds of compulsory requirements. Advocates of the independent young researcher concept often tend to overlook that learning can and should not end with graduation. On the contrary, as Alvin Kwiram in his Carnegie essay on the doctorate in chemistry has demonstrated,

during the doctoral and postdoctoral phase there is still a lot to be learned, and additional mentoring required. In short, any Graduate School should offer its PhD students courses in methodology, writing, teaching, presentation and other "soft skills", but not all of these courses should be obligatory. University departments should trust in the ability of their PhD students to make their own choices. Only by adapting our doctoral programmes to the needs of PhD students can we win talented young people from all over the world to pursue postgraduate studies at our universities.

The international dimension

One of the most crucial questions to be asked by research policy-makers these days is: "How can we attract top-notch talents to our country, and to what extent can we keep our best researchers in the country?" In the current and ever-increasing competition for excellent researchers we need to develop strategies to win – and keep – the best. Thus, doctoral education always also has an international dimension. What is perhaps new, is the fact that the increasing trend towards transnational higher education, some even call it "borderless tertiary education"[3]. which we can observe particularly in Bachelors and Masters courses, has become a matter of concern for doctoral students and for graduate schools as well. In the near future we will probably see more and more strategic alliances among leading research universities cutting across national and even continental borders.

Geoff Maslen, one of the founding editors of the online platform *University World News*, wrote in a recent article entitled "Australia: Many foreigners but few PhDs" about the internationalisation of Australian PhD programmes: "*So difficult has life become for Australian PhD and masters by research students that the numbers starting the degrees are falling and completion rates are among the lowest in the developed worlds. At the same time, foreign student commencements in PhD degree courses have rocketed by 125% over the past six years.*"

The development described by Maslen seems to indicate that despite some shortcomings in the doctoral education at Australian universities, these are still attractive to international students. However, despite the considerable rise in the international student population at Australian universities, students from abroad make up only 17% of the Australian PhD student population, which seems a rather small number compared with 40% in Great Britain. Moreover, the number of international PhD students in Australia is already beginning to fall again due to visa and work restrictions and lack of funding.

In Germany, the number of foreign PhD graduates is rising slowly, but with less than 15% it is still far lower than that in the USA (with 33%) or the UK (with 40%). However, there are some programmes now which demonstrate how excellent international students can be attracted. One of those is located at the German University of Göttingen. It is an international "Molecular Biology MSc / PhD Program" which has now been successfully running for 10 years. Students in this programme come from all over the world – and the drop-out rate is below one percent. One of the keys of success of this programme is the close cooperation between the university and several other research institutions, in particular two of the Max Planck Institutes situated in Göttingen. The programme is offered by the Göttingen Center for Molecular Biosciences (GZMB) at the University of Göttingen, and is conducted jointly by the participating university departments and research groups, the Max Planck Institute for Biophysical Chemistry, the Max Planck Institute for Experimental Medicine, and the German

[3] S. Cunningham et al.: The Business of Borderless Education, Canberra 2000

Primate Centre (DPZ). Many excellent and world-renowned researchers such as the Nobel Prize winner Erwin Neher are involved in this programme. In October 2006, the Molecular Biology Master's programme was awarded the label "Top 10 International Master's Degree Courses made in Germany". Criteria for the award were the innovative concept, a high degree of internationalisation, scientific excellence of teaching, measures of quality assurance, services and counseling, and the alumni record.

However, while we should certainly foster "brain gain", we should at the same time be very careful to avoid "brain drain" from developing countries. To overcome the disparities between advanced countries on the one hand, and developing and transition countries on the other is certainly one of the great challenges of our time. This is particularly true with regard to the area of research and higher education. In 2003, the then Secretary General of the UN Kofi Annan drew the attention of the scientific community to the fact that "*the way in which scientific endeavors are pursued around the world is marked by clear inequalities*". In an Editorial for the journal *Science* Annan pointed out that:

> The number of scientists in proportion to population in developing countries is 10 to 30 times smaller than in developed countries. 95 % of the new science in the world is created in the countries comprising only one-fifth of the world's population. And much of that science – […] – neglects the problems that afflict most of the world's people[4].

Kofi Annan's "Challenge to the World's Scientists" to overcome these inequalities should also be taken up by all internationally active research policy makers and research funders. It is their task to make a long-term commitment to help improving the research infrastructure and enhancing the research capacity in developing and transition countries. But this is a topic for another lecture. In the context of the internationalisation of doctoral research and education it simply seems important to keep in mind that while we should foster exchange and international mobility, and also attract international students to our universities, we will all lose if the developing countries lose out in the current competition for the best talents.

I want to conclude my speech by addressing a question which is crucial to the future of transformative research and doctoral research and education: How can we foster a culture of creativity in our universities and research institutions, and thus attract the most talented young people to pursue an academic career?

Towards a culture of creativity

A new idea, an insight, or an invention often begin by seeing things differently. As if one saw them in another light or with the eyes of someone else. The Nobel Prize winner Richard Feynman once described such a moment, which led him out of a long phase of stagnation and induced a new definition of basic physical laws, as an intellectual fluke. As he sat in the Cornell University cafeteria, watching two students tossing back coat of arms inscribed plates like Frisbees, a new idea occurred to him of how to combine the hitherto separate fields of electrodynamics and quantum mechanics. The inspiration derived from playful observation meant a breakthrough for Feynman (and the world of physics) to a new thought, which ultimately—as he wrote about it himself—almost on its own coalesced into a convincing theory of quantum electrodynamics: *"It was effortless. It was easy to play with these things. I almost tried to resist it! There was no importance to what I was doing, but ultimately there was. The diagrams*

[4] Annan, Kofi(2003). A challenge to the World's scientists. *Science*, 299 (5642) p. 14-85

and the whole business that I got the Nobel Prize for came from that piddling around with the wobbling plate."[5]

Looking back in that way; one could easily get the impression that a creative gain in insight is a matter of coincidence, the result of personal as well as structural contingency. But several new studies which pursued the question as to why there are far more groundbreaking insights obtained under one set of institutional contexts and not another show that is not the case. The American researcher of scientific discovery Rogers Hollingsworth has for instance investigated why there are many more breakthroughs at medium-sized research universities than at facilities which are much larger and thus could offer manifold opportunities for transdisciplinary co-operations. He came to the conclusion that in addition to a clear strategic orientation and an overall research-friendly climate, the balance between a sufficient amount of diversity of disciplines and the most intense degree of communicative interaction had to be guaranteed.[6] If the facility is too small and homogenous in orientation, the potential for extra-disciplinary stimulation will be missing. If the institution is too large and heterogeneous, there are hardly any opportunities for personal contact. Narrow disciplinary focus leads to monotony; all encompassing breadth transforms a desire for a degree of diversity into unproductive heterogeneity. In both extremes intellectual creativity is ultimately stymied and along with it the generation of knowledge.

All research institutions should aim at establishing and fostering a culture of creativity. Admittedly, 'creativity' just like 'innovation' is one of the most overused and under-defined terms in research literature as well as research policy-making. The common denominator seems to be that creativity manifests itself in a piece of work that requires not merely mechanical skills to produce it, but intelligence and imagination. To foster such creativity in a research institution, at least seven preconditions have to be met:

Competence: The first precondition of a culture of creativity is to provide the best training for the future generation of academics and to enable researchers in general to develop their skills as freely as possible.

Courage: Not only researchers, but also the institutional leadership and funders must be both courageous and adventurous. You can only encourage people to enter new fields and leave the beaten track if you are prepared to share the risks. The readiness to take risks must be complemented by a high degree of error tolerance.

Communication: Thought-provoking discussions are essential for achieving progress in research, in particular cross-disciplinary and transcultural exchanges, but also interactions with the outside world.

Innovativeness: The fifth precondition is that the institution actively fosters innovativeness. Those researchers who are prepared to take a risk with unconventional approaches need to be identified and encouraged. Academic leaders as well as heads of foundations and other funding organizations must appreciate unconventional approaches and encourage risk-taking by providing incentives such as additional funding and long-term commitments.

Persistence and Perseverance: To forge new paths in a barely known territory often takes longer than two or three years, the usual lengths of project funding. Mistakes must be allowed as well as changes of direction. To put it in

[5] Feynman, Richard: *Surely You're Joking, Mr. Feynman!* New York 1985, p. 167 f.
[6] Hollingsworth, J. Rogers et. al.: *Fostering Scientific Excellence. Organizations, Institutions, and Major Discoveries in Biomedical Science.* New York 2003.

the words of Albert Einstein: "Two things are indispensable for our research work: untiring persistence and the readiness to dispose of something in which we have invested a lot of time and hard work."

Diversity: As we have already learned from Rogers Hollingsworth's studies, monocultures in academia do not provide an adequate breeding ground for exceptional thoughts. New knowledge is usually formed at the boundaries of established fields, so the interfaces between these areas of expertise must be activated. To be successful it is essential to provide ample opportunities for all the researchers to interact intensively so that new paths can be developed and breakthroughs achieved.

Serendipity: It is impossible to plan the precise moment at which a radically new idea emerges or a major scientific discovery occurs. The philosopher Ludwig Wittgenstein once said: "*Sometimes we do not know what we are looking for, until we finally found it*." But there are numerous examples in the history of research which prove that it is possible to establish a particularly stimulating environment more conducive to scientific breakthroughs than others. Although there is no one-size-fits-all kind of recipe we can apply, it is certainly worthwhile to try and try again.

Achieving and maintaining a culture of creativity is not at all straightforward. On the contrary, it is full of paradoxes and contradictions. Whilst every institution, not least for securing its own survival, has to insist that its members adhere to its rules, quality standards, etc. the creation of new ideas ultimately is about breaking the rules, fighting against common wisdom, and in particular for its leadership about being tolerant to errors made. Epistemologically speaking, radically new ideas can often not be phrased in terms of the initial question, and the openness for "fresh thinking" is not only required by those who produce new ideas, but also by those who are expected to pick them up. For a research funder and for heads of universities and research institutes it is essential to strike a balance between maintaining high quality standards and inviting the most creative minds to put forward their new ideas instead of feeling discouraged upfront.

The readiness to listen to independent voices inside and outside of one's own institutional network, to encourage risk-taking in "off the beaten track" areas, and to foster a climate of mutual learning are prerequisites for successfully establishing a true culture of creativity. This is the culture in which talented PhD students can truly flourish, broaden their horizon, and turn into visionary stewards of their respective discipline who as researchers can freely embark upon inter-, and transdisciplinary projects that have the potential to transform our view of the world. It is by no means easy to achieve these goals. But we have no reason to fall into despair. As Albert Einstein once put it: "Admidst all the difficulties, there is room for opportunities.

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Research integrity: An unfolding tragedy in six scenes with an overture by Professor Mandy Thomas

Alistair McCulloch
University of South Australia
And

Mandy Thomas
The Australian National University

With additional material by

Celine McInerney
University of Adelaide

Introductory notes

The University of Arkaroola is by Australian standards a small University of 15000 students but with an academic staff of 1000 has an extremely high proportion of research students which currently number just on 3000.

We join the University on a sunny morning early in Semester 1 shortly after the first HDR induction when an invited guest speaker, Professor Mandy Thomas (Pro Vice-Chancellor [Research and Graduate Studies at the ANU] is about to begin an address to the assembled university community on the topic 'Emerging issues in research integrity for HDR students', an address that will be followed immediately by a special meeting of the University's own version of the Star Chamber, the Arkaroola Court of Enquiry on Contentious Issues in Research Integrity (ACECIRI). As the event's chair approaches the podium, the assembled crowd rustles itself into quietness and Professor Thomas is introduced.

Overture: Professor Mandy Thomas's address

Good morning. In my introductory comments, I'm going to raise a range of issues related to research integrity and doctoral students. First of all is the wider context. We know that this government is very focused on standards and on the quality of education and research and that it places a great emphasis on lifting the quality of performance in these areas. There is also a general sense that academic culture is becoming more competitive. While academia has always had elements of competition, recently there are signs that it appears to have intensified. That's not only because of ERA (Excellence in Research for Australia)—there are a whole lot of different ways in which people feel the competition is much greater. At the same time, partnerships and alliances between universities across the sector is something that the Government is fostering. Another development of importance is that there is now going to be a national body to deal with research integrity issues. This was announced this week. There will be an independent body to handle serious cases of research misconduct (the Australian Research Integrity Committee announced in April 2010), which has been established by Minister Kim Carr and which will be jointly administered by the ARC and the NH&MRC.

This development is a really big step. We haven't seen such a body in Australia before. Rather, we've left the investigation of misconduct up to institutions. There is a difference between the Australian and the US systems. In the latter you have an Office of Research Integrity associated with the National Institute of Health, but also Offices of Research Integrity related to most of the other national funding bodies including those for the humanities and social sciences.

Each agency has its own committee and these report every year on the allegations of serious research misconduct they have investigated.

In contrast, it's very hard to know in Australia what is happening inside institutions. You only hear about the number of cases, the number of investigations or the number of allegations that they've had in informal discussions with people. It is only when it reaches very serious cases of research misconduct such as the Hall affair at the University of New South Wales a number of years ago that things become public.

As far as we know, we're not talking about a large number of cases but the problem is that we only hear about them once they reach a very serious state. We never really know in Australia what's happening and there is no monitoring of trends in research misconduct issues. Unfortunately the proposed body, ARIC, is only focused on investigating cases of research misconduct and it is not concerned with education about misconduct in research. My own feeling about this is that, if you have a national body related to research integrity, it is very important that you focus on increasing standards in universities and in developing knowledge and understanding about research integrity issues and ethical behavior as well as investigating instances of serious misconduct.

So how does this link in with doctoral training? Well, we know the quality of doctoral training is coming under the spotlight, particularly with the possibility of ERA being used to identify where research training can take place. Irrespective of that possible development, the future is highly likely to see the development of more quality measures associated with doctoral training. Quality research is more and more being linked with responsible research practice and I think we'd all probably agree, you can't have quality research without it being undertaken with the highest integrity. There is a generational shift that is occurring. Senior academics have often not been trained in research integrity and ethics. It is not that they necessarily behave without integrity or in unethical ways, but they have usually not had formal training and they don't usually give formal training to their students. Frequently the embodiment of research integrity in a positive research culture is something that occurs by accident. In addition, there is more mobility of PhD students through, for example, increasing numbers of joint international PhDs and through other forms of global research collaborations. This adds complexity to dealing with issues of research misconduct. If you have a joint PhD program with a university in China, for example, which university is going to take charge if there is plagiarism in a thesis? These sorts of issues are really hard to work on because each country has completely different codes. There is no international code, although the OECD Global Science Forum is beginning work on an international framework for research integrity because it recognises that with research becoming more and more globalised it is very difficult to align different national and institutional policies when you are faced with a case of misconduct that crosses national boundaries and this is something that will happen more and more with time.

I would like, however, to reiterate the point I've made earlier; that education about research integrity is more important than dealing with breaches of the code. This is not to say that breaches of the code aren't important but, if you set the standards right in terms of education, you have fewer breaches to deal with which is an important aim.

I'd like to take a step out of the codes and the policies for a moment and look at what I consider to be the moral dimensions of a doctorate. The Carnegie Foundation President said last year that the doctorate is a degree that exists at the junction of the intellectual and the moral. Why is that? I think it is because there is something very different about doctoral education which means that we

really must emphasise research integrity, probably in a way more than at any other level of higher education. I think the formation of scholars (which is what we are achieving in research education) has this character because they, the next generation of scholars, hold the future of knowledge production in their hands and thus carry responsibility for the future solutions to many of the world's problems. In a sense we can see them as an endowment for our future and if we don't emphasise responsible research practice as a very important element of research training, then I think we're losing touch with that future and the ways in which we want problems in the world to be solved,

So what are the dimensions that underpin ethics, morality and integrity for doctoral students?

Firstly there are the codes of research practice. In Australia we have the Australian Code for the Responsible Conduct of Research which is linked in, of course, with national statements on human and animal ethics. All of these are very closely linked. The Australian Code for the Responsible Conduct of Research says that you must treat both human and animal participants and also the environment with respect and the Code also says that if you don't have the necessary ethical approval then that is breaching that Code.

However, probably the most important base for responsible research is a positive research culture; a sense of good citizenship. That is something that we all would want to encourage, but it is very hard to put your finger on what it means and I'll return to that in a moment. First, I'd like to point out that there is no actual national policy on research culture. It does say in the Code that institutions should support positive research cultures but it stops short of actually stating exactly what that would constitute. It talks a little bit about openness. Certainly, we know from the US, from studies of research integrity and breaches of policies, that when there is a negative highly competitive research culture, there is more likelihood that there will be breaches of the code.

In the US, when people are behaving in ways that border on research misconduct it is called 'questionable research practice' and some of the studies that have been done on this indicate that these questionable practices stem from highly competitive behaviour in research groups and are related, in some cases, to a sense of distrust between colleagues, to bullying, and to the exploitation of junior staff and doctoral students by senior researchers. Often those groups will ignore conflicts of interest such as informing people that an application for a PhD scholarship is from their cousin or whatever. This can be related to a more general sense of injustice regarding funding decisions. Such as, 'oh the ARC doesn't fund fairly or the NH&MRC outcomes are biased to a particular group of institutions or researchers, it's just who you know'. That is a very common statement in these sorts of cultures. Likewise, there will be a similar feeling about appointments. So a sense can develop among people in those groups that they need to take matters into their own hands. That is why you can get, as was the case in some of the very well known cases in the US, a link between those sorts of beliefs, behaviours and the longer term fabrication of data. Bell Labs is an example where that happened with a whole group over a period of about a decade.

So we really do need to nurture a more positive, open and generous research culture and that is something we should do at the PhD level. If groups such as those described above have PhD students there is likely to be a cloning experience given that doctoral students frequently model themselves on their senior colleagues and their behaviours and, if the behaviours are bad, then that's something we have to guard against. We have to look at these cultural

groupings within our universities in order for us to avert the potential for research misconduct.

So what are some of the common issues for doctoral students? Firstly, there is highly competitive behaviour and this is one of the things that we can deal with. Competition can be a very positive thing. We all like competition and it is part of the academic world to be competitive. But there are times where it crosses the boundary and we have to diagnose that problem early particularly where doctoral candidates are concerned. We need to educate all doctoral students, their supervisors and research group members about the importance of developing a positive research culture. If we notice that a group has a negative character in this respect, we should be mentoring our doctoral students from outside that group.

In research integrity issues, there are occasional plagiarism and authorship issues but this doesn't appear to be a growing problem. While we only know this anecdotally in Australia, in the US we have the figures and the issue seemed to grow hugely in the 1990s and then plateau. Why is that? It is probably a result of education. Until the last decade or so, undergraduate students didn't have education about plagiarism whereas now undergraduates are being trained on those issues. It is not that plagiarism doesn't occur, rather that it doesn't appear to be growing. In contrast, the fabrication of data does appear to be a growing problem.

One of the reasons suggested as to why data fabrication is growing is the increasing capacity to manipulate visual images. About five years ago, for example, The *British Medical Journal* noted that 60 percent of the images in submitted papers had undergone some digital manipulation. The journal was not saying that these constituted fabricated data, but now they insist on reviewing those images in their original form. So here we have an example of a way in which developing technology makes it easier for data fabrication to take place and hence contributes to its apparent growth.

CV exaggeration is something that we quite commonly see. This does not necessarily involve the fabrication of elements in people's records but can involve something as simple as being inaccurate about the stage a publication is at (whether it has been accepted for publication or just sent off or in press or in process). We know that that this is a common practice and that it is also something we can and should educate PhD students on very strongly. It is interesting that in the US, where they studied serious cases of CV deception, they found that women were more likely to do it than men. Men were more likely to plagiarise and to fabricate data, but women were more likely to exaggerate their CVs because they often didn't have the same records because of the disadvantages academic women face. It is an interesting finding.

To take another issue, data storage is not well understood by students. A lot of students aren't aware they have to maintain data for at least five years and very much longer if it is clinical data. I think the way of dealing with this is mandatory research integrity training for all doctoral candidates. I feel very strongly that we have not just to provide training in the first year of training of a PhD but develop student's understanding all the way through a program of doctoral education.

I'd like to move to some issues related to ethics and PhD students. I am the chair of the Human Research Ethics Committee at ANU as well as managing PhD training so I am fortunate to be able to see the way that those things are interlinked. There is a confusion about when there is a need to apply for ethical clearance for human research, particularly in areas like the creative arts. I notice that there is a paper later on today about creative arts ethics practices. It is

related to the definition of research and also to the definition of 'publication' and whether an exhibition is a form of publication if you've engaged a human participant. Does the participant need to have signed a statement indicating informed consent has been given to be involved? This raises interesting and challenging questions and is something we need to work on.

There can also be a failure to understand the importance of submitting a high quality protocol. One of the things that I've found is that when students produce a very high quality ethics protocol and submit that, that it involves looking at the methodology, the aims of the research, the dissemination of the research, the involvement of participants, informed consent. Considering all of these things before commencing a project can assist students enormously in carrying out their research. We know that a lot of people, particularly more senior academics in the social sciences and humanities, feel very negatively about the ethics process. They feel that a medical model is being imposed on them. I disagree. My experience is that when students do their ethics 'well', and they're trained well to do it, it sets them up extremely well for producing high quality research, in writing research proposals and in their later research career. I think that a high quality proposal is something we can and should train people to produce.

At our university, every week we provide a one hour ethics training session on how to fill out the form for ethics and how to make an online submission. It is more than an administrative training, however. It is a way of explaining to people the importance of ethics and highlighting the key issues in ethical research.

Another issue is protecting students in dangerous environments. Increasingly students are investigating topics that could be dangerous to them, such as terrorism, criminal behaviour or homelessness in environments that are putting students at risk when they're undertaking research. Often in an ethics application we notice that a student's supervisor hasn't really provided adequate guidance on issues such as how the researcher will protect themselves from potential harm when they go into countries where there are travel advisories. They are often going into very dangerous areas in the world and within Australia. So that is something that we need to be increasingly concerned about and ensure that our students are protected.

The commencement of research without final approval and delay in submitting progress reports are common issues. Most often, these seem to be due to a supervisor's negative attitude about ethics. They are often people who didn't have to fill in ethics applications when they began their career and they feel very negatively about it and will say to a student, oh it's just one of those things you have to do and you don't really have to follow it once you submit it. So the student submits the application and then goes off on field work before receiving a response or approval. This is an issue because we know that almost all of the proposals that come in for ethics approval have to be revised. We are mostly not recommending large revisions but mostly just small revisions or details that have to be included and sometimes we send those back to the student and we never hear from them. They're in Afghanistan! This is a real problem.

The delay in submitting progress reports is also a problem. Again, supervisors seem to be the issue. So as well as education, I think auditing of research projects across an institution is something important to do. This means going annually into each college, faculty or other academic unit and looking at all their ARC and NH&MRC grants and all other named research proposals in their systems and asking to be shown the ethics approval when the research has involved humans or animals. When we have done that we have found it is usually just the senior academics, people who are very experienced, and, no

doubt, behave ethically in their research, who have never submitted requests for ethics approval. We've discovered some people have never submitted an ethics protocol in their entire career and they're working in dangerous environments. When challenged, a frequent response will be something along the lines of, 'Oh I thought that you couldn't get oral consent from the HREC'. There's a very common view that you have to get written consent if you submit an ethics protocol. We know that there is no ethics committee in Australia that would not accept oral consent in some situations, where appropriate.

So, ways forward. You need very clear internal policies, relying not only on the national guidelines but developing other, locally relevant policies as appropriate. An example would be in the area of ethics in art practice and research. We know that the Australia Council has such a policy but it doesn't apply perfectly to the university context. That is something where we could either develop a national policy for how universities approach the question of ethics in art practice or each university could develop local approaches to the issue. That would be something that would give confidence to the arts practitioners in our universities that they actually are free to do a lot of very interesting research that they might think would not be accepted by an ethics committee. If given a clear framework, people know where the boundaries are.

So, research ethics, responsible research and PhD students. The responsible conduct of research is simply good citizenship applied to academic life. I can't stress strongly enough that this is actually simply about treating your colleagues well, understanding and acknowledging the role of others in research, respecting people that you work with, and maintaining the integrity of what you do. These sorts of issues are basic good citizenship and that is something about which I think we should be informing higher degree by research students continually. Research integrity is simply good human practice applied to the academic setting. That's it, thank you.

The University of Arkaroola Court of Enquiry in contentious issues in research integrity: A play in one Act and six Scenes

Dramatis Personae		
Role	**Played by at QPR 2010**	**Affiliation**
General Counsel for the University	Ms Celine McInerney	General Counsel, University of Adelaide
A senior research student and president of the postgraduate association	Ms Tammi Jonas	President, CAPA (Council of Australian Postgraduate Associations
An early career researcher and expert on authorship	Dr Suzanne Morris	Education Officer, Sugarcane Biotechnology CRC, University of Queensland
Senior lecturer and student advisor	Dr Michelle Picard	Director, Researcher Education, University of Adelaide
Associate Head of the School of Business Research	Associate Professor Howard Harris	Associate Head of School: Research, Division of Business, UniSA

Theologian and member of the University Ethics Committee	Professor Andrew Doutney	Associate Professor in Theology, Flinders University and President-Elect of the Uniting Church in Australia
Dean of Graduate Studies	Professor Barbara Evans	Dean of Graduate Studies, University of British Columbia, Canada
PVC Research	Professor Dick Strugnell	Pro Vice-Chancellor (Graduate Research), University of Melbourne

As always, the Vice-Chancellor is here in sprit, if not in person.

Prologue

Following Professor Thomas's address, she is joined on stage by the host, narrator and interlocutor for the second half of the morning, Ms Celine McInerney, General Counsel and Chief Prudential Officer for the University together with a number of other players. Again, the assembly quietens in anticipation of the wisdom with which it anticipates the Court will address the issues placed before it. Ms McInerney begins to speak.

'Good morning ladies and gentlemen and welcome to the University of Arkaroola. With us this morning are a number of members of the University's staff. Together they will constitute the Arkaroola Court of Enquiry on Contentious Issues in Research Integrity.'

SCENE 1 – Authorship or the case of the premature publication

HDR inductions often stimulate and empower students to be more open about problems and this year is no exception.

'Suzanne Morris, for you the year starts with a problem raised by a student about behaviours she deems to be unfair, and like many research students, she has sought you out as a person she feels she can trust. Her complaint is about Dr Smith.'

Dr Smith is supervisor to a number of doctoral students, one of whom (Alfred Jones) is following a doctoral program which includes a compulsory course assessed by a report based on a mini-research project involving empirical research. Alfred's report contains data, which Dr Smith thinks would interest the readers of the *International Journal of Advanced Spoon Bending*, but is not very well written. Alfred has had to suspend his studies for work reasons and is not available for three months. Dr Smith decides to re-write Alfred's report (it requires substantial re-writing and the addition of a much revised theoretical basis) and submits it to the journal, which accepts it forthwith. It is published under the authorship of 'Smith, S., Jones, A., Zainal, T and Poon, H. (Zainal and Poon being Alfred's additional supervisors).

Dr Morris, as an expert on this issue, how would you respond to this enquiry?

(Following response) 'Whilst you are confident you have given the correct answer you feel this issue is one you should share with a senior colleague and in the course of the next week discuss the issue with your Dean of Graduate Studies.'

'Barbara Evans, as Dean of Graduate Studies, you have a wealth of experience in these murky matters. How would you advise your junior colleague in this matter?'

SCENE 2 – The Examiner or The case of the silent banns

'Meanwhile, as the semester wears on, life around the Student Union office is becoming busy. Late one Friday afternoon, Tammi Jones has an unexpected visit from a senior student and colleague of Maxine, one of the research students in the department of History.'

Maxine submitted her PhD thesis in History, the Examinations Panel deciding on the basis of the examiners' reports that she had failed, but that she could revise the thesis and resubmit it for a Masters Degree by Research. One examiner (Dr Henry Bennett) in particular was highly critical of Maxine's analysis and her critique of the work of one particular group of scholars, including that of Dr Mary Gordon. The other examiner had been slightly less critical, but had said that the thesis required major revisions before being allowed to resubmit for re-examination for PhD.

Maxine was very disappointed, but accepted the decision and had begun her revisions when, one night in the pub, a fellow student told her that she had heard at a conference that Drs Gordon and Bennett are in fact husband and wife but that, for the purposes of publication continuity, Dr Gordon had retained her maiden name.

'Tammi, from your perspective and role in the Union, does Maxine have grounds for complaint, If so, with whom?'

(Following response) 'A trifle confused about the academic dilemma and how to best advance the case raised by Maxine you, Tammi, seek some help from a Student Adviser.'

'Michelle Picard, in your role as a Student Adviser, what counsel would you give Tammi and how would you help her address the issue at a senior level, and how would you recommend the University address this matter?'

SCENE 3 – The Bully or The case of the culture in the laboratory

As autumn begins to settle over the campus, a global email from the Vice-Chancellor announces to the staff that an ERA research evaluation will be undertaken in 2013 and that the cut-off date for publications will be December of the current year. This produces a dramatic surge of activity amongst at least some of the academic staff. Amongst them are some that have little hesitation in passing the pressure down to the already burdened shoulders of those beneath them.

'Howard Harris, as an Associate Head of School, you are well known for giving student complaints a fair and reasonable hearing to the extent that some students seek you out even if they are not in your school. Jane is one such student and her appointment is going to be a challenging one.'

Jane is registered for a research degree in Professor Mill's laboratory. Prof. Mill is one of her supervisors and Dr Boon the other. When Jane was interviewed for the position, Dr Boon advised her that the project had a firm time-line and that he hoped she was not planning to have children during the next three years. This played on Jane's mind throughout her candidature.

Jane didn't have children during the three-year period, but towards the end of her candidature, while she was writing up against the deadline imposed by the end of her bursary payments, Prof Mill informed her that she was required to assist run some experiments that 'would boost the lab for the forthcoming ERA initiative'. Jane was told this was not a request but an order.

Finally, Jane was told in a meeting with both supervisors that ERA and the University's researcher-recognition system meant that a number of staff within the lab who had not contributed directly to her research would have to be added as authors to publications emanating from her research. When she objected, Jane was gently reminded that she would require references at some point in the future.

'Howard, what is Jane's position and what can the University reasonably do now that it has been made aware of Jane's experience?'

SCENE 4 – The strange case of the author that never was

'As has been the case with previous attempts to assess the quality of research, the ERA exercises unearth all sorts of interesting behaviours, and Jane was not alone in feeling uncomfortable. With the onset of the winter trimester, the PVC (Research) is about to be embroiled in the strange case of the author who never was.'

A news report in the higher education press says that Professor James, one of the University's biggest guns for the forthcoming ERA exercise, has had a number of his most-cited articles 'ghost-written' by an un-named person employed directly by the pharmaceuticals company that has provided the large majority of Professor James' grants over the last decade. The 'ghost-writer' is not employed by the University and is not named as an author, and the press report says that her/his role was to produce a 'near-complete draft' for the research team to finalise. The new report quotes Professor James as saying that he couldn't see what the problem was as he had 'looked over' all the articles before they were published. He further opined that, at a time when 'publish or be damned' seems to be the order of the day, both his University and the Government should be 'pretty damned pleased with the help the company was providing'.

'Dick Strugnell, what are the potential implications for Professor James' University and if, as seems very likely, the Vice-Chancellor asks you for your opinion about the issues raised for the University by the report, what will you tell him?'

SCENE 5 – A second life for Arkaroola or The case of the respondents who never were

'Life at Arkaroola isn't entirely confined to the real world and the impact of modern information technology is never far below the surface. Andrew Doutney, as chair of the University Ethics Committee, the impact of IT on students and on students' lives is something you reflect upon frequently...not always without some qualms.'

Seth is a mature research student who wishes to examine the subjective experiences of sex-workers and to undertake a comparative study of males and females involved in this type of work using an auto-ethnographic approach. He proposes to develop two avatars/persona within Second Life (a global virtual community), one male and one female, each of whom will take on the role of 'escort' within the community. Seth will operate anonymously (as do all participants in Second Life) over a period of 18 months and document his/her experiences there fully. He anticipates his study generating a significant amount of interest when he eventually completes and publishes his results.

'Andrew, in your mind, what issues do Seth's plans raise for himself and for the University community as a whole?'

'Tammi you have heard the view of our ethicist. How do you see Seth's problem through the eyes of the current student generation?'

SCENE 6 – Are we beating ourselves up too much?

'As spring touches the campus, life is like that in the grounds and gardens that surround it—renewed even if only by the fact that the end of the academic year is approaching. One of the few people for whom problems never go away is you, Barbara Evans, in your capacity as Dean of Graduate Studies. The never ending flow of new students brings an equally endless round of concerns of which Zhi Li's is no exception.'

Zhi Li's PhD intends to examine the short-term effects of hypnotism on young males subjected to stress whilst under hypnosis. His proposed methodology involves having individuals play an arcade-type video game in which their task is to shoot and kill zombies, which are attacking them. Whilst they are playing, the subjects are to be hypnotised and physically moved on a gurney to a nearby life-size mock-up set of the 'inside' of the video game. Once on the set, they will be stood up, given a gun, and woken to find themselves 'in the game' with zombies moving towards them. Unlike in the video game, however, the zombies (played by actors) will not 'die' and fall over, but will keep walking toward the shooter. Just before the point at which the zombies reach the shooter, sleep will be re-induced and they will be de-briefed whilst still in their hypnotic trance and then de-hypnotised. All the above will be done by a professional hypnotist known by the student. The student will then apply standard psychological tests to gather relevant data. The University Human Research Ethics Committee has rejected the proposal.

'Barbara, how do you persuade Zhi Li that the refusal is justified when he tells you that last year he saw exactly the method he intends using used by a famous television hypnotist on a national network purely for entertainment, whereas he wants to use it to pursue serious academic research?'

(Following response) 'Are there any general issues arising from this case?'

EPILOGUE

'And so, with the coming of Christmas, the campus breaks for the year and at least for some a well earned rest. The students have largely left, Barbara has gone to Canada, Richard has embarked on a cruise and Andrew is looking forward to the celebration of Christmas and its message of hope. Howard is looking forward to a family holiday and Michelle has moved to a vineyard in McClaren Vale. Tammi has finished her PhD and she alone will not have to face another academic year of ethical problems. But for the others the New Year will bring business as usual!'

***Exeunt all* and *finis*.**

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Research quality assessment in New Zealand

Harlene Hayne
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New Zealand

Thank you very much for that lovely introduction. Thank you also for inviting me here to give this presentation. It was really a pleasure to arrive yesterday in the beautiful sunshine and have the opportunity to take that walk down to the end of the pier. It is a beautiful location and given the beauty of the location, I'm really surprised to see so many people here inside today to listen to me talk about research quality assessment in New Zealand but I'm glad to see you all here.

In my view, the New Zealand experience has a lot to teach Australia about the trials and tribulations of funding universities on the basis of research quality. For those of you who are here from New Zealand, I suspect that many of you don't know all of the ins and outs of the way in which the funding operates. Hopefully, I'll be able to clear some of that up for you today. For those of you who are here from Australia, hopefully you will be able to identify levers in your own research assessment exercise that you can use to enhance resources for your postgraduate students.

Despite the fact that my title on the slide says that I'm the Deputy Vice Chancellor of Research and Enterprise which I currently am, I also still hold a personal chair in the Psychology Department and I still actively supervise postgraduate students. I currently supervise 11 Masters and PhD students; the supervision of postgraduate students is something that is very, very near and dear to my heart. Today I will highlight for you the way in which the Performance Based Research Fund in New Zealand has enhanced opportunities for postgraduate students in New Zealand.

Here is a brief outline of what I would talk to you about today. The Performance Based Research Fund or PBRF is the name of the research assessment exercise that has been conducted in New Zealand. It is without a doubt the largest change to confront the tertiary sector in at least three decades if not longer; when it was brought in, it was probably also one of the most controversial as well.

To put the fund in context, I will tell you a little bit about the history of why New Zealand moved to this particular funding model, tell you a little bit about the purpose of the fund, and then I'm going to describe, in what will probably feel like excruciating detail, the evaluation process. What I want to highlight is that in understanding the evaluation process, you will be able to identify the drivers for researchers and for universities that will help you to see opportunities for your own activity. I will also provide some examples of how this has happened in New Zealand. I will also tell you a little bit about the funding model and how it actually works and then I will tell you a little bit about how we think the Performance Based Research Fund has impacted a number of behaviours within New Zealand Universities.

So let's start with the history of the process. The first research assessment exercise took place in New Zealand in 2003. The first question is why was it established in the first place? During the late 1990's, a number of factors concerned the Government about the funding of universities. For example, there had been huge increase in Government spending on tertiary education. The same thing has probably also occurred in Australia where access to universities and expectations about coming to university have increased over the past two decades; in New Zealand, we saw more and more students entering the tertiary

sector and we saw the tertiary sector responding by increasing the number of non-university degree providers.

Not only was there growth within the traditional universities but there was also a growth in the number of private providers who were offering degrees. There was also a huge increase in polytechnic courses that were also designed to provide degrees. This created a tension in New Zealand because the increased growth in the non-university degree provision was inconsistent with the Education Act (1989). This Act stipulates that degrees are to be taught primarily by people engaged in research.

As a result of all this growth, the Government was left with a problem--an increase in the number of degree providers without a mechanism of determining whether or not the people who were providing those degrees actually met the criterion that were outlined in the Education Act. Therefore, what they needed was some way of differentiating, and differentially funding, education providers. Prior to the PBRF assessment exercise, the Government did not have any objective way of determining which tertiary providers were engaged in research and which ones were not. It was against this historical backdrop that the PBRF was born in the early 2000's.

Against this historical backdrop, the Government established the PBRF as a way of meeting a number of high level goals. The PBRF was designed to fund tertiary institutions on the basis of research performance. The PBRF was designed to shift funding to research intensive institutions and away from those institutions that were not heavily engaged in research.

The other high level goal of the PBRF was that the Government also wanted to improve the *quality* of research that was conducted in New Zealand. This point is really important because often we get muddled up with the idea that PBRF promotes more and more and more research. In actual fact, what PBRF does is to promote research of a higher quality. The PBRF put a halt to the view that it was important to produce more and more and more, and focus instead on the quality of the research publications that were produced. As we will see later, there is some evidence to suggest that it has achieved this goal.

The PBRF was also designed to improve the quality of information that is available to students and policymakers. I grew up and was educated in the United States. In the US we have a very clear system of differentiating universities. There are the Ivy League universities and then even outside those universities, we also publish volumes on ratings of particular kinds of institutions. In New Zealand, however, we had been very reluctant to engage in any kind of assessment or league tabling of our universities. Given this, students had very little information available to them about the strengths and weaknesses of a particular university or other tertiary provider. Therefore, the Government wanted to provide an objective way of determining which tertiary institutions in New Zealand were research intensive and then provide that information to prospective students; this information would then allow students to make the choice that was best for them.

In addition, the Government also want to gain information that could be used to identify the research strengths of a given university. One of the primary goals a tertiary institution like a university is to provide high level advice to policymakers in government about things that interest them. So, for example, if the Government of New Zealand is interested in climate change, policymakers should be encouraged to seek expertise and advice from universities where there are people who have dedicated their very long careers to understanding the factors that might be involved in climate change. Similarly, my area of expertise

is child development; recently I've become interested in adolescence. I was constantly frustrated by the development of policies in New Zealand that were completely antithetical to any of the data that we had about development.

Recently, there has been a push in New Zealand to go to the universities and seek expert advice about things that concern Government. Now the problem here is that Government did not have a good way of deciding who to listen to and who not to listen to. So anyone who bowled in off the street who was from University X or Polytech Y or Tertiary Training Institute Z was considered to have the same level of expertise as an individual who might, in fact, be an internationally-recognised expert in a particular area. From this perspective, the PBRF provided a way for the Government to identify pockets of expertise within its tertiary institutions that were benchmarked against international standards. Once they had identified those pockets, it was then possible for them to selectively go to those particular experts to seek advice.

Of course the fourth purpose of the PBRF was to ensure that degree level teaching, and particularly postgraduate teaching, was undertaken in institutions with a strong research culture and significant research capability.

With these factors in mind, New Zealand went through its first research assessment exercise in 2003, we underwent a second research assessment exercise in 2006, and we are currently preparing for our third research assessment exercise which will take place in 2012. As the Deputy Vice Chancellor, I spend a huge amount of my time in preparation for this exercise and what I find interesting is that even though I have been evaluated as a researcher in prior rounds, it was only when I became the Deputy Vice Chancellor that I truly understood the mechanisms involved in this funding process. It has actually been an eye opening experience. In many ways, it has calmed some of the fears that I felt as a researcher and hopefully I'll be able to calm some of the fears that you have as you face the assessment exercise in Australia.

So, how did the assessment exercise work in New Zealand? I am going to go through this in a little bit of detail because, as a psychologist, one of the things that I know is that the important drivers of behaviour are the reinforcers that people are going to get for behaving in a particular way. So once you understand how the Government sets up the funding device, you can then figure out how you can get in there and influence the kind of behaviours that you want and to get more money or other kinds of resources for postgraduate education.

Every PBRF-eligible staff member in New Zealand is evaluated on a person-by-person basis using the following criterion. In the last assessment of PBRF eligibility, there were 8,671 PBRF eligible staff members in New Zealand and they comprise the following job categories: professor, associate professor, senior lecturer, lecturer, senior teaching fellow, research associates and postdoctoral fellows. So anyone who holds one of those job titles is assessed. Each of these researchers is evaluated and each researcher receives a quality score. That quality score is made up of three components. The first component is research outputs; each researcher nominates four NROs (nominated research outputs) for assessment by the committee. In addition, each researcher is assessed in two other categories: Contribution to Research Environment (CRE) and Peer Esteem (PE). The CRE category should be particularly interesting to the people in this room because one of the ways you can gain points for CRE is to supervise postgraduate students. In addition to student supervision, you can also serve on grant assessment panels, you can review for journals, etc.—but a key component to CRE is supervision of postgraduate research students.

The third component of the research quality score is Peer Esteem (PE). PE includes things like receiving prizes or awards of some kind, or getting invited to give keynote addresses. These are just two examples on a long list of items that contribute to PE.

Each PBRF-eligible staff member prepares an individual research portfolio that includes all of this information. Those portfolios are then assessed by 12 discipline-specific panels. These panels are made up of people who have expertise in these 12 basic disciplines. Each panel evaluates the information and then provides a score to each portfolio. Those scores are then translated into grades using the grid shown in this slide.

These individual scores are then converted into money. In 2010, $250 million of the Government's funding for tertiary education was distribution using the PBRF funding mechanism: 60% of the $250 million was distributed on the basis of the research quality evaluation of staff, 25% was distributed in terms of thesis completions and 15% was allocated on the basis of external research income.

The researcher quality scores were also weighted by discipline. This table shows PBRF rankings and the multipliers that are used to calculated dollars on the basis of the particular discipline. The funding multipliers were established on the basis of the amount of money that it costs to do research in a particular area.

In addition to adjustments on the basis of a researcher's discipline, the amount of money that the universities receive on the basis thesis completions also varies as a function of the area in which the thesis was conducted--so less money is provided for thesis completion in humanities and commerce and more money is provided in medical sciences and engineering. New Zealand also included an ethnicity component in the funding model. One of the goals of the New Zealand Government--and part of the strategic plan of all the universities in New Zealand-- is to increase participation at the tertiary level of Maori and Pacific Island students.

So that is the nitty gritty about how PBRF works. Obviously, one thing that is really important when evaluating something like the PBRF system is to examine the impact of the funding model on the behaviour of universities and their staff. I want to talk about three different areas of impact: research quality, commercialisation, and postgraduate students.

So what have we seen in New Zealand since the introduction of PBRF in terms of our research quality? Well I think one of the most important things that we have seen is that New Zealand universities have actually improved their ranking relative to their UK counterparts since the introduction of PBRF.

Although this next slide is very difficult to read, the only thing that you need to know is that at the very far right sit of the graph are the highest ranked universities in the world like Oxford and Cambridge. The coloured arrows represent the New Zealand universities. The blue arrows represent individual New Zealand university scores on the basis of the 2003 PBRF round and the red arrows represent the scores of those same institutions three years later. Hopefully, what you can see from looking at this slide is that the New Zealand institutions are actually moving up relative to their UK counterparts in terms of the quality of their research.

By way of specific example, in 2003, 40 percent of the PBRF eligible staff in New Zealand were rated as research inactive (R). This figure was obviously concerning given that the Education Act says that the people who provide degrees must be engaged in research. Since 2003, however, the number of

research inactive staff has dropped to 32 percent. The New Zealand Government is obviously very hopeful that that number will continue to plummet in the 2012 round in order to meet the requirements of the Education Act.

One obvious measure of research quality is international benchmarking like the benchmarking that is shown in this slide. But other indicators also suggest that research output has changed in New Zealand since the PBRF was introduced. For example, one way in which researchers evaluate the quality of a particular piece of work is to look at how many times that piece of work gets cited in the international literature. Across New Zealand, we have seen an increase in our share of international citations since the introduction of the PBRF. Finally, despite the fact that PBRF is based on the quality of outputs, it turns out that the total number of research outputs has also increased since 2003.

But what about the potential downside of a research assessment exercise like the PBRF? One of the big concerns when PBRF first came into play—and I suspect this is something that is weighing on the minds of the Australian universities—is that if the universities are now in direct competition with each other, there might be a decrease in the collegiality or the willingness of people to collaborate across institutions. So, for example, if the researchers at Otago are actively in competition with researchers at the University of Auckland, some people argued that it might decrease the amount of active collaboration between researchers at the University of Otago and the University of Auckland.

It turns out that exactly the opposite thing has happened. We've actually seen an increase in the percentage of papers jointly authored by researchers in institutions within New Zealand. I think this signals another one of the good things about PBRF--most researchers treat it with a healthy dose of scepticism. Researchers are continuing to do exactly what they would do if there were no PBRF except for hopefully they're doing a little bit more of it and what they're doing is of higher quality.

What about commercialisation? Many researchers, and more recently members of the business community, have been concerned that PBRF might have a negative impact on commercial activity. Remember that 60 percent of the PBRF money is distributed on the basis of researcher quality scores. In order to obtain a high quality score, researchers must publish their work in internationally peer reviewed publications.

Now if you're engaged in commercial activity, the kinds of journals that you publish in may not be the top journals in your particular field. Furthermore, you might also be prohibited from publishing your research because in order to get your patent or protect your intellectual property you must keep the work secret. From this perspective, there is a perceived tension between commercial activity and publication. Given this, many people were afraid that PBRF would inhibit commercialisation.

It turns out, that at least at the University of Otago, 75 percent of our commercially active researchers are A- and B-rated researchers on the PBRF scale. That is, our high calibre scientists are also many of the ones who are also engaged in commercial activity. It also turns out that the experience at Otago is not unique. If we look at the data across New Zealand, we see that since the introduction of PBRF, there has been an increase in a number of factors that are associated with a healthy commercialisation environment. There has been an increase in the number of patents that have been applied for, an increase in the number of start-ups that have been spun out of university commercialisation, and an increase in the number of active licences that have been initiated for particular kinds of commercial technology.

Okay, so finally what about postgraduate students? Obviously this is the issue that concerns most of you. What has the impact of the PBRF been on the life of postgraduate students in New Zealand? Clearly, the PBRF has focussed our attention on the important role that postgraduate students play in research and this focus has lead to changes in both policy and practice. For example, one of the best things that the New Zealand Government has done since the development of the PBRF system has been to charge domestic fees for international students who are studying for a PhD. This policy has breathed new life into the postgraduate community in New Zealand.

At the University of Otago, 30 percent of our PhD students were born outside of New Zealand; these internationals students come from many other parts of the world. One sign of a high calibre research institution is a large proportion of international PhD students. The change in the fees policy for international students has helped us to recruit high quality PhD students from the around the globe. At Otago, we have also increased our funding for PhD scholarships and we have established a publishing bursary scheme for both Masters and PhD students that provides students with an additional stipend during the marking of their thesis. To receive this stipend, students must devote their time to preparing their thesis material for publication. Last year, the University of Otago spent over half a million dollars on the publishing bursary scheme.

The other thing that has happened in at the University of Otago is an increased emphasis on the development of high quality procedures and practices to support postgraduate research students. All in all, this has been a really positive experience for students and the net result is that the PBRF drivers are working. Across New Zealand, we have had an increase in research degree completions between when PBRF started and now. For example, doctoral completions have increased by 30 percent relative to 16 percent and 22 percent in the UK and in Australia, respectively, over the same period.

In addition to the potential benefits of the PBRF system, a number of concerns have also been raised. One of those concerns involved teaching. With all of this emphasis on the quality of research, a large number of people were concerned that teaching might get neglected. When PBRF started in 2003, there was some evidence to suggest that the introduction of the RAE in the UK had had a negative impact on the quality of teaching, but there is a critical difference between the RAE as it is used in the UK and the PBRF as it is used in New Zealand. In the RAE, institutions nominate X percent of their researchers to opt into the system. So what they have essentially done is create two classes of individuals: the high calibre research individuals who probably are doing no teaching whatsoever and those individuals who get the job of teaching. Under those circumstances I could see how the quality of teaching might suffer—essentially the UK system generated a class of teachers who aren't engaged in research and a class of researchers who aren't interested in teaching. In New Zealand, however, we have circumvented that problem by making everyone eligible for assessment. Everyone who has substantial teaching responsibilities is assessed by the PBRF.

If we actually look at the data on teaching, there hasn't been a negative impact of the PBRF, again at least the University of Otago. The University of Otago continues to win a large share of national teaching awards and we have maintained a very high level of student satisfaction in our graduate opinion surveys.

What about collegiality? How has the introduction of the PBRF influenced staff relations within the institutions? In 2003, the development of individual staff portfolios was a particularly private process. People prepared their own

portfolio, and had little opportunity for feedback prior to submission. In 2006, however, we strongly encouraged researchers to share their portfolios with their head of departments, with their colleagues in their departments, and with colleagues in other departments. We set up panels where people looked at all the portfolios and shared best practice across the University. Lifting the veil of secrecy around the individual portfolios has had a very positive effect on collegiality and it has led to a teamwork approach. Everyone now recognises that PBRF is extremely important to the University and that we are all in this together.

The final threat of PBRF involves the issue of gaming. When it was introduced, there were concerns that there would be horse trading among the Universities. For example, those researchers who achieved high scores would be in a position to negotiate better deals from their own institutions of from competing institutions. Although there has been a little bit of trading of researchers across New Zealand institutions, I don't actually see this as a bad thing. In every other profession in the world, people who rise to the top have a certain amount of commerce or mana associated with their expertise and the PBRF has simply made it more explicit. So again, I think that although probably a little bit of gaming has gone on, it's really made Universities think about ways in which they can create better working environments for the high quality staff so that they can retain them.

On balance, I see the PBRF as a good thing in New Zealand. It has focussed our attention on what makes universities special and important. It has also allowed the Government to identify pockets of research expertise. The current National Government in New Zealand is taking advantage of these pockets of expertise. In the end, this will result in more research-led policies for New Zealand and essentially everyone profits from that.

Thank you very much for your attention.

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The Three Minute Thesis (3MT)

Zlatko Skrbis,
David MacDonald, and
Tony Miscamble
University of Queensland
Australia

Charles Tustin, and
Chris Stoddart
University of Otago
New Zealand

Margaret Kiley
The Australian National University
Australia

Chair's Comment

The aim of this session was to introduce the Three Minute Thesis competition which originated at the University of Queensland and is now spreading across Australia and New Zealand, and hopefully further.

The 3MT at the University of Queensland: Zlatko Skrbis

The history of 3MT

The essence of the 3MT competition is for Research Higher Degree (RHD) candidates to present their thesis topic in three minutes in language that is understandable to educated but non-specialist audiences. 3MT was at least partly a brainchild of former UQ Graduate School Dean, Professor Alan Lawson. The first 3MT competition was held in 2008, repeated in 2009 and will go 'national' in 2010.

Why do we do it at UQ?

Firstly, skills training for RHDs

At the University of Queensland (UQ), 3MT is part of an effort to provide students with an opportunity to develop their oral/presentational skills.

Oral and presentational skills are often marginalised in an RHD culture with more emphasis on writing and a production of a thesis. 3MT is the most visible activity that aims to address this issue. At UQ this occurs within a new system of candidature progression (confirmation, mid-candidature review and thesis review) which includes oral presentation as an integral part of each milestone.

We want to ensure our graduates leave the university with the skills to express themselves confidently both in oral and written domains.

We run 3MT because it:

- Allows candidates to learn how to communicate their ideas effectively to a range of non-specialist audiences and to the wider community
- Helps 'crystalise' thoughts about the thesis
- Is mapped onto PhD/MPhil skills development
- Is a lot of fun and has tempting prizes.

Secondly, building research culture in Schools

It provides opportunities for candidates to come together and talk about their research, and opportunities for Schools to provide training in presentation skills.

Thirdly, building external relations for the university

At UQ our 3MT finalist presents at the industry dinner during the research week.

3MT is not a self-referential exercise: we do not see the 3MT competition as something that is self-contained and bears no relation to any other activity. The competition is an integral part of a much bigger set of activities designed to improve our RHD students' presentational skills.

It is not a circus or a hedonistic orgy where people come together to talk nonsense. **It is not about trivialising research.** Recent outcomes demonstrate that 3MT finalists are not just good with their oratory skills but are excellent researchers in their own right. UQ's 2009 winner, Richard Ronay, is now a postdoctoral fellow at UQ and our runner-up, David Macdonald, now holds an academic position at UQ.

Chair's Comment

David McDonald was the UQ runner up in the 2009 3MTcompetition. He was invited by the organisers to provide some reflections on his experience and to present his '3MT'. If you would like to view his presentation live go to http://www.uq.edu.au/grad-school/three-minute-thesis.

Presentation and Reflection: David McDonald

Introduction

I am very happy to have this opportunity to speak to you today about my three minute thesis experience. My goal is to give you an idea of what it is like to attend a three minute thesis competition and I will do that by presenting my talk. The other thing is to let you know how I've benefited, so in short what did I get out of participating?

It is my hope that by doing that, it will encourage as many of you as possible to get involved this year in the three minute thesis competition. So in brief, the three minute thesis competition is an oral competition where you discuss your thesis to an intelligent but non-specialist audience, just like you and you have three minutes or less to do that.

To give you an idea of the steps required to transition between the thesis and the three minute thesis, my official thesis title is *The Morphology and Behaviour of the Lumbar Paraspinals in People with Chronic Recurrent Low Back Pain*. The title of my three minute thesis that I'll present to you now is *Why Do Some People Keep Hurting Their Back?*

'The 3MT'

Imagine ladies and gentlemen, there you are enjoying your day and all seems right with the world when suddenly, because of a quick and unexpected movement, you experience the gut wrenching sensation of low back pain. Now the good news is that the majority of people who hurt their back will recover fully and have no further problems.

The bad news is five million Australians will not be so lucky. You see, these people get caught on the not so very merry-go-round of hurting their back,

appearing to recover, only to suffer subsequent bouts of low back pain and then around and around they go.

The question my research investigated was why do some people keep hurting their back while others do not? Now this question is important because this problem costs Australia $8 billion every year, not to mention the psychological and emotional costs to the people with recurring pain.

The first thing to consider is that the back muscles are critical for spinal health. Without the support of your back muscles, your spine would collapse under as low as nine kilos of weight. So without getting into the specifics, I'm fairly certain that everyone here today weighs just a bit more than nine kilos. So that means our spine couldn't support our own bodyweight, let alone protect itself from the forces applied to it when we move.

By recording back muscle activity, I investigated the function of the back muscles in a group of people who keep hurting their back but during the period of time when it appeared that they had recovered. My research showed for the first time that the activity of the back muscles does not return to normal despite recovery from pain.

My key findings can be summarised by two words, the two Ds: decreased and delayed. See the activity of the back muscles in this group of people is decreased just when they need it most, during quick and unexpected movements.

Furthermore, the activity of the back muscles is delayed compared to normal.
So folks, what we've got here is a classic case of too little too late that leaves the spine with less back muscle support than is needed to prevent re-injury. These findings offer us a mechanism to finally explain why these people keep hurting their back. These findings are also important because they force us to redefine what it means to be recovered from low back pain.

It is not just a simple matter of being symptom free and able to get on with day to day tasks. These findings will also help shape the development of specific therapeutic exercise programs to restore back muscle function and ultimately break the cycle and help get as many people as possible off of the $8 billion low back pain merry-go-round. Thank you.

Reflections

Thank you again for that, that was very nice. So that hopefully gives you an idea of what it is like to attend one of these competitions. What I'd like to answer now is so what's in it for you? I want to answer that question by highlighting some of the things and some of the benefits that I've received as a result of participation.

I've divided these into two groups in my mind and the first group is things you can put in your hand. So the things you can put in your hand include free food. I think we'd all agree that if you want to motivate a group of research higher degree students to participate in something, the offer of free food is a good idea. The other thing is the prize money. It is extremely nice to get funding for conference travel and that is going to enable me to attend the World Congress of Low Back and Pelvic Pain this year to talk about my research again and that's a fantastic opportunity.

Secondly, what I'd like to draw your attention to are the things that you can't put in your hand. Changes in confidence, offers to speak, future employment, which has already been alluded to, and networking. Now the first thing about confidence is you may think well it is good that it helps you to become more confident in your ability to speak publicly and that's true but that's the small c

confidence. The big C confidence for me was realising that people are actually interested in my work that aren't part of my profession, my discipline, and this was particularly timely for me because I was well and truly in the midst of my PhD psychosis. The intellectual despair had well and truly set in and I was really wondering: 'Why am I doing this, why do I sit here and do this?'

So on the day of the three minute thesis competition, after we had presented, the judges were off tabulating the results and four separate people came up and asked me very genuine questions about back pain and how we were going to make things better and how this research was going to help them.

One guy in particular marched right up to me and he said, that's exactly what happens to me. That's exactly what my back pain is like, I do this thing and it's back. So he was asking all kinds of questions. I hadn't been asked a question like that in my whole research career. It is always statistics or something. It was fantastic and that really helped me to get more enthusiasm for my work and to get back into it. So that to me is the big C confidence; that was fantastic.

The offers to speak came in which was wonderful. I got to speak at division level presentations, at the Division of Physiotherapy, for the School of Health and Rehabilitation Sciences and a research showcase at the Faculty of Health Sciences. The benefits of that were much bigger than to practice speaking and getting my name out there.

I got to meet a bunch of different levels of administration, get a sense of how the University worked and to connect with these people in a way that made them feel happy to see me in a hallway which was great because when I went for my interview for my lectureship position, I had positive experiences with everyone but two of the panel members. It was great.

The other good thing about the interview was you have to do a 10 minute presentation at the start so it worked out really well and the networking opportunities fabulous. To be here today is just a great example of that. I've got a chance to meet at least 20 different people and have really good conversations with them and that is extraordinary. For someone like me I think it is fantastic.
So why isn't everyone doing it? Because it's scary. That's why not everyone is doing it. The fear of public speaking can be profound and it is related to this issue of sociophobia. A brief example of sociophobia that may be a bit backwards is that you can see there is no-one in the front row. The people there are just as scared.

But sociophobia is the fear of being negatively evaluated by your peer group in a public setting and public speaking is a great example of that. But just to put this into context of how profound this fear can be, this is number two on the list of most common phobias. Number 10 is necrophobia, which is fear of death and dying. So what that means is that most people would be more afraid of delivering the eulogy than being in the casket.

This is one of the particular strengths of the three minute thesis contest is that it is a warm and friendly audience. The people there are cheering you on. They want to see you do well and they want to be entertained. They are not there to dissect your argument. It is a very positive experience and that for me was wonderful. The other great thing about the three minute thesis competition from this perspective is there are no questions at the end.

Literally, you get a really genuine warm round of applause and you get to really enjoy that without having to dread the questions that are coming. So I think the

three minute thesis competition can address one of the most profound limitations in public speaking which is sociophobia just by continuing to do what it does. It is fantastic.

So ladies and gentlemen, I hope I've done a reasonable job of illustrating and conveying to you just how positive an experience this has been for me and I hope that this encourages you to take part in this year's Australasian three minute thesis competition at the University of Queensland. Thank you very much for your time.

Chair's Comment

Following the very well-received presentation by David McDonald, Charles Tustin and Chris Stoddart of Otago University in New Zealand explained how they have introduced 3MT at that university.

The University of Otago Three Minute Thesis Experience: Charles Tustin and Chris Stoddart

In November 2009, the University of Otago held the final event in its inaugural Three Minute Thesis competition. The contest as a whole was well received and saw 73 students (approximately 7% of all PhD candidates at Otago) take part in heats, with nine participants progressing to the final. The following is a summary of how Otago organised its competition, and some of the key lessons learned along the way.

Pre-planning

- It is recommended that a minimum two to three months be allowed prior to the final for planning (assuming a medium to large university that would need to organise heats before a final event).
- Sponsorship of prizes is something to consider early in the process. While external sponsorship is not necessary, as an educational, media-friendly and fun event, the Three Minute Thesis has sponsorship appeal.
- If running the event for the first time, a call for initial expressions of interest, prior to a formal application process, can help give an indication of how many students might take part, which can help with planning.
- After the expression of interest stage, Otago used application forms for formal entry into the competition. These included options for participants to show which of the proposed heat dates they would be available for, a commitment from participants to be available for the final should they be selected, and a media/publicity waiver. Rules for the competition also need to be made clear at the point of application, and it is recommended that scheduling for the heats and the final is organised prior to the call for applications, in order to allow participants to commit to the relevant dates.
- Selecting judges is a very important part of the process. At Otago different judges were used for all the different heats and the finals, with 24 judges used in all; obviously this requires a lot of availability checking, so judge selection needs to start early in the process. The best judges are not overly critical (the Three Minute Thesis is *not* an oral examination), but equally not too fawning in their praise; they present some constructive criticism, but in a non-threatening and supportive manner. The feedback from the judges provides an excellent learning opportunity for the participants, but stinging criticism can wreck the whole experience and leave a sour taste: choosing judges carefully is therefore essential.
- A suitable venue for the final needs to be selected. A lecture theatre can work for this, but ideally it should have something of a dramatic/musical theatre feel, to help give the final a sense of occasion.

The Heats

- Otago used closed, non-public heats, with three judges per event. Two administrative staff were also on hand to time keep, manage the participant's previously collected slides, introduce participants to the judges (and vice versa), and provide feedback to the judges on the feedback they were providing.
- Participants came to the room in groups of four or five, with each presenting in turn. Once everyone in a group had presented, the judging panel gave feedback to each of the participants in the same order in which they had presented. Each heat had approximately 16 participants, and took between two and two-and-a-half hours.
- Other heat formats are also possible, and may work better in other situations. For example, Otago has satellite campuses in Wellington and Christchurch, which in 2010 will hold their heats as public 'mini-finals', so that non-participating students on these campuses have the opportunity to come along and watch.
- The advantage of the Otago format from 2009 is that it presents a relatively non-threatening environment to the participants: they are not performing in front of a large crowd, and by facing the judges as part of a group, there is a shared camaraderie under stress. Additionally, the chance to see how others approach the presentation, and how the judges react to this, is a further learning opportunity.
- In 2009 Otago did not use Divisional or departmental quotas for finalists – instead the best nine participants across all the heats were selected. This helped ensure a high-quality final, but is administratively more complex than having Divisional heats whereby different areas of the University can put forward their best candidate(s). Otago will use this latter system in 2010.

The Final

- After finalists are selected, it is time to step up advertising efforts to encourage staff, students, the public, and the media to attend the showpiece final event.
- The final also requires some additional personnel apart from the judges and time-keeper. A Master of Ceremonies is essential to keep the event running smoothly, and to break the event up, half-time entertainment (a musical performance) was also organised at Otago. Finally, dignitaries, including sponsors and high-level university staff, can be invited to award prizes and for any speeches around the event.
- If an audience favourite is to be selected (recommended!) a mechanism for voting needs to be organised. At Otago electronic 'clickers' were used, but a paper ballot or even a count of hands can also work.
- It is recommended that finalists be given an opportunity to practice in the venue prior to the actual event. Performing in front of a crowd is a step up from the heats, and this helps to ensure that participants are at their best on the day.
- The Otago final, with nine finalists, a musical interlude and presentations and short speeches at the end, took approximately an hour and twenty minutes from start to finish.
- An edited version of the Otago final may be viewed on the University of Otago's iTunesU site (under "Life at Otago") or at http://podcast.otago.ac.nz/weblog/_lifeatotago/

Chair's Comment

To conclude the session, Tony Miscamble of the University of Queensland, one of the originators of the 3MT, presented an invitation to all present to take part in the international final to be held at UQ later in 2010.

The 3MT going international: Tony Miscamble

The design of the competition derives from the intentions Zlatko described earlier. After two iterations we've arrived at a model that is simple, robust and hopefully achieves its purpose.

There are three **judging criteria** of equal weight telling competitors what they need to do:

- Communication style: tell me what you're doing and why without jargon and without juggling.
- Comprehension: at the end of three minutes, will I understand what you're doing and why you're doing it? Will I walk away a little more educated?
- Engagement: notice the emphasis on oration. 3MT is a TALK, not a picture show.

The rules tell competitors what they can't do and keep minds focused on the competition's intentions:

- One PowerPoint slide is permitted. No transitions, no moving parts, it has to be STATIC.
- The slide cannot have any embedded media or music or films.
- No props are allowed.
- Time limit: Three minutes maximum. It can be less than that but it can't be more. We will have a timekeeper with a laptop displaying the countdown. To commence the competitor makes eye contact and gives the timekeeper a nod to start the clock. The timekeeper will give a 20 second warning before time is up, and ring a bell at 3 minutes.

The prizes are generous and useful to the winners. At UQ we provide these as research travel grants to emphasize the academic purpose of the competition: $5000 first prize, $2000 second and $1000 for the People's Choice prize. Every person in the audience is given a ballot paper to vote for their favourite presentation—the People's Choice. This popular feature of the competition engages the audience, gives them a stake in the outcome and signals that their opinion is valued.

Structure. At UQ we hold heats at each level of our university's hierarchy to progress successful competitors towards the university final. Adapt the competition to suit your own institutional arrangements. Keeping the 3MT format simple allows local organization of the competition, which spreads the logistical workload and encourages participation.

Who is competing? We are delighted that to date, 27 Australian and four New Zealand universities have indicated their participation in this inaugural competition. These 31 universities have a combined cohort of over 50,000 research students. We anticipate strong media interest in the event and hope it raises the profile and understanding of early career research in Australia and New Zealand.

The competition final is at UQ's St Lucia campus in Brisbane on Tuesday 21 September. Our Vice-Chancellor will host a dinner to celebrate our competitors and the research talent of our universities. You will find details, resources and updates at http://www.uq.edu.au/grad-school/three-minute-thesis or contact us anytime at the 3MT@gradschool.uq.edu.au. **There is still time for your institution to participate.**

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Papers

Widening participation to doctoral study: Issues, methodology and a research agenda

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Until very recently, the focus of Widening Participation (WP) policy and practice has been on routes to undergraduate study (e.g. in Australia, the *Bradley Report* (2008) and, in the UK, *The Future of Higher Education*, 2003). However, a second WP focus, this time on postgraduate and doctoral education, is emerging. (DIUS 2009; UUK 2009) Unfortunately, this policy focus is developing within an evidence vacuum with the 2006 Gorard Review's conclusion about 'the paucity of research examining widening participation in the context of postgraduate education' (2006, $8.4) being reinforced by other studies (Bowman 2005; Wakeling 2005; Leonard *et al* 2006). This situation has not changed significantly since 2006 and this is surprising, not least because of the massive global expansion in doctoral education which has taken place over the last 15 years and because of the declarations from a large number of universities across the world that it is their intention to expand significantly their numbers of doctoral students over the next planning period.

In the UK over the last year or two, the WP focus has shifted slightly to encompass doctoral education and this paper outlines the context for that emerging interest, reviewing the extant, albeit sparse, literature and identifying emerging institutional responses and trends. The paper then raises one of the most important methodological issues in the field of WP: that of the identification of low Socio-Economic Status (SES) without which judgements of success or failure and comparative work cannot be undertaken. Finally, an initial research agenda is developed around WP in the area of doctoral education.

Definitional issues

We use the term 'widening participation' throughout this paper. WP refers to the process which involves '… helping more people from under-represented groups, particularly low socio-economic groups, to participate successfully in higher education.' This definition was originally developed to refer to undergraduate education, but is equally applicable to postgraduate and doctoral levels of education. WP is distinguished from 'fair access' which means 'increasing opportunities for people from under-represented groups to attend higher education institutions and courses which offer the highest financial returns.' (DfES 2006, p. 3) The pursuit of the former (which we agree with the UK government involves the latter), will require those involved in 'rais(ing) aspirations and educational attainment among people from under-represented communities to prepare them for higher education, ensure success on their programme of study, improve their employment prospects and open possibilities for postgraduate study, and give them opportunities to return to learning throughout their lives.' (HEFCE http://www.hefce.ac.uk/widen/)

We believe that WP, an initiative with its roots in the UK educational system, is becoming a matter of global concern at undergraduate level and will shortly become so at the postgraduate and doctoral levels. (Ross 2010)

The WP debate

In 1955, in a very influential book, Olive Banks examined UK secondary education and developed a perspective on the problems of that decade 'which drove most education reform until the end of the next decade – the combining of human capital arguments for much wider investment in the country's 'pool of talent' with egalitarian arguments for lessening social class differences in life chances.' (Edwards 2009). Her arguments informed the first phase of a process in which the focus of concern over limitations in participation in education developed from concern over access to grammar schools (1950-60s) to concern over undergraduate access (1970s-present) and, most recently, to the postgraduate arena. (DfES [UK] 2003; Gorard 2006 [UK]; Bradley 2008 [Aust])

The two factors identified by Banks in 1955 continue to be influential in the search for wider participation to higher education. In the UK, the Higher Education Funding Council for England (HEFCE) Strategic Plan for 2003-2008 stated that "(w)idening access and improving participation in HE are a crucial part of our mission" suggesting that "(p)articipation in HE will equip our citizens to operate productively within the global knowledge economy. It also offers social benefits, including better health, lower crime and a more tolerant and inclusive society."

The debate (and the use of the arguments first laid down by Banks in support of action) is not limited to the UK. In 2009, and on the other side of the globe, Julia Gillard, the Australian Minister for Education argued that:

> 'Equity matters to national productivity...(and is) an economic issue. Without greater equity in our higher education system, Australia simply cannot obtain the high-level knowledge and skills we need to compete with the most successful economies of the world....Equity must involve improvements to early childhood education, to schools and to family attitudes towards education. It will take significant cultural change.' (Gillard 2009)

This dual rationale for widening participation in higher education is noted by Archer (2007):

> The rationale for WP has been framed in both economic and social terms – as a means for revitalising national and local economies, and boosting individual and collective wealth…as part of a "civilising" mission within society…and as a means for fostering greater social equality through the inclusion…of "disadvantaged" social groups into higher education. (Archer 2007, 636)

She does, however, go on to argue that the WP agenda is 'used to bolt together conflicting and contrasting motivations and interests.' (p. 637).

Wider participation to postgraduate research

In recent years, there has been a small flurry of UK reports which comment on widening participation to doctoral education (Gorard et al 2006, DIUS 2009, UUK 2009) and a small amount of academic literature on the subject. The 2006 Gorard report which examined what was known about WP to undergraduate education commented that:

> "What is striking in this review is the paucity of research examining widening participation in the context of postgraduate education. This finding is confirmed by Wakeling (2003) who has been unable to find any UK study on this topic in the past 25

> years. The lack of research about access to postgraduate study was raised with Alan Johnson when he was Minister for Lifelong Learning, Further and Higher Education on 20/5/04 by the National Postgraduate Committee (NPC)." (Gorard et al, 2006, $8.4).

Three years later, the issue of WP to postgraduate education was raised in the context of a report (published through but independent from, the Government's Cabinet Office) on access to the professions, *Unleashing Aspiration: The Final Report of the Panel on Fair Access to the Professions* (Panel on Fair Access to the Professions 2009). In the same year the representative body for the executive heads of UK universities (UUK), published a research report *Promoting the UK doctorate: challenges and opportunities* (UUK 2009) which addressed the issue. 2009 also saw the publication on the DIUS (Department for Industry, Universities and Science) website of a report written by Nigel Thrift for the UK Secretary of State for Education. This stated that '(d)uring the course of this review it has become clear that very little is known about the socioeconomic and demographic makeup of those UK students who go into postgraduate study' (DIUS 2009, p.20) and recommended that 'Universities should consider whether the widening participation agenda applies to postgraduate study and, if so, what might realistically be done to improve matters.' (p. 3) However, in 2010, the government department by then responsible for higher education (Business, Industry and Science [BIS]) issued a report, *Higher Ambitions,* focusing on access. While this included a focus on access to the professions, it had little to say about either doctoral education or, indeed, postgraduate education more generally (BIS 2010).

The paucity of research referred to by Gorard (2006) was reiterated by Benton who said that "(f)air access to postgraduate study has received far less attention than undergraduate study". (2009, p. 21) and Zimdars who echoed Gorard noting 'the paucity of statistical information on postgraduate students' (2007, p. 5).

What do we know about widening participation at postgraduate level?

A review of the extant literature will illustrate how little is known.[7] In 2003, Mullen *et al* examined the issue of who goes to US Graduate Schools while a year later, a report from the Higher Education Policy Institute (HEPI 2004) looked at the situation in the UK. HEPI published a follow-up report in 2010 which, while not focused specifically on doctoral study, commented that '(p)articipation in postgraduate study, especially research degrees, does appear to be heavily skewed towards those from higher socio-economic backgrounds.' (p.20) Paul Wakeling has been a largely lone scholar, publishing on a number of areas relevant to WP and postgraduate education including: social class & progression to postgraduate study (2005); social class inequalities in postgraduate education (2009); and ethic minority representation in postgraduate education (2009a). Zimandars (2007) has investigated the institutions from which postgraduate students at Oxford are drawn and, writing in 2010, Tobbell *et al* have examined the transition to postgraduate study across a mixed sample of students studying at both Masters and Doctoral levels.

Addressing the UK context, the UUK review (2009) focuses on a number of areas and draws on data showing that:

[7] A small number of studies published of relevance to WP taught Masters rather than research degrees have been published. For example, Bowman (2005) and Waters (2009), but here too there is a paucity of academic research.

- Gender equality has been achieved overall and that, in specific discipline areas, women out-number men, a development which gives rise to concern.
- Ethnic minorities are more than proportionately represented (12 per cent non-white compared to the 7-9 per cent of the English population which is non-white [http://www.statistics.gov.uk/cci/nugget.asp?id=455]), but at a lower rate than in the undergraduate population and they are under-represented in some discipline areas.
- Four per cent of doctoral students disclose a disability.

There is, however, little information given on the socio-economic background of students studying at postgraduate level.

Within this sporadic and slowly developing literature, there is nothing about differential student experiences or differential success rates in postgraduate education and research and this perhaps has fed into the recent award in the UK by the National Co-ordinating Centre for Public Engagement (NCCPE) and the Economic and Social research Council (ESRC) of a contract for a research synthesis which is currently being undertaken by Paul Wakeling. The call for tenders said that it is intended that the 'synthesis will uncover and synthesise current academic literature and report on this topic. It is intended that the synthesis will outline the existing data and highlight any trends and/or gaps in existing knowledge. If justified, appropriate 'grey' literature may also be referenced.' The initial survey of the literature presented in this paper at least, suggests that rather more gaps will be identified than we suspect the awarding bodies had hoped for.

There is, however, an early contribution to the debate from Australia. In 1995, as part of an examination of the relationship between fees and access to coursework-based postgraduate programmes, the Centre for Continuing Education at the Australian National University was commissioned by the Higher Education Council to 'examine enrolment statistics for 1993 and 1995 to see whether there was a link between fee status and students' financial need or social disadvantage.' A follow-up study (including data from 1996 and 197) was undertaken which concluded that there was evidence to indicate that:

> (i) postgraduate coursework fees can be at least a partial deterrent for groups of Australians who could benefit greatly from postgraduate study as a vehicle to improving their socio-economic position, employability and status; and (ii) in at least some cases a person's financial means is the main or even the sole determinant of whether a person proceeds to postgraduate study, whether or not he or she has the ability or potential to proceed. (Anderson et al 2000, pp. ii-iii)

In an early precursor of the current debates in the UK, the HEC report concludes:

> Governments around the world are recognising the importance of lifelong learning for both social and economic development. Postgraduate courses have an important place in fostering lifelong learning. It is true that enrolments in such courses, and university income from them are rising, but many people qualified to enrol and needing the postgraduate qualification are debarred for reasons outside their control. To that extent, talent and past investment are being wasted.' (p. 76)

This conclusion was based on the authors' findings that:

- Potential students were reluctant to add postgraduate fees to debts accrued during undergraduate study.
- 'Significant concentrations of those who are deterred from enrolling…are found among those of lower socio-economic origin women, and those from rural home background'.
- There was no evidence that students of non-English speaking background were 'any more likely than the average to be deterred from enrolling due to costs or any other reason'.
- Only the youngest (under 25) and the oldest (over 40) reported more obstacles to enrolment than average.
- Aboriginal and Torres Strait Islanders enrolled at 'much the same rate as they do in undergraduate study'.
- 'High fees and associated costs of study are most resented…when applied to some courses which are necessary for entry to particular professions'.
- Some people were being deterred from entering their chosen professions by the fees charged for the final stages of their qualification. (pp. xvi – xvii)

What are English HEIs doing? Evidence from institutional WP strategies

In 2009 HEFCE required English Higher Education Institutions to draw up and submit Widening Participation Strategic Assessments (WPSA) (HEFCE 2009); interestingly postgraduate-only institutions were also required to submit a WPSA. An examination of these documents (Action on Access forthcoming 2010) has revealed that, in the majority of cases, the HEI does not regard WP activity as extending to postgraduate education. Twenty seven of the 129 HEIs make reference to postgraduate activities, but a closer reading reveals that only 18 of these references are specifically about widening participation to postgraduate study. Thus, over 85% of English HEIs do not consider widening participation in relation to postgraduate study. While there is some evidence in a handful of institutions of an acknowledgement that WP is regarded as being relevant to postgraduate education, this tends to be couched in a very general terms promoting, for example, progression either to postgraduate study generally or to their own provision. This includes both activity targeted at encouraging their own UG students to progress into their PG awards and/or targeting under-represented groups beyond their institution to enter PG programmes. This work is generally in its early stages and often not specifically about progression to research degrees. It does, however, demonstrate a growing awareness of the need to widen participation beyond undergraduate level.

Towards a research agenda on widening participation and doctoral education

This paper has had a limited number of objectives. These were firstly to raise the issue of widening participation to doctoral education within the community of scholars focused on that level of study. Secondly, to outline what little is known about the issue and, thirdly, to sketch out the outlines of a research agenda for the area. Before doing that, it will be useful to remind ourselves what purposes such an agenda might fulfil and which audiences it might address.

The three key audiences for the agenda are the policy-makers who put so much store on the contribution doctoral graduates can make to national economic well-being and the maintenance and development of the knowledge economy, the universities that will have to implement (or may desire to pursue simply as a result of their institutional values) government policy and actually widen participation to doctoral study, and those scholars whose research is either focused on or touches on in some way the question of WP at doctoral level. Research is needed in order to inform our broader understanding, to develop the

knowledge base in a systematic way, to encourage collaboration and comparative work, and to enable the demonstration of effectiveness in terms of equity, quality of postgraduate learning and supply of trained researchers to the labour market, which it must be remembered, includes higher education itself.

A large number of issues and areas suggest themselves as part of this agenda and these can be organised in a number of ways. We choose here to use an actor focus (student, institution and policy-maker) and then to identify some methodological issues separately. We intend to deal more extensively with the research agenda in further publications and do no more here than briefly outline the elements we have identified drawing on both the (limited) literature on WP in doctoral education and also on our knowledge of WP (and its precursor movement around the notion of widening access) to higher education.

We suggest the following items belong firmly on the Widening Participation to Doctoral Study research agenda.

Student-focused agenda items

- Who has access to doctoral degrees and who does not?
- Where and to what do they have access?
- What are the barriers (cultural, social or economic) to accessing and succeeding in PGR degrees?
- How do student make decisions regarding whether or not to pursue doctoral study?
- How successful are different student groups at achieving in different types of provision/institution?
- Are there differential completion/non-completion rates?
- What do WP doctoral students do after graduation and what career routes do they follow?
- Aspirations to doctoral study across students with different background characteristics.

Institution-focused agenda items

- What is the level and extent of institutional concern about widening participation to postgraduate education?
- What are the institutional drivers for change regarding WP to doctoral education? Does this cover both access to HDR and the experiences, completion and progression of students, or just the former?
- What are effective strategies to widen access and ensure student success at doctoral level?
- Does WP at doctoral level have implications for students' preparedness to study at that level?
- What learning opportunities are available 'post-doc' and how are they accessed and utilised by different groups of students?

Policy-focused agenda items

- Impact of national HE funding policies on WP at doctoral level.
- Impact of grants (both those awarded by bodies external to institutions and also institutionally self-determind) and their relationship to equity/meritocracy (Zimdars 2009)
- Do 'HEIs generally prefer their own graduates in awarding international scholarships' (Zimdars 2009) or, for that matter, their domestic scholarships?

Other agenda items

We include here three items which we believe to be of crucial importance to the structure of doctoral education, but which do not fit comfortable into our 'actor-focused' categorisation.

- To what extent can the scholarship of WP at undergraduate level inform the theory, policy and practice of WP at postgraduate and doctoral level?
- What, if any, is the relationship between WP and quality of experience, achievement and outcome?
- Would WP have implications for the doctoral curriculum?

Methodological issues: Defining low socio-economic status

Finally, there are a number of methodological issues which will require to be addressed in order for the comparative and cross-national studies we believe to be essential to understanding whether some systems of doctoral education work better than others in regard to access to doctoral education can be undertaken. In making this statement, we take account of Zimdars' argument that '(f)uture research should be longitudinal, on a national or international scale and take into account the attainment at first degree, the pattern of applications for postgraduate study and acceptances and actual enrolments on postgraduate courses[8].' (2009, p. 17) These issues include how SES is measured at doctoral level and how best can data comparability be achieved across institutions and political jurisdictions

One of the key issues in the theory, the policy and the practice of WP is that of defining socio-economic status (SES). Not only is this an issue within political jurisdictions, but it is also an issue for those who wish to draw comparisons across national boundaries. For example, in the UK, HEIs target low SES by using indicators which apply to individuals such as family income, index of multiple deprivation, school attended, parental education, and indicators which apply to groups of individuals such as proportion of pupils in a school receiving free school meals, employment rates, and neighbourhoods with low rates of participation in higher education. This is evidenced by the recent analysis of WPSAs (Action on Access 2010). This identifies at least six ways in which students from lower socio-economic groups are categorised and identified: from state schools, young people from NS-SEC 4-7, first generation entrants, from low participation neighbourhoods, by using the Index for Multiple Deprivation and from a public care background. In addition, a range of other target groups are identified. This includes part-time learners, learners with vocational qualifications, mature students, work-based learners, etc, which are all, with differing degrees of reliability, taken as proxies for lower socio-economic status.

Internationally, there are different constructions of low SES. The US uses income, whereas Canada, Germany, Ireland, Norway and Sweden focus on employment. Australia focuses on geography utilising data on where people live, while Canada, Netherlands, Norway and Sweden use the educational background of student's parents. (Thomas and Quinn 2003). These alternative definitions give differential emphases to cultural, social and economic capital (Thomas and Quinn 2006), and this is significant because, in turn, it informs the strategies developed to widen participation. For example, a few UK HEIs are offering bursaries to widen participation to PG education (Action on Access 2010 forthcoming) and are, thus, foregrounding economic barriers or disincentives to participation in postgraduate education. Other institutions are addressing more culturally oriented disincentives, and so they are offering taster sessions, contact

[8] To which, the current authors suggest, completion and non-completion rates could be added.

with existing postgraduate students and new PG courses, or they are addressing the teaching and learning practices for postgraduate education implied by a WP agenda.

Conclusion

Following the identification of widening participation in the area of doctoral education as an issue which, to date, has been largely ignored, this paper has outlined what is known about the subject and then sketched out a research agenda for the area. This agenda is important, but unlikely to be completed without the concerted attention of a number of scholars and practitioners drawn from across a number of educational systems and support from relevant research funding bodies. In addition to laying out such an agenda, the authors hope to provide an initial impetus towards the development of such a group of interested individuals and to stimulate the allocation of the necessary resources for the successful pursuit of the agenda.

References

Action on Access (2010 forthcoming) Analysis of Widening Participation Strategic Assessments 2009. Ormskirk: Action on Access

Anderson, D., Johnson, R. and Milligan, B. (2000). Access to Postgraduate Courses: Opportunities and Obstacles. Canberra: Higher Education Council, Commonwealth Department of Education, Training and Youth, Australia.

Archer, L. 2007. Diversity, equality and higher education: a critical reflection on the ab/uses of equity discourse within widening participation. Teaching in Higher Education 12, no. 5: 635-53.

Benton, M. (2009). 'The State of the sector: an audit', in Withers, K. (ed.) FirstClass? Challenges and opportunities for the UK's university sector, London: Institute for Public Policy Research pp. 17-36.

BIS (2010) Higher Ambitions. http://www.bis.gov.uk/assets/biscore/corporate/docs/h/09-1447-higher-ambitions.pdf

Bowman, H. (2005) 'It's a year and then that's me': masters students' decision-making. Journal of Further and Higher Education. 29 (3), 233-49.

Bradley, D. (2008). Review of Australian Higher Education, Commonwealth of Australia.

DfES (2003) Widening Participation in Higher Education. London: DfES.

DfES (2003). The Future of Higher Education. London: HMSO.

DfES (2006). Widening participation in higher education. London: DfES.

DIUS (2009). Thrift Report on Research Careers. www.bis.gov.uk/he-debate-thrift (Accessed 25.5.10)

Edwards, T. (2009). 'A sociology for our times?', British Journal of Sociology of Education,29(4), pp.369–379

Gillard (2009). Speech given to the Australian Financial Review Higher Education Conference, Sydney, 9 March 2009

http://www.deewr.gov.au/Ministers/Gillard/Media/Speeches/Pages/Article_090310_141130.aspx

Gorard, S., Smith, E., May, H., Thomas, L., Adnett, N. and Slack, K. (2006) Review of Widening Participation Research: addressing the barriers to participation in higher education. Bristol: HEFCE.

HEFCE (2003). HEFCE Strategic Plan 2003-2008. Bristol: HEFCE

HEFCE (2006) Widening participation: a review. Report to the Minister of State for Higher Education and Lifelong Learning by the Higher Education Funding Council for England. http://www.hefce.ac.uk/widen/aimhigh/WPfinalreview.pdf Accessed August 2007. London, HEFCE.

HEFCE (2009). Request for Widening Participation Strategic Assessments. HEFCE 09/01. Bristol: HEFCE

HEPI (2004) Postgraduate Education in the United Kingdom, HEPI (2004) http://www.hepi.ac.uk/466-1149/Postgraduate-Education-in-the-United-Kingdom.html *(Accessed 25.5.10)*

HEPI (2010) Postgraduate Education in the UK, HEPI. London. www.bl.uk/aboutus/acrossuk/highered/helibs/postgraduate_education.pdf *(Accessed 25.5.10)*

Jones R. and Thomas L. (2005) "The 2003 UK Government Higher Education White Paper: a critical assessment of the implications for the access and widening participation agenda", Journal of Education Policy 20 (5) 615-630

Leonard, D., Metcalfe, J., Becker, R. and Evans, J. (2006) Review of literature on the impact of the working context and support on the postgraduate research student and learning experience. York: Higher Education Academy.

Mullen et al (2003) Royal Society (2008). A higher degree of concern. London: Royal Society.

NAO 2008

NCEE, (2008). 'Action on Access – Paper to NCEE Ambassadors Group on HEI links with Primary schools'. *www.actiononaccess.org/.../resources__Report_on_school_and_HEI_links_to_Ambassadors_Group_March_09.doc* (accessed 12.4.10)

Ross, J. 2010. 'Research expansion needs a research agenda', Campus Review, 19.4.10. http://www.campusreview.com.au/pages/section/article.php?s=News&idArticle=15556 (accessed 26.5.10)

The Panel on Fair Access to the Professions (2009). Unleashing Aspiration: The Final Report of the Panel on Fair Access to the Professions. www.cabinetoffice.gov.uk/media/227102/fair-access.pdf *(accessed 25.5.10)*

Thomas, E. and Quinn, J. (2003) International Insights into Widening Participation: supporting the success of under-represented groups in tertiary education. Stoke on Trent: Staffordshire University and the European Access Network, with The Sutton Trust and the Esmee Fairbairn Foundation

Thomas, L. and Quinn, J. (2006) First Generation Entry into Higher Education: An international study. Maidenhead: Society for Research in Higher Education and Open University Press

Tobbell, J., O'Donnell, V. & Zammit, M. (2010). 'Exploring transition to postgraduate study: shifting identities in interaction with communities, practice and participation'. British Educational Research Journal, 36(2) pp. 261–278.

UUK 2009. Research report: Promoting the UK doctorate: challenges and opportunities. UUK, London.

Wakeling, P. B. J. (2003). Social Class and Progression to Postgraduate Study in England. MA (by research) Dissertation. University of York.

Wakeling, P. (2005) La noblesse d'etat anglasie? Social class and progression to postgraduate study. British Journal of Sociology of Education. 26 (4), 505-22.

Wakeling, P. (2009). A comparison of comparatively little', Paper presented to the 2nd International RESUP Conference Université de Lausanne, Lausanne, Switzerland, 18 – 20 Jun.

Wakeling, P. (2009a). 'Are Ethnic Minorities Underrepresented in UK Postgraduate Study?', Higher Education Quarterly, 63(1,) pp 86–111.

Waters, J. L. (2009). 'In pursuit of scarcity: transnational students, 'employability', and the MBA'. Environment and Planning A, 41, pp. 1985-83.

Zimdars , A. 'Testing the spill-over hypothesis: meritocracy in enrolment in postgraduate education', High r Education. 54:1–19

Zimdars, A., Sullivan, A. & Heath, A. (2009) 'Cultural Capital and Access to Highly Selective Education: The Case of Admission to Oxford ', in Robson, K. & Sanders, C. (eds.), Quantifying Theory: Pierre Bourdieu, Springer. 117-128

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Doctoral orphans: Nurturing and supporting the success of postgraduates who have lost their supervisors

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Most research into the learning of doctoral students follows similar patterns to that conducted with undergraduates, focusing mainly on learning processes with the emphasis on the conceptual dimensions rather than the emotional. Our current work on doctoral students' wellbeing and identity, the focus of an HE Academy Education subject centre funded project, and work on data emerging from a well established project (1997-2010) focusing on a cohort of international mid-career professional PhD students, in Israel, has begun to reveal rich information about the emotional and wellbeing dimensions to doctoral study. Early research reported here focuses specifically on doctoral 'orphans', those who have for one reason or another had to lose and change their supervisor or whole supervisory team, their experience throughout this process, and the effect on their sense of wellbeing as well as their progress in learning.

Isolation and lack of progress are issues familiar to doctoral students (Pargetter, 2000) and these can be exacerbated by changes in the supervisory team. During their doctoral learning journey, some students experience such changes which could lead to frustration, disorientation, and a stalling of the research. Those who lose or have had to change supervisors not only must overcome the initial confusing vacuum, any difficulties of communication with the institution more generally, and a sense of momentum and motivation related to their project, but must then shift to realign with the changes in research learning support for the development of their research experience but also report experience of loss of identity (ontology) momentum and confidence. For some the lack of ontological security related to loss of supervisor support and investment leads to lack of epistemological development. Even when studying at a distance in their own countries of origin, students from cultural origins different to the host institution, might find that the experience of being 'orphaned' exacerbates a sense of isolation and cultural disjunction, while the issue of distance itself can add to the problem.

Students who are orphaned can become 'stuck', lacking ontological security and wellbeing. They need to seek support which helps to develop or re-assert their confidence and success—or wellbeing and emotional resilience, (Beauchamp, C., Jazvac-Martek, M. and McAlpine, L, 2009.) Academic identities are framed by the variety of work undertaken, in context and by the relationships of those with whom the student comes into contact—both in their research and in the wider community. Loss of a supervisor, a close contact, can lead to disorientation not unlike loss of a relative or a friend, and in this case one who confirms the student in their identity as a postgraduate. The supervisor or team who next 'adopt' these doctoral 'orphans' recognise the notion of a 'duty of care 'and the practices of 'nurturing' which support the student and help them to re-develop the ontological security and freedom to construct knowledge with confidence and so achieve their doctorates.

Conceptual threshold crossing theories (Kiley and Wisker, 2008) which grow from threshold concept theory (Meyer and Land 2003; Cousin 2003; Meyer and

Land 2005; Meyer and Land 2006) are helpful in exploring issues in relation to their identities as doctoral researchers and the progress of their research practice. Conceptual threshold crossing (Kiley and Wisker, 2008) engages with specific key moments of change and development in the learning journey. It is useful in examining doctoral learning and in particular, ways in which doctoral students engage with ontology and epistemology i.e. understand themselves and build knowledge. We have begun to identify moments of difficulty, 'stuckness' or blockages to crossing conceptual thresholds and gaining the levels of learning and wellbeing, which achievement at postgraduate levels affords. We have also begun to identify some strategies for engaging with the learning and successfully moving on.

'Stuckness' impacts negatively on self-esteem, confidence, and may lead to attrition or delay in completion (Kiley and Wisker, 2009) and lack of wellbeing. However, studies in this area to date have not adequately focussed on the experiences and perspectives of the students themselves. This raises questions about how students experience 'stuckness', how this affects their wellbeing and what strategies they themselves can employ, alongside those developed by institutions and supervisors. Exploring these questions and identifying effective strategies are the focus of this study building on the work of Wisker and Robinson (2008).

Attention has been given to specific aspects of research student learning which affects confidence, such as identity development and role confusion (Jazvac-Martek, M., 2009); the complexity of the doctoral experience (Beauchamp, C., Jazvac-Martek, M. and McAlpine, L., 2009) and the importance of emotional and community support (Shacham, M. and Od-Cohen, Y., 2009). This project builds on and develops this work, taking the link between students' learning processes and their wellbeing as a starting point.

Our research looks at how students and supervisors cope with change in supervisory relationships. Sometimes this is very stressful for everyone – especially if a supervisor leaves, retires or disappears and a new one is found. We were interested to find out the experiences of the student, what it felt like, what happened that worked for them – how such an event (which is common in all systems) can be made manageable. Common modes of supervision are an individual supervisor, a pair, or a supervisory team. In the large PhD programme in Israel, the notion of 'guardian supervisors' was developed so if the student lost their supervisor a guardian would step in

To date this small scale research has involved face to face and email interviews with 7 'orphans'.

Questions asked were:

- What were you working on and how long had you been working?
- How did you feel when this happened? And what happened?
- Did you feel confused? stressed?
- How did you manage with changing your supervisor? What were your experiences?
- What were the issues and any difficulties?
- What made it work for you?

We developed two case studies which exemplify concerns and strategies reported by the students.

Case study 1

- Local supervisor in Israel + supervisor in UK

- Local supervisor: 'didn't help very much', said 'I can't help you any more'
- Supervisor in the UK left the university—student said 'I tried to call, I tried to email but he didn't answer me' ' maybe he went abroad, he doesn't work for me only'
- Anxiety about loss of time, the demands of the university and the loss of contact with the university.
- Feeling of anxiety 'from having different perspectives and making new demands'
- Need to build bridges to the new supervisors and to 'bother (them) very much'. They did not know the field.
- Initial loss of self esteem but 'after that I pulled myself together and said it's my work, I will manage. I became calm'
- What helped was 'the drive to finish' – 'I decided to finish the Ph.D. no matter what' + family support

Case study 2

- Started PhD at university in Israel. Problematic—'reached a stone wall. I thought I would have to drop the entire Ph.D. idea.'
- Changed to a programme in UK—'I not only changed advisors, but I totally changed programs' ... 'I not only changed programs but countries'—'there were different demands made on me'.
- 'Parts had to be researched and much of it re-written'
- New advisor 'knew the field I was working in extremely well, thus being able to give me the necessary direction'.
- What worked was 'the well-built program, an interested supervisor, my own drive and compulsion'

Our analysis of interview material was across three categories, personal, learning and institutional.

Personal: Because of the breach of supervisory contract or relationship, there's a distressed student who needs someone to bring back confidence; someone efficient and responsive, this might initially be someone who is not in the field. It might be just a caring relationship at that point. So it's a nurturing, duty of care overall role, (Wisker 2004; Shacham, M. and Od-Cohen, Y., 2009). It might be related to a committee, or guardian supervisors. First of all it is important to get rid of any resentment or disappointment regarding the loss of the supervisor, especially the feeling that they've lost time. This can involve large amounts of reading for the new ''supervisor who has to 'catch up with them'.

Learning: The student feels they are wasting time, and there is a need to catch up with others who have not had this lack / loss.

It's a hidden interaction and it's a mutual learning experience, it's also an experience where both students and supervisor learn to work with each other's learning styles. The new supervisor might come in with a totally different framework, which can be advantageous in that it brings the critique and the uncertainty which might only occur for that student at the viva stage. However, to the student, having to see it through the new eyes of another supervisor at first seems a threat and a worrying move from their own trajectory.

Institutional: The silence or absence of any supervisor can shut the student off from the knowledge and expectations of the system. The supervisor is perceived as the one with the insider knowledge of the institutional regulations and also the thesis shape – and the student has to have this knowledge to proceed, like a key to the door. The institutional issues and difficulties are seen separate from the academic issues of the quality of the work

Our success stories came from resilient students who were confident in their field of knowledge, driven, autonomous learners and those who find, or build on, supportive communities (families, critical friends and academic others, communities of practice). Even though successful, they reported difficulties of making this transition to a new supervisor, that there were problems from the 'replacement' supervisor perspective who sometimes expected them to change direction or focus and who was involved in noting and adapting to the student's learning style. Mutual trust needed to be developed quickly and the student needed to catch up almost instantly on what is possibly a huge amount of reading

For some there was a problem of dealing with the expectation that you can mechanically replace the other supervisor, coming fully-fledged with the knowledge that the other one had.

Conclusions

While previous research has focused issues of supervisory interactions and student self esteem, our work on doctoral 'orphans' attempts to address a gap in the literature and to provide a focus of what is probably a common occurrence-change of supervision and how this affects a students ontological security and progress in their research. It uncovers some quite traumatic experiences, a supervisory and institutional duty of care, and the success of resilience, dedication to achievement and community spirit. Further research will focus on the perspective of the supervisor and trace other student experiences, some for those who have not yet completed.

References

Beauchamp, C., Jazvac-Martek, M. and McAlpine, L. (2009). Studying doctoral education: Using Activity Theory as a methodological tool. *Innovations in Education and Teaching International* 46(3), 265-277.

Cousin, G. (2003). *Threshold concepts, troublesome knowledge and learning about others*. Paper presented at the European Association for Research on Learning and Instruction conference.

Kiley, M. (2009) Identifying Threshold Concepts and proposing strategies to support doctoral candidates in *Innovations in Education and Teaching International,* Vol 46, No. 3, August 2009, 293 – 304

Kiley, M. and Wisker, G. (2008). *Now you see it, now you don't: Identifying and supporting the achievement of doctoral work which embraces threshold concepts and crosses conceptual thresholds*. Paper presented at Threshold Concepts: From Theory to Practice, Queen's University, Kingston, Ontario, Canada

Kiley, M. and Wisker, G. (2009) 'Threshold concepts in research education and evidence of threshold crossing' in Higher Education Research Development journal. 28(4), 431-441.

Kiley, M., & Wisker, G. (In press). Learning to be a researcher: The Concepts and Crossings. In J. H. F. Meyer, R. Land & C. Baillie (Eds.), Threshold Concepts and Transformational Learning. Rotterdam: Sense.

McAlpine, L., & Amundsen, C. (2009). Identity and agency: Pleasures and collegiality among the challenges of the doctoral journey. Studies in Continuing Education, 31, 2, 107-123.

Meyer, J.H.F. and Land, R. (2005). Threshold Concepts and troublesome knowledge (2): Epistemological considerations and a conceptual framework for teaching and learning. Higher Education, 49, 373.

Meyer, J.H.F. and Land, R. (Eds) (2006) Overcoming Barriers to Student Understanding: Threshold Concepts and Troublesome Knowledge. Abingdon, UK: Routledge

Shacham, M., & Od-Cohen, Y. (2009). Rethinking PhD learning incorporating communities of practice. *Innovations in Education and Teaching International,* 46(3), 279-292.

Wisker, G., Robinson, G., & Kiley, M. (2008). Crossing Liminal Spaces: Encouraging Postgraduate Students to Cross Conceptual Thresholds and Achieve Threshold Concepts in their Research. Paper presented at the Quality in Postgraduate Research: Research Education in the new Global Environment - Part 2, Canberra.

Wisker, G. and Savin Baden, M. (2009) 'Priceless conceptual thresholds: beyond the 'stuck place' in writing' in London Research Education journal.

Wisker G and Robinson G (2008) 'Encouraging postgraduate students of education to cross conceptual thresholds and achieve threshold concepts in their research '. Quality in postgraduate research conference

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Significance of factors affecting research higher degree students' perceptions of their academic unit's research culture

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Introduction

The quality of the 'research enabling' climate fostered by any academic unit with research higher degree (RHD) students is an important factor to minimise student attrition. Annual surveys at The University of Sydney of all continuing RHD students' perceptions of their candidature result in quantitative metrics and open response comments that summarise the RHD experience over five broad scales (i.e. quality of supervision, quality of infrastructure, research climate, generic skills and overall satisfaction with candidature). A notable feature is that the research climate scale metrics are consistently lower than the other scales (overall university score range between 2002-2008: supervision scale 72-75% student agreement, quality of infrastructure 59-64%, research climate 54-59%, generic skills 75-79%, overall satisfaction 75-80%) with this trend across academic units. The research climate scale gauges students' perceptions on opportunities for social contact and support from other RHD students, whether they feel integrated into the academic unit's community, availability of a good seminar program, whether their research is enhanced by a supportive working environment and whether they feel respected as a researcher. It is argued that the research environment is also affected by competitive forces that are known to drive outstanding research, but may result in tensions between competing research groups and even between individual students. Additionally those bureaucratic processes inherent to universities, capable of delaying research but ensuring regulatory compliance, may also negatively influence perceptions. Those factors that influence students' perceptions of research climate leading to greater dissatisfaction with this scale, as well as strategies to counter-act these tensions, are discussed.

In order to measure the quality of the RHD students' experience during their candidatures, The University of Sydney has distributed the Student Research Evaluation Questionnaire (SREQ) annually to continuing RHD students since 2002. The SREQ consists of a series of statements or 'items' based on five general areas or 'scales' i.e. the 'quality of supervision', 'quality of infrastructure', 'quality of research climate', 'development of generic skills' and 'overall satisfaction' concerning the RHD experience. The students are requested to respond to these items via a five point Likert scale ('strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree'). Information on the SREQ is available at http://www.itl.usyd.edu.au/sreq and an extended description, including the psychometric properties of this questionnaire is available (Ginns, et al., 2009).

An observation from the quantitative data collected from the SREQ from 2002 to 2008 is that the 'research climate' scale rates consistently lower than all other scales across the university as illustrated in Figure 1, and within all academic units (data not shown). This quantitative data for each of the five scales corresponds to the proportion of students who 'agreed' or 'strongly agreed' with

each item that belongs to each scale, and then averaged for all items, to provide each scales '% Agreement'.

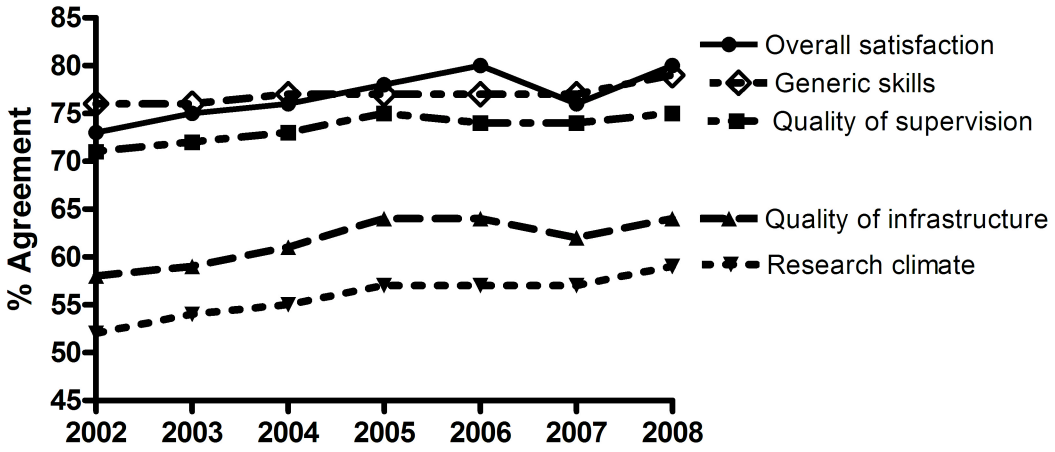

Figure 1: The University of Sydney students' total percentage agreement to all five scales of the SREQ from 2002 to 2008.

The research climate scale consistently rates lower than all other scales and this abstract examines the underlying quantitative data that gives rise to these observations and proposes contributory factors to account for this observation.

Materials and methods

HRD students' responses for the 2002 to 2009 SREQs are available at http://www.itl.usyd.edu.au/sreq. Data from items 1 to 31, and 44 were analysed, as these items are directly related to the specific scales, while other items relate to aspects of university administration.

For analysis, the 2008 data was used only, whereby the proportion of students that 'strongly agreed' or 'agreed' for each item were combined as the 'agreed' category used here. The mean and standard deviation for each item across the seventeen faculties were determined. This process was repeated for the 'neutral' responses, as well as 'disagreed' or 'strongly disagreed', the latter two being collated into a 'disagree' category. Item 20 was a reversed item and accounted for in the analysis. Further the 'agreement', 'neutral' and 'disagreement' means of each item were further grouped according to the scale they referred to, further averaged and standard error of the mean (SEM) determined. This data underwent a one-way analysis of variance (ANOVA) between all scales, except for 'overall satisfaction' as this scale consists of one item. Tukey's post tests determined any significant difference between pairs of means when the ANOVA was significant.

The 2008 'agree' data for each scale, for the humanities verses science faculties were also compared by two-tailed paired t tests. Additionally for each faculty, the quantitative data from domestic compared to international students was also available and the 2008 'agree' data for both these groups for each scale were also compared by the same statistical method. Statistical analysis was accepted at $p < 0.05$. The open-response qualitative data was not available.

Results

There were 2,620 student responses to the 2008 SREQ, resulting in an overall response rate of 69%. For the 2008 quantitative data across all faculties there was no significant difference between both 'agreement' and 'neutral' for 'research climate' and 'quality of infrastructure' scales, however there were significant differences between both of these scales with the 'quality of supervision' and 'generic skills'. For 'disagreement' there was a significant difference between 'quality of infrastructure' and 'research climate' with the 'generic skills' scale.

The mean proportion of science students who 'agreed' was higher for all scales and significantly so for 'quality of infrastructure' ($p = 0.015$) and 'research climate' scales ($p < 0.0001$). Humanities students also had a proportional lower response rate per faculty (65.7%) than science students (73.2%).

The mean proportion of international students who agreed was higher across all scales, however this increase was only just significant for the 'quality of infrastructure' ($p = 0.048$), but of greater significance with respect to 'research climate' ($p = 0.019$).

Discussion

The data suggests that

> For both the 'research climate' and 'quality of infrastructure' scales, students' agree less and disagree more, compared to that of the 'quality of supervision' and 'generic skills', but 'research climate' has the highest neutral response mean (although not significantly different to that of the 'quality of infrastructure' scale). While some 'research climate' items are straight forward such as *A good seminar program for postgraduate students is provided* (item 24), others require some personal filtering and evaluation of expectations such as *The research ambience in the department / school or faculty stimulates my work* (25), *I feel respected as a fellow researcher within my department / school* (31).

The 'research climate' scale evaluates the quality of students' interactions with the academic unit. However, both collaboration and competition exists within and across academic units, the reality is that both staff and students walk a fine line between the tensions of such a workplace, which may exaggerate positive or negative behaviours such as perceived competition between RHD students in the same research group, or with other research groups within the academic unit, thereby influencing student perceptions of the research climate.

Additionally, it is not uncommon for students to become frustrated by issues inherent in institutional bureaucracies, such as a delay in funding or ethics committee approval that may impede progress of some research projects. As the 'research climate' scale contains five out of nine items that requests students to 'feel', therefore subtle and not-so-subtle frustrations, may be expressed via these items.

However some ambiguity and confounding factors may exist within the 'research climate' items that may influence students' responses:

> iv. Some staff and students may fail to recognise the importance of a research 'culture' to facilitating degree completion (Deem, et al., 2000). It is in this realm of the research culture where

> students interact with peers to gain support, develop friendships as well as academic and social networks. Interacting with, or contributing to the research culture may be deliberately ignored by supervisory teams, academic units and students themselves, as it is considered either a distraction to time-constrained candidatures, or overlooked due to the lack of awareness of the importance of the research culture in supporting candidatures, and may explain the magnitude of the neutral responses to the 'research climate' scale.

It has been well documented that students in science based faculties have greater satisfaction with their candidatures than humanities students, as the science projects often have some laboratory-based component, often more of a team atmosphere and more opportunities for interactions with supervisors, staff and other students (Anderson, et al., 1998; Bair, et al., 2004; Deem & Brehony, 2000) and the results here were consistent with previous reports.

Another observation was international students have greater 'agreement' with all scales (with lower agreement with 'infrastructure' and 'research climate') than domestic students. The data provided does not account for this observation and the underlying factors at this stage could only be the subject of speculation.

The quality of the research climate has been shown to be an important part of the RHD experience and has a role in optimising output and minimising student attrition during their candidature. On reflecting on this data the authors make some suggestions. Organising student review and feedback on the items of the SREQ, including what items they would suggest modifying, omitting or adding and why, and how the changes may have a positive effect on their candidatures. This exercise could also be utilised to investigate the 'research climate' items and students' perceptions on the importance of these items and why a neutral response to these items is more prevalent than items of other scales.

The authors also suggest that both academic unit personnel and students need to be made aware of the importance of the research climate and all must take some collective responsibility to maintain and enhance this climate. Academic unit staff may need regular reminding of the importance in instigating and supporting research climate activities and students may require induction into what a research climate is, why it is important to them and how they can take an active contributory role in its maintenance. Furthermore it would be useful for the institution or academic units to assist RHD candidates to develop strategies to deal with some of the regular issues that arise when working within a competitive, somewhat constrained and bureaucratic environment with regular workshops on these issues with successful established researchers.

References

Anderson, M. S., & Swazey, J. P. (1998). Reflections on the graduate student experience: An Overview. *New Directions for Higher Education, 101*, 3-13.

Bair, C. R., & Haworth, J. G. (2004). Doctoral student attrition and persistence: A meta-synthesis of research. In J. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 19, pp. 481-534). Dordrecht: Kluwer.

Deem, R., & Brehony, K. (2000). Doctoral students' access to research cultures-are some more unequal than others? *Studies in higher education, 25*(2), 149-165.

Ginns, P., Marsh, H. W., Behnia, M., Cheng, J. H., & Scalas, F. (2009). Using postgraduate students' evaluations of research experience to benchmark

departments and faculties: Issues and challenges. *British Journal of Educational Psychology, 79*, 577-598.

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Examining students' research experiences with the postgraduate research experience questionnaire (PREQ) in a Hong Kong university

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University of Hong Kong

Hong Kong is undergoing major education reform and for some universities instigating the systematic evaluation of student learning experiences at all levels. The Postgraduate Research Experience Questionnaire (PREQ) has been used in Australian universities to measure postgraduates' research experiences for many years and recently in the UK after modification.

This paper aims at validating PREQ and four newly developed scales in a Hong Kong university and exploring the effect of student research experiences on the perceived development of generic skills.

Survey data were collected from 409 currently enrolled postgraduates at a Hong Kong university. The survey included five PREQ scales and four scales developed from the authors' previous study. Factor and regression analysis were used to determine the construct validity of the scales and the effects of student research experiences on the perceived development of generic skills.

The results from confirmatory factor analyses supported the scale structure of five PREQ scales and three newly developed scales. Model fit estimates were good to excellent and reliability estimates ranged from .79 to .95. The regression results provided evidence that two of the new scales were significant in predicting generic skills development, the effects of one other existing scales in PREQ was significantly decreased and overall explanation of the variance in skill development was .48.

The results suggested that the PREQ, including three new scales, can validly be used in a Chinese context. The data can provide important information about relationships between student research experiences and how to promote positive learning outcomes.

Keywords: Research experience, Research postgraduate students, Postgraduate Research Experience Questionnaire (PREQ)

Introduction

Since 1990s', there were increasing numbers of surveys on students' perceptions of university teaching and learning environments in Australia and the UK. They measured teaching effectiveness and learning environment of the university from students' perspective. The data obtained have supported universities in improving the quality of the student experience as well as benchmarking between universities and faculties within a university. Based on these studies into undergraduate students' evaluations of coursework degrees, from early 2000s, postgraduate research experience questionnaires were developed for the evaluation of research higher degrees in Australia (Postgraduate Research Experience Questionnaire (PREQ), University of Sydney, Institute for Teaching and Learning, 2007a; Student Research Experience Questionnaire (SREQ),

University of Sydney, Institute for Teaching and Learning, 2007b) and the UK (Postgraduate Research Experience Survey (PRES), The Higher Education Academy, 2009).

In recent years, universities in Hong Kong, like universities in many other countries, are seeking ways to improve the quality and enhance the accountability of its higher education sector (University Grants Committee, 2005). Hong Kong is undergoing a reform of undergraduate education under the "3+3+4" academic structure to take effect in 2012. The University of Hong Kong is using this opportunity to evaluate student learning experience systematically at all levels to facilitate the reform. Course Experience Questionnaire (CEQ, University of Sydney, Institute for Teaching and Learning, 2005) has served as an initial tool to commence this evaluation process and a modified version of CEQ evaluating course experience of undergraduate student studying at the University of Hong Kong has been validated (Webster, Chan, Prosser, & Watkins, 2009). The evaluation of student's experience using this modified tool has helped revisit undergraduate curriculum and improve student learning experiences at the University of Hong Kong.

More recently, the University of Hong Kong is now preparing to commence this systematic evaluation on postgraduate learning experiences. The PREQ and SREQ developed by Australian universities seem to be a potential instrument for use in Hong Kong. However to date there is little evidence on the reliability and validity of the PREQ and SREQ in a non-western context such as Hong Kong. The purpose of the study reported in this paper is to provide such evidence.

The Postgraduate Research Experience Questionnaire (PREQ) and the Student Research Experience Questionnaire (SREQ)

In late 1990s, the Postgraduate Research Experience Questionnaire (PREQ) was developed and piloted among Australian and New Zealand universities. Its development incorporated extensive input from diversified sources such as reviews of instruments used in different universities, feedback from higher education staff with relevant experiences, students' feedback, and so on (Australian Council for Educational Research, 1999). The PREQ provides a multidimensional measure of the research students' experience: supervision, intellectual climate, infrastructure, thesis examination, goals and expectations, and skills development in their research degrees. From 2002 the Institute for Teaching and Learning (ITL) at the University of Sydney began to run the PREQ nationwide on graduated research students.

From the same year, the Student Research Experience Questionnaire (SREQ) was carried out within the University of Sydney to collect the same data from currently enrolled research students. In content, SREQ and PREQ are largely similar except for the tenses used and PREQ has two more scales: goals and expectations and thesis examination, which is only applicable to graduates. SREQ has 11 more items than PREQ: an overall satisfaction item in supervision and infrastructure, one item in infrastructure, four items in intellectual climate, and four items in skill development.

These surveys served greatly as a basis for strategic academic development and curriculum review for the universities of Australia and their faculties to further enhance the quality of their research postgraduate education. Researchers have suggested that although these instruments might not support the usefulness of PhD students' evaluations for benchmarking universities or faculties and departments, they are still good instruments according to many traditional criteria on the basis of individual responses (Marsh, Rowe, & Martin, 2002; Ginns, Marsh, Behnia, Cheng, & Scalas, 2009).

Supervision and peer support

From an earlier study on Mainland Chinese research students at the University of Hong Kong, it was found that in these students' perspective, good supervision meant more than research supervision that is measured in PREQ (Zeng, 2009). Other factors such as whether or not students perceived a comfortable personal relationship with supervisors, whether they perceive a smooth and comfortable communication with their supervisors, and whether they perceived an effort of their supervisors to socializing them into their disciplinary community were regarded as very important factors contributing to their progress in research studies and satisfaction with the learning experiences (Zeng, 2006). Another factor, perceived support from peers was found to be very influential as it helped the students make progress in research and promoted sense of belonging. Items measuring these dimensions were developed accordingly and tested in this study as well.

This study

The overarching focus of the present study was to validate PREQ and new scales in the context of the University of Hong Kong. More specifically, the appropriateness of using PREQ and new scales with Hong Kong research students was examined with the objectives of exploring:

- the goodness of fit and reliability of the data to the hypothesized scale structures including the newly developed scales on supervision
- the construct validity in terms of relationships between perceptions of research experience
- the predictability of research experiences on students' perceived development in generic skills

Methods

Sample

As there is relatively small number of research students graduates each year, this pilot study collected data from 409 research postgraduate students who were concurrently enrolled at University of Hong Kong from May 2009 to September 2009. They were from 10 faculties (Humanities, n=118; Sciences, n=219) and represented approximately 17.6% of the population. 41.3% (n=169) of the respondents were local Hong Kong students, 47.8% (n=196) were from Mainland China, and 10.8% (n=44) were from other countries and districts. There were 127 (31.2%) MPhil students and 280 (68.8%) PhD students. 9.3% (n=38) were part-time and 90.0% (n=368) were full-time. There were 207 (50.7%) females and 201 (49.3%) males.

Instruments and procedures

24 PREQ items, measuring research supervision, intellectual climate, infrastructure, skill development, and goals and expectations were adapted from the PREQ (University of Sydney, Institute for Teaching and Learning, 2007). These items were slightly modified in tense to make it more appropriate for the currently enrolled students; for example, 'supervision was available when I needed it' was changed into 'supervision is available when I need it'. 16 newly developed items measuring peer support and three other aspects of supervision (relationship with supervisor, supervisor's effort of socializing students into disciplinary community, and communication with supervisor) were also included (see Appendix 1). The students were asked to respond to each item on the extent they agreed with a particular statement along a 5-point scale (1=strongly disagree to 5= strongly agree). Additional data on background information of the

participants such as gender, program, faculty, mode of study, and origin of student were also collected. Before the formal data collection, the questionnaire was piloted among research students from different faculties as well as staff with relevant experiences and expertise. The survey was then put into an online survey system. Email invitations were sent to the currently enrolled research students for voluntary participation via the University email accounts. Ethical approval was obtained before the commencement of the survey.

Analysis

As previous studies have shown that PREQ is appropriate for analysis on the basis of the individual responses but not very robust on faculty and university level (Marsh, Rowe, & Martin, 2002; Ginns, Marsh, Behnia, Cheng, & Scalas, 2009), this study examined mainly the psychometric properties on the level of individual students. The responses to the items with negative wording (marked '*' in Table 1) were reversely coded before calculating the scale scores. The internal consistency of the scales was assessed using Cronbach's (1951) alpha. Exploratory factor analysis was then conducted with SPSS 15.0 to test the factorial structure of 24 PREQ items together with the 16 newly added items. Subsequently, confirmatory factor analyses on each one-factor model were conducted.

Robust Maximum likelihood (RML) was used to estimate the goodness-of-fit indices based on an asymptotic covariance matrix as the sample size of this study was comparatively small (Boomsma & Hoogland, 2001). The assessment of model fit included standard criteria: chi-square, non-normed fit index (NNFI), comparative fit index (CFI) and the root mean square error of approximation (RMSEA). The chi-square statistic tests the null hypothesis of perfect fit to the data. A non-significant chi-square indicates a good fit. CFI (Bentler, 1990) assesses the extent to which the specified model provides a better fit to the data than a null model. NNFI (Bollen, 1989) compares the fit of the two models. Their values of .90 or higher indicate good fit. The RMSEA is an index of badness of fit (Steiger, 1989). Values of .05 or lower suggest good fit and between .05 to .08 suggest moderate fit (Tomarken & Waller, 2003). After the confirmatory and validation analysis on each scale, correlation and multi-regression analyses were done to explore the relationships between perceptions of research experience and perceived development in generic skills.

Results

Exploratory factor analysis and reliability

An initial principal components analysis with Varimax rotation method identified a 9-factor solution based on the eigenbalue > 1 criterion, explaining 76.1% of the total variance (see Table 1). There was no cross loading on other scales greater than .30 among 24 PREQ items. However, there were several items from three other scales measuring supervision that cross loaded on research supervision and one item from research supervision cross loaded on supervisor's effort of socializing students into disciplinary community with factor loadings higher than .30. However, the highest loading of these items were on the scales they were designed for, except one, which was supposed to be related to communication with supervisor (.471) but loaded slightly higher on research supervision (.493). Analysis indicated that the scales had good internal consistency at the level of individual students. The estimates of reliability ranged from 0.79 to 0.95.

Table 1. Factor loadings of 24 PREQ items and 16 new items (marked with "")**

Scales	Items	Factor loading								
		1	2	3	4	5	6	7	8	9
Supervision	**s4**	**.799**	.119	.184	.137	.142	.197	.195	.148	.112
	s 2	**.779**	.117	.161	.068	.098	.307	.157	.102	.136
	s 6	**.744**	.194	.168	.018	.152	.256	.184	.167	.002
	s 1	**.735**	.121	.201	.102	.162	.179	.140	.129	.156
	s 3	**.720**	.124	.189	.142	.140	.175	**.305**	.160	.048
	s 5	**.709**	.252	.109	.085	.173	.253	.240	.118	.040
Intellectual climate	**ic1**	.100	**.801**	.060	.174	.228	.137	.015	.095	.080
	ic3	.131	**.790**	.016	.215	.258	.098	.144	.115	.053
	ic2	.139	**.736**	.135	.249	.247	.168	.151	.021	.071
	ic5	.230	**.710**	.056	.239	.207	.077	.186	.107	.052
	ic4	.231	**.688**	.121	.123	.254	.042	.190	.157	-.042
Skill development	**sd1**	.199	.078	**.798**	.089	.115	-.142	.088	.159	.001
	sd4	.184	.082	**.764**	.134	.144	-.051	.128	.117	.104
	sd3	.207	-.005	**.758**	.092	.068	.106	.046	.195	.024
	sd2	.155	.053	**.722**	.047	.070	.175	.041	.208	.110
	sd5	.002	.108	**.710**	.034	.155	.072	.180	.023	-.220
Peer support	**ps2****	.088	.156	.078	**.887**	.146	.017	.142	.113	-.009
	ps3**	.070	.227	.153	**.868**	.168	.050	.079	.056	-.009
	ps4**	.095	.195	.044	**.864**	.142	.054	.072	.060	-.003
	ps1**	.101	.199	.105	**.859**	.181	.008	.113	.078	-.033
Infrastructure	**i3**	.089	.237	.180	.076	**.802**	.061	.075	.069	.096
	i4	.096	.157	.168	.189	**.794**	.064	.039	.080	.017
	i2	.185	.203	.164	.212	**.752**	.061	.095	.099	.182
	i1	.122	.270	.121	.119	**.715**	.144	.054	.048	-.035
	i5	.221	.253	-.054	.167	**.572**	.023	.078	.239	.027
Relationship with supervisor	**rs3****	**.347**	.098	.117	.046	.122	**.800**	.196	.053	.015
	rs1*	.274	.123	.151	.046	.122	**.780**	.196	.083	.165

	*			6	7	9	**1**	8	9	2
	rs			.15	.05	.07	**.74**	.26	.03	-.04
	2**	**.392**	.157	1	6	5	**9**	9	2	3
	rs			.09	.00	.03	**.63**	.15	.09	**.32**
	4**	**.463**	.168	2	4	3	**6**	6	4	**1**
Supervisors' effort of socializing students into disciplinary community	**sdc1** **	.249	.150	.17 5	.10 2	.04 4	.24 8	**.79 0**	.07 0	.02 3
	sdc2 **	.221	.169	.12 7	.13 6	.09 4	.22 6	**.77 0**	.15 3	.11 2
	sdc3 **	**.327**	.186	.14 2	.13 7	.13 6	.27 2	**.71 8**	.13 9	-.01 0
	sdc4 **	**.418**	.149	.10 8	.16 3	.07 5	.06 3	**.63 2**	.00 6	.04 9
Goals and expectations	**ge3**	.188	.116	.22 9	.10 3	.10 1	.06 6	.09 3	**.87 7**	.03 5
	ge1	.148	.107	.21 4	.10 5	.19 4	.07 4	.09 3	**.85 1**	.00 1
	ge2	.217	.174	.26 9	.09 8	.11 6	.07 2	.11 0	**.80 6**	.07 3
Communication with supervisor	**cs1** *	**.493**	.165	.10 9	-.00 8	.08 8	**.45 5**	.18 7	.11 3	**.47 1**
	cs2 *	.030	-.006	.10 3	.07 9	.03 6	.01 4	-.08 7	-.05 2	**.75 3**
	cs4 *	**.332**	.140	.29 2	.10 3	.11 6	.24 1	.24 0	.12 0	**.56 9**
	cs3 *	.298	.113	.25 7	.04 7	.16 9	.17 9	**.31 2**	.21 3	**.56 4**
Eigenvalues		15.29	4.032	2.726	2.065	1.677	1.333	1.222	1.100	1.033
% of variance		38.23	10.06	6.769	5.155	4.197	3.332	3.055	2.754	2.588
Reliability		.95	.91	.88	.95	.89	.92	.90	.93	.79

Confirmatory factor analysis

The goodness-of-fit of 9 measurement models (intellectual climate, infrastructure, skill development, goals and expectations, research supervision, relationship with supervisor, communication with supervisor, supervisor's effort of socializing students into disciplinary community, and peer support) was tested. The significant error covariances between observed variables were specified (Byrne, 1998; Jöreskog & Sörbom, 1996). The chi-square for intellectual climate, infrastructure, skill development, goals and expectations, communication with supervisor, and peer support were small and non-significant ($p>.05$). Except for relationship with supervisor, whose RMSEA value was not acceptable (RMSEA=.14), the RMSEA values of all other scales were good (intellectual climate, infrastructure, goals and expectations, communication with supervisor, and peer support) to moderately acceptable (skill development, research supervision, relationship with supervisor, and supervisors' effort of socializing students into disciplinary community) (see Table 2). The NNFI and CFI of all models were all equal to or close to 1.00. Together, these fit estimates suggested good fit to the models for intellectual climate, infrastructure, skill development, goals and expectations, communication with supervisor, and peer

support, acceptable fit for research supervision and supervisors' effort of socializing students into disciplinary community and poor fit for relationship with supervisor. Therefore, the last scale was eliminated from further analysis. The model fit indices of the five one-factor measurement model (PREQ model) indicated that the resultant model fit well with the data (x^2=259.18, *df*=236, p>.14; RMSEA=.016; NNFI=1.00; CFI=1.00). The measurement models with PREQ scales and new scales fit the data considerably well too (x^2=590.32, *df* =441, p>.001; RMSEA=.030; NNFI=1.00; CFI=1.00).

Table 2. Fitted one-factor and measurement models for PREQ and 3 new scales: goodness-of-fit indexes

Composite variable	x^2	*df*	*p*	RMSEA	NNFI	CFI
Supervision	31.62	9	.00	.081	.99	.99
Communication with supervisor	3.03	2	.22	.036	1.00	1.00
Relationship with supervisor	17.03	2	.00	.14	.97	.99
Supervisors' effort of socializing students into disciplinary community	7.19	2	.03	.082	.99	1.00
Peer support	3.83	2	.15	.049	1.00	1.00
Intellectual climate	3.25	4	.52	.00	1.00	1.00
Infrastructure	2.74	5	.74	.00	1.00	1.00
Skill development	8.48	4	.08	.054	.99	1.00
Goals and expectations	.72	1	.40	.00	1.00	1.00
Measurement model (PREQ scales)	259.18	236	.14	.016	1.00	1.00
Measurement model (PREQ scales and 3 new scales)	590.32	441	.00	.030	1.00	1.00

Correlation and regression analysis

All scales showed significant correlations with each other (see Table 3). In the regression analysis of perceived development in generic skills with original scales of PREQ as predictors, significant path were found from research supervision (β=.30, p<.001), infrastructure (β=.17, p<.01), and goals and expectations (β=.33, p<.001) (see Table 4). The total variance explained was 41%. When the new variables were added (peer support, relationship with supervisor, supervisors' effort of socializing students into disciplinary community), the total variance explained was increased to 48%, research supervision was no longer a significant predictor of students' perceived development of generic skills while infrastructure (β=.12, p<.05), goals and expectations (β=.29, p<.001), communication with supervisor (β=.31, p<.001), and peer support (β=.13, p<.01) were (see Table 4). As 47.8% of the respondents were mainland Chinese students and the new scales measuring other aspects of supervision and peer support were developed based on a study of this type of students, separate regressions were also done by the origin of student, namely, Hong Kong local students vs. Mainland Chinese students. The patterns found were similar. In the both groups, when the new scales were added, communication with supervisor was a significant predictor (p<.001) and research supervision was a non-significant predictor (see Tables 5 and 6).

Table 3. Correlations between PREQ scales and new scales

	S	CS	SDC	I	IC	SD	GE	PS
S	1							
CS	.65	1						
SDC	.70	.54	1					
I	.51	.43	.43	1				
IC	.57	.45	.55	.66	1			
SD	.54	.57	.48	.45	.40	1		
GE	.49	.41	.41	.42	.42	.54	1	
PS	.39	.26	.40	.45	.54	.37	.34	1

Note:

1. All correlations are significant at the 0.01 level.
2. S=Supervision, CS=Communication with supervisor, SDC=Supervisors' effort of socializing students into disciplinary community, I=Infrastructure, IC=Intellectual climate, SD=Skill development, GE=Goals and expectations, PS=Peer support.

Table 4. Multi-regression analysis with skill development as dependent variable (all samples)

Model	PREQ scales			PREQ and new scales		
	Beta	**t**	**Sig.**	**Beta**	**t**	**Sig.**
(Constant)		10.71	.000		7.54	.000
Supervision	**.30**	**6.00**	**.000**	.08	1.26	.209
Infrastructure	**.17**	**3.20**	**.002**	**.12**	**2.45**	**.015**
Intellectual climate	-.02	-.38	.701	-.10	-1.88	.061
Goals and expectations	**.33**	**7.29**	**.000**	**.29**	**6.62**	**.000**
Communication with supervisor				**.31**	**6.40**	**.000**
Supervisors' effort of socializing students into disciplinary community				.10	1.81	.070
Peer support				**.13**	**2.86**	**.004**

Table 5. Multi-regression analysis with skill development as dependent variable (Mainland Chinese students)

Model	PREQ scales			PREQ and new scales		
	Beta	**t**	**Sig.**	**Beta**	**t**	**Sig.**
(Constant)		6.58	.000		4.79	.000
Supervision	**.29**	**4.01**	**.000**	.18	1.89	.061
Infrastructure	.15	1.90	.059	.08	1.05	.297
Intellectual climate	-.08	-.95	.342	-.10	-1.19	.235
Goals and expectations	**.41**	**5.87**	**.000**	**.34**	**4.97**	**.000**
Communication with supervisor				**.26**	**3.76**	**.000**
Supervisors' effort of socializing students into disciplinary community				-.02	-.20	.841
Peer support				.11	1.74	.084

Table 6. Multi-regression analysis with skill development as dependent variable (Hong Kong local students)

Model	PREQ scales			PREQ and new scales		
	Beta	**t**	**Sig.**	**Beta**	**t**	**Sig.**
(Constant)		7.76	.000		5.33	.000
Supervision	**.28**	**3.78**	**.000**	.04	.43	.668
Infrastructure	**.19**	**2.48**	**.014**	**.16**	**2.23**	**.027**
Intellectual climate	.06	.71	.479	-.07	-.88	.378
Goals and expectations	**.28**	**4.10**	**.000**	**.27**	**4.22**	**.000**
Communication with supervisor				**.33**	**4.17**	**.000**
Supervisors' effort of socializing students into disciplinary community				.16	1.96	.052
Peer support				.12	1.62	.107

Discussion

This study has generally supported the good internal consistency of all scales. The initial exploratory factor analysis showed that 24 PREQ items together with 16 new items formed a 9-factor structure. There was no cross loading larger than .30 among 24 PREQ items. The subsequent confirmatory factor analyses and test on the measurement model using PREQ items only also indicated good fit of the models to the data. These together supported the scales structure of PREQ at the level of individual students in Hong Kong context.

With regards to the newly designed items for the assessment of supervision, the estimates from confirmatory factor analysis indicated a good fit of one-factor models for communication with supervisor, an acceptable fit for supervisor's effort of socializing students into disciplinary community and a rejection for relationship with supervisor. The cross loading of items indicated that the new items designed to measure supervision need to be further developed. The new scale designed for the measurement of peer support displayed a valid and reliable scale structure based on all the statistical results.

The result that the inclusion of new scales made research supervision an insignificant predictor of students' perceived development of generic skills in multi-regression analysis suggested that there might be more aspects that should be covered in the evaluation of supervision such as whether or not students perceive a smooth communication with their supervisors, or at least for the research students at the University of Hong Kong. If this is the case, further effort in developing a more inclusive measurement tool for supervision may also help capture more variances among the respondents. This may help to identify variances between universities and faculties as well. However, as the sample size of this study was small, it was impossible to do such an analysis on subgroups to further confirm such a pattern.

References

Australian Council for Educational Research. (1999). Evaluation and Validation of the trial Postgraduate Research Experience Questionnaires. Australian Council for Educational Research.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238-246.

Bollen, K. A. (1989). A new incremental fit index for general structural equation models. *Sociological Methods & Research*, *17*(3), 303-316.

Boomsma, A., & Hoogland, J. J. (2001). The robustness of LISREL modeling revisited. In R. Cudeck, S. D. Toit & D. Sörbom (Eds.), *Structural equation models: Present and future*. (pp. 1-25). Lincolnwood, IL: Scientific Software International.

Byrne, B.M. (1998). *Structural equation modeling with Amos, EQS, and LISREL: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates.

Cronbach, L. J. 1951. Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297–334.

Ginns, P., March, H. W., Behnia, M., Cheng, J. H. S., & Scalas, L. F. (2009). Using postgraduate students' evaluations of research experience to benchmark departments and faculties: Issues and challenges. *British Journal of Educational Psychology, 79*, 577-598.

Jöreskog, K. G., & Sörbom, D. (1996). *LISREL 8: User's reference guide*. Chicago: Scientific Software International.

The Higher Education Academy (2009). PRES 2009 Questionnaire. Retrieved December 14, 2009, from http://www.heacademy.ac.uk/ourwork/supportingresearch/postgraduatework.

Marsh, H. W., Rowe, K. J., & Martin, A. (2002). PhD students' evaluation of research supervision: Issues, complexities, and challenges in a nationwide Australian experiment in benchmarking universities. *The Journal of Higher Education*, *73*(3), 313-348.

Steiger, J. H. (1989). *EZPATH: A supplementary module for SYSTAT and SYGRAPH*. Evanston, IL: SYSTAT.

Tomarken, A.J., & Waller, N. G. (2003). Potential problems with "well fitting" models. *Journal of Abnormal Psychology*, 112, 578-598.

University Grants Committee. (2005). Education quality work: the Hong Kong experience. Hong Kong: The Hong Kong Polytechnic University, Educational Development Centre.

University of Sydney, Institute for Teaching and Learning (2005). 2005 Student course experience questionnaire (SCEQ). Retrieved on December 12, 2006, from http://www.itl.usyd.edu.au/sceq2005.

University of Sydney, Institute for Teaching and Learning (2007a). Australian graduate survey (GDS & PREQ). Retrieved on December 2, 2008, from http://www.itl.usyd.edu.au/preq/Sydney_PREQ_APR07.pdf.

University of Sydney, Institute for Teaching and Learning (2007b). 2007 Student research experience questionnaire (SREQ). Retrieved on December 2, 2008, from http://www.itl.usyd.edu.au/sreq/2007_SREQ_questionnaire.pdf.

Webster, B. J., Chan, W. S. C., Prosser, M. T., & Watkins, D. A. (2009). Undergraduates' learning experience and learning process: quantitative evidence from the East. *Higher Education*, *58*(3), 375-386.

Zeng, M. (2006). The Adaptation of Mainland Chinese Research Postgraduates to the Universities of Hong Kong. Unpublished PhD Thesis, University of Hong Kong, Hong Kong.

Zeng, M. (2009). What makes high-quality research postgraduate education? Voices from Mainland Chinese research students at the University of Hong Kong. Paper presented in the 6th International Conference on Universities' Quality Development, Norway.

Appendix 1. Adapted PREQ item

PREQ items

Supervision

s1. Supervision is available when I need it.
s2. My supervisor(s) make(s) a real effort to understand difficulties I faced.
s3. My supervisor(s) provides me with additional information relevant to my topic.
s4. My supervisor(s) provides helpful feedback on my progress.
s5. I have received good guidance in my literature search.
s6. I am given good guidance in topic selection and refinement

Infrastructure

i1. I have access to a suitable working space.
i2. I have good access to the technical support I need.
i3. I am able to organise good access to necessary equipment.
i4. I have good access to computing facilities and services.
i5. There is appropriate financial support for research activities.

Intellectual climate

ic1. I am provided with opportunities for social contact with other research students.
ic2. I feel integrated into the faculty/centre/institute's community.
ic3. I am provided with opportunities to become involved in the broader research culture.
ic4. A good seminar program for research students is provided.
ic5. The research ambience in the faculty/centre/institute stimulates my work.

Skills development

Sd1. My research has further developed my problem-solving skills.
Sd2. I have learned to develop my ideas and present them in my written work.
Sd3. My research has sharpened my analytical skills.
Sd4. Doing my research has developed my ability to plan my own work.
Sd5. As a result of my research I feel confident about tackling unfamiliar problems.

Goals and Expectations

Ge1. I understand the requirements of thesis examination.
Ge2. I have developed an understanding of the standard of work expected.
Ge3. I understand the required standard for the thesis.

New items

Relationship with supervisor

Rs1. I have some enjoyable non-academic interaction with my supervisor(s).
rs1. My supervisor(s) is/are interested in helping me grow in more than just academic areas.
Rs3. My supervisor(s) is/are willing to spend time to discuss some non-academic issues of importance to me.
Rs4. I have developed a comfortable personal relationship with my supervisor(s).

Communication with supervisor

cs1. I have no difficulty in communicating with my supervisor(s).
cs2. I would get nervous when I speak to my supervisor.*
cs3. Sometimes I don't understand the advice of my supervisor.
cs4. I have difficulty in making myself understood by my supervisor(s).

Supervisors' effort of socializing students into disciplinary community

sdc1. My supervisor(s) provide(s) with me opportunities for contact with other academics of similar research area.
sdc2. My supervisor(s) encourage(s) me to communicate with other academics of similar research area.
sdc3. My supervisor(s) help(s) me to be integrated into the research community of my research field.
sdc4. My supervisor(s) keep(s) me informed of academic events (e.g. conferences & seminars) relevant to my filed.

Peer support

ps1. My fellow research students help me overcome difficulties I encounter in research.
ps2. My fellow research students provide me with advice on my research.
ps3. My fellow research students are willing to discuss academic issues of importance to me

Ps4 My fellow research students would like to share their research experiences/research with me.

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A different kind of doctoral education: A discussion panel for rethinking the doctoral curriculum

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Introduction

Boud and Lee (2009) discuss the emergence of doctoral *education* as a primary organising idea in practical and theoretical work on the doctorate, as distinct from notions of research training. This pedagogising of the doctorate has opened up important new spaces for thinking about doctoral processes, structures and outcomes, although we acknowledge the importance of adding notions of pedagogy alongside other doctoral discourses, rather than replacing those of research and knowledge production. Given the strong emphasis on the doctorate as an educational endeavour, we were collectively struck by the lack of engagement with one of the central concepts within the field of education: curriculum.

According to Green (2009), questions of knowledge in doctoral education are fundamentally questions about curriculum. Rethinking the doctorate in these terms directs attention to the forms of knowledge in which it is grounded and how these are articulated in the documentation and assessment of the degree (Gilbert, 2009). But curriculum may be about more than this. The panel brought together scholars with experience in a range of countries, and with varying interpretations of 'the doctoral curriculum'. As panel we did not speak with one voice, but rather sought to engage each other and our audience with this rich, powerful, contested, difficult and sometimes slippery notion.

In this written representation of the panel discussion, we maintain this multiplicity of views, each offering a personal account framed around the three questions that were posed by the chair, David Boud. The sequence of narratives begins with a description of aspects of emerging curricular practices and influences in a Swedish context (Abrandt Dahlgren). This is followed by responses from Hopwood, Kiley and Lee to the questions posed by the chair (Boud).

Madeleine Abrandt Dahlgren

Illustrating aspects of the doctoral curriculum in Sweden

Just to start—discourses of a doctoral curriculum or publishing pedagogies are more or less non-existent in the Swedish context. The Bologna process has had some impact, since it has forced us to articulate the intended learning outcomes of coursework as competencies; this has been a challenge to many of us. But to articulate the curriculum and pedagogies at work in our daily practice demands some reflection. In my department (at the University of Linköping), which hosts three disciplines, education, psychology and sociology, we have agreed on a common structure for assuring quality through out the PhD programme. There are three formal seminars that all doctoral students need to go through, and there are also regular work-in-progress seminars in the local research group to which the student pertain. Together these form crucial parts of a curriculum which focuses not only on substantive issues relating to students' research, but also fosters pedagogies relating to issues of peer review, defence of ideas, public scrutiny, presentation and publication. In their sequential nature, they offer a curriculum that moves with students, respectful of early-stage vulnerability and uncertainty (initial seminars may be quite private, in-house affairs), while raising expectations and extra-institutional involvement in later stages.

The first of the formal seminars is the 30% seminar, which is the first time the doctoral student presents preliminary research ideas in her or his research group, in which supervisors, staff and fellow doctoral students participate. The research ideas are discussed and the group of fellow researchers are collectively contributing with the intention to help the doctoral student to shape the research problem, and explore what theoretical perspectives that might be fruitful.

The second formal seminar is the 60% seminar. At this stage, the doctoral student is about halfway through, and presents the research that has been done so far, and also the plans for completing the thesis. At this seminar, there is a senior researcher from the department who acts as a discussant in order to make sure that the research is viable, and that the set plans is the way to proceed. The researcher who is acting as a discussant at the 60% seminar will also be a member of the committee when the thesis is finalised, and will then have a notion of the student's development along the course of the PhD program.

The third formal seminar is the 90% seminar, when the thesis is almost finished. A senior researcher from another university is acting as opponent, critically scrutinising a manuscript, which accompanies the presentation, and suggesting changes that need to be done. This person is normally also included in the final committee in the end. After the 90% seminar, there is a reading group to support the finalising of the thesis manuscript before it is printed and made public three weeks before the viva voce. Following the tradition of Martin Luther, who nailed his theses on the church door in Wittenberg, the doctoral thesis is literally nailed to the wall in our rector's office, with a particular nail and a particular hammer, only used for this occasion. Of course, we also use more modern ways of making the thesis public!

These formal seminars (and coursework requirements) are complemented by local research groups and the work-in-progress seminars, which take place within them. These seminars form the arena in which students learn how to discuss issues of methodology, analysis and draft versions of their papers, and think about where to publish. This takes place in a group of researchers and fellow students, raising questions of the ongoing debate are they addressing and making a contribution to with their research, and where they are located within

that debate. The work-in-progress seminars should make up a safe environment, where it is legitimate to expose insecurity, and where the doctoral student feels like one of the researchers in the group. Perhaps it is important to mention that the work-in-progress seminar is a working tool that we all use for developing and critiquing research ideas – that is not only for the doctoral students. The program for the seminars is decided collectively at the beginning of each semester, and anyone that has a paper in progress and wants to discuss it can step forward to do so. So, our doctoral students are also involved in critiquing more senior researchers' work – creating a curriculum in which critical feedback is not only received by students, but also offered by them. This agreed infrastructure of support through the formal seminars and the work-in-progress seminars in the local research group that are based on constructive critique and trust is what make up the research environment for the doctoral students.

Some curricular challenges

The steer towards publishing in international peer-reviewed journals is increasingly strong, and it is very difficult to resist this even within doctoral candidature. Whether this is helpful or not for the PhD student's development, can be debated, as can the pedagogies necessary to support the PhD candidate's development, in such pressurised conditions.

Following this, there is also pressure for writing in English. This means that students (and by all means, also senior researchers), who do not have English as their mother tongue, may always feel a step behind. Many of our doctoral candidates have never written anything in English before entering their doctoral education. There is a curricular pedagogical challenge there, how to support those writing skills when you are not yourself a native English speaker.

Nick Hopwood

What do I mean by the doctoral curriculum?

The power of curriculum for me is that it captures much more than written documents, statements of intent, modes of delivery, or outcomes. It is about the whole pedagogic environment, the collection of things and practices that shape students' learning. Curricular texts, socially and historically produced, do not speak for themselves, but are interpreted and re-fashioned in different places and at different times. Cultural habits and work practices (disciplinary, departmental etc.), modes of interactions and the privileging of particular discourses, practices and bodies all have pedagogic significance and constitute curriculum, as do the materialities of doctoral education. Curriculum is what is enacted and experienced through the course of being a doctoral student. Many hidden aspects of curriculum may be contrary to explicitly articulated intentions. Margolis and Romero (1998) capture vividly ways in which hidden doctoral curricula can reproduce social inequalities linked to race and gender. My notion of curriculum is thus not one of pre-defined, documented trajectories, but of something that has individual and social, historical, cultural, material and discursive dimensions.

What issues or challenges are surfaced through this perspective?

I have seen multiple ways in which students shape, extend and draw boundaries around their doctoral curriculum (see Hopwood, 2010a, 2011). For many this begins with defining their research agenda, and continues through engagement in teaching, wider skills development, participation on committees, attendance at conferences, and agency in fostering and exploiting the pedagogic potential of interactions with others (Hopwood, 2010b). At the same time I see the powerful

ways in which students are produced as particular kinds of subjects, and positioned socially, symbolically and materially – access to office space, exclusion from decision making. Holding the student both as constructor of and subject to curriculum in play presents a significant conceptual challenge.

A further challenge relates to resisting the depersonalising and disembodying of the doctoral curriculum. The students' narratives I have analysed clearly convey how the curriculum is not uniformly constructed or experienced, and how it is not simply a matter of the mind, but one of the body (Hopwood & Paulson, 2010). At the same time curriculum ceases to be useful and loses its conceptual integrity if it engages only at the level of individual experience. The doctoral curriculum is in many ways historically and culturally produced, and is re-constructed in the unfolding of in-the-moment disciplinary, institutional and other practices. The potential of thinking about curriculum I think lies in shifting the stance away from structure versus agency. Herein lie the challenges to follow the concept into its subjective, historical and wider cultural terrains.

What, then, might, could or should the future of the doctoral curriculum hold?

I believe that the doctoral curriculum could and should become a site of active political work. What more powerful locus of resistance is there against the agendas of improvement, quality assurance, surveillance and becoming business-like that neo-liberalism has brought? I also think that important theoretical and practical work remains to be done in thinking through the epistemological and pragmatic consequences of the shifting position of doctoral education – in relation to so-called knowledge economies, intra- and international flows of students, the multiple forms a doctorate has taken on, and the emergence of non disciplinary- Western- or university-centric modes of knowledge and knowledge production. These are imagined possible futures.

My sense of a more likely future is that the doctoral curriculum that is a site of distortion, control and accountability, shaped by forces that think not in curricular terms. The curriculum, with all its intangible and unintentional qualities, will continue to shape students' experiences, as will students themselves, but I certainly feel there is much to be lost if the future shaping of doctoral education fails to engage with that concept which is perhaps (as Bill Green suggests) uniquely indigenous to education.

Margaret Kiley

What do I mean by the doctoral curriculum?

When I try to explain the doctoral curriculum I usually build up a model involving several components (candidates, supervision, environment, examination, outcomes, outputs). I begin by looking at the candidate who arrives on a supervisor's 'doorstep' (or supervisors' doorsteps). Candidates will be male or female, of varying age, ethnicity and social background, have particular motivations, research experiences, academic background, conceptions of research, intellectual capacity, and cultural and language background to mention just a few of the possible variations (see Pearson et al., 2008).

In addressing in supervision we have to mindful of significant variation in what is offered to students. For some this may include two or sometimes three supervisors given that many universities require more than one supervisor for each candidate. As a collective, supervisors will have the same range of characteristics as students, as well as different levels of experience.

Research education does not occur in a vacuum, but rather is influenced by, among other factors, polices, procedures, global developments, disciplinary and

universities cultures, the role of peers and significant others, support services and resources. What may be broadly termed the environment or context in which doctoral studies are undertaken have an important bearing on the curriculum. Furthermore, the examination process is a substantial factor in the curriculum, not only as an assessment strategy, but also as a specific process in which the power difference between the candidate and supervisor is particularly evident. Finally, the outcomes and outputs of the research education experience are critical factors which shape the doctoral curriculum.

All of these factors influence the learning, teaching and research of, and by, both candidate and supervisor as outlined in Figure 1.

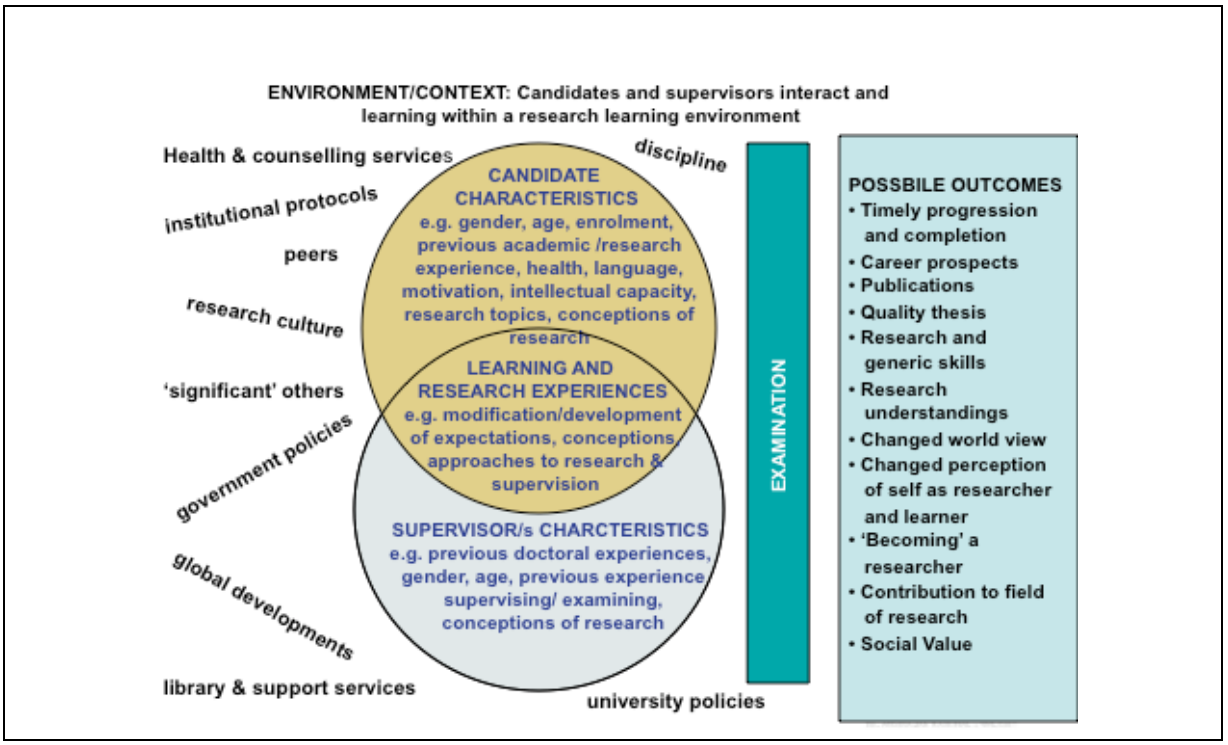

Figure 1 A model of influences on the doctoral curriculum

What issues or challenges are surfaced through this perspective?

Many of the research supervisors with whom I work at the Australian National University (ANU) would not think of the term 'curriculum' in the same context as the PhD. However, if I change the term to research education many of them would probably think of a PhD that happens in a faculty of education, or they might consider research methods courses. To address this challenge I have developed the above model of one way of trying to explain my perspective.

There is often a sense that doctoral candidates should come 'oven-ready' to commence research and that if they are not then they should not be accepted into a program. In some cases this belief is likely to be based on an award classification rather than any skills or knowledge that the candidate might have. With this 'oven-ready' view some staff would consider that the research education curriculum is one that relates to the Honours or Masters level where students are being prepared for a PhD.

However, to me the doctoral curriculum is something about:

Individual differences and working with each candidate to recognise strengths and weaknesses and identify ways of developing these;

Teaching (through modelling, supporting peer interaction, explanation, demonstration etc) about research through undertaking research;

Socialisation into a scholarly research community (not necessarily an academic one), and often into the discipline as well as into the concept of learning as a social phenomenon (e.g. Gardner, 2008);

I think it is also about understanding, and making understood, what is expected of the learning experience.

What, then, might, could or should the future of the doctoral curriculum hold?

Universities (and supervisors) would recognise that candidates arrive at their doorstep through rich and varied pathways, bringing different skills and motivations. They would also recognise that the special nature of doctoral education builds on that individual difference rather than trying to get everyone to 'conform' in the realisation that there are also a rich and varied way of moving through the doctoral experience.

Alison Lee

What do I mean by the doctoral curriculum?

If we are to explore ideas of curriculum in relation to doctoral education, I think it is very important to understand something about educational theorising about curriculum, in order to apply it usefully to the doctoral setting and to explore the possible usefulness, as well as the limitations of conceptions of curriculum for doctoral education.

Curriculum can be conceptualised in terms of a three-dimensional frame. The first dimension concerns the philosophy and purpose of an educational program. In its fullest sense, curriculum can be understood as a program of learning that is shaped by social, historical, political and economic forces, and as contributing directly to the shaping of broad professional, social and economic as well as personal futures (Australian Curriculum Studies Association, 2004; Barnett & Coate, 2005). A curriculum is both a motivated selection from relevant aspects of a culture (advanced disciplinary knowledges, professional practice and knowledge concerns, 'regional' knowledges (Bernstein, 2000), theoretical and methodological frameworks etc) and a vision of a future for that culture (e.g. a vision of a sustainable health system, enhanced literacy experiences, or cleaner energy). This level of thinking about the curriculum is critical to connecting curriculum development to questions of disciplinary, professional and intellectual futures and to the future of the university in a conceptually robust and sustainable way. It is within this dimension that questions of knowledge become visible and salient, including questions of disciplinarity, inter- and trans-disciplinarity etc.

The second dimension of curriculum theorising is concerned with framing sets of learning outcomes from curriculum work, expressed in relation to particular standards and sets of attributes: knowledge, skills and capabilities as well as values and attitudes (Barrie et al., 2006; Curriculum Council of Western Australia, 2010). Curriculum frameworks such as those of Barnett and Coate's (2005) conception of the 'dynamic curriculum' address the inter-relationships between knowing, being and doing. For doctoral education, the frameworks we have inherited from bodies such as DDOGS reside at this level of curriculum framing (Council of Australian Deans and Directors of Graduate Studies, 2008).

Currently there are growing discussions within this dimension, concerning the development of structured programs to develop generic capabilities such as employability- and career-related capabilities and outcomes.

The third dimension involves the core educational activities of teaching, learning and assessment. Within the context of doctoral education, what is important is to consider the core activities of research within particular fields, as requiring educational intervention, in terms of how students are inducted, enculturated and taught how to operate within a particular research environment. Examination of the outcomes of doctoral degrees is a key component shaping the nature of the activities undertaken within a doctoral candidature, and it critically involves writing at the centre of the examination process, particularly in Australia, where there are rarely viva examinations.

What issues or challenges are surfaced through this perspective?

What often happens in discussions about doctoral education is that policy attention is directed to the second dimension, involving developing lists of skills, attributes and outcomes, when the substance of what the doctoral program is engaged with—the production of new knowledge etc—is considered a separate matter from that of curriculum framing. Curriculum framing discussions often take place within the context of the first dimension, raising questions of the changing nature and purpose of the doctorate (e.g. generic skills development in relation to disciplinary knowledge production), but do not explicitly engage in these questions in terms of the philosophical underpinnings of such matters, rather remaining in the dimension of framing, specifying and tabling actual instances (Lee, 2005). This perpetuates a content-process split and impoverishes the discussions within doctoral education reform, in relation to questions of knowledge and the purpose and shapings of the doctorate.

Another issue is that the concrete everyday activities of doing research within a doctorate are most often couched in terms of research activity rather than learning activity, while the educational dimension of doctoral education reverts back to the supervision relationship. This narrows and impoverishes awareness and development of aspects of doctoral learning and development beyond or outside the supervision relationship. A well conceived curriculum framework can integrate these different dimensions in a way that will surface the relationships between them. There is a real and current debate within the European context, as highlighted by keynote speaker Wilhelm Krull (at this conference), about the tensions between seeing the doctorate as part of the European research zone, as part of the research policy process, and as part of the higher education reform process (where the doctorate moves up the scale of educational stage into the 'third cycle' of the Bologna process). An explicit focus on curriculum can render these struggles much more visible and explicit.

What, then, might, could or should the future of the doctoral curriculum hold?

In their reflective discussion of the idea of a 'research training curriculum', McWilliam and Singh (2002) ask some important questions concerning the nature of doctoral curriculum. They point out the term 'curriculum' is usually associated with coursework rather than research degrees, and speculate that this may be because 'curriculum's imperative to *contain* knowledge is widely understood to be contrary to the imperative of research, to discover new knowledge' (p. 3).

If the common idea of curriculum is that it 'contains' knowledge by prescribing and delimiting 'what counts as worthwhile learning' in particular fields, what then is research? McWilliam and Singh consider Gibbons' assertion that research is

'inherently transgressive' and it, by definition, exceeds its institutional boundary. But McWilliam and Singh suggest that this contrast is not so clear-cut as this and that actual practices of research are often more 'prescriptive than transgressive (p. 4). They suggest the possibility of imagining a doctoral curriculum that 'guides individuals in enacting research'. In this way the apparent tensions and contradictions in thinking normatively about curriculum and about research may be exceeded. Their point is that current pressures require such rethinking. For the purpose of this discussion, what this leads to is the continuing need to 'think curriculum as part of research' (p. 4) and to undertake careful conceptualisation of the relationships among research and education, knowledge and skill. A three-dimensional conceptual frame for curriculum, and a careful examination of the conceptual resources brought with the term 'curriculum', would offer important insights (Lee, 2005).

Final thoughts

In developing our own statements about the doctoral curriculum in response to Boud's questions, in challenging each other and being challenged by our audience, we have not arrived at a clear consensus view, nor have we operationalised the concept in a utilitarian way. If anything these processes have helped us better understand the complexity of curriculum as both a theoretical and practical concern. Kiley, describing curriculum with reference to students, supervisors, environment, assessment and outcomes, points to the work that needs to be done if we are to engage colleagues in other disciplines in productive discussions about a doctoral curriculum (or a curriculum for research education). Abrandt Dahlgren's account of the Swedish seminar processes was suggestive of a rich pedagogy (a curriculum not only about research substance and methods, but about issues of defence, peer review, public scrutiny), and site of progressive pedagogic continuity (Delamont et al., 1997) across the period of candidature. The conceptual perspectives offered by Hopwood and Lee suggest that the doctoral curriculum is not necessarily a comfortable place to dwell, but dwell we must in the complexities, tensions and challenges it provokes.

References

Australian Curriculum Studies Association (2004). *ACSA principles for Australian curriculum reform,* available online from http://acsa.edu.au.

Barnett, R., & Coate, K. (2005*). Engaging the curriculum in higher education,* Maidenhead: Open University Press and the Society for Research in Higher Education.

Barrie, S., Hughes, C., & Smith, C. (2009). *The National Graduate Attributes project: integration and assessment of graduate attributes in curriculum*, available online from http://www.altc.edu.au/resource-national-graduate-attributes-project-sydney-2009.

Bernstein, B. (2000). *Pedagogy, symbolic control and identity: theory research, critique*, Oxford: Rowman and Littlefield.

Boud, D., & Lee, A. (2009). Introduction. In D. Boud & A. Lee (Eds.), *Changing practices of doctoral education* (pp. 1-9). London: Routledge.

Council of Australian Deans and Directors of Graduate Studies (2008). *Framework for Best Practice in Doctoral Education in Australia*, available online from http://www.ddogs.edu.au/cgi-bin/papers.pl?cmd=v&f=33340.

Curriculum Council of Western Australia (2010). *Curriculum Framework*, available online from http://www.curriculum.wa.edu.au.

Delamont, S., Parry, O., & Atkinson, P. (1997). Critical mass and pedagogic continuity: studies in academic habitus. *British Journal of Sociology of Education, 18*(4), 533-549.

Gardner, S. K. (2008). 'What's too much and what's too little?': the process of becoming an independent researcher in doctoral education. *The Journal of Higher Education, 79*(3), 326-350.

Gilbert, R. (2009). The doctorate as curriculum: a perspective on goals and outcomes of doctoral education. In D. Boud & A. Lee (Eds.), *Changing practices of doctoral education* (pp. 54-68). London: Routledge.

Green, B. (2009). Challenging perspectives, changing practices: doctoral education in transition. In D. Boud & A. Lee (Eds.), *Changing practices of doctoral education* (pp. 239-248). London: Routledge.

Hopwood, N. (2010a [in press]). Doctoral students as journal editors: non-formal learning through academic work. *Higher Education Research & Development, 29*(3), 319-331.

Hopwood, N. (2010). A sociocultural view of doctoral students' relationships and agency. *Studies in Continuing Education*, 33(2), 103-117.

Hopwood, N. (2011 [in press]). Doctoral experience and learning from a sociocultural perspective. *Studies in Higher Education, 36*(1).

Hopwood, N., & Paulson, J. (2010, 19-23 April 2010). *The body in doctoral education: towards a research agenda.* Paper presented at the 2nd International Doctoral Education Research Network Conference, Universiti Putra, Kuala Lumpur.

Lee, A. (2005). 'Thinking Curriculum': framing research/education. In T. W. Maxwell, C. Hickey, & T. Evans (Eds.) *Professional doctorates: working towards impact. Proceedings of the 5th Biennial International Conference on Professional Doctorates*, (pp. 75–86), Geelong: Deakin University, available online from http://www.deakin.edu.au/education/rads/conferences/publications/prodoc/.

McWilliam, E., & Singh, P. (2002). Towards a research training curriculum: what? why? how? who? *Australian Educational Researcher*, *29*(3), 3-19.

Pearson, M., Cumming, J., Evans, T., Macauley, P., & Ryland, K. (2008). Exploring the extent and nature of the diversity of the doctoral population in Australia: a profile of the respondents to a 2005 national survey. In M. Kiley & G. Mullins (Eds.), *Quality in postgraduate research: research education in the new global environment - conference proceedings* (pp. 90-114). Canberra: Australian National University.

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A generational analysis of the "How to Get a PhD…" literature: Towards a classification of the genre

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Over the last 15-20 years, there has been a huge increase in the number of texts intended to advise students 'how to get a PhD' and supervisors 'how to supervise a PhD', hence our identification of this literature as the 'How to…' literature. Kamler and Thompson refer to them as 'DIY guides and advice books' (1986, p. 507) Despite the large number of texts that have been produced, there is a surprisingly small academic literature on them and this paper seeks to go some way towards addressing this omission and also to contributing to our understanding of their past, and possibly future, development. The paper is structured in the following way.

- Why has there been this expansion in the 'How to…' literature?
- What do we know about that literature?
- The presentation of an initial framework for more systematic analysis through the development of a tentative/ initial construct and generational analysis.

Why the expansion?

The expansion of the 'How to…'literature has been driven by a number of developments within the environment within which universities go about their business and also as a result of universities seeking to maximise their revenue streams, their performance in national research assessment exercises and their placement in the international rankings by which they are increasingly judging one another and being judged by prospective students, through increasing the number of research students they, first, recruit and then see through to graduation. These environmental factors include:

- Expansion of doctoral student numbers across the world
- Increased international competition for research students
- Diversification of the research student population
- Growing concern about the quality of the doctoral experience
- Emphasis on timely completion
- Increasing pressure on the student-supervisor relationship as higher education undergoes a process of massification
- Development of a number of bodies concerned with graduate education (DDoGS [1995], UKCGE [1994], UK SRHE Postgraduate Issues Network [1995])
- The development of the 'DIY culture/genre' across society (Kamler & Thompson 1986)
- Parallel developments in the literature on 'How to…be (a taught student)'
- Increased academic and scholarly interest in the virgin territory of the research degree (Quality in Postgraduate Research Conference [established 1994] and International Doctoral Education Research Network [2007])
- Competition and borrowing amongst and between education publishers.

What do we know about the literature?

The simple answer to this question is, 'very little'. To date, as far as the authors can ascertain, the academic literature consists of McCulloch and Stokes (2006) in which we focused on the linear approach taken by much of the 'How to…' literature and called for a greater focus on the 'messiness' of the doctoral experience, and Kamler and Thomson (2008) who focus on the subject of doctoral writing, setting the discussion in the context of the 'How to…' text as a genre. Their discussion reinforces our own conclusions when they criticise the texts as generally characterising the writing process as a 'series of linear steps', and goes further by identifying the following aspects of the texts as problematic:

- They encourage the reproduction of the expert-novice relationship
- They constitute advice packages comprising a set of over-generalised rules
- The texts are emphatic in nature and offer a paradox of reassurance and fear

Kamler and Thomson call for the re-positioning of students as 'scholars-in-the-making' (p. 512)

The only other reference to the 'How to…' literature comes in Maher et al (2008 where the authors note the 'growing array of 'how-to' guides for dissertation writing', finding them 'generally…difficult to engage in and of limited usefulness.' They note that they found themselves 'in agreement with Kamler and Thomson'. (p. 264)

The development of an initial framework for analysis

In developing a framework for analysis, we recognise that we are seeking to construct a classificatory system and that, as such, our framework should conform to the rules of such entities. In this we follow Doty and Glick (1994) who characterise *classification schemes* and *taxonomies* as 'systems that categorize phenomena into *mutually exclusive and exhaustive sets* with a series of *discrete rules*' about how to allocate cases to sets. This means that as a very minimum, a classificatory scheme must comprise at least two categories and must also have defined rules by which cases can be placed along the dimension or dimensions that define the scheme. Further, at its most basic, classification involves the organisation of data or cases into a number of discrete categories through the utilisation of one or more dimensions.

Why should we seek to classify?

With its roots in Aristotle's explication of political systems, classification is a fundamental tool of academic (or indeed any) form of analysis, and can perform the following functions:

- Allows the organisation of data.
- Assists with the identification of new cases or data when they occur by enabling their definition as specific types of instance rather than examples of a more general entity.
- Enables systematic comparison.
- Allows the identification of patterns in development within the cases or data.
- Can enable the identification of possible trajectories of future developments.
- Can act heuristically, suggesting possible lines of enquiry about relationships between any variables which may have been defined as part of the development of the classificatory schema.
- More fully developed classificatory schemes can offer the possibility of explanation regarding variables, cases and data.
- Functions as a narrative aid, that is, it can make telling the story of a potentially chaotic collection of cases or data much easier.

In the case of this paper, when faced with the question "why should we seek to classify the 'How to…' literature", the answer is that classification:

- Helps make the body of literature visible
- Helps make the literature understandable
- Helps us to understand the past, and also the potential future, development of the body of literature.

What is the literature with which we are concerned?

In any classificatory scheme, it is important to place boundaries around the phenomena being dealt with. Accordingly, for the purposes of this current paper, 'How to…' literature has been excluded unless it:

- has the doctoral process as its focus;
- is explicitly intended, *inter alia*, to advise either research student, supervisor, or both on ways of improving the likelihood of successful navigation of all or part of the doctoral process; and,
- has been published in the UK.
- The specific literature we examine is detailed in Appendix 1. We intend at a later point to extend our analysis to include other texts and to make international comparisons.

Possible classificatory dimensions (i.e. classificatory criteria)

In developing the classificatory dimensions of our framework for the analysis of the 'How to…' literature, we need to ensure that they:

- recognise that the doctoral process is an *administrative* process ;
- recognise that the doctoral process is a *social* process;
- reflect the diversity of the body of students pursuing doctoral qualifications. and also that they
- reflect the literature's different audiences.

As part of this process of dimension development, the authors read the literature and also took cognisance of the policy and administrative context in which doctoral provision is made and doctoral study occurs. We identified a number of possible dimensions and these are shown in Figure 1.

Figure 1: Potential dimensions for the development of a classificatory system

Primary audience students	-	Primary audience supervisors
Student focused	-	Supervisor focused
Focus on whole PhD process	-	Focus on part of the PhD process
Representation—normative	-	Representation—constructivist
Full-time	-	Part-time
Responsibilities for caring	-	No responsibilities for caring
UK domiciled student	-	EU/international student

The next move was to position these to produce a sequence of 2 x 2 classificatory grids which use each of the dimensions shown in Figure 1 as the axes. The simple framework is shown in Figure 2. The work discussed in this article is ongoing and only one of these grids, that using the two dimensions of 'supervisor voice' and 'student voice', is used in the paper to illustrate the principle and use of our approach. Figure 2b shows this use and, in this Figure, it is possible to identify four possible different categories of 'How to…' texts. These are, as shown in Figure 2b:

Figure 2: A simple 2 x 2 typology

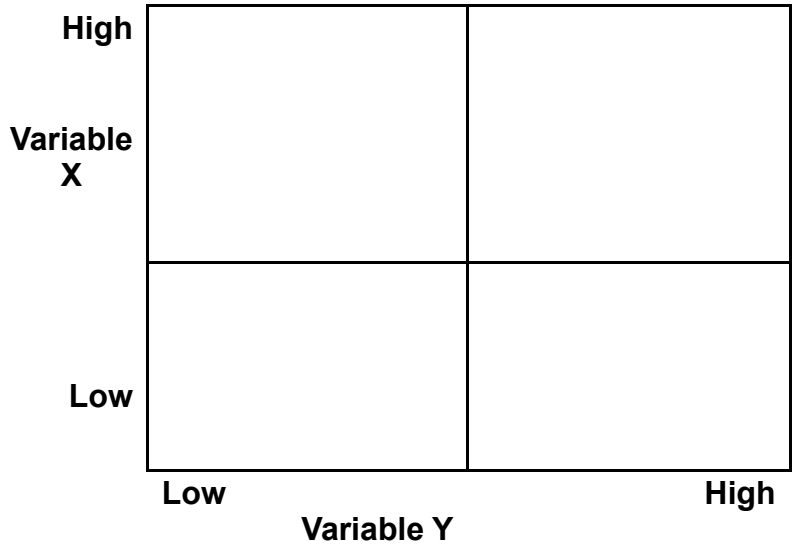
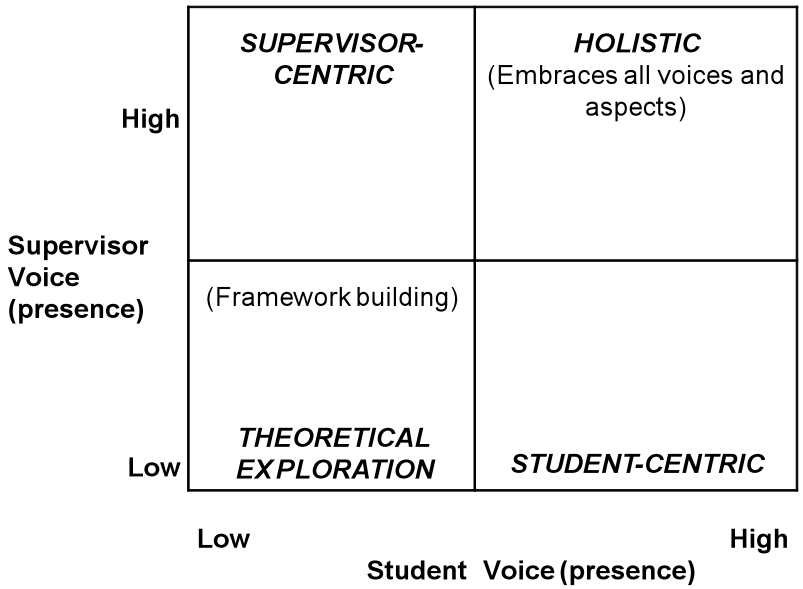


Figure 2b: Supervisor Voice and Student Voice

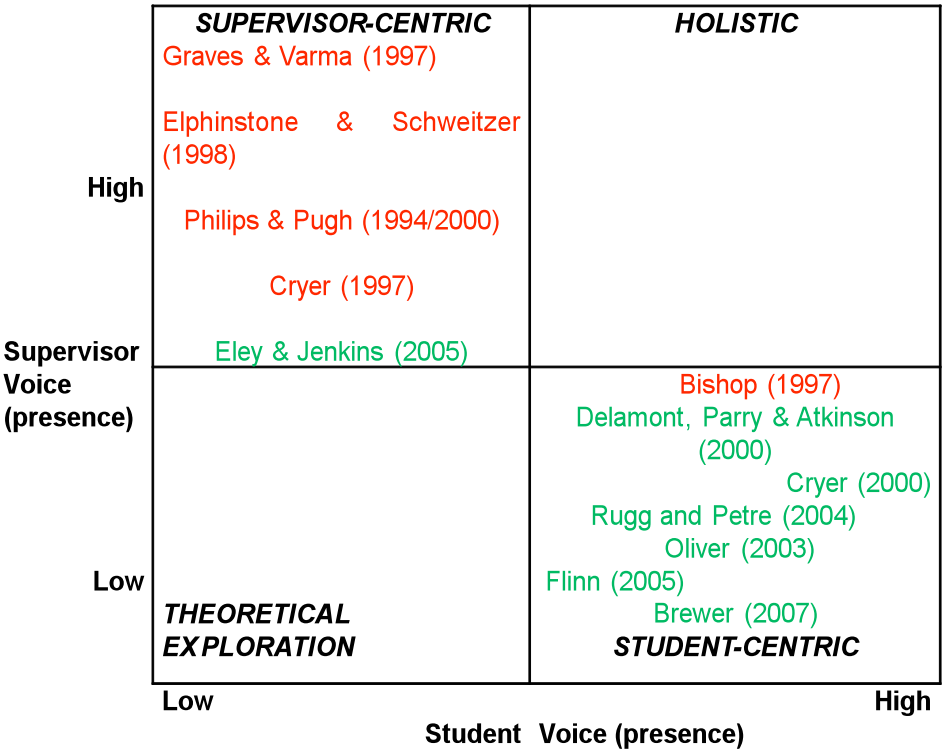


- **Supervisor-centric**: where a text gives high prominence to the supervisor voice, but low prominence to the student voice.

- **Student-centric**: where a text gives high prominence to the student voice, but low prominence to the supervisor voice.
- **Holistic**: where both supervisor and student voice are given high prominence.
- **Theoretical exploration**: where neither supervisor nor student voice are given high prominence.

Figure 2c illustrates the situation when a number of the texts shown in Appendix 1 are allocated by the authors to the appropriate categories within the classificatory framework. These allocations should be treated as provisional at this stage as it is planned that each author will be contacted to allow them to review the authors' categorisation. What immediately becomes apparent is that two of the cells remain empty, that is, there is no representation of 'holistic' or 'theoretical exploration' texts. What is also apparent from the Figure is the suggestion that there has been a move over time in text production from the category of 'supervisor-centric' towards that of 'student-centric'.

Figure 2c Supervisor Voice and Student Voice



Conclusion: What does this tell us about the 'How to…' literature?

Our initial contention is that the framework has a potentially high degree of utility in helping us understand the nature and development of the 'How to…' literature. In addition to saying something about the nature of the publishing industry, it has the potential to:

- show diagrammatically how the literature has developed over time
- show how the literature has moved from the 'general' to the 'specific' (this is suggested in our further work which is not reported as part of this current paper)

- show how constructionist approaches to parts of the process are largely missing (although there are notable exceptions to this) and that the literature remains largely 'linear/processual' in nature.

The framework also appears to demonstrate an increasing focus on student as opposed to supervisor perspectives (and we speculate that this may reflect the development of CPD for supervisors within and between HEIs and, thereby, a lessening need for DIY-type literature)

The framework also allows us to more easily identify 'gaps' in the 'How to…' literature, which our work using others of the dimensions shown in Figure 1 suggests include:

- Student-focused pieces on part-process
- Supervisor-focus on part-process
- Constructionist approaches to part-process

Finally, we believe that we can identify three broad generations of 'How to…' texts.

- Supervisor-focused
- Student-focused
- Constructionist

References

Doty, H & and Glick, W. (1994). 'Typologies as a Unique Form of Theory Building: Toward Improved Understanding and Modeling', The Academy of Management Review, 19(2), pp. 230-251.

Kamler, B. and Thomson, P. (2008). 'The failure of dissertation advice books: towards alternative pedagogies for doctoral writing', *Educational Researcher*, Vol. 37, No. 8, pp. 507-14.

Maher, D. et al, (2008). "'Becoming and being writers': the experience of doctoral students in writing groups", *Studies in Continuing Education*, Vol. 30, No. 3, pp. 263-275.

McCulloch, A. and Stokes, P. (2006). 'Beyond the doctoral process: A call for the re-focussing of "How to…Get a PhD" literature', *Journal of Graduate Education*, Autumn, pp. 107-115.

Appendix 1: 'How to…' literature referred to in the development of the Framework

Bishop, V. (ed.) (1999). *Working towards a research degree*. London: Nursing Times Books, c1999

Brewer, R. (2007). *Your PhD: How to Plan, draft, Revise and Edit Your Thesis*. Abergele (UK): Studymates.

Cryer, P. 1997 *Handling Common Dilemmas in Supervision***,** The Society for Research into Higher Education and the Times Higher Education Supplement, London.

Cryer, P. 2000, *The Research Student's Guide to Success*, Open University Press, Buckingham.

Delamont, Parry & Atkinson (2000) *The doctoral experience: success and failure in graduate school.* London, Falmer Press.

Delamont, Atkinson & Parry (2004). *Supervising the Doctorate: A Guide to Success.* Open University Press, Buckingham.

Eley, A. & Jennings, R. (2005). *Effective Postgraduate Supervision: Improving the Student/Supervisor* Relationship. Maidenhead: Open University Press.

Elphinstone, L. and Schweitzer, R. 1998, *How to Get a Research Degree: A Survival Guide***,** Allen and Unwin, St. Leonards.

Finn, J. (2005) *Getting a Ph.D: An Action Plan to Help Manage Your Research, Your Supervisor and Your Project,* London, Routledge.

Graves, N. and Varma, V. 1997, *Working for a Doctorate*, Routledge, London.

Leonard (2001). *A woman's guide to doctoral studies*, Open University Press, Buckingham.

McCulloch, A. & Stokes, P. (2008). *The Silent Majority: Meeting the Needs of Part-time Research Students*, Issues in Postgraduate Education: Series 2, London: SRHE.

Murray, R. (2002). *How to Write a Thesis*, Maidenhead, Open University Press/McGraw-Hill Education.

Murray, R. (2003). *How to Survive Your Viva*, Maidenhead, Open University Press/McGraw-Hill Education.

Oliver, P. (2003). *The Student's Guide to Research Success*, Maidenhead, Open University Press/McGraw-Hill Education.

Pearce, L. (2005). *How to Examine a Thesis*, Maidenhead, Open University Press/McGraw-Hill Education.

Phillips, E. and Pugh, D. 1994/2000) *How to Get a PhD: A Handbook for Students and Their Supervisors,* Open University Press, Buckingham.

Rugg, G. and Petre, M. (2004). *The Unwritten Rules of PhD Research*, Maidenhead, Open University Press/McGraw Hill Education.

Tinkler, P. and Jackson, C. (2004). *The Doctoral Examination Process: A Handbook for Students, Examiners and Supervisors,* Open University Press, Maidenhead.

Wellington, J. Bathmaker, A., Hunt, C., McCulloch, G. & Sikes, P. (2005). *Succeeding With your Doctorate.* London: Sage.

Wisker, G. (2005) *The Good Supervisor: Supervising Postgraduate and Undergraduate Research for Doctoral Theses and Dissertations*, Basingstoke, Palgrave- Macmillan

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The relationship between critical and creative thinking in postgraduate education

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Introduction

Field of research and purpose

Doctoral students are supposed to develop many faculties during their postgraduate education, among them critical and creative thinking. This is evident, for instance, in the Swedish Higher Ordinance where critical and creative thinking are conceptualized as certain skills for identifying and formulating scholarly problems. However, against the background of existing literature on critical and creative thinking this is a rather limited way to capture their meanings. In fact, there is a range of theoretical meanings as to how these phenomena are understood, which all of them could be related more or less to the scholarly context. As both these phenomena are conceptualized in quite diverging ways, and since their relationship to one another is not clear, we do have a genuine educational challenge in respect to how critical and creative thinking could be developed in postgraduate students. Accordingly, we need to put the contextual meanings of critical and creative thinking into words and find out the different conditions for these faculties to be developed. Indeed, much research already exists as regards critical thinking on the one hand and creativity on the other, yet not in relation to postgraduate education where such research is almost non-existent. Inasmuch as a lot of research on both critical and creative thinking point to the fact that these phenomena are context-dependent, it is of great importance to examine critical and creative thinking within the special context of postgraduate education. Furthermore, research on the *relationship* between critical and creative thinking has received almost no attention hitherto, which also creates a crucial need for further knowledge within this area. This missing spot in research could be explained by the fact that critical and creative thinking have traditionally been understood as contradicting to one another. Yet with the newer perspectives on both critical and creative thinking, the relationship between the two phenomena could be understood in a fruitful and dialectical way, hence opening up the possibilities for a new research field. A first step in this direction has already been taken by e.g. Paul & Elder (2009) who show that both critical and creative thinking are needed in order to make ethical judgments.

Against this background, a two-year Swedish research project started in 2009 in order to examine critical and creative thinking in scholarship as regards their meanings and relationships both in theory and practice. The overall aim of the empirical study is to scrutinize how doctoral students and their supervisors experience critical and creative thinking against the background of their specific scholarly and educational contexts, and to examine how they conceptualize creative and creative thinking in relation to the doctoral student's thesis work. Inasmuch as the project is in its very beginning only some initial theoretical and empirical results can be presented in this paper. Firstly, a theoretical model will be introduced in order to illuminate how the relationship between critical and creative thinking could be understood in relation to the development of qualified scholarly thinking. The model is based upon a synthetic understanding of existing and established theories on critical and creative thinking that will be very briefly described below. Also, some first empirical results are presented, with special focus on how three doctoral students conceptualize the meanings

and estimated values of critical and creative thinking within their scholarly and educational contexts.

The theoretical study

Perspectives on critical thinking

The meaning of critical thinking is understood and manifested in a number of ways, both in theory and in practice. Irrespective of which contemporarily theoretical perspective one refers to, however, they do have some qualities in common. Critical thinking is more or less related to rationality and it always involves some kind of abstract thinking (Brodin, 2008). Research on critical thinking is possible to trace back to the 1940s, where Glaser developed the first test on critical thinking and conceptualized it in the following way:

(1) an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experience, (2) knowledge of the methods of logical inquiry and reasoning, and (3) some skill in applying those methods. (Glaser, 1941. See Walters, 1994, p. 8)

Glaser's definition of critical thinking constitutes the foundation for how this phenomenon is understood in traditional perspectives on critical thinking today where critical thinking is basically understood as a rational and general skill which is independent on the context. This implies that if the individual has learned to think critically in one context, he or she could transfer his or her critical thinking ability to other contexts as well. Within the traditional field, mainly two perspectives could be identified: The cognitive perspective which has its base in psychology, on the one hand, and the informal logic movement which has its roots in philosophy, on the other. In the cognitive perspective critical thinking is generally understood as a problem solving skill in which the critical thinker follows certain rational rules in order to attain an appropriate conclusion. For instance, it could be a matter of following the rules for hypothesis-testing. Accordingly, in the cognitive perspective, critical thinking is conceptualized as a scientific method for rational and objective problem solving (Halpern, 1984; Kurfiss, 1988). In the informal logic movement, critical thinking is not only understood as a pure cognitive skill but also as a certain argumentative approach in which the critical thinker is *disposed* to think critically as Siegel (1988) expresses it. However, in accordance with the former perspective, critical thinking is still conceptualized within rationally principled frames in which the critical thinker is "*appropriately moved by reasons*" (ibid., p. 23). The traditional way to understand critical thinking as a rational skill which is independent on the context has, however, been questioned by later researchers. In fact, critical thinking seems to be a highly context-dependent phenomenon inasmuch as earlier experience within a certain area is vital for the quality of critical thinking (Bailin et al., 1999). Moreover, later researchers have pointed to the fact that the critical thinker is unavoidably captured within his or her cultural frames, and hence cannot be as objective as is advocated in the traditional perspectives. Therefore, in these later perspectives, critical thinking is understood as a subjective, context-dependent and interactive social phenomenon. Furthermore, critical thinking is no longer conceptualized within rational frames only, but other qualities are highlighted as important aspects of critical thinking as well, such as reflective thinking, emotions, imagination, intuition and creativity (Brookfield, 1987; Garrison, 1999; Thayer-Bacon 1998, 2000; Walters, 1990). As regards the emotional part of critical thinking, it is mainly associated with negative and uncertain feelings, which could be explained by the fact that such feelings are traditionally understood as constituting the origin of critical and reflective thinking (e.g. see Dewey, 1997). There are, however, some scholars who assert that positive emotions are important for critical thinking as well (e.g. see

Brookfield, 1987). Within the later views on critical thinking, mainly two perspectives could be discerned which both of them hold that thinking cannot be separated from the individual's unique cultural horizon of understanding: The existential "developmental-reflective" perspective, and the feminist perspective. In the former perspective, critical thinking basically implies that the individual continuously questions his or her prejudiced beliefs and reflects upon other possible ways of understanding and being in the world in order to choose a constructive path for further development (Brookfield, 1987). In the feminist perspective, critical thinking is rather construed as a kind of "constructive thinking" that appears between individuals in a never-ending dialogue. Thus, critical thinking corresponds to social communicative action when this action is related to constructive knowledge development (Thayer-Bacon, 2000). Comparing the existential "developmental-reflective" perspective with the feminist perspective, it turns out that critical thinking is mainly understood as a reflective way of being in both perspectives.

One aspect that is more or less highlighted in all the four above mentioned perspectives is the individual's responsibility of thinking critically in order to maintain the democratic society. Thus critical thinking is implicitly understood as a means for attaining normatively good ends. The same phenomenon appears in scholarship where critical thinking is very much associated with problem formulation and methodology, but not so much on the critical feature of the results. Rather, the critical quality of scholarly results is somehow thought to be ascertained through their foundation in appropriately chosen problem and methods, which leads to that critical thinking is captured in its own instrumentality. This is problematic inasmuch as critical thinking involves no assurance of ending in something good in itself. Thus, the most prominent quality of scholarly critical thinking should be the individual's sense of responsibility towards both scholarship and society in a way that constitute the intention, process and end into an interrelated constructive whole (Brodin, 2008)[9].

Perspectives on creativity

Similar to the theoretical frameworks on critical thinking, creativity is also understood in different ways. This could be explained by the fact that the meaning of creativity is dependent on culture and context (Lubart, 1999). According to my readings within this knowledge field so far10, two main streams could be identified: The cognitive perspectives, and the existential perspectives on creativity. Starting with the cognitive perspectives, creativity is often conceptualized in accordance with the general overall psychological understanding of this phenomenon, which implies a kind of divergent thinking (Gardner, 1993). Divergent thinking in this context implies that the creative individual is good at making unique associations when approaching a certain stimulus or problem. Another cognitive way to understand creativity is provided by de Bono (1990), who conceptualizes creativity as lateral thinking. More specifically, lateral thinking means that the individual applies different systematic methods in order to create new ideas and concepts. Lateral thinking is rather

[9] My own doctoral thesis in Education, which I defended in 2007, is titled: "Critical Thinking in Scholarship: Meanings, Conditions and Development". Besides analyzing different contemporary perspectives on critical thinking, I also analyze the meanings of critical thinking in relation to the epistemological development of scholarship ranging from different philosophers in ancient Greece until Foucault in postmodernism. Throughout history it appears that the scholarly critical thinker is concerned with either mastering, understanding or changing the world, and that these underlying interests could be derived from the critical thinker's sense of responsibility towards God, nature, society and humanity as a whole. For further reading, see the slightly revised version of my thesis that was reprinted in 2008 (see list of references).

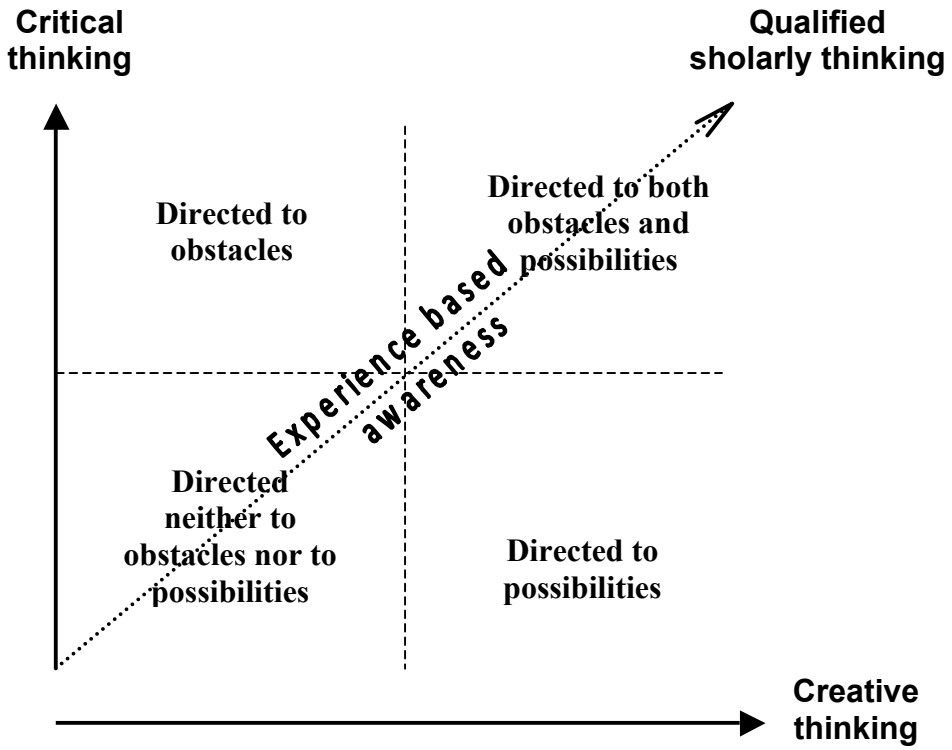
[10] In contrast to critical thinking, which I have studied for several years, creativity is still a quite new research field for me. Therefore, my theoretical summary of creative thinking is only in its initial phase and will be deepened and developed further on.

directed to widening one's own field of thinking than deepening it. In order to summarize the cognitive approach in this respect, creative thinking is often understood as a kind of problem solving where originality is a qualitative part of the process, either by making unique associations or by using new methods. In the other main stream, where creativity is understood in a more existential way, creative thinking is founded in the individual's entire experience. For instance, May (1994) asserts that creativity does not only emerge in the creative idea or in the creative product, but also in the pure experience of something created. According to May, the creative process is characterized by the individual's increased intensity of awareness, which in turn makes the individual understand the attended object in new ways. The same foundation in experience is also evident in another prominent scholar on creativity, namely Csikszentmihalyi, who conceptualizes creativity as a being in the process of "flow", in which the individual is deeply concentrated on a specific goal-directed task (Csikszentmihalyi, 1990). According to Csikszentmihalyi, this process is characterized by a complete sense of joy. Other researchers have, however, showed that the creative process is not purely a pleasant experience but also anxiety and ambivalence are typical feelings connected to the creative course of action (Smith & Carlsson, 1990). Against this background, it appears that creative thinking implies to reach beyond what is already given in different ways and that emotions play an important role in this process. Sometimes creativity is manifested through the individual's ability to make associations beyond the current contexts, and other times it becomes manifest in that the individual find new modes of solving problems. It could also be a matter of experiencing a phenomenon in a new way. Irrespective of which meaning one refers to, it emerges that creativity is an emotional phenomenon that involves seeing new possibilities in some way or another.

Comparing critical and creative thinking in theory

When comparing the theoretical meanings of critical and creative thinking to one another, both similarities and differences appear between them. In respect to both critical and creative thinking, emotions are a constitutive part of the process yet with a particular distinction. Even though all kinds of emotions play an important role in both phenomena, negative feelings are more frequently associated with critical thinking, whereas the creative process is generally understood in terms of positive feelings. Furthermore, both critical and creative thinking are sometimes conceptualized as certain skills involved in problem solving, although in traditionally different ways. Whereas the critical thinker follows certain rational rules for solving his or her problem, the creative thinker rather breaks the rules in order to find new ways as to how to solve a problem. Also, in both cases it is a matter of abstract thinking that involves an experience which directed beyond the present. In critical thinking, this direction is very much "past – present" orientated, since critical thinking often has its origin in a sense of dissatisfaction with earlier and current conditions. Creative thinking, on the other hand, is rather "present – future" oriented, inasmuch as focus is often put on creating a forthcoming product. The most prominent theoretical difference between the two phenomena is that critical thinking is related to rational thinking, whereas creative thinking is rather understood as a kind of original thinking. Pondering further, another important difference between critical and creative thinking appears. Critical thinking has a clear feature of responsibility which is not evident in creative thinking. Within the scholarly context of postgraduate education, this critical responsibility is mainly directed to find the shortcomings of the doctoral students' (and others') ideas, theories, methods or results. Thus scholarly critical thinking in this sense means to be directed to the obstacles of the thesis work in order to increase its scholarly quality. Creative thinking, on the other hand, lacks a clear quality of responsibility. Instead, it is a

matter of free creation where different ways for future development are explored, with no immediate concern for the eventual consequences. Within the context of postgraduate education, creative thinking could therefore be understood as being mainly directed to the possibilities of the further development of the thesis work. Based upon this synthesized understanding of the similarities and differences between critical and creative thinking, a first theoretical model has been worked out. The model is supposed to be valid within the frame of postgraduate education and aims at illustrating how these phenomena are related to each other, on the one hand, and how this relationship could be understood in connection to the development of qualified scholarly thinking, on the other.



The relationship between critical and creative thinking in postgraduate education

The empirical study

About the participants

The sample is delimited to four universities in Sweden, in which the participating doctoral students and their supervisors belong to either of the following four faculties and disciplines: (1) *Musical performance* within the faculty of fine arts, (2) *Educational practice* within the faculty of social science, (3) *Psychiatry* within the faculty of medicine, and (4) *Theoretical philosophy* within the faculty of humanities. Totally 3-4 doctoral students and supervisors from each discipline are planned to be interviewed, given a total sample of 14 doctoral students and 14 supervisors. At the time when the interviews are carried out, the doctoral students have accomplished at least 60 % of their research education, and most of them are supposed to defend their doctoral thesis in public within one year. Since the data collection is still going on and the analytical process is in its initial phase, no complete empirical results can be provided in this context. Instead the results presented here are based upon analyses of interview data from three doctoral students: one female student in musical performance, one female

student in educational practice, and one male student in theoretical philosophy. According to the background data these students are full time students, although with some exception for the student in educational practice who works partly (20 %) as a teacher in compulsory school. They all have their supervisor at the same department to which they belong, and they all participate regularly in the seminars that are arranged at their departments. Leaving out the student in musical performance, who has chosen to do her thesis work at home, these doctoral students work in their institutional environments. No background data is collected in respect to the supervisors included in the study, as it was not considered as necessary for the purpose of this research project. Inasmuch as the aim is to capture how doctoral students and their supervisors experience critical and creative thinking against the background of their different scholarly settings, especially two background factors are important: (1) Amount of experience of carrying out research, and (2) Amount of experience of being a part of a scholarly community. As regards the first background factor, all supervisors were supposed to have rather great experience of doing research, or else they would not be qualified as supervisors. In respect to the doctoral students, one criterion in the selection process was that the student should have accomplished more than half of his or her postgraduate education. In other cases they would not have enough experience of doing thesis work for answering the interview questions in qualified manner. In respect to the other background factor, the supervisors were supposed to have great experience of being part of a scholarly community, because once again they would otherwise not be supervisors. To which extent the doctoral student works with his or her thesis in a scholarly environment and how much he or she participates regularly in the seminars at the department are, however, important questions. Through such information it is possible to get a picture of some of the conditions for critical and creative thinking to be developed in the doctoral student.

About the interviews

In connection with my inquiries if the doctoral students wanted to participate in the study, they were also asked if they would like to send me an excerpt of their thesis manuscript (about 30 pages). The students were told that it should be an excerpt that they were satisfied with themselves and that the text was not going to be included in the analysis. Instead, the intention was that their text would constitute a basis for concrete reflections during the interview. All students included in the study have accepted to share their texts with the interviewer. Also, all of them have given their permission to that the interviewer discusses the same text in a similar way with their supervisor. After having accomplished 17 interviews in the writing moment, a reflection is that reading the doctoral student's text in beforehand has been especially valuable for the quality of the interviews. Since the disciplines included in this study were partly chosen because of my general competence within the knowledge fields, I could fully understand most of the texts (with some exception for a few texts which were harder to grasp due to their technical language that I do not master completely, e.g. in psychiatry and theoretical philosophy). Generally each interview takes approximately one hour to carry out (ranging from 40-100 minutes). The interviews are semi-structured and comprise how the participants experience critical and creative thinking in relation to the following themes:

- Meanings within the participants' specific practices
- Expressions in the doctoral student's thesis work
- Process (both their general development throughout postgraduate education and in relation to academic writing)
- Estimated value and experienced demand for critical and creative thinking

- Relationship to one another

About the analysis

Each interview is transcribed word for word and confirmed by the participants before the transcription is analyzed with hermeneutic-phenomenological text analysis. In short this qualitative methodological approach implies that focus is put on the participants' own descriptions of how they experience critical and creative thinking against the background of their specific scholarly and educational context. Thus there is no preceding theoretical framework as to how to categorize the interview data, but the interpretative and descriptive themes are worked out successively through the analysis of the content and meanings of the participants' statements. As the data collection is still going on and the analytical process is in its initial phase, it is presently not possible to provide any complete results with interpretative conceptual themes as to how critical and creative thinking are contextually understood by the participants. Instead there will be a descriptive presentation of some first empirical results from my interviews with three doctoral students, as I have described earlier.

Some first results

Meanings of critical thinking

All three doctoral students conceptualize critical thinking in a quite traditional manner. According to them, critical thinking means to be objective, to argue and to question both one's own writings and others' research. However, exactly what is questioned in relation to others' research differ between the students. Whereas the doctoral student in musical performance mainly questions facts, such as whether a specific author has reported the correct year in musical history or not, the doctoral student in educational practice is more concerned with methods – if other researchers have carried out their studies in an appropriate manner. The doctoral student in theoretical philosophy, on the other hand, directs his critical thinking to the conclusions and results of other philosophers. The main critical question for him is whether the philosophical conclusions are valid in general or if they are context-dependent. In case of the latter, further critical thinking is needed as the conclusion is then not philosophically satisfying. One important aspect of critical thinking for the doctoral student in musical performance and in theoretical philosophy is to avert critique from others. This implies that they continuously ask themselves whether their writings could be criticized, as critique from others is related to rather unpleasant feelings such as fear and blushing. Thus the critical goal is to write a text that "just cannot be criticized" as the student in theoretical philosophy expresses it. In order to attain that goal, these students have two solutions as to how to avert critique from others. On the one hand you could develop unclear parts in the text. On the other you could erase them. In contrast to the other two students, the student in theoretical philosophy is the only one who relates critical thinking to problem solving. According to him critical thinking is important in the process of identifying and finding solutions of problems.

Meanings of creative thinking

The doctoral student in musical performance almost exclusively relates creative thinking to her musical part of her studies. Even so, she also sees some connections with the academic part. For instance, in accordance with the other two students she thinks that her creative thinking becomes manifest when she stands out as a person in the text. More specifically, the students express that it implies to be "personal and subjective" (musical performance), to "develop your own identity" (educational practice), or to "have your own approach" (theoretical

philosophy). The student in musical performance does, however, add that one should not be too subjective as this is detrimental for the critical feature of the thesis. Furthermore, according to the students in musical performance and educational practice, creative thinking is needed in order to write readable texts which are well-structured, coherent, interesting and nice to read. All students also conceptualize creative thinking in terms of developing one's own understanding. For both the student in musical performance and the student in educational practice creative understanding emerges when two different contexts are put together. For instance, it appears when history is related to present times or when theory is related to practice. The doctoral student in theoretical philosophy, however, describes creative understanding as trying to empathically imagine another person's perspective. To be more precise, he conceptualizes creative thinking as a will to understand the underlying intentions of another person even if one does not agree with the other person's specific theoretical perspective. This statement could be understood against the background that the same student explains that there is not so much tolerance of other perspectives within his scholarly context of theoretical philosophy. Hence, taking a wider perspective corresponds to creative thinking in his point of view. Finally, the doctoral student in theoretical philosophy is the only one of the three students that relates creative thinking to problem solving. During the interview I asked him how creative thinking is differently related to problem solving in comparison with critical thinking. He answered that creative thinking is involved in the actual solution of a problem, whereas critical thinking is related to the identification of problems and their solutions. Thus, critical thinking is used in the former processes of problem solving, whereas creative thinking is used in the latter processes.

Important aspects for developing critical and creative thinking in postgraduate education

When the students were asked to point out what has been important for their development of critical thinking in postgraduate education, they all mentioned participation in seminars with senior researchers (the student in theoretical philosophy mentions no other factors). Only one of the students, the one in musical performance, states that her supervisor has been important for her development of critical thinking. She also thinks that reading is an important developmental factor inasmuch as she experiences that increased knowledge facilitates critical thinking. The student in educational practice holds that besides the seminars, also courses (especially in methodology) and academic writing have been the most essential parts in her education for developing her critical thinking. When the same question was asked as before, yet in relation to creative thinking, the doctoral students give no unitarily answer. The doctoral student in musical performance mentions that the opportunity to make theoretical and critical reflections upon her own musical practice has certainly promoted her creative thinking. Thus in her case, academic critical thinking has been explicitly fruitful for the development of creative thinking. Also, the fact that she has been forced through her education to put her musical practice into words has been important for her creativity. The doctoral student in educational practice points out that academic reading and writing are vital for promoting her creative thinking, but only when these activities are founded in genuine understanding of the current theories that she reads and writes about. The doctoral student in theoretical philosophy, on the other hand, asserts that nothing in his postgraduate education has been fruitful for the development of his creative thinking, but rather the reverse. Instead, most important for his development in this respect are those critical and informal discussions that he has with his friends at the department. When I ask him why he thinks that this informal setting has been especially valuable for his creative thinking, he answers that he can discuss wider questions (which are not strictly limited) with

his philosophical friends. Also, he says that one is not afraid of trying new paths of thinking in that context.

Experienced demands for critical and creative thinking

All three students experience great demands for critical thinking in their education. However, the doctoral student in musical performance only experiences this in relation to the academic part of the thesis work (the text book). At the same time she also experiences a great demand for creative thinking, but only in respect to the musical part of her doctoral studies. Neither of the other two doctoral students experience any external demands for creative thinking. The doctoral student in educational practice does, however, push herself to write readable and nice texts, which make them creative in her point of view. The doctoral student in theoretical philosophy points out that creative thinking is not encouraged in his scholarly context and that creativity is only allowed within very narrow and predetermined frames. When he once attempted to be more creative and take a "wider perspective" at a seminar in the beginning of his postgraduate education, his seminar text was not accepted at his department at all. The critique was so harsh that he was deeply wounded afterwards and thereafter chose to conform to the existing philosophical paradigm.

References

Bailin, S., Case, R., Coombs, J.R. & Daniels, L.B. (1999). Common misconceptions of critical thinking. *J. Curriculum Studies*, 31 (3), pp. 269-283.

Brodin, E. (2008). *Critical Thinking in Scholarship: Meanings, Conditions and Development*. *Revised Edition.* Saarbrücken: Verlag Dr Müller.

Brookfield, S.D. (1987). *Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting*. Buckingham: Open University Press.

Csikszentmihalyi, M. (1990). *Flow: the psychology of optimal experience*. New York: Harper & Row.

De Bono, E. (1990). *The use of lateral thinking*. London: Penguin Books.

Dewey, J. (1997). *How We Think*. Mineola, New York: Dover Publications.

Gardner, H. (1993). *Creative minds: An anatomy of creativity seen through the lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Ghandi*. New York: Basic Books.

Garrison, J. (1999). Dangerous Dualisms in Siegel's Theory of Critical Thinking: A Deweyan Pragmatist Responds. *Journal of Philosophy of Education*, 33 (2), pp. 213-232.

Halpern, D.F. (1984). *Thought and Knowledge: An Introduction to Critical Thinking.* London: Lawrence Erlbaum Associates, Publishers.

Kurfiss, J.G. (1988). *Critical Thinking: Theory, Research, Practice, and Possibilities*. ASHE-ERIC Higher Education Report No. 2. Washington, D. C.: Association for the Study of Higher Education.

Lubart, T.I. (1999). Creativity Across Cultures. In: R.J. Sternberg (ed.), 1999, *Handbook of Creativity*, pp. 339-350.

May, R. (1994). *The courage to create*. New York: W.W. Norton.

Paul, R. & Elder, L. (2009). Critical Thinking, Creativity, Ethical Reasoning: A Unity of Opposites. In: D. Ambrose & T. Cross (eds.), *Morality, Ethics, and Gifted Minds*, Chapter 8, pp. 117-131, Dillon Beach: Springer US.

Siegel, H. (1988). *Educating Reason. Rationality, Critical Thinking, and Education*. London: Routledge.

Smith, G. & Carlsson, I. (1990). *The Creative Process: A functional model based on empirical studies from early childhood to middle age*. Madison: Int. Universities Press, Inc.

Thayer-Bacon, B.J. (1998). Transforming and Redescribing Critical Thinking: Constructive Thinking. *Studies in Philosophy and Education*, 17, pp. 123-148.

Thayer-Bacon, B.J. (2000). Transforming Critical Thinking: Thinking Constructively. Foreword by Jane Roland Martin. London: Teachers College Press.

Walters, K.S. (1990). How Critical is Critical Thinking? *The Clearing House*, 64 (1), pp. 57-61.

Walters, K.S. (1994). Introduction: Beyond Logicism in Critical Thinking. In: K. S. Walters (ed.). *Re-Thinking Reason: New Perspectives in Critical Thinking*. Albany: State University of New York Press.

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Experiences in developing an on-line research supervisors induction module

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The University of Western Sydney (UWS) is developing an on-line supervisors induction program, for senior staff new to UWS and for new academics.

Writing the modules and filming interviews for video clips has raised a few unexpected issues. We are adjusting our work practices on a "learn as we go" basis. This presentation will look at how we have fared so far and what insights we have gained.

I hope my talk doesn't remind you of the scene in Fawlty Towers where Basil snarls at Sybil that she should be a contestant on "Mastermind", special subject; "the bleeding obvious". A quick trawl of the web shows that many universities have very well structured Graduate Supervisor Development programs but this is the story of our adventure at UWS.

I'll start with a little background about our current program, to lead in to the explanation of why have made the decision to go on-line and how that has affected what we are already doing.

Ten years ago we introduced a Graduate Supervisor Register which requires attendance at a training event once every three years. We were conscious that staff might see it as another example of apparatchiks sticking their beaks in. But we were looking for a systemic solution to the niggling irritation of a few candidatures that were taking up an awful lot of time with thorny problems.

Policy driven behaviour sets a common baseline. That's fine for people who need to lift their game, but is not so beneficial for those already operating above the minimum standard. We couldn't mark out some supervisors as targets for reform so how would we engage good supervisors? Especially as they have excellent skills and knowledge that others would benefit from their sharing?

Right from the start we deliberately shied away from language like "training". "Training" is for monkeys, not sophisticated educators. We spoke of "supervision as a shared experience" We didn't want our forums to reflect the outdated supervisory practices we were encouraging people to move away from; no more master apprentice relationships in supervision. No standing up and telling supervisors how to perform.

In our "Research Supervisor Forums" we aim for genuine sharing among supervisors and an opportunity to draw attention to national trends, developments in research and UWS policy and resources. The program is more than reform of crooks. It aspires to raise the profile of HDR education and add to the repertoire of good supervisory practices. We want good conversation about HDR.

Themes of forums include publishing and your candidate, authorship issues, exams, giving feedback, practices that support a writing culture, mentoring of junior supervisors, what does ERA mean to you as a supervisor?

Annually, there are at least two large forums with invited external guests for experienced supervisors who would enjoy an opportunity to hear other experts,

for purposes of registration renewal. DDoGs have been a generous source for us and we are very appreciative of their excellent contribution. Prof Anthony Pare gave a most erudite and well received talk on writing just last week.

The forums run for three hours and the outline is;

- Setting the national HDR context, UWS profile
- Introductions
- Information update, new policies, resources
- Library information
- Morning tea
- Senior academic leader or panel introduces the advertised topic and engages in discussion, case studies etc.

We distribute relevant journal articles and policies. I follow up the forum with an email giving links to further resources and answer questions that may have arisen during the forum.

Ratings of forums 2009, scores in percentages:

Overall rating	92% good to excellent
Overall content	88% good to excellent
Ease of understanding of information	92% good to excellent
Knowledge of presenters	98% good to excellent

Policy is best explored through case studies, all from true life; rather than standing out the front and saying blah blah blah item 3 of section 6 of the policy states that zzzzzzzzzz.

I thought that writing case studies might be an opportunity to be creative and think up some really tricky situations. No need. All our case studies are from "true life". Only the names have been changed to protect the not so innocent. Here's my favourite;

Thelma said:

> Of course I'm not writing yet, I need to think deeply for another few months but my supervisor is pressuring me to start writing because she doesn't understand the way I think. Her constant demands are impeding my progress. I think it's because she is jealous of my professional career. I'll have to change my supervisor.

As Thelma's principal supervisor what do you think of that comment?

We do try not to be boring and to be respectful of participant's expertise and their valuable time. Comments from participants are taken seriously and the program is adapted according to evaluation information. If they ask for more discussion, the next forum will have more discussion. I have included checklists in the supervisor's handbook and made a better effort to keep academic staff appraised of policy changes, and tell them about opportunities for candidates etc. One spin off is a new e-news monthly bulletin for supervisors.

The forum program has three tiers; New to UWS, New to Supervision and Re-registration. For the two new groups we hold a forum each semester and for re-registration we have the large forums with invited guest speakers and specific topic forums with UWS presenters.

So why go on-line?

1 Tail wagging the dog

Wrong forum attended, for the sake of ticking a box

There has been pressure on occasion to allow staff to attend a forum that was not suitable for them, so that they could "get on the books" e.g., senior researchers attending "new to supervision" forums. This is the wrong motivation. It is policy that principal supervisors must be on register, but it is much better practice to allow them to put their name down for the right forum rather than risk damaging the whole program, never mind irritating the individual staff member, for the sake of bureaucracy.

2 I've got a compass and a cut lunch but no diary space

UWS has six campuses and covers an area the size of the Netherlands.

There are just under 600 people on the Graduate Supervisors Register, which means there around 200 people needing to renew registration annually plus new additions to staff.

The most serious problem is the diaries of people needing to attend and what we offer at which campus. We hold up to 12 forums a year, if four of those are for new staff and I am on leave one semester, it only leaves 4 for me to choose from. This can be very difficult.

Consequently, often people don't go the most suitable forum; they go to one that suits their diary and location.

This, in effect, is us having trouble keeping up with demand.

3 Changing Expectations

Staff, like students, are looking for and expecting greater flexibility and alternative modes of delivery. They want to be able to complete requirements in their own time. Our challenge is in obliging such desires without losing the strong components of the current program.

4 What's the party-line comrade?

This only happened once but I have to mention it because it is so outrageous. We invited a well-known academic as a presenter who told his audience that they shouldn't bother with things like annual progress reports. *If you just refuse to do them, you'll eventually get away with it* he cheerfully said. After everyone had left my co-presenter and I lay on the floor, waving our legs and arms in frustration.

Rule number one; make sure your presenter is not going to poke their tongue out at the university. The party line rules!

5 Oh no not another forum: Imposition on academic leaders

We have to resist a tendency to use the same reliable academics who we know will do a great job as a presenter.

Seminars by senior staff are very well received. Academics respect each other, and their leadership is inspirational. However, we have to be careful not ask the same people all the time. We do feel shy about imposing on busy staff to lead discussions so we always give them content to use, with discussion questions,

case studies, references etc. There is an element of a favour bank too; no free lunches at UWS.

We do a deal with presenters; they get a 3 year registration renewal as a thank you. There must be at least one professor who is registered till about 2020.

6 You need a script writer: No place for a content free zone

Quick fix "lets fill their heads with UWS policy" sessions were run a couple of times for experienced new to UWS staff, by other senior staff, for tick a box purposes.

Participants could have read the material on the web; the "value adding" component was absent. Supervisor forums need an element of curriculum development by asking the question; how will this event ensure a coherent experience that contributes towards professional and academic development? The forums have never been about dictating practice but are of nurturing shared conversation about HDR.

7 They wanted opera and got hip hop: B Hons supervisors

It was decided that B Hons supervisors should be more closely aligned with the doctoral experience and research in general. Perfectly sensible. How was it approached? Make it policy that all B Hons supervisors had to be on the Graduate Supervisors Register.

How do you get on to the register? Attend a forum and complete some paperwork. Do forums address B Hons issues? No they don't. Who gets mighty narked? B Hons supervisors who attend. Who gets even crankier about this? The presenters who are put in an impossible situation. This snuck up on us as we were unaware of the policy change. Out of the blue we had an influx of participants introducing themselves as "here for Hons". Apart from a mismatch of expectations we couldn't cope with the increased numbers.

There are moves afoot to provide a program that addresses B Hons supervision.

Does the on-line program address the problems above? Yes

- The dog will wag the tail
- The party line rules
- Favourite presenters are left in peace
- Script is all pre-prepared and nicely tuned
- Content and audience are clearly identified
- Problems with location and dates vaporise.

Other advantages of on-line

Academic contributions to video clips. Their narratives are a highlight. For example; in explaining how scholarship students have a responsibility to pursue their candidature as their number job, one professor told a story about a student who told her husband that she wasn't being paid by the university to do the housework. *A candidature to watch*, she added.

Another academic spoke of prevaricating behaviours by students and told a personal story of her candidature where she found herself re-grouting the tiles in the bathroom of a rented property. She went on to warn about the candidate who takes the long way around the building to avoid you. Something is awry there.

Candidates keep their professors honest said another.

In establishing the candidature *structure is everything* and you need a common language of scholarship…*Or you are nowhere*

The speaker on examinations said *poor examiner choice can ruin a career* and he went on to explain how to make the most of multi-disciplinary theses, of not viewing boundary breaking work as a burden but as a creative exploration that is good for scholarship.

Panel supervision was described as in tune with human ways of working; we are social, there are strengths in numbers and sharing ideas among a brains trust team. No more guru/shishya, as in Indian music, was used as another way of saying no more master/apprentice. We don't work that way anymore; we're not in business of imparting a set of rules and knowledge but rather, collegially guiding as supervisors.

One supervisor shows students editing of her own work, in preparation for their submitting articles and to normalise the feedback process. She tells her students *if you haven't been rejected for a journal at least once you haven't aimed high enough.*

Chris Halse and Janne Malfroy's work on supervisor's concept of themselves as professionals with highly developed skills and knowledge gives voice to previously unarticulated knowledge. A *Language for unexpressed ways of doing.*

Intended to speak more about this today but we have had a delay in getting access to some of the clips. The point is though that the value of the videos is a reflection of the value of our attended forums; shared experience, academics talking to each other about their practice.

Capturing things we are repeating at the moment. The re-registration program titles change to reflect interests and topical issues. Forums for the two new groups tend be fairly consistent over time which means that we are repeating ourselves. Why not do it once instead and dedicate freed resources to enhancing the attended program?

Volume control. We have threatened to hold auditions for academic staff presenters before they get the gig. Their content may be excellent, but it is surprising how many people who have spent most of their lives giving lectures adopt a soft, intimate, conversational voice when addressing a room full of people.

Does on-line create new problems?

Yes

1 Virtual wall flowers

Social interaction and HDR conversation will be lost. No more *in the room together* sharing ideas. Learning is a social activity, losing it is a significant disadvantage.

What to do?

- Use the on-line program as an introductory base.
- Build on the on-line program with the attended forums.
- Possibly use a wiki space for discussions.
- Follow up in AOU's where real valuing of research culture and provision of excellent opportunities for candidates should be cultivated.

2 No longer make initial face-to-face contact with new staff.

This is a loss for me as it has been a good opportunity to be introduced as a living, breathing person who can be contacted later about any HDR matters

How does the attended program fit in with on-line?

The on-line program will be an adjunct to attended forums. Getting the best from the combined program will be a work in progress. We are using the same principles with both attended and on-line programs, that is, engage UWS experts, share expertise, encourage a HDR discourse and learn from our practice.

On-line content

The two groups will share these topics; UWS HDR profile, UWS HDR performance, trends in pedagogy, national trends and UWS, UWS supervision policies.

Experience and inexperienced supervisors are then streamed.

Experienced supervisors topics are: Panel supervision and mentoring other panellists, scholarship establishment, governance of HDR, mandatory reporting, role of senior academic leaders and the Dean of Research Study, topical issues at UWS (e.g. scholarships and paid work, extensions and timelines), resources for supervisors, resources for students, encouraging development and participation in research culture, examples of good practice that participants share, policy case studies, evaluation.

For staff new to supervision the additional topics are: your role on a supervisory panel, how to negotiate with other panellists, models of panel supervision, first year reporting, on-line orientation for students, early candidature plan confirmation of candidature, expectations and concerns about supervising, establishing the relationship with the candidate, good practices, managing progress against time, examples of good practice, evaluation.

Video Clip Topics: Reflections on supervisory practice, the university is your friend and wants you to succeed; use the system, how does supervision fit in ones career? Cultivating good research practice, supervision as a pedagogy, keeping your student on track, identifying difficulties and taking action, managing the panel, project management, examiner choice and cross disciplinary work, career mentoring for students, publishing and writing.

The Project

We have some excellent web development friends who are turning the content provided by me into visually appealing on-line material.

It is still early days; we have mapped out the content, sought references and done most of the filming. Design is still in progress and after that comes implementation and an evaluation mechanism. At the moment we are editing the video clips.

Participants will be encouraged to answer some questions, then given some possible answers. The modules will raise questions, plant ideas and provide references.

There won't be an assessment as such but rather an encouragement to reflect on ones practice and themes raised, as we encourage at forums.

Doing the Filming

We offered presenters general topic areas and points we wanted to cover.

It wasn't in an interview format; we didn't want the presence of a second person but rather the presenter speaking directly to the audience.

We chose the presenters carefully; with respect to a variety of disciplines, colleges, gender balance and we sought people we knew were exemplars as supervisors and who would make a good contribution.

Speakers were asked to address their audience just a little to the side of the camera, to avoid a rabbit in the headlights effect. I sat next to the camera, to get the talk started and to give the speaker a face to address. One professor kept looking past me and way off to the side. We asked him if he'd rather not look at someone. "Oh no, its not that" he replied "I always look off into the distance when I'm talking, otherwise I can't think".

One presenter felt more comfortable addressing a pot plant. If it works, why not?

The recording was very straight forward, a couple of times we repeated a short piece of filming. There were one or two cases of the giggles and/or stumbles. Each clip was between 4 and 7 mins and the final edit will cut each to one or two minutes.

We took up more time packing and unpacking gear than filming. Most bother was cause by; airplanes near Bankstown, tin roofs making crackling noises in the sunlight, loud air conditioners and the sun coming out unexpectedly from behind clouds and affecting the light.

Performance anxiety

Teaching has an element of performance; one takes on a 'performing identity" in front of a group of people. But when we put a video camera in front of our guests the result was not the same as when they faced a roomful of people. I guess it's like asking the bass player to sing. I don't want to overstate this it but was an observable feature and we are grateful to the presenters for chirpily taking on the task.

Subtle communication signals captured on tape.

This might not be news to those of you who get behind a video recorder at home, but I was struck by the subtle communication signals are picked up on a video tape that aren't noticed despite being present at the time of filming. Who talks over whom? Who gets the most attention, from whom? What are the personal dynamics in a group? *Very interesting* as Maxwell Smart would say.

We are very excited about the next phase and I look forward to assessing and evaluating our progress.

These programs are one part of a suite of strategies

Forums and on-line induction are part of a suite of strategies to improve HDR performance. Others include rigorous Confirmations of Candidature, the on-line orientation program Postgraduate Essentials, bought on licence from the University of Melbourne, better identification of problem candidatures and early intervention, improved admission strategies, panel supervision, strong leadership in Colleges by academic leaders and improved resources for students and

supervisors. Recent surveys of AOU's reveals a marked increase in provision of writing and reading groups, in addition to the programs run centrally.

UWS has made a difference in recent years with improved completion rates (now the best in Australia), better results from student satisfaction surveys and increased student publication rates. Personally I have noticed that the contributions by staff at forums are demonstrative of a higher level of engagement with pedagogical concerns.

Halse and Malfroy work on supervisor's concepts of themselves as professionals shows a sea change from some of the past practices that we set out to address. We acknowledge that supervisors have changed and adapted.

Universities are structured in a way that makes them vulnerable to the crummier attributes of central planning, soviet style. We have made an effort to avoid those pitfalls, successfully I hope.

A summary of the surprises and insights in initiating an on-line program?

- The nature of the medium will allow us to load more content than we manage in 3 hours face to face.
- This is a great foundation for future forums. I expect that we will change the front half of future forums to allow more discussion.
- The ease of engaging excellent contributors for video clips is acknowledged but wasn't really a surprise.
- Contributors didn't disappoint and needed little direction; give them a general topic area and let them fly- the best parts of the video clips are where academics contributed stories from their experience.
- We have had to reflect on what we are trying to achieve at forums in order to write the on-line material in a way that captures the tone of forums. This includes encouraging thought about a wide range of issues around the pedagogy of HDR, use of the findings of research into HDR, active engagement in development of supervisory skills, making good use of resources and so on.
- Loss of the social dimension is a real concern. Compensation with other communication strategies is only part of the answer, participation in a group discussion is the ideal; still thinking about this.
- We'll reduce replication and that will give us room to enhance the attended program.
- Filming is fun
- Writing the program has been fun too and I think it will be most exciting as we package the information with the assistance of the web development people.

Let's keep talking.

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The trouble with CARE: Creative Arts and Research Ethics

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Abstract

This paper presents findings of a pilot study into Creative Arts and Research Ethics. From a survey of staff in the Faculty of VCA and M at University of Melbourne, respondents were asked to respond to a series of questions about their experience as researchers and research supervisors in applying the university's research ethics guidelines to creative arts research projects. The questions included consideration of the extent to which the requirements of the University ethics guidelines differ to creative arts practice external to an academic environment; the degree to which research ethics guidelines inhibit or enhance research; whether researchers had felt the need to alter the parameters of a creative arts project because of the constraints of the university's ethical framework and finally the value of the ethics guidelines for framing a research question or devising the methodology for a creative arts project. The findings from the survey revealed a significant difference in the experience of researchers who were working with traditional quantitative or qualitative methodologies and researchers working in the emerging field of practice led research. Whilst traditional researchers had few issues with the ethics process (beyond those common to most researcher), practice-led researchers expressed a great deal of dissatisfaction with the ethical regulation of practice-as research. With its emergent and performative methodologies, practice-led research has quite different approaches, methodologies and outcomes from established qualitative and quantitative research methodologies that constitute the "norm" in research in the University. From the responses in the survey, particularly from amongst practice-led researchers, it emerged that researchers believe that the ethics protocols, processes and procedures in universities operate as a silent regulator of conduct and a subtle determination of content in creative arts research. From these observations it could be argued that through its very stringent processes of ethical regulation, the university ethics procedure introduces limitations that work against "cutting edge" research and mitigates experimentation at the heart of practice. For some researchers, ethical regulation acts as an impost on artistic freedom and license. This raises a very fundamental question: If art's role is to test the boundaries, to create bother and to bring its audience into crisis, is it compatible with the "the ethics of research"? Should it be in the university?

Introduction

The trouble with (John) Cage is that he disturbs nobody's sleep[11]

Whilst for the broader university research community, research ethics is a well established, if contested, part of the research process (Wiles, Coffey, Robison and Prosser: 2010, Guillemin, Gillam, Rosenthal and Bolitho: 2008), creative arts' researchers come to the research table without a history or strategies to negotiate the university's ethical processes, as well as a strong antipathy towards it. In the creative disciplines, where many artists are still coming to terms with their status as researchers, the time consuming and complex processes, procedures and protocols of the university ethics process are totally

[11] Archie Shepp, quoted in Hentoff, N., *Giants of Black Music,* P. Rivelli & R. Levin, ed. The World Publishing Company: New York, 1979.

foreign. Moreover, the principles that underpin the *National Statement on the Ethical Conduct of Research Involving Humans* grate against the core principles that drive artistic practice. For artists in the academy (now researchers), art is a provocation that acts as the conscience of a culture. For them, art works at the edges to test the boundaries. In testing boundaries its role is to produce discomfort, bother and worry rather than promote beneficence, a sentiment that is at the core of the National Statement.

The "challenge" and the role of ethical regulation in creative arts research raises many questions that remain unexamined and poorly understood amongst artists-as-researchers, within Art Schools and within the broader University research culture. This paper presents findings of a pilot study that examines this troubling relationship. In a survey of staff in the Faculty of VCA and M at the University of Melbourne, the study investigated the experience of university ethics protocols and procedures amongst creative arts researchers in their own research practice and in the supervision of graduate researchers. The survey addressed attitudes towards the ethics process and the extent to which the requirements of the University ethics have impacted upon art-as-research.

The research context

Creative arts education has been part of a unified higher education system since the early 1990s when the Dawkins' educational reforms combined the Colleges of Advanced Education (CAE) into the Australian university system. This national policy shift radically changed the context of the predominant form of education for the creative arts from the previous professional training of the vocational sector, or in the case of some performing arts, conservatoires and private education institutions, to a higher education context.

The rapid growth in postgraduate education in this period was specifically relevant to the creative arts with the introduction of the creative arts doctorate, the expansion of research masters courses and a subsequent increase in postgraduate enrolments. Over the period 1989-2007, for example universities offering creative arts doctoral programs increased from 12 to 30, and enrolments in these doctoral programs increased tenfold from 102 EFTSU to 1230 EFTSU [12].

As a consequence of these policy initiatives, learning and teaching in the creative arts has undergone a fundamental transformation. This is particularly evident at a graduate level where creative arts education faced significant cultural and procedural changes. At graduate level art (practice) was transformed into 'practice as research' and hence became subject to the processes and procedures set in place to oversee all university research. The emergence of subject specific research methodologies occurred as the notion of creative art (practice) as research was introduced; and creative art practice was reframed within a research framework. Procedural requirements were faced as university research ethics protocols became applicable to all creative arts projects involving human or animal subjects.

This has had consequences for both creative arts researcher and also for the university. Firstly, the creative arts do not have the history or literature in research ethics that can provide examples and precedents to help researcher's confidently negotiate the university ethics process. Secondly, this short history and the lack of research and case studies continues to limit the University Ethics Committee's capacity to make determinations in relation to practice-led research projects. Finally Creative artists have not, until recently, had an "investment" in

[12] Source: DEEWR datasets in Baker, S., Buckley, B. and Kett, G. *Future-Proofing the Creative Arts in Higher Education.* ACUADS, Melbourne, 2009, p.22.

the research ethics process and have been keener to avoid it or strategically sidestep ethics frameworks than address the existing system's shortcomings and offer stewardship in creative arts and research ethics.

Background: The "gap" in the research literature

From the discussion so far, it becomes evident that in this new research field there has been relatively little time to develop research that addresses the question of research ethics in the creative arts. However, there is an emerging literature in research around ethical issues in visual research that has had a major impact on the creative arts, or particularly on the visual arts and film. Research using "visual data"—photographs, films, memorabilia and other "visual data" has seen the emergence of a new area of ethics, that is, visual ethics. A number of key reports in the UK, for example the Economic and Social Research Council (ESCR) publications *Visual Ethics: ethical issues in visual research (2009)* and *Ethical Regulation and Visual Methods: making visual research impossible or developing good practice (2010),* set out the ethical issues working with visual data and the implications that has for research in the visual field.

The research in visual ethics is being driven by social sciences, in particular Sociology, Anthropology and Geography and relates to the emergence of visual methodologies in these disciplines. However, the energy around visual methodologies has had a knock on effect for the visual arts, which has benefited from the work done by Visual Sociologists, Visual Anthropologists and Visual Geographers. Thus, in addition to the institutional need to abide by University Research ethics protocols, the visual arts has been able to draw on the research compiled in this area.

The visual arts have responded by adopting a problem solving approach to the question: how can we help our creative researchers negotiate the demands of the university ethics process? With funding from the UK Arts and Humanities Research Council, a number of initiatives in Art and Design have emerged to address the lack and develop specific resources to help staff and students negotiate university ethics. This has tended to take two forms, firstly develop specific ethics protocols that relate to the creative arts and secondly develop specific resources (online resources and case studies) that will help staff and students negotiate the university ethics processes. Thus, "The ethics project", a collaboration between UCE Birmingham Institute of Art and Design (BIAD),[13] the University of the Arts London, University of Central England, Coventry University, Nottingham Trent University, Sheffield Hallam University and Staffordshire University developed an online resource containing case studies and guidance, which is used as part of research training. Other institutions, such as The University of the Arts London and the University of Bradford, on the other hand, have set in place ethics protocols that specifically address the unique character of creative arts research.

The "problem centered" initiatives in the UK have developed been in response to perceived need amongst creative arts researchers. In Australia, on the other hand, whilst Guillemin, Gillam, Rosenthal and Bolitho's 2008 study of perceptions of research ethics amongst health researchers, *Investigating Human Research Ethics in Practice,* has been seminal in invigorating interest in ethical research, there have been no studies that specifically address the question of creative arts and research ethics. Following on from Guillemin et al, this research is concerned with developing empirical evidence around the question of ethics and art-as-research. Whilst part of the rationale for this study has been to develop teaching and learning approaches and resources to help our researchers and graduate

[13] http://www.biad.uce.ac.uk/research/rti/ethics/about.html

researchers to negotiate the university ethics process, a second aim of this study is to address the fundamental or ontological questions that arise when art becomes seen as research and hence draw out the fundamental dilemmas of ethics regulation for the creative arts.

The project

In 2009 The Melbourne Research office provided funding to a research team, drawn primarily from the VCA Human Ethics Advisory Group (HEAG), to complete a pilot study 'Research Ethics and the Creative Arts'. The application arose in response to a unique set of issues that arose in assessing ethics applications from across the Creative Arts – Visual Arts, Music, Performing Arts, Film and Television, and Community and Cultural Development. The funding enabled the team to devise and administer an online survey of creative arts staff in the Faculty of VCA and Music. The study targeted researchers who have negotiated the university ethics process in their own research or who had mentored graduate researchers through the ethics process. The aim of the project was to was to:

- identify key issues facing creative arts researchers and research supervisors in negotiating the university's ethics protocols and procedures;
- Identify the differences between the perceived requirements of the university and industry standards;
- Attitudes to the ethics process amongst researchers;
- The effect of the formal ethics process on the research undertaken in the Creative Arts;
- Differences between disciplines in attitudes towards the ethics process.

Study methodology, sample and method

The study involved qualitative and quantitative analysis of data from an online survey conducted with academic staff from VCA and Music at the University of Melbourne. In this pilot study, the decision was made to target researchers and research supervisors rather than graduate researchers. An invitation to participate was sent to 51 academic staff—13 potential participants from the School of Music at Parkville, and 38 potential participants from Southbank campus of VCA and Music. From this population, 18 responses were received from across the artforms—Music (3), Visual Art (9), Media (3), Performing Arts—including Dance, Movement and Design (3).[14]

The survey instrument addressed both demographic issues and experience of the ethics process. The data was thematically analyzed to organize data according to participant and in order to establish patterns across research experience and artforms.

In the research population, the majority of the respondents work in the new area of research, practice-led research (15), whilst there were also researchers working in the more traditional modes of quantitative (4) and qualitative methodologies (7). Of the sample, there were only two researchers who had experience across quantitative, qualitative and practice-led research, whilst four

[14] It is difficult to speculate on the differential discipline responses to the survey. Both Art and Music have developed a research culture and have strong cohorts of graduate researchers. Music research and supervision ranges across qualitative, quantitative and practice-led research whilst in Art, practice-led research dominates the mode of research. In the Performing Arts staff still tend to see themselves as artists rather than artists-as-researchers. Performing arts has very few staff members who are qualified to supervise RHD students and thus the program involves a small cohort of research students.

had experience across two types of research. Of the participants who had experience in only one form of research, 11 of these having experience in practice-led research. This data has a bearing on the responses received.

In addition to the demographic questions, respondents were asked to respond to the following mix of questions:

11. Have you had any difficulties in applying the University's human or animal research ethics guidelines to any of the research projects you supervise or are involved in? Please discuss.
12. To what extent do the requirements of the University's human or animal ethics guidelines differ to creative arts practice external to an academic environment? Please discuss and give examples.
13. To what extent have you found that the University's human or animal ethics guidelines inhibit your research or the research of your students? Can you describe in what ways has this occurred?
14. To what extent have you found that the University's human or animal ethics guidelines enhance your research or the research of your students? Can you describe in what ways has this occurred?
15. Do you feel that the ethics guidelines are an important consideration when framing a research question or devising the methodology for a project?
16. Have you altered or have you advised a student to alter the parameters of a project or its methodology because you felt that ethics approval would be too difficult to obtain?

Research findings

1. Difficulties in applying the guidelines in a creative arts research context

Yes	**8**
No	9 *[15]
No comment	1

When asked: "Have you had any difficulties in applying the University of Melbourne human or animal research ethics guidelines to any of the research projects you supervise or are involved in?", many of the responses echoed the complaints made by researchers across all disciplines. The charge that 'red tape bogs down the research work' and that the process is clunky is a common criticism of the ethics processes across the university. Similarly the comments that the ethics process was 'imported from medical and psychological research/guidelines (which) are formulated largely for human subjects within medical/scientific research and therefore are outside the scope of creative arts', and the criticism that researchers needed 'to wade through a great deal of science/social science language and methods that are not appropriate' were also raised, hence Wiles, Coffey, Robison, and Prosser's *Ethical Regulation and Visual Methods: Making visual research impossible or developing good practice?* (2010). However, researchers also suggested difficulties that were related specifically to the nature of creative arts research. The charge that the ethics approval process 'mitigates experimentation, which is at the heart of practice, that it limits the development of studio-based research and that 'current university ethics requirements would make many existing film practices untenable', suggests that the requirements of the research process strike at the very heart of creative practice. The emergent, unpredictable and experimental nature of practice-led is fundamentally in conflict with the pre-determined nature of the ethics application process.

[15] * NB 1 of these respondents had not submitted an application for ethics approval

2. The "fit" between University ethics guidelines and industry "standards"

Differences	**12**
No differences	4

The responses to question; To what extent do the requirements of the University's human or animal ethics guidelines differ to creative arts practice external to an academic environment? varied broadly demonstrating a lack of a shared experience concerning ethical protocols and practice outside the university. The word "industry standards" is applicable in a number of areas in the creative arts, for example, in music therapy where the "industry" includes the hospitals and schools and in film, where there is a recognized "film industry" with established processes and protocols that guide the practices of filmmakers.

In dance, on the other hand, the idea of "an industry" tends to be replaced by the idea of a "community", one that is built on negotiated rather than pre-established principles. One respondent stressed that the collaborative nature of choreographic practice demands an ongoing negotiation, a negotiation that is not accommodated by the existing University ethics protocols. This respondent made the observation that, 'this (the creative) process is cumulative, incremental and process driven with the discovery along the way a large part of the overall investigation (research). Having to project all outcomes, at the outset can be quite destabilizing to the delicate early stages. The framing of questions assume that 'data' (written form) unfolds'.

In the visual arts, on the other hand, there are no prescribed "industry standards". However, artists become caught up in ethical protocols in a number of ways. Firstly when working with models, artists operate within a framework established by organizations such as the Life Model's Society. A number of responses were recorded around question of the use of models (such as photograph and portraiture). In the survey one respondent commented that practices which use people as models 'are undertaken with a sensitivity to the subject's well being and are not intended to do harm. It is possible that harm may result, but this is rare and is nothing like the real concerns involved in human and animal experimentation'. Another respondent suggested that outside of university environment, 'the human subject merely has to agree to appear in the artwork by signing a … release'. Hence, observes another, 'visual art practice does not apply the same constraints to the use of human and animal subjects as the Uni guidelines'. They go on to say 'therefore they tend to inhibit research projects in the academic context'.

Secondly, as a number of recent public cases attest (for example the Bill Henson case), ethics and questions of ethical practice in the visual arts is likely to be negotiated in the public arena around issues such as censorship. One respondent observed that 'Arts practitioners in the visual arts encounter legal obstacles in exhibition or publication, from agencies who are protecting their own exposure to legal suit or criminal liability (slander, libel, etc)'. A comment from a researcher in film raised the question of "spontaneity" or "surprise", for example in documentary film practice, commenting that 'under ethics prescriptions requirements we would likely not be able to use surprise tactics, despite arguing a truth "for the greater good" claim'.

The "difference" between university and professional practice is that outside the university context art practice may, be seen to lack established protocols to govern practice. One of the respondents observed that whilst in other academic disciplines 'ethics applications are part of professional practice' … 'In the creative arts, the only time that you will ever need to fill in an ethics application is in an

academic environment … the process seems to be just a bureaucratic hurdle … there is no real-world-working-as-studio-based-artist application'. This respondent also observed that there is a failure to address the question of ethics at the undergraduate level and this leads to students being mystified by the process at postgraduate level.[16]

The value and impact of the ethics guideline on research activity

The survey asked two questions related to the value and impact of the research ethics guidelines on research activity. The first question asked: *To what extent have you found that the University of Melbourne human or animal ethics guidelines inhibit your research or the research of your students?* The second question asked: *To what extent have you found that the University of Melbourne human or animal ethics guidelines enhance your research or the research of your students?*

Research ethics inhibits research

Inhibits	Number
Strongly disagree	3
Disagree	2
Neutral	4
Agree	4
Strongly agree	5

In answering this question, respondents from the Visual Arts and Media were most vocal in their view that the guidelines inhibited research activity. These respondents regarded the ethics process at the university as time consuming, cumbersome and onerous, and hence argue that it inhibits the research undertaken. Here, creative arts researchers are not alone in this criticism. Timeliness and the procedural complexity of ethics procedure are cited as enduring problems facing all researchers.

However, it was in questions of methodology that the Visual and Media artists felt that the ethical regulation was most limiting on the creative research. Respondents criticized the process and the procedural complexity of the approval process, arguing that they do not allow for spontaneity and experimentation that is at the core of artistic activity. One of the key issues facing artists-as-researchers in relation to the ethics guidelines is a methodological one. Practice-led research methodology is emergent rather than prescriptive. The guidelines and the ethics application form expect that the researcher is able to clearly set out a methodology that will be adhered to and the notion of emergent methodology is an anathema to this requirement. One respondent noted that 'If you are going to take the ethics process seriously then you are bound to carry out your research exactly as you have stated in the ethics application. Creativity doesn't always work like that and it may be that only through trial and error that you end up with your art'. Another commented that, 'The training of a processional artist within academe, even as it includes research training must also acknowledge the serendipitous, convulsive, errant and imperious actions of the imagination in its moments of both discovery and selfish discipline'. Overall, many of the responses felt that the 'mode as well as the criteria for ethics clearance militate against the kinds of exploratory, risk taking activities identified with the creative process' and hence art practice and research can never sit

[16] This could also account for the ambivalence and even hostility to research ethics amongst both staff and students in the creative arts.

comfortably together. In this sense the very existence of creative arts research comes into question.

Research ethics enhances research

Inhibits	Number
Strongly disagree	**5**
Disagree	**7**
Neutral	**2**
Agree	**2**
Strongly agree	**2**

Twelve of the respondents did not agree that the ethics guidelines enhanced their research or their student's research (5 strongly disagreed; 7 disagreed that the ethics guidelines enhanced research). Despite this quantitative data, the comments offered by the respondents offered a more complex and nuanced response to this question that enables us to draw out the "value" and the "limitations" of the ethics process on research.

While on the one hand respondents argued that research ethics produced more "academic" rather than risky work, that practice-led research tends to lead to illustration not experimentation, and that the obligations concerning human ethics guidelines produce 'normative and politically correct' art, on the other hand, there a sense amongst the respondents that the ethics process helped give clarity and focus to the research. This "enthusiasm" for the value of the ethics process came from across the disciplines and related much more to research supervision than to their own practices as researchers. For example, one researcher noted that, "Students often find that the process of needing to address all parts of the ethics application helps them to clarify their research outline and to articulate what they are planning to do. They often draw on the ethics document when writing up summaries for interested bodies in the early stages of research." Another researcher noted that through the ethics process, 'they sharpen up the (their) awareness of ethical paper and acting with probity. The(y) also become a form of learning about research, as often a research student has not been taught about ethical practice'. Whilst the researchers working in qualitative and quantitative research found the ethics process essential to clarifying the project, since it 'requires the researcher to have well-founded research questions, a clear and concise method, and a plan for analysis' practice-led researchers could also see the value in the process. One researcher commented that, 'seeing the process as a point of clarification for any practice-led research can be an advantage. It begins to focus the written aspect. It opens up points of discussion as regards ownership of the work. It encourages a 'large view' look at the project in order to consider all possibilities, in cases these need to be cleared. It brings ownership and ways of protecting that to the surface early so that discussions with collaborators can take place at the outset'.

Creative machinations—fitting the research to the guidelines

In the survey, we were interested in whether researchers had modified their research in order to either obtain ethics approval or conversely avoid having to negotiate the ethics process. The responses to the question: *Have you altered or have you advised a student to alter the parameters of a project or its methodology because you felt that ethics approval would be too difficult to obtain?* revealed a focus on research supervision rather than their own research. Here their responses relate to questions of supervision and (perhaps as with supervisions in other areas), the scope of the project and the degree of risk

inherent in the project and the implications for a minimal risk or standard application. Only one response addressed the researcher's own research, saying 'Yes – too numerous to name (and in the interests of anonymity)'.[17]

Conclusion

The findings from the survey revealed a significant difference in the experience of researchers who were working with traditional quantitative or qualitative methodologies and researchers working in the emerging field of practice led research. Whilst traditional researchers had few issues with the ethics process (beyond those common to most researcher), practice-led researchers expressed a great deal of dissatisfaction with the ethical regulation of practice-as research. With its emergent and performative methodologies, practice-led research has quite different approaches, methodologies and outcomes from established qualitative and quantitative research methodologies that constitute the "norm" in research in the University. From the responses in the survey, particularly from amongst practice-led researchers, it emerged that researchers believe that the ethics protocols, processes and procedures in universities operate as a silent regulator of conduct and a subtle determination of content in creative arts research. From these observations it could be argued that through its very stringent processes of ethical regulation, the university ethics procedure introduces limitations that work against "cutting edge" research and mitigates experimentation at the heart of practice. For some researchers, ethical regulation acts as an impost on artistic freedom and license. This raises a very fundamental question: If art's role is to test the boundaries, to create bother and to bring its audience into crisis, is it compatible with the "the ethics of research"? Should it be in the university?

Bibliography

Baker, S., Buckley. And Kett, G. (2009). *Future-proofing the Creative Arts in Higher Education*, ACUADS, Melbourne.

Boultwood, A. and Newberry, D., The "ethics project", accessed at http://www.biad.uce.ac.uk/research/rti/ethics/about.html, on 31/04/10

Cazeaux, C. The Ethical Dimension of Aesthetic Research, in *Research Issues in Art, Design and Media*, Issue 5, Autumn 2003 accessed at http://www.biad.uce.ac.uk/research/rti/ethics/ on 31/04/10

Guillemin, M., Gillam, L., Rosenthal, D and Bolitho, A. (2008) *Investigating Human Research Ethics in Practice: Project Report*, Centre for Health and society, Melbourne School of Population Health, The University of Melbourne.

Hentoff, N. (1979). Foreword In R. Rivelli and R. Levin (Eds) *Giants of Black Music*, The World Publishing Company: New York.

Wiles, R., Prosser, J., Bagnoli, A., Clark, A., Davies, K., Holland, S., and Renold, E., (2008) *Visual Ethics: Ethical Issues in Visual Research*, ESRC National Centre for Research Methods Review Paper, National Centre for Research Methods Hub, University of Southampton.

Wiles, R., Coffey, A., Robison, J., and Prosser, J. (2010) *Ethical Regulation and Visual Methods: Making visual research impossible or developing good practice?* ESRC National Centre for Research Methods, NCRM Working Paper Series.

[17] This may relate to a comment that 'mostly artists ignore the requirements to get approval, ignore the approval once granted or do the work outside.'

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Accountability relationships in Australian postgraduate research education

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Introduction

This paper provides a preliminary analysis of accountability and trust relationships in postgraduate research education, using typical relationships in Australian higher education as exemplars.

With the growing interest internationally in reviewing and revising the nature of doctoral education (e.g. EUA-CDE, 2010), to ensure better outcomes and more efficient means of developing the next generation of 'knowledge workers' (Drucker, 1994; Alvesson, 2004), it is timely to consider the effects of accountability schemes on universities' efforts to assure and improve research education (Brooks and Heiland, 2007). I take as given the primacy of higher education institutions in postgraduate research education and the central role played by trusting interactions between supervisors and students (DEST, 2003; Adkins, 2009) in ensuring successful completion of research degree programs. In this context, there is some concern over possible negative effects of accountability schemes on the trust relationships between supervisors and students (Kendall, 2002; Tennant, 2004; McWilliam, Taylor and Singh, 2002; McWilliam, 2004), a point that is considered further below.

In the first section of this paper, a map is shown of current accountability relations in Australian postgraduate research education, looking at relationships both internal and external to the university. The mapping reveals the increasingly 'congested' nature of accountability relations, in regard to the actors involved, their expectations and the forms in which accountability is provided. It also serves to highlight those relationships which are stronger and those which seem to be weaker.

The next section of the paper considers how and whether the growth in accountability relations is likely to have improved research education in respect of: better outcomes (more completions; better quality); and improved trust relations across the various actors in our accountability 'landscape'. I argue that accountability and trust are distinctly different sets of relationships rather than two ends of a single continuum. Although these two relationships may tend to run in parallel, strengthening one does not necessarily strengthen the other – in fact, the reverse can be the case. One of the reasons for this is that the concepts appeal to essentially different naturalised regimes of justification. Some implications are drawn for research students and their supervisors.

Mapping accountability relationships

Accountability can be defined broadly as the state where one party is required or obliged to offer an account of their actions to another party, maybe with a justification and with the possibility of the other party imposing sanctions or consequences for poor performance (cf. Bovens, 2006).

A standard way of analysing accountability schemes is to consider the four questions 'to whom?', 'for what?', 'how provided?' and 'what sanctions?' (Trow, 1996; Burke, 2004).

Figure 1 presents a possible mapping of the 'to whom' aspect, with the arrows representing the direction in which accountability flows. Dotted lines indicate those relationships where there is likely to be contestation over whether a formal accountability relationship exists, e.g. between student and supervisor or between a supervisor and the relevant disciplinary community. This map may not fully take into account all accountability relationships for international research students and it does not fully map the complexity of accountability relationships in cotutelle or other joint doctoral programs, which are an increasing feature of doctoral education and which have their own challenges (Knight, 2008).

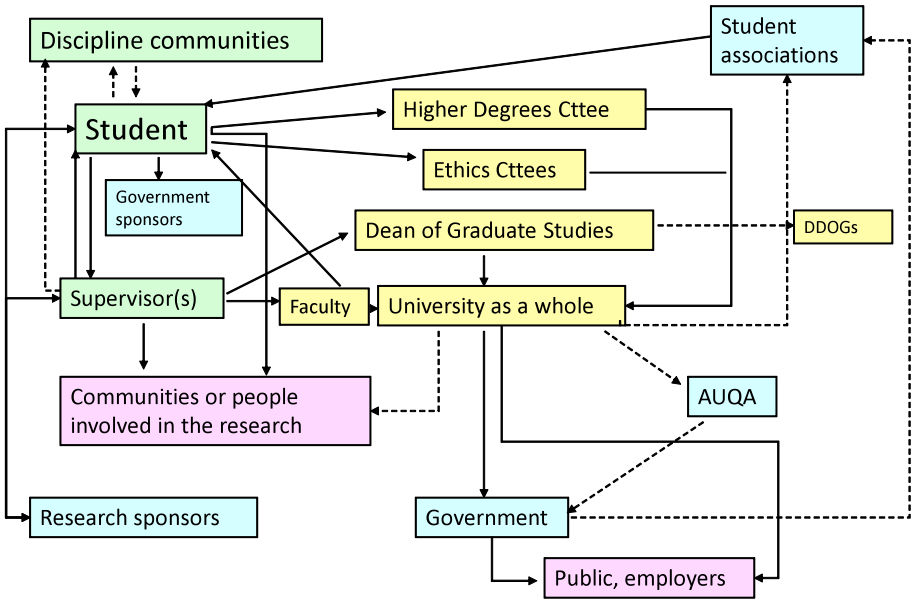

Figure 1: Mapping of accountability relationships in Australian postgraduate research education

Nevertheless, this mapping demonstrates that accountabilities in research education run in several directions and involve many actors: from supervisors and universities to students; from students to supervisors; from senior executives responsible for research to the university leadership; from universities to government and funding bodies or sponsors; from government to universities; from peers to peers. Notable is the emergence of 'the university', represented by various committees, senior managers and faculty managers, as a significant actor in direct accountability relationships with students (Adkins, 2009), with an associated rise in formalisation of accountability relationships (Pearson, 1999; Hammond et al, 2009).

We see also the presence of actors trying to hold others to account on behalf of other individuals or groups, e.g. student associations, AUQA.

Turning to the 'for what' aspects, we come to the well-documented dilemmas in trying to define 'quality' in postgraduate research education. Is quality represented by a great learning experience, successful completion and examination of the thesis, the quality of the thesis, the impact of the research, the preparedness of graduates for academic or professional careers, the international networks established by students, the effective use of taxpayer dollars, or by some combination of these factors? It is here we see the potential

for conflict between 'an accountability discourse around training and skills' and 'a learning discourse around education and knowledge' (Oxford Learning Institute 2009). It seems possible that each actor represented on our map may be seeking to hold others accountable for different 'quality mixes', although there may be places where the interests of parties coincide: after all, both students and the government have an interest in timely completion of their research degrees.

A further complicating factor is the effect of incentives, which may be designed to ensure a particularly accountability mix but which in practice are likely to swamp these quite subtle mixes of factors. A case in point is where government funding is provided to universities on the basis of the number of timely degree completions. The dollar imperative, combined with the power of a university to impose hierarchical 'upwards' accountability (Vidovich and Slee, 2000, 2001) on supervisors and students, is likely to produce a more 'proximal' sense of accountability (cf Ladd et al, 2009) than the more diffuse peer-based accountability of supervisors and students to discipline communities for advancing knowledge.

Other factors that affect the 'for what' aspects are the inevitable changes in attention as new concerns become legitimated, such as a concern for the development by research students of English language proficiency or teaching skills. The 'for what' can be changed by new information, such as the comparatively low ratings given by students for 'intellectual climate' through the Postgraduate Student Research Experience Questionnaire, which can serve as a justification for policy proposals for concentration of research education (e.g. Cutler, 2008).

On the 'how provided' elements, Trow (1996) differentiates between legal/financial and academic accountability, while work across other sectors has identified a range of different forms (Stone, 1995), including contractual/market, managerial, legal, administrative and political. Moral accountability is also discussed. All these different forms produce their different paper artefacts and apply various processes for making judgments and applying sanctions.

Within universities, we might ask ourselves whether managerial forms of accountability from supervisors and students, in the shape of progress reports, milestone events such as confirmation of candidature, registers of supervisors, and even ethics clearance processes – all elements of the 'managed' research degree – are now viewed as primacy accountability devices, rather than more diffuse but less well-reinforced forms of professional accountability and ethical behaviour (Power, 1997).

We should not forget that accountability is in part a relationship of power (the power to demand an account), so our accountability map for research education could also be taken as an illustration of some of the 'circuits of power' (Clegg, 1989) in postgraduate research education. Accountability relationships obviously are not equal in their effects. AUQA audit reports suggest the comparative powerlessness of research students in trying to hold universities to account for providing the facilities and resources their policies mandate, which may be a reason for some students to turn towards market-based, legal or contractual forms of accountability.

Taking this brief survey as a whole, it is evident that even in what appears to be a comparatively straightforward domain, that of postgraduate research education, is now a highly congested space, where multiple groups are linked in ever-expanding chains of association, taking ever more factors into account in the mix of accountabilities they seek or must provide. From the literature we see

that previous categorisations of accountability relationships in higher education (Leithwood, Edge and Jantzi, 1999; Vidovich and Slee, 2001) and forms of accountability are increasingly being replaced by consideration of complex 'accountability networks' (Harlow and Rawlings, 2006), where accountabilities run in many directions and involve a wide range of stakeholders, inside and outside the academy, with an interest in influencing the nature of research education.

Complex accountability relationships: boon or bane?

So, should we be concerned about the complexity of these accountability relationships or should we applaud them?

One the one hand, it often seems as if 'accountability' is such a good thing that more is always better (Sinclair, 1995). Complex accountabilities and many actors can sensitise people and organisations to potential changes in demands and expectations (Keohane, 2008), as different groups highlight different but important expectations, and others refer to the virtues of transparency in higher education activities (Salmi, 2008).

On the other hand, some have argued that those seeking accountability are frequently unclear over their multiple expectations and thus generate more 'noise' and confusion for those from whom accountability is sought than is useful (Koppell, 2005; Tennant, 2008), a problem that is magnified when there are many people seeking accountability. Thus, it may be that accountability is a form of zero-sum game, where too many demands for different things from too many people actually compromise the ability to be accountable (Stone, 1995; Keohane, 2008). Certainly, how such networks can produce more than a proliferation of groups all trying to hold each other to account can be unclear. Moreover, there may be ripple effects, as when demands for accountability from one set of actors are passed through various actors onto those ultimately responsible for doing the work. That is, that increased demands for accountability in postgraduate research education are likely to fall most heavily on students and their supervisors. A further concern is the possible fragmentation of accountability, so that while actors may be accountable to specific groups for specific aspects, accountability for the overall outcome is missing.

There is also a displacement effect, related to the 'circuits of power'. Governments may try to exact accountability from universities on behalf of a group, e.g. of citizens, of students. However, the accountability can be seen as to (and benefiting) the party to which it is provided. The accountability that is provided by universities helps the government to assert that it is worth of public trust. Thus, any intermediate body is likely to be seen to be demanding accountability for its own purposes rather than in the interests of others. To take a further example, when a university seeks to hold supervisors of research students accountable for their actions, is this for the benefit of students or for the benefit of the institution, which needs to account in certain ways to government? The answer may be for the benefit of both, but it is not always evident that both parties benefit equally, as increasingly the body that is able to demand accountability is seen as having more power. Dame Onora O'Neill, in her Reith Lectures, captures this view as follows:

In theory the new culture of accountability and audit makes professionals and institutions more accountable to the public. This is supposedly done by publishing targets and levels of attainment in league tables, and by establishing complaint procedures by which members of the public can seek redress for any professional or institutional failures. But underlying this ostensible aim of

accountability to the public the real requirements are for accountability to regulators, to departments of government, to funders, to legal standards. The new forms of accountability impose forms of central control-quite often indeed a range of different and mutually inconsistent forms of central control (O'Neill, 2002: Lecture 3).

A second set of questions concerns the benefits or otherwise that are actually realised from proliferating accountability relationships or demands forever more accountability. Is there evidence that more actors and more accountability mechanisms actually improve anything? Accountability schemes and relationships are often justified on the grounds that they promote trust between the parties, although O'Neill (2002) suggests the evidence is lacking and other writers, including writers on higher education, have suggested the reverse actually occurs, making more and more accountability relationships not only problematic but positively harmful (see Power, 1997; Morley, 2003 Djelic and Sahlin-Andersson, 2006). I return in the next section to these questions about accountability and trust.

Another argument for accountability schemes is that they help to assure (or improve) the quality of outcomes or processes, through external scrutiny of activity. Is there evidence of such assurance or improvement in the accountability mechanisms that are used by stakeholders for postgraduate research education, such as the collection of student progress reports, data on completions, data on student attrition, student satisfaction surveys, supervisory records of academics, and reports of examiners? What about the largely informal and normative (peer pressure) accountability relationships found within discipline communities?

I think the answer is mixed. If we take the view that quality can only be assured by comparison with the intended goals, then it appears that many institutions are not seeking the full range of information that would be required to demonstrate internal accountability, referring back to our list of interpretations of quality. Some elements are present but how well do universities assess: the actual quality, in absolute and comparative terms, of students' research and theses?; or the extent to which research education has appropriately prepared graduates for their future careers?; or the extent to which graduates are likely to adhere to professional and ethical norms?

On the positive side, internal and external accountability mechanisms seem likely to be able to identify problematic trends and some specific issues that are susceptible to amelioration or improvement. (It is worth noting the presence of more discursive and interactive forms of account-giving than mere paper-based reports in many universities, some of which serve to review the quality of the research as well as act as milestone markers.) Such identification of itself does not improve quality, but it provides information about what may need to be improved. And, we are all familiar with the phenomenon of smartening oneself up for external scrutiny, another benefit that is often ascribed to accountability regimes.

Similarly, scrutiny of students' experience by student associations can draw attention to aspects of quality that may appear to be neglected by a university. And, peers can potentially exert a strong normative pressure for accountability, through statements of norms and expectations (e.g. DDOGS, 2008). However, if the only remedy available to try to improve a problem is a sanction or to seek even more accountability, then we must conclude that accountability as a mechanism for improvement is seriously limited in its utility.

Given the concerns outlined above, but also the (at least theoretically) beneficial effects of accountability mechanisms which recognise many actors and address many different aspects of quality, are there ways forward? One way may be to leave it to individuals to chart a way through the maze of competing demands to be accountable for different goals. This may work: it could be argued that the individuals in question are generally familiar with these accountabilities and are managing to strike a balance. Another way could be to try to better balance accountabilities, so that more diffuse elements are strengthened and (further) formalised, which may assist in reinforcing bonds of accountability, as accountability can be both sought and given through two-way flows. A further way forward may be to bring all the actors together to negotiate an agreed set of accountabilities across all actors recognising that compromises need to be made? O'Connell (2005) suggests the latter may be possible, but we could ask how might this be possible for research education in a global context?

The relationship between accountability and trust

As noted above, across the literature from higher education and other sectors, we see a variety of positions taken on the nature of the relationship between accountability and trust (e.g. Kurland, 1996; Salmi, 2008). One school of thought regards accountability and trust as two opposite ends of a single continuum (Ammeter et al, 2004) and this is a position often taken in the higher education literature (e.g. Huisman and Currie, 2004; Hoecht, 2006; Vidovich and Currie, forthcoming). Martin Trow famously wrote that '***accountability*** is an alternative to ***trust***; and efforts to strengthen it usually involve parallel efforts to ***weaken trust....***' (1996). On this view, accountability and trust are polarized: there is no need for trust if there is 100% accountability and correspondingly no need for accountability if there is 100% trust (Ammeter et al, 2004). Accountability is seen as a form of insurance against the possibility of betrayal of trust (O'Hara, 2009).

But, do we really think that accountability relationships always weaken trust relationships? As an example, might ask ourselves how this schema plays out in relations between research students and their supervisors, where some agreed accountability arrangements can reassure both parties of the 'good faith' of the other.

An alternative view is that accountability reinforces trust, by ensuring there is clarity about what is expected. On this view, accountability and trust may be thought of as moving in parallel, so that more accountability implies more clarity, which implies more trust. There are numerous objections to such a simple account, on both theoretical and practical grounds, including the issues noted above when the party demanding accountability has multiple and even conflicting accountability expectations. A lack of accountability may weaken trust but a lack of trust may be more likely to strengthen accountability mechanisms than to weaken them.

A third assessment of the relationship is essentially contingent: in certain circumstances, accountability can increase trust, while in others it may reduce trust or have little impact on a trust relationship (O'Hara, 2009). This view takes as its starting point the different natures of trust and accountability relationships, as illustrated schematically in Figure 2.

	Trust	Accountability
Party A	Direction is towards 'giving' to Party B	Direction is 'demanding' from Party B
Party B	Direction is towards 'earning' the gift from Party A	Direction is 'providing' to Party B

Figure 2

Both trust and accountability are important elements in personal and inter-organisational relationships, but they are two separate strands and while they often overlap, they are not identical. The two concepts operate differently: unlike accountability, 'trust cannot be asserted, demanded or legislated' (CAPAM, 2010). Trust is a form of belief (O'Hara, 2009) while accountability is a state of obligation. These two concepts operate semi-independently: trust between two parties can increase without an increase in accountability, and vice versa. In fact, this is quite likely to occur, as trust 'in what' and accountability 'for what' can comprise of bundles of differing attributes. One can trust a person's discretion while not at all trusting the same person's expertise, for example. However, in many situations, accountability and trust relationships co-exist and may intertwine.

Reina and Reina (2007) identify three elements of interpersonal trust relationships in organisations: contractual trust, which includes negotiated expectations and the keeping of agreements; communicative trust, which includes honesty and openness in communication; and competence trust, which includes respecting others' skills and abilities. Their 'transactional trust' model relies on mutuality or reciprocity and the building (or rebuilding) of trust step by step. Although it is too simplistic to fully address all aspects of interpersonal trust, which is a very personal construct, the model does draw attention to two features that are very important for supervisor-student relationships, namely the acceptance of competence and good communication (DEST, 2003; Engebretson et al, 2008).

The aspect of contractual trust seems most closely related to many of our understandings of accountability, but accountability seen as an accepted two-way agreement, rather than an imposed demand. On a professional level, we can imagine that accountability can build or sustain trust if people are willing to be held accountable to each other. However, if accountability is enforced from one party without agreement, then it may actually erode trust, by making the other party feel they are not trusted. The bottom line seems to be that accountability can reinforce trust if it is not coercively applied, i.e. when it appears to shade into mutual acceptance of obligations. (We note there needs as well to be agreement on how accountability will be provided and to whom.)

It should not be forgotten that the concepts of 'accountability' and 'trust' respectively, have their origins in different naturalised discourses of evaluation and justification, one more 'industrial', the other more 'domestic' (Boltanski and Thévenot, 1999), although in real life these discourses are often intertwined. We should also remember that trust is an important feature in a sense of personal safety and efficacy and, if it reduces the need for detailed monitoring through accountability mechanisms, it is cost-effective. So, although trust and accountability may not be polar opposites or always run in parallel, most would agree that 'good' accountability mechanisms should also stimulate trust, or at the very least, stimulate the capacity for self-improvement.

How this can be done is more problematic, especially in cases where trust between parties is damaged. It seems likely that without acknowledging and

addressing the issues that cause the trust breakdown, using accountability as the only means to revive trust often results in only more 'shouting louder' by the 'betrayed' party.

Accountability and trust relationships in postgraduate research education

Figure 3 is my attempt to overlay onto our mapping of accountability relationships in postgraduate research education some of the areas where trust relations seem intuitively likely to also be present, although we might expect some element of trust (or mistrust) to accompany most of these accountability relationships. As for Figure 1, the mapping is provisional and elements could be contested, but it serves to highlight the points that accountability and trust often are seen together and that 100% trust relations are nearly as unlikely as 100% accountability relations to be found in real life.

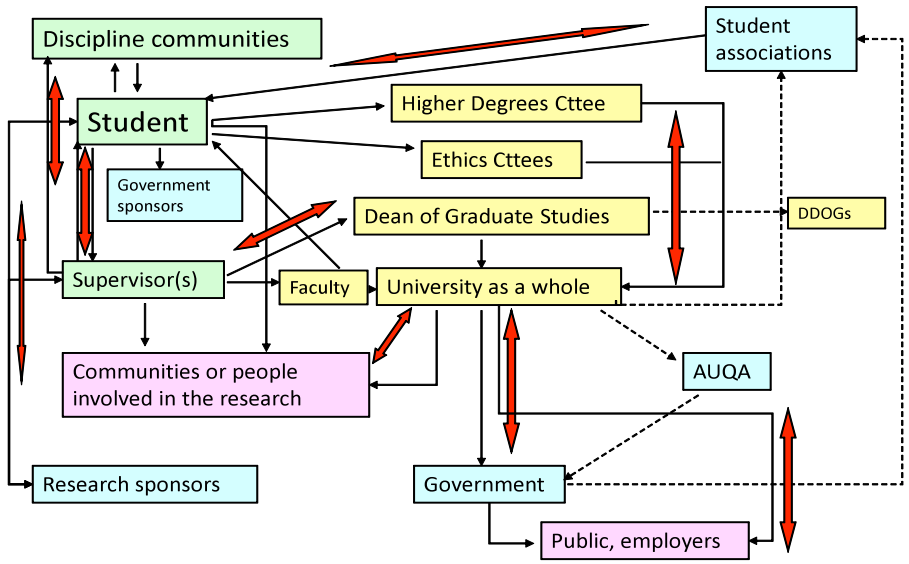

Figure 3: Trust and accountability relationships in Australian postgraduate research education

How does the interplay between accountability and trust relationships manifest itself in aspects of postgraduate research education? I consider several examples. The first case is of accountability relations between Australian universities and the federal government. Universities have traditionally resisted most attempts to change the accountability relationship, either in respect of the 'for what's' or the 'how provided'. The sector often portrays requests for more accountability as coercive, to be resisted, which may be due to a lack of dialogue that would offer institutions an opportunity to accept changed obligations.

However, in respect of research education and at the risk of oversimplifying, the accountability relationship appears to have been stable for some time, despite acknowledged underfunding. Although the trust relationship has previously been eroded by governmental actions that are seen to break an implicit 'contract' with the institutions, e.g. in respect of the adequacy of stipends and the imposition of voluntary student unionism, it may now be recovering. While changes to government research policy may adversely impact some universities, and the Excellence in Research for Australia initiative increases accountability for

research outcomes, accountability for research training outcomes seems not to be a significant issue for debate.

What about relations between universities (and students and supervisors) and communities that may be directly affected by the research? Many universities now formally recognise the rights of communities, including Indigenous communities, to be actively involved in and acknowledged for their contribution to university research. Previously research may have been seen as being 'done to' rather than 'done with' these communities and contributed to an erosion of trust among those communities. It appears likely that this recognition, and associated formal accountability mechanisms through institutional ethics committees, will help to build a stronger trust relationship, although certainly good communication will also play a role.

Turning to relations between research sponsors and universities (and students and supervisors), it seems likely that formal accountability mechanisms will play a significant role in supporting a trust relationship, although the other aspects of trust relations (competence and communications) should augment them.

On the internal accountability of research students to university managers and committees, milestone requirements, such as confirmation of candidature, may or may not promote trust between students and institutions. On the one hand, they may promote confidence that the institution will 'look after' the student by ensuring students can see achievements along the way. On the other hand, they may be seen as 'gates' to keep out students who need more thinking time, or vehicles to corral students into less risky but less exciting research topics. And, there is always the possibility that supervisors and students will work together to preserve an internal bond of trust by subverting external demands for accountability that are either unhelpful or unwelcome.

Finally, let us consider accountability and trust relations between research students and their supervisors. Possibly the most risky situation in postgraduate research education is a breakdown in trust between a research student and their supervisor (Frischer and Larsson, 2000; Lovitts, 2008; Hammond et al, 2009). The relationship is often viewed as one of trust first and accountability second, and it is in this relationship that tensions most obviously occur in the competence and communicative elements of the Reina and Reina model, as when a student loses respect for their supervisor's expertise or a supervisor finds a student wants to discuss their personal crises more than the research project.

As indicated above, accountability mechanisms may identify this breakdown to the parties themselves or to third parties but they may not be able to fully restore a trust relationship. The question then arises as to how far the parties should go in trying to restore a damaged trust relationship and whether more formal accountability arrangements can assist. We have all seen instances of heroic efforts on the part of supervisors and students to accommodate damaged trust relations. Some aspects of the trust relationship are readily amenable to negotiation of accountability arrangements between the two parties, such as setting meeting times and clarifying expectations (Lovitts, 2008), with the associated acknowledgement of consequences for non-performance. However, other aspects may require outside intervention that does not involve an accountability relationship, such as mediation to bring both parties to a position where they can move on.

Implications for postgraduate research education

In this brief discussion of complex issues I have hinted at some concerns which need to be addressed by the various actors in the accountability networks for

postgraduate research education. The first and most obvious is the idea that the main parties (or at least the main parties who are readily identifiable and accessible) should come together to collectively review whether change is needed in any aspects of the 'to whom', the 'for what' and the 'how provided', to provide better accountability and stimulate trust. That is, demands, accountabilities and working relationships may need a systematic review. A guiding principle of this review might be 'accountability in the service of enhancing trust'.

It is perhaps most useful to start with the 'for what' aspects, as the parties may need to adjust their 'quality mix' of agreed outcomes for research education, with a view to reaching a more or less agreed position on the trade-offs that need to be made. Too often, what happens in discussions of quality outcomes in doctoral education is the production of an ever-longer list of desirable features. In practice, something has to give, and expectations need to be adjusted accordingly. In this regard, there may be a need for better mechanisms for hearing the 'voice' of academic discipline communities nationally and internationally.

Next, it may be useful to consider whether the 'how provided' and 'to whom' mechanisms need to be adjusted to ensure better accountability for outcomes, such as mechanisms for better finding out the comparative quality of thesis and mechanisms to better monitor attrition, accompanied by actions to address any problems that are identified. Such a review might consider whether there are aspects of candidature that seem to be more 'low risk' than others and whether there are any accountability mechanisms that are not producing useful accounts or where there do not seem to be any meaningful consequences. It may be useful as well to ask whether these accountability mechanisms seem to be diminishing or augmenting trust, and whether accountability mechanisms are being used as substitutes for, rather than the servants of, trust relationships.

On the 'to whom' aspect, the review could consider whether there are elements of accountability that need to be strengthened, especially where they have the potential to build trust. Examples may be found in the extent to which universities provide students with the resources and intellectual climate they claim to and the extent to which communities involved in the research believe they benefit from the research. That is, a more equal distribution of two-way accountability relationships may be needed, including renegotiations of obligations in university-government relations. The 'to whom' review can also assist in establishing primary responsibilities for ensuring accountability (O'Connell, 2005).

Many of the ways for building accountability and trust in supervisor/student relations have been discussed in the literature, such as agreement on expectations and setting out formal and personal accountabilities. It is likely to be useful for supervisors and students to consider how a sense of accountability to various actors can developed through the research (cf Sinclair, 1995) and to reflect individually from time to time on whether the trust relationship is as strong as it could be.

Most supervisors and research students would agree that what is now required is a broadly faceted relationship encompassing both informal and professional requirements (Engebretson et al, 2008). However, the systematic review at university level of accountability and trust relationships should continue to address key vulnerabilities, such as the supervisor/student relationship, including the support that is routinely available for independent mechanisms to assist in rebuilding trust between supervisors and students when and as required.

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References

Adkins, Barbara A. (2009) PhD pedagogy and the changing knowledge landscapes of universities*. Higher Education Research and Development*, 28, 2, pp. 165-177. Retrieved 1 April 2010 from QUT eprints repository:

http://eprints.qut.edu.au/16980/

Alvesson, M. (2004). *Knowledge Work and Knowledge-Intensive Firms*. New

York: Oxford University Press.

Ammeter, A. P., Douglas, C., Ferris, G. R. and Goka, H. (2004). A social relationship conceptualization of trust and accountability in organizations *Human Resource Management Review* 14, pp. 47–65

Boltanski, L., & Thévenot, L. (1999). The sociology of critical capacity, *European Journal of Social Theory* 2(3), pp. 359–377.

Bovens, M. (2006). *Analysing and assessing public accountability. A conceptual framework.* European Governance Papers (EUROGOV) No. C-06-01, http://www.connex-network.org/eurogov/pdf/egp-connex-C-06-01.pf.

Brooks, R. L. and Heiland, D. (2007). Accountability, Assessment and Doctoral Education: Recommendations for Moving Forward. *European Journal of Education*, 42, 3, pp, 351–362.

Burke, J.C. (ed.) (2004). *Achieving accountability in higher education: balancing public, academic and market demands*. Jossey-Bass: San Francisco.

CAPAM (The Commonwealth Association for Public Administration and Management) (2010). Conference Overview. Good Governance Accountability & Trust: 2010 CAPAM African Regional Conference, May 17-19, Abuja, Nigeria. Retrieved 1 April 2010 from:

http://www.capam.org/_documents/2009121812626.pdf

Clegg, S. (1989). *Frameworks of power*. Sage: Thousand Oaks, CA.

Cutler, T. (2008). *Venturous Australia – Building Strength in Innovation*.

Report on the Review of the National Innovation System. Retrieved 9 April 2010 from: http://www.innovation.gov.au/innovationreview/Pages/home.aspx

EUA-CDE (European University Association Council for Doctoral Education) (2010). About EUA-CDE. Viewed 1 April 2010 at:

http://www.eua.be/events/eua-council-for-doctoral-education/about-eua-cde/

DDOGS (Deans and Directors of Graduate Studies in Australia) (2008). *Updated Framework for Best Practice in Doctoral Education in Australia - July 2008*. Retrieved 10 April 2010 from: http://www.ddogs.edu.au/

DEST (Department of Education Science and Training) (2003). *The Doctoral Education Experience: Diversity and Complexity*. Prepared by Ruth Neumann. Evaluations and Investigations Programme Report 3/12. Retrieved 1 April 2010 from: http://www.dest.gov.au/sectors/higher_education/publications_resources/other_publications/the_doctoral_education_experience.htm

Djelic, M-L. & Sahlin-Andersson, K. (eds.) (2006). *Transnational governance. Institutional dynamics of regulation.* Cambridge: Cambridge University Press.

Drucker, P. F. (1994, November). The age of social transformation. The Atlantic Monthly, pp. 53–80.

Engebretson, K., Smith, K., Seibold, C., Terrett, G., and Ryan, E. (2008). The changing reality of research education in Australia and the implications for supervision: a review of the literature. Teaching in Higher Education. 13(1): 1-15.

Frischer, J. and Larsson, K. (2000). Laissez-faire in research education: an

inquiry into a Swedish doctoral program, *Higher Education Policy*, 13, pp.131–155.

Hammond, J., Tennant, M, Ryland, K. and Boud, D. (2009). Interim analysis of interviews with research leaders and supervisors of higher degree research supervisors in Australia. Building Research Supervision and Training (Australian Learning and Teaching Council project), October 2009. Retrieved 9 April 2010 from:

http://www.first.edu.au/public/ALTC/ALTC_building_research_capacity_interviews_analysis.pdf

Harlow, C. & Rawlings, R. (2006). *Promoting accountability in multi-level governance: a network approach.* European Governance Papers (EUROGOV) No. C-06-02, http://www.connex-network.org/eurogov/pdf/egp-connex-C-06-02.pdf.

Hoecht, A. (2006). Quality Assurance in UK Higher Education: Issues of Trust, Control, Professional Autonomy, and Accountability, *Higher Education*, 51, 4, pp. 541–563

Huisman, J. & Currie, J. (2004) Accountability in Higher Education: Bridge over troubled water? *Higher Education*, 48, pp. 529-551.

Kendall, G. (2002). The Crisis in Doctoral Education: a sociological diagnosis, Higher Education Research and Development, 21, 2, pp. 131–141.

Keohane, R. O. (2008). Complex accountability and power in global governance: issues for global business, *Corporate Governance*, 8, 4, pp. 361–367.

Knight, J. (2008). Joint and Double Degree Programmes*: Vexing Questions and Issues*. Observatory on Borderless Higher Education. Retrieved 10 April 2010 from:

http://www.eahep.org/web/images/Malaysia/joint_and_double_degree_programmes_vexing_questions_and_issues_september_2008.pdf

Koppell, J. G. S. (2005). Pathologies of Accountability: ICANN and the Challenge of "Multiple Accountabilities Disorder", *Public Administration Review,* 65, 1, pp. 94–108.

Kurland, N. B. (1996). Trust, Accountability, and Sales Agents' Dueling Loyalties, *Business Ethics Quarterly*, 6, 3, pp. 289–310.

Ladd, J. M., Lappé, M. D., McCormick, J. B., Boyce, A. M. and Cho, M. K. (2009). The "how" and "whys" of research: life scientists' view of accountability, *Journal of Medical Ethics*, 35, pp. 762–767.

Leithwood, K., Edge, K., & Jantzi, D. (1999). *Educational Accountability: The state of the art.* Gutersloh: Bertelsmann.

Lovitts, B. E. (2008). The Transition to Independent Research: Who Makes It, Who Doesn't, and Why, The Journal of Higher Education, 79, 3, pp. 296–325.

McWilliam, E. (2004). On Being Accountable: Risk-consciousness and the doctoral supervisor. AARE Annual Conference, 28th November - 2nd December, Melbourne, Australia.

Retrieved 1 April 2010 from QUT eprints repository: http://eprints.qut.edu.au/981/

McWilliam, E., Taylor, P.G. and Singh, P. (2002) Doctoral Education, Danger and Risk Management, Higher Education Research and Development, 21, (2), 119-129. Retrived 1 April 2010 from: http://eprints.qut.edu.au/1035/1/erica_doctoral_69BD51A2.pdf

Morley, L. (2003). Quality and Power in Higher Education. SRHE and Open University Press: Maidenhead, Berkshire UK.

O´Connell, L. (2005) Program accountability as an emergent property. The role of stakeholders in a program's field. *Public Administration Review*, 65, pp. 85-93.

O'Hara, K. (2009). A general definition of trust. Technical report. University of Southampton. Retrieved 10 April 2010 from: *http://eprints.ecs.soton.ac.uk/18322/*

O'Neill, O. (2002). A Question of Trust. Reith Lectures. Retrieved 1 April 2010 from:http://www.bbc.co.uk/radio4/reith2002/

Oxford Learning Institute (2009). Research Into Doctoral Education website, Oxford University. Retrieved 23 November 2009 from: http://www.learning.ox.ac.uk/rsv.php?page=327

Pearson, M. (1999). The changing environment for doctoral education in Australia: implications for quality management, improvement and innovation, *Higher Education Research and Development.* 18, 3, 269-288.

Power, M. (1997). *The Audit Society: Rituals of Verification*. Oxford University Press: Oxford UK.

Reina, D. S. and Reina, M. L. (2007). Building Sustainable Trust, *OD Practitioner*, Vol 39, no. 1, pp. 36–41. Retrieved 9 April 2010 from: http://systemsinsync.com/pdfs/Building%20Sustainable%20Trust.pdf

Salmi, J. (2008). *The Growing Accountability Agenda: Progress or Mixed Blessing?* OECD-IMHE Programme. Retrieved 9 April 2010 from: http://www.oecd.org/dataoecd/3/30/41218034.pdf

Sinclair, A. (1995). The chameleon of accountability: forms and discourses, *Accounting, Organizations and Society*, 20, 2–3, pp. 219–237.

Stone, B. (1995). Administrative Accountability in the 'Westminster' Democracies: Towards a New Conceptual Framework, *Governance*, 8, 4, pp. 505–526.

Tennant, M. (2008). Regulatory and quality assurance regimes in doctoral education: fostering innovation and risk or standardization and safety? *Proceedings of AUQF 2008*: Quality & Standards in Higher Education: Making a Difference. AUQA Occasional Publication Series No. 16, pp. 127–131. Retrieved 8 April 2010 from: http://www.auqa.edu.au/files/publications/auqf2008%20proceedings.pdf

Trow, M. (1996). Trust, markets and accountability in higher education: A comparative perspective, *Higher Education Policy*, 9(4), 309–324. Retrieved 12 October 2010 from: http://escholarship.org/uc/item/6q21h265?display=all

Vidovich, L., & Currie, J. Governance and trust in higher education (forthcoming in *Studies in Higher Education*, February 2011).

Vidovich, L. and Slee, R. (2000). The unsteady ascendancy of market accountability in Australian and English higher education. Paper presented at Australian Association for Educational Research Conference, Sydney, December 2000. Retrieved 12 October 2009 from http://www.aare.edu.au/00pap/vid00478.htm

Vidovich, L. and Slee, R. (2001), Bringing universities to account? Exploring some global and local policy tensions, *Journal of Educational Policy*, 16, 5, pp. 431–453.

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A new challenge in teaching for PhD supervisors

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Introduction

With consideration taken to the development of an increasingly complex postgraduate education in Sweden, the final touch only of being examined for the degree of PhD is no longer good enough in the academia for those wishing to further their career building. (For a description of the Swedish system, see below.) During the postgraduate studies, the students are also expected to acquire teaching skills in order to qualify for any future teaching positions at the university. Nowadays, from a competitive perspective, it is essential for a new PhD to be offered post-doctoral fellowship for further research, preferably in an international setting. This would put demands on both the research training it self and the PhD supervisors. New requirements for postgraduate education would, for example, include new challenges in teaching for PhD supervisors.

As a supervisor you are expected to have research qualifications as well as teaching skills. You are supposed to be an academic role model; and in targeting the student's perspective, you should also be able to provide some kind of guidance in teaching and learning and to be involved in supporting the professional development of the student in the academia. The supervisor should thus be able to support his/her doctoral student in the process of improvement on his/her teaching skills and expertise; to advise on the student's further development towards the role and expectations of the post-doctorate; and hopefully to approach and support the student like a skilled peer or colleague of the future.

The current view of the role of PhD supervisor is more complex than ever, regardless of what post-graduate practice of training or education you have in mind. Given such a perspective, we would as writers like to stress the importance of strengthening the role of the PhD supervisor by engaging a teaching mentor for the benefit of the postgraduate students. In our paper, we discuss mentorship of teaching in postgraduate educational organisation and its significance in terms of establishing reflective interrelationships between the doctoral student, the PhD supervisor and the anticipated supervising practice emerging of the post-doctorate after the final PhD examination.

Teaching mentors to doctoral students

In this paper, we will introduce a model with teaching mentors, for the benefit of both doctoral students and their supervisors. The mentor will make for long-term guidance in connection to the doctoral student's teaching, but also look into the individual's needs to develop the academic skills.

The suggested model is based upon our experiences with teaching mentors at our basic teacher training course. At that course we use three meetings embraced: *Pre-meeting*: mentor discussing a teaching proposal designed by the teacher/mentee; *Observation*: mentor observing the mentee teaching class on a single occasion (no further time-extension); *Post-meeting*: peer-to-peer talk and discussion; exchange of ideas, no assessment done for examination/testing; reflection on action in focus. To support the teaching mentors we offer a

specially designed training program, which differs from the supervisor training program. For a thorough description of these training programs, see below.

We will make use of the capability and desire of the trained teaching mentors to fill a more substantial role and engage in longer relations with the doctoral students.

The project will start with a pilot study with three departments from different areas of the university. The departments will assign trained teaching mentors to their new doctoral students. The mentors will mainly discuss teaching issues with the doctoral students. In that way they will be a compliment to the supervisors, who are not always able to help in teaching issues. We will support the teaching mentors with further training, guidance and an opportunity to network with the teaching mentors from the other departments.

The model will be evaluated by means of interviews, questionnaires and observations. It is important to monitor how a model with teaching mentors affects doctoral students, their supervisors and teaching mentors themselves.

Hopefully the discussions will lead to increased self-confidence of the doctoral students and enhance their development into full members of the academia. It could systematically support development of educational and teaching skills as a useful complement to the research skills for both teachers and doctoral students. In the long run it might also positively affect the climate at the department as a whole.

The possible drawbacks must also be investigated. Will this lower the supervisor's interest for the doctoral student's complex whole? Is there a risk of conflict between the supervisor and the teaching mentor? How will staff members look at the model in terms of departmental resources in terms of time and money? What would be an appropriate volume of mentors and mentees involved in the activities? Are there sufficient personal resources for it?

We plan to start in January 2011 and to publish our results in an international journal. The data and results will also be presented at QPR 2012. We are grateful for all opinions, critiques or reflections of our ideas.

The Swedish system

In Sweden, undergraduate and postgraduate studies are free of tuition fees. Undergraduate students normally take student loans to finance their education and they gain their basic degree after 3-4 years. In order to get a PhD, the student continues to study for another 4 to 5 years, depending on whether he/she also has responsibility to teach or not. All PhD students have to be fully financed throughout their education. Many are engaged in a research project and therefore financed by a research funding agency, while other students are financed by the universities. In both cases they have a salary that is just below average for a young academics' first position.

In autumn 2008 there were 16,900 active PhD students in Sweden, of whom approximately 50 % were women. Uppsala University had 1,774 active PhD students (873 women and 901 men) in 2008, and each year approximately 374 students achieve a PhD degree between the years of 2005-2008.

A governmental three-year goal is set for each university that states how many PhD degrees they must "produce" (during 2005-2008 the goal for Uppsala University was 1,340 PhD degrees, 12 % less than what actually happens in reality). This is the political method of controlling the universities and making the country's PhD education more efficient.

Area of research	♀	♂	∑
Humanity and Theology	136	124	260
Law	23	16	39
Social science	155	138	293
Maths	9	28	37
Natural science	166	240	406
Medicine	282	204	486
Pharmacy	55	49	104
Other	14	1	15
Total	873	901	1774

Table 1. Active PhD students at Uppsala University in Area of research, in autumn 2008 (Swedish National Agency for Higher Education, Rapport 2009:12 R)

In Sweden there only exists one doctoral degree, but several syllabi; each of them includes both courses and a thesis. At least one of the four years is reserved for scientific courses of different kinds, and the rest of the time is used for the thesis. The PhD student normally has one first supervisor and at least one assistant supervisor. The final examination (in Swedish "disputation") takes place at the *viva voce*, where the student has to defend the work in public, often in front of a large audience, and where an opponent questions the scientific methods and results. An examination committee, selected for the specific occasion, judges both the thesis and the scientific defence.

Postgraduate training in Sweden has experienced major changes during the past few decades, as we mention in the beginning of the in this paper, and the new situation is a great challenge both for students and the supervisors. Doctoral studies were before the new reform in Sweden, inspired from the Bologna process[18], a type of "life-long" work, i.e. that special academic work, but nowadays it being considered just as a diploma for the doctoral students developing in their education. All doctoral students have to finish their degrees in 4 years, both courses and research included, as a result from the Bologna-process. It can be extended to 5 years, if the doctoral student decides to teach classes or do administration tasks for their departments. Before the new time limitations for doctoral studies, the doctoral students could work on their thesis for 6-12 year or more.

If the doctoral students want to teach graduate students at our university they have to take a teacher training course of 5 weeks to develop their understanding for teaching and learning in higher education and their teaching skills. New challenges for our PhD students are also, with the new reform, that they had to prepare and plan for future activities after their dissertation. It is not clear that they could or even should stay at the university to do research or teaching. If they want to pursue an academic carrier most of them have to do a post-doc to be able to compete when applying for positions in higher education. To what extent this applies varies depending on which faculties' they are coming from.

Because of the changes in the education for the doctoral students it became clear that the PhD supervisors needed a special arena for both specialized and more advanced discussions, reflections and pedagogical activities. Our extended training programme for supervisors – with a special basic course for PhD supervisors – offers such an arena. And one of the main ideas with the

[18] For more information about the Bologna process in Europe look at The Bologna process – harmonizing Europe's higher education: including the essential original texts (Reinalda & Kulesza 2006).

programme for Uppsala University was to provide a ground and time for discussions and reflections on pedagogical issues in postgraduate training.[19]

Training for PhD supervisors and teaching mentors at Uppsala University

Since 2000, Uppsala University has offered postgraduate supervisors a course, "Supervising the PhD beyond Boundaries", corresponding to Stage II in the supervisor training programme of the Division for Development of Teaching and Learning.[20] The course consists of six days of seminars, workshops, training, lectures, discussions and assignments, all in all requiring three weeks of full-time work. It is offered in both Swedish and English. Each course given has 16 participants from different faculties. The strategy is to mix supervisors from different faculties to get input from many aspects, to broaden their minds and also to give supervisors the opportunity to share experiences with their colleagues. Some are experienced as supervisors and some are not, the group is very heterogeneous. The topics that are brought up are thematic and we move from external to internal aspects, from the framework and regulations to self-reflection and self-knowledge.

To receive a certificate of completion, you are required to participate in all sessions, to observe a supervisory meeting involving a supervisor and his/her PhD student ("peer observation" in a supervision practice) and to write four individual reflective assignments. A significant number of PhD supervisors at the university have attended the course so far; and lots of our colleagues at the university intend to attend the course as one step in their career building. In the most recent semester, the interest to attend was at such a high rate that we decided to double the number of participants. This lead to 34 supervisors being accepted into the course. In doing so, we would promote flow of supervisors taking the course.

We have also organized some domain-specific supervisor training courses comprising a total of two days organized in four half-day sessions to better meet the subject-specific needs and expectations of PhD supervisors working at faculty and departmental levels. The size of the participant bodies ranges from 15 to 40 supervisors. Content and design have then been subjected for discussions with director of postgraduate studies, head of department, or senior faculty administrator.

All in all, considering the courses of the university-wide supervisor training programme (Stage II in particular) and the domain-specific supervisor training courses offered at faculty and departmental levels, we would estimate that roughly 50 per cent of the supervisors who are affiliated with Uppsala University have undergone supervisor training of some sort. A university-wide network for PhD supervisors is also a significant activity 2005 to support supervisors of the professional skills. Different activities, such as workshops, seminars and lunch talks by invited speakers, are offered, making it possible for the supervisors to go on.

[19] For more information of the supervisor training program and how it has developed as a professionalization of the role of PhD supervisors at the Uppsala University look in the report "Training with Care! – On Developing a Supervisors Training Programme and Strategise for Managing Supervisory Issues" (Reinholdsson 2004).

[20] Stage III has been targeted towards senior PhD supervisors (docents, full professors, and supervisors who have taken Stage II). This course, or rather series of five seminars, was initially launched in 2002 together with SLU (The Swedish University of Agricultural Sciences). It has been offered on and off embracing 10-15 participants.

Furthermore, Uppsala University has, since the mid 1990s, been offering a staff training course (`Teaching Mentorship`) for academic teachers who are most interested in sharing teaching practices and reflections on teaching experiences with newly trained teachers.[21] The course comprises one week of full-time training, with 3.5 days in class. Number of participants is limited to no more than 15 in order to make for good small-group interaction on a university-wide basis, meaning that the participants´ backgrounds are diversified in terms of domain and faculty affiliation. The strategy used is thus similar to that of the supervisor training course, as well as that of other staff training courses given on a regular basis by the Division for Development of Teaching and Learning. Nonetheless, speaking of experience, the aspiring teaching mentors are, in general, senior and very experienced.

As far as the course delivery is concerned, the emphasis is put on training the participants´ conversation skills, making use of practical's and small-group exercises in combination with practice-based theoretical perspectives on advising/supervising in general.[22] Schön's `reflective practitioner` and Dewey's `learning-by-doing´ come to mind, too. Besides taking part in a number of practical activities, the participants are required to write a teaching proposal (teaching plan) for practicing mentoring (advising) in small groups of three (mentor, protégé/mentee, observer).

The aim of the course is to promote participants´ self-reflective abilities in teaching and learning, as well as to give opportunities to sharing teaching practices and experiences between and among the participants. In doing so, the participants will hopefully be well prepared for mentoring newly-trained teachers from university-wide basic teacher training courses given by the Division, as well as for taking on and introducing new teachers at departmental level. The significance of the latter is actually pointed to in the policy programme recently adopted on teaching and learning at Uppsala University.[23]

Until now, about 150 academic teachers have been trained in teaching mentorship. Upon completion of this training, all mentors automatically become members in a university-wide network for teaching mentors sustained and supported by the Division by virtue of a variety of activities furthering mentors´ professional development (such as workshops, lunches with invited speakers). Being a teaching mentor is based on voluntary action. Consequently, due to heavy workload, mentors may choose to be inactive for certain periods of time. Otherwise, they are paid for each and every mentoring assignment completed with newly trained teachers. This assignment is a compulsory component of the basic teacher training course.

References

Giertz, Birgitta (1997). Mentor 95. Rapport från försöksverksamhet med pedagogiskt handledarskap. *Rapport nr. 5, Uppsala universitet. Rapporter från tidigare Enheten för utveckling och utvärdering.* Uppsala: Uppsala universitet.

Lauvås, Per & Handal, Gunnar (2001). *Handledning och praktisk yrkesteori*. 2:a uppl. Lund: Studentlitteratur.

[21] For a historical background, see Giertz, B. (1997) Mentor 95. Rapport från försöksverksamhet med pedagogiskt handledarskap. Rapport nr. 5, Uppsala universitet. Rapporter från tidigare Enheten för utveckling och utvärdering.
[22] See Lauvås, P. & Handal, G. (2001).
[23] See section 3.2.1 in Teaching and Learning at Uppsala University. Guidelines for Educational Activity and Development. Adopted by the Vice-Chancellor, 6 May,2008.

Reinalda, Bob & Kulesza, Ewa (2006). *The Bologna process – harmonizing Europe's higher education: including the essential original texts.* Opladen: Budrich.

Reinholdsson, Peter (2004). Training with Care! – On Developing a Supervisors Training Programme and Strategise for Managing Supervisory Issues. *Rapportserie från Enheten för utveckling av pedagogik och interaktivt lärande, Nr 4.* Uppsala: Uppsala universitet.

Swedish National Agency for Higher Education (2009). Universitet & högskolor. *Högskoleverkets årsrapport 2009, Rapport 2009:12 R.* Stockholm: Högskoleverket.

Teaching and Learning at Uppsala University. (2008). *Guidelines for Educational Activity and Development*. Adopted by the Vice-Chancellor, 6 May, 2008.

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Meeting needs and moving around mountains: The issues surrounding research training for our future indigenous researchers

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In order to advance the place of Indigenous Knowledges, ontologies and methodologies in academia, Indigenous higher degree by research students should be provided with training programs that encompass both Western research epistemologies and protocols and global and national Indigenous research perspectives and methodologies. The challenge for the Western schooled providers of this training is not only to understand and support the broader elements of the Indigenous research agenda but to embrace methodologies and theoretical perspectives that reflect Indigenous ontologies and cultural values. This paper describes how a both-ways approach to the provision of research training at Batchelor Institute of Indigenous Tertiary Education attempts to meet these challenges and goals.

Introduction

Over the last two decades there has been a gathering *vitality of discussion* about Indigenous Knowledge (Agrawal, 2005; 73), accompanied by strong argument from Indigenous researchers that it is time that Indigenous knowledge and methodologies took their rightful place in academia (for example Bell et al, 2007; Biermann & Townsend-Cross, 2008, Raseroka, 2008, Wilson, 2008). While the philosophical argument has largely been that all knowledge systems should have a place in universities (Nandy, 2000), other, predominantly non-Indigenous academics have proposed more practical reasons for its inclusion, such as the potential for local or traditional knowledge to provide solutions to global problems in areas such as Environmental Management (Berkes, Colding & Folke, 2000) and Agriculture (Armitage, 2003).

According to the Indigenous Higher Education Advisory Council (IHEAAC) Australian universities should be taking up the challenge to improve the status of Indigenous knowledge and methodologies by promoting the recognition and value of Australia's Indigenous people and culture, and addressing the under-representation of Indigenous people in all facets of university life (IHEAC, 2007). Further, the same body identified that

> Enhanced Indigenous research training is desperately needed (p 6).

If the challenge laid down by the IHEAC is to be fully addressed, the training provided for prospective Indigenous researchers needs to be a comprehensive program that not only exposes them to Western research frameworks, methodologies and protocols, but also enables them to gain a global and national perspective on Indigenous ways of knowing and doing, and to explore the latest ideas and arguments from Indigenous research practitioners. Similarly, during their training they should be provided with the skills so they can reflect and articulate their own ontology, select methodologies that reflect this, and to incorporate aspects of Indigenous knowledge wherever possible and appropriate, into their research.

This paper reflects what has been learnt when a research training program at Batchelor Institute of Indigenous Tertiary Education was developed specifically to address these issues. It discusses the underpinning epistemologies, the challenges that have been encountered, and in line with these challenges, what are perceived to be the extra dimensions that should be included in a research training program.

Batchelor Institute of Indigenous Tertiary Education (Batchelor Institute)

Batchelor Institute has its main campus in the small township of Batchelor, 97 kilometres south of Darwin in Australia's Northern Territory. It has several other smaller campuses in main population centres such as Alice Springs, Katherine, and Nhulunbuy and representation in learning centres in some of the larger Northern Territory Indigenous communities. It is a dual sector Institution specifically for Indigenous Australians, although recently it began to offer on-line postgraduate units for a range of non-Indigenous professionals requiring cross-cultural training.

While the majority of students originate from the Northern Territory (Batchelor Institute Annual Report, 2008), the student body includes Indigenous adults from all over Australia. Students are travelled and accommodated, either at the Batchelor or Alice Springs campus for one to two week blocks. Or alternatively, as is the case for many smaller campuses and the delivery of many vocational training packages, a lecturer travels to the site.

Batchelor Institute has the stated aims of providing a learning journey that not only provides the opportunity for students to transform their lives, but also to strengthen their identity. To assist with the latter, a philosophical approach labelled both-ways has been adopted, with the intent that it underpins and guides the delivery of both academic programs and administrative services (Ober & Bat, 2007). As the name suggests this philosophy allows for the equal status of both Indigenous and Western ontologies and seeks to promote respect for both.

Research training programs

The philosophy of both-ways has guided the positioning of the two research degrees within the institution and the content and delivery of formal training units. In the first instance, reflecting the fact that Indigenous knowledge is holistic and intertwined rather than being able to be assigned neatly into any of the designated Western discipline areas, both the Master of Indigenous Knowledges and Doctor of Philosophy are administered by the Research Division rather than being owned by either of the major Faculties. This cutting across discipline areas and the inclusion of traditional knowledge from sources outside the academy suggests that the term *trans-disciplinary* (Christie 2006; 78) is the most appropriate term for the type of knowledge that most of the research projects seek to generate.

Before students can attempt their own research in the Master of Indigenous Knowledges they must complete four training units. The units are Indigenous research ethics, Indigenous research issues and practice, Analysis and interpretation and Specialised research skills. While the titles of the first two suggest a heavy emphasis on Indigenous approaches, the trainee researcher begins the units analysing Western ethics and research processes and then is given the opportunity to practice them. Indigenous perspectives are then introduced and analysed and compared to the Western. The latter two units focus on presentation and practice of the skills required primarily for the conduct

of qualitative research, with a both-ways flavour guiding the materials chosen and the way the skills training is presented.

The assignments that have to be completed in each unit equate step by step, to the individual tasks that need to be addressed before the proposed research is attempted. They can be seen as individual parts of a jig saw that once completed will form a map that will guide them through their research. When some find that they have selected the wrong pieces and the overall picture does not emerge, a selection of new pieces is sometimes necessary, so completion of the assignments on one specific topic does not lock the students into researching that specific topic. However, a major change in direction can make the overall research program more challenging, and extend the time required for completion. Examples of major assignments include the identification of the ethical issues that must be addressed in the proposed research, the production of a detailed research plan and a literature review.

The training units are not compulsory for Doctoral students, but since the students are drawn from all over Australia, with a variable level of research skills and confidence, they are required to attend a compulsory orientation week during which they sit a diagnostic test to determine their level of understanding of, and their proficiency in, research ethics, research methodologies and data collection methods. The results of this test are discussed with them individually and form a basis for the negotiation and completion of an individual learning plan. If they identify specific skills or knowledge in need of attention, they can elect to do all or specific parts of the on-line versions of the units offered to Masters students and/or small on-line courses such as 'Developing a Research question', and 'Survey techniques'. Both groups are required to identify extra life or generic skills training that may be useful to them.

The postgraduate coordinator and postgraduate support officer guide all students through the first semester in which they are enrolled, providing essential initial administrative and academic support. After the requirements of an initial probationary period have been fulfilled, academic responsibilities are passed to a Supervisory panel, while the postgraduate support officer continues to provide assistance with resources and travel.

The broader agendas of Indigenous higher degree by research students

The research degree students that elect to study and research at Batchelor Institute come with a passion to explore past injustices, save languages, history and culture or to research topical problems or issues from the Indigenous perspective. While a proportion of all Australian higher degrees by research students may enter an award with a passion to change the world in some small way, for Indigenous candidates the desire can be both personal and collective. On average the candidates are older than their non-Indigenous colleagues, and they have rarely progressed from school to first degree and then on to higher degree without large amounts of time away from study. Most have held, or currently do hold, jobs in government or other institutions, and many have a multiplicity of responsible roles in their home community.

It is rare to interact with a student that does not have health issues, or has not suffered personal or family tragedy. For many, the topics that they identify are frequently intertwined with their own personal or family circumstances and clearly support Tuhiwai-Smith's notion that Indigenous research is broad in scope, ambitious in intent and that the agenda includes elements such as healing, decolonisation, spiritual, and recovery (Tuhiwai -Smith, 2005: 117).

Examples of topics that can incorporate a strong healing or recovery aspect are family histories, stolen generation stories and issues such as suicide and health literacy. The recording and analysing of these events against theoretical perspectives can become a journey that can be fraught with emotional highs and lows, and so these possibilities must be addressed in the training program. Expiation and healing of spirit may be a desired outcome for the individual researcher and in some instances other family members, but at Batchelor Institute candidates are also encouraged to identify practical ways in which their work can benefit a wider group.

Indigenous trainee researchers exploring Indigenous issues with Indigenous participants have, according to Fredericks (2007) quite complex and markedly different responsibilities to those of their non-Indigenous counterparts. While the ethics training provided can alert both Indigenous 'insiders' (those who belong to a community) and 'outsiders' (those who do not) about the existence of protocols and procedures that should be adhered to, it for some there may be specific circumstances that complicate matters. For example, the 'insider' has another layer of responsibilities dictated by their gender, position in the community, and status. Frequently the 'insider' is expected to know these although they are rarely spoken about. Martin (2003; 209) also identifies responsibilities in respect to the reporting and dissemination of work, including using preferred language, terms and expressions.

Although they are frequently referred to as such, Indigenous Australians are not a homogenous group (Bullen, 2004). The diversity of language, culture and circumstance means that providing both training and guidance for projects where the trainee researcher is an 'insider' can be difficult because of these differences, and the fact that in most instances those providing the training have never researched in similar situations. It is therefore not surprising that Tuhiwai-Smith (2005: 10) has identified that:

Non-Indigenous teachers and supervisors are often ill prepared to assist Indigenous researchers in these areas and there are so few Indigenous teachers that many students simply 'learn by doing'.

Accepting the importance of the spiritual in Indigenous thinking, and guiding its expression in research is an even more challenging aspect of the training, particularly for those who have themselves been shaped by disciplines where spirituality has never had a place. The Indigenous perspective is that it is the Western culture that is poorer for missing this most important dimension (Lehman, 2008; 107).

There is however, an increasing amount of literature that emphasises just how important it is to embrace this. For example, in a study of well being with Aboriginal Australians in the inner city suburb of Redfern in New south Wales, Grieves (2008; 363) identified spirituality as the most important factor affecting wellbeing. Further, Grieves (p384) proposes that until this concept is fully appreciated and understood then there will be no decolonisation, no movement forward.

The interconnectedness between the physical, human and sacred aspects of the world (Whap, 2001; Martin, 2005; Foley, 2008) is another Indigenous philosophical approach that should be included in any discussion of research paradigms during training, but one that may be difficult for western trained minds to deal with appropriately. As Foley (p. 118) explains, the physical world forms the base of a triangle on which the human and the sacred, the other two sides, sit. This is because the physical, the land, sky and other living organisms is seen as the mother to the other two, providing food, culture, spirit and

identity. The human world includes what is known, as well as approaches to people, family, rules of behaviour and ceremonies. The sacred world has as a foundation the physical and spiritual well-being of all creatures, and carries the responsibility to care for country and to maintain and uphold laws. When ontologies such as these are not adequately understood or appreciated by researchers Prior, (2009; 72) suggests that

While it may not be the intention of the researchers, methodologies that neutralise the cultural content of the Indigenous human experience can only gather half of the story.

Wilson (2008, 7) maintains that the accountability to relationships whether they be human, spiritual or country is something that determines the Indigenous researcher's choice of topic, methods of data collection and analysis and presentation. If the trainee researcher has difficulty articulating the influence of these factors, and is unsure exactly how they need to be included and those providing training do not understand their importance in data interpretation, then difficulties can arise.

Many prominent Indigenous academics consider that in the colonial past, universities and their research outputs played a key role in the dispossession of Indigenous peoples' knowledges (Martin, 2003; Tuhiwai-Smith, 2005). The research training provided to Indigenous students therefore has the added responsibility of providing the students with the skills and confidence to gradually challenge and change any lingering colonial attitudes and practices. This is the *emancipatory imperative*, that Rigney (1999; 116) identifies should be an aim for all research carried out by Indigenous researchers.

The mountains

The most desirable trainers for Indigenous students are undoubtedly Indigenous academics who have themselves embarked on the higher degree by research journey, encountered diversions, steep slopes and landslides, and have learned lessons that may help others who wish to embark on the same journey. Just like any other tertiary institution (DEST, 2003), however, Batchelor Institute has a limited number of Indigenous staff with the qualifications and experience to train higher degree by research students.

While every effort is made to use what expertise is available, the largest proportion of the training provided has to be delivered by non-Indigenous researchers, with the inclusion of relevant Indigenous personnel from both inside and outside the institution wherever possible. Debriefing after training sessions and the sharing of ideas in a both-ways manner has therefore become an important activity.

Prominent Indigenous scholars such as Langton and Nakata (Nakata, 2004; 2) have acknowledged that non-Indigenous research trainers will continue to have an important role in promoting and influencing the research of Indigenous issues or research that seeks to occur in Indigenous contexts. Nakata (opp cit; 4) emphasises that in the interests of the promotion of Indigenous research, non-Indigenous academics must be willing to be educated by Indigenous researchers about Indigenous ways. He also identifies that training of Indigenous researchers should also contain another aspect—that of providing sufficient skills and knowledge so that the future Indigenous researcher will be able to identify and adequately deal with the issues that may arise from the range of interactions that can occur between non-Indigenous and Indigenous researchers.

Given the choice, Indigenous research trainees gravitate toward a selection of qualitative research methodologies that are largely determined by the topic to be researched (Winch & Hayward, 1999; Bullen, 2004). In most instances they are those that (perhaps unbeknown to them) appear to closely align with their own epistemologies. These include narrative and story telling (Bell et al, 2007), ethnography, collaborative inquiry, action research (Winch & Hayward, 1999) and auto-ethnography (Bainbridge, 2007; Houston, 2007).

When the choice of these methodologies is looked at against the backdrop of the broader agenda that most bring to their research training program, the choice of story-telling and narrative is not surprising. For while knowledge has always been disseminated through oral story-telling in Indigenous Australia (Arbon, 2008), Lekoka (2007, 84) maintains that it represents a potent way of recognising ordinary people, something many Indigenous Australians are seeking. Further, Reissman-Kohler (2008, 9) a proponent of the narrative, maintains that most of the major resistance movements of the twentieth century can trace their origins to groups exchanging stories.

The Cooperative Research Centre for Aboriginal and Tropical Health has however, identified that the choice of methodologies represents another mountain that may need to be moved around. For in 2002 they seemed to suggest a degree of uncertainty when considering their acceptance by the wider academic world, via the statement:

> the extent to which the application of newly defined Indigenous research methodologies are being supported within mainstream academic and research institutions remains undisclosed (Henry et al, 2002; 4).

The emerging Indigenous postgraduate research programs were seen as a possible pathway that could be forged to gradually overcome this lack of support. Many Indigenous researchers such as Tuhiwai-Smith (2005; 140) have however, suggested that there are continual large boulders that have to be moved around if new methodologies and the knowledge is to be accepted, viz:

> The research community has a number of terms which are used to good effect to dismiss challenges made outside the fold. Research can be judged as 'not rigorous', 'not robust', 'not real', 'not theorized', 'not valid' or 'not reliable'.

This then represents another challenge for those designing and delivering research training programs. For they not only must ensure that features such as robustness, reliability and validity are fully understood by the prospective researcher, but they also need to find and explore innovative ways to address these concerns so that the status of preferred Indigenous methodologies improves.

Another issue closely aligned to the choice of methodology or topic, is that in many instances data and research findings are better presented in non-traditional forms. For example, when information that has been passed from generation to generation through dance, symbol, painting, ritual and/or oral story for thousands of years is the object of research, when it does not infringe on cultural laws it may be more effectively captured by tape or camera and presented in a multimedia format. In these instances the traditional thesis may frequently become an exegesis. That is, the presentation of visual and auditory materials becomes the data or results section, with a shorter written section that outlines the traditional aspects of a thesis including the analysis and interpretation of the collected data against a theoretical perspective. This method utilised by visual and performing artists in the past, may take on extra

dimensions when it is used by Indigenous researchers, since in some instances it may require an exhibition of the data to the owners of the knowledge who may be those that carry out the validation and/or test of rigour.

Lessons learned

While it is early days for the research training program at Batchelor Institute of Indigenous Tertiary Education, each intake of research students has bought new challenges and resulted in small changes in the training, supervision and support provided. What has occurred can be compared to a trek through mountainous country with a very basic map that does not identify major obstacles. Once the obstacles have been successfully negotiated, in most instances what has been revealed however, is refreshing new perspectives and options.

Even the most experienced academics who have been involved in providing training and support to Indigenous research students have had to accept that they, as suggested by Nakata (2004), are learners on this trek themselves. Listening to, and reflecting on, the ideas and opinions of Indigenous colleagues and students has become an important part of that learning. The well travelled and sometimes deeply worn pathways of personal ontologies and epistemologies, have through necessity, been broadened.

It has taken longer than planned to provide students with the necessary understanding of both Western and Indigenous research paradigms and practices, but there has been no deviation from the belief that future Indigenous researchers must understand both, to be effective and confident in their future tasks of enhancing the status of Indigenous research and knowledge, and ensuring that the emancipatory imperative of Indigenous research is addressed.

While the number of Indigenous research graduates continues to remain disproportionately low, it is unfortunately the quantity of completions that will receive more attention than the quality of the programs. As identified by the IHEAAC (2007: 15), this may increase the risk that students will be fast tracked and left with shortages in key skill areas. The experiences from Batchelor Institute have indicated that this is the antithesis of what should occur, since extra time is required to cope with the additional needs of the students and the challenges that both they and those assisting them have to face.

References

Agrawal, A. (2005). The politics of Indigenous Knowledge, *Australian Academic and Research Libraries*, 36(2), 73 – 84.

Arbon, V. (2008). Indigenous research: Aboriginal knowledge creation, *Ngoonjook*, 32, 80 – 94.

Armitage, D. R. (2003). Traditional agro-ecological knowledge, adaptive management and the socio-politics of conservation in Central Sulawesi, Indonesia. *Environmental conservation* 30, 79-90.

Bainbridge, R. (2007). Auto-ethnography in Indigenous Research Contexts: The value of inner knowing, *Journal of Australian Indigenous Issues*, 10 (2), 54 - 64.

Batchelor Institute of Indigenous Tertiary Education (2008). *Annual Report for 2008.* Batchelor Press.

Bell N., Davis, L., Douglas, V., Gaywish, R., Hoffman, R., Lambe, J., Manitowabi, E., McCaskill, D., Pompana, Y., Williams, D. & Williams, S. (2007). Creating Indigenous Spaces in the Academy: Fulfilling our responsibility to future generations, *Alternative*, 1, (Inaugural issue).

Berkes, F., Colding J. & Folke, C. (2000). Rediscovery of traditional ecological knowledge as adaptive management, *Ecological Applications* 10, 1251- 1262.

Biermann, S. & Townsend-Cross, M. (2008). Indigenous Pedagogy as a force for change, *The Australian Journal of Indigenous Education*, 17 (supplement), 146 – 157.

Bullen, C. (2004). 'Doing' Indigenous research: reflections, questions, challenges, *Aboriginal and Islander Health Worker Journal*, 28 (2), 9- 10.

Christie, M. (2006). *Transdisciplinary Research and Aboriginal Knowledge*. Australian Journal of Indigenous Education, 35, 78-89.

Department of Education, Science and Training (2003). *Achieving Equitable and appropriate Outcomes: Indigenous Australians in Higher Education,* Chapter 4, Our Universities: Backing Australia's Future, Commonwealth of Australia.

Foley, D. (2008). An indigenous Standpoint theory, in A. Gunstone (ed.) *History, Politics, Knowledge: Essays in Australian Indigenous Studies*, Australian Scholarly Publishing Pty. Ltd, North Melbourne, Vic.

Fredericks, B. (2007). Talkin' up the Research *Journal of Australian Indigenous Issues*, 10 (2), 45 – 53.

Grieves, V. (2008). Aboriginal Spirituality: A baseline for Indigenous Knowledges Development in Australia, *The Canadian Journal of Native Studies* 28 (2), 391- 396.

Henry, J., Dunbar, T., Arnott, A., Scrimgeour, M., Matthews, S., Murakami-Gold, L. & Chamberlain, A. (2002). *Indigenous Research Reform Agenda. Rethinking research methodologies*, Links monograph series: 2, Cooperative Research Centre for Aboriginal and Tropical Health.

Houston, J. (2007). Auto-ethnography: Addressing the 'crisis in representation', *Journal of Australian Indigenous Studies*, 10 (2), 73 – 81.

Indigenous Higher Education Advisory Council (IHEAAC) (2007). *Strengthening Indigenous Research Culture in Australian Universities and Higher Education*, report of the 2007 IHEAC Research conference, 20-21 Feb 2007, University of Melbourne.

Lehman, G. (2008). Two thousand generations of place-making, in F. Vanday, M. Higgins & A. Blackshaw (Eds). *Making sense of place.* National Museum of Australia Press, Canberra.

Lekoka, R. N. (2007). Storytelling as a potent research paradigm for Indigenous communities, *Alternative*, Special supplement, 2007, 82-95.

Martin, K. (2003). Ways of Knowing, Being and Doing: A theoretical Framework and methods for Indigenous and Indigenist Research, Journal of Australian Studies, 76, 203-214.

Martin, K. (2005). Childhood, lifehood and relatedness: Aboriginal ways of being, knowing and doing, in J Phillips and J Lampert (eds) *Introductory Indigenous studies in Education: The importance of knowing*, Chapt 3, 27-40, Pearson Education Australia.

Nakata, M. (2004). Ongoing conversations about Aboriginal and Torres Strait Islander Research Agendas and Directions, *Australian Journal of Indigenous Education,* 33, 1- 6.

Nandy A. (2000). Recovery of Indigenous Knowledge and dissenting futures in the university, in S Inayatullah & J Gidley (eds.) *The university in transformation: global perspectives on the futures of the university,* Westport Conn: Bergan & Garvey.

Ober, R., & Bat, M. (2008). Both-ways: philosophy to practice, *Ngoonjook*, 32, 56-79.

Prior, D. (2009). Decolonising research agendas: claiming voice and power in academia *in*, Frawley, J., Nolan, M. & White N. (eds.) *Indigenous Issues in Australian Universities. Research, Teaching, Support*, Charles Darwin University Press.

Rigney, L. (1999). *Internationalisation of an Indigenous Anticolonial Cultural Critique of Research Methodologies: A Guide to Indigenist Research Methodology and its Principles*, Wicazo Sa Review, Fall, 14 109-113.

Raseroka, K. (2008). Information transformation in Africa: Indigenous knowledge –securing a place in the knowledge society, *International Information and Library review,* 40 (4) 243-250.

Reissman-Kohler, C. (2008). *Narrative methods for the human sciences*, Sage Publications, Los Angeles.

Tuhiwai Smith, L. (2005). *Decolonising Methodologies. Research and Indigenous peoples*, Zed Books Ltd, London (Eighth impression).

Whap, G. (2001). A Torres Strait Islander perspective on the concept of Indigenous Knowledges, *Australian Journal of Indigenous Education*, 29(2), 22-29.

Wilson, S. (2008). *Research is ceremony: Indigenous research methods*, Fernwood Publishing, Halifax and Winnipeg.

Winch, J. & Hayward, K. (1999). Doing it our way. Can cultural traditions survive in Universities? *New Doctor*, Summer, 1999, 25- 27.

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Research supervisor capability development for neophyte research supervisors

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Abstract

The demographics of research students indicate growth in the numbers of students. As student numbers grow so does the need for supervisors and particularly new supervisors. One of the education areas that university research training departments will need to address in the near future is professional development for neophyte research supervisors.

As Kandelbinder and Peseta (2001), Pearson & Brew (2002) and Brew & Peseta (2004) observe, many neophyte research supervisors draw on their own experiences as a research student to set their agenda's for the emergence of research supervision as part of their academic career. In recent years these experiences can include exposure to Graduate Research Capabilities. This forms a platform and viable background knowledge for developing a repertoire of research supervision practices.

Traditionally neophyte research supervision capability development has been undertaken within the context of co-supervision (Phillips and Pugh, 1987, p. 109; Bourner and Hughes, 1991, p. 23). While this approach has been successful there are risks that the learning is not explicit and that the practices to which neophyte supervisors are exposed are flawed rather than examples of quality research supervision. Providing a framework for evaluating research supervision enables neophyte supervisors to evaluate the types of research supervision to which they are exposed through co-supervision and draw from this reflection a repertoire of research supervision practices that are recognised as quality research supervision.

This study reports on the curriculum action research across three iterations of an exercise for neophyte research supervisors to raise their awareness of their candidature experiences, to name the capabilities and lack of capabilities they carry from those experiences and to reframe those capabilities into agendas for research supervision professional development agendas. Drawing on neophyte research supervisor's background knowledge from their candidature can identify dominant agendas in their research supervision professional development and act as a conduit to less dominant agendas as they move to round out their research supervision capabilities.

Introduction

According to Department of Education, Training and Youth affairs figures (DETYA, 2008) there has been a growth in the number of students undertaking research in Australian universities. Allowing for the changes in the ways in which these figures have been collected in the past, there is still a strong argument for suggesting that there has been a growth in research students and a subsequent increased demand for research supervisors. One of the professional development areas that university research training departments will need to address in the near future is professional development for neophyte research supervisors.

Addressing the specific needs of neophyte research supervisors falls within a broader professional development agenda that has been in existence in Australian Higher Education since 1985, and that is the agenda of the quality of

research supervision. By addressing the needs of neophyte research supervisors we can also address these broader issue of improving and maintaining the quality of research supervision.

As Kandelbinder and Peseta (2001), Pearson & Brew (2002) and Brew & Peseta (2004) observe, most neophyte research supervisors draw on their own experiences as research students to set their agenda's for the emergence of research supervision as part of their academic career. But, as progressive Post Graduate Research Questionnaires have indicated (Harman, 2002), not all research students experience a positive research journey, and some come to the prospect of research supervision either with blazing and unrealistic goals to right the wrongs of their own experience or a lack of awareness that what they experienced as a poor candidature can in fact be understood as poor quality research supervision.

Alongside drawing on their prior knowledge, neophyte research supervisors are often paired with supervisors who have been practising for some time (Phillips and Pugh, 1987, p. 109; Bourner and Hughes, 1991, p. 23) so that they can learn from the experienced supervisor's example. As Spooner-Lane, Henderson, Price and Hill (2007) suggest, these mentoring experiences are also not always educational and many neophyte research supervisors witness examples of poor supervision and a lack of explicit professional development from their mentor such that they are not made aware that it is poor practice being modelled in the research supervision.

Both agendas emphasise the importance of professional development for neophyte research supervisors and specifically the importance of reflecting on past experiences or current mentoring experiences in the light of current research supervision literature.

Context and methodology

Queensland University of Technology has been offering professional development for research supervisors since 1989. Like it's counterparts it has been experiencing a growth in research student numbers and is constantly endeavouring to increase the number of academic staff eligible and qualified to supervise research.

The programs they have used in the past have been face-to-face workshops exploring the range of issues and problems that research supervisors encounter. For a short time they also offered research supervision as one of the units in a Postgraduate Diploma in Higher Education, and as this endeavour ended, launched an on-line professional development portal to resource research supervisors and also provide moments of reflective practice through moderated professional development programs. The style of the programs mirrored the processes established in the earlier Quality in Postgraduate Supervision workshops, in that it attempted to cover a range of the problems that supervisors might encounter in the undertaking of research supervision.

In 2009 a series of opportunities arose that enabled the development of a dedicated professional development program for novice research supervisors. Initially this involved working with a group of novice research supervisors from Bhutan University. The activities developed in this initial program were then used for a series of face-to-face workshops (Transition to Supervision) for novice research supervisors and finally absorbed into the on-line professional development program (Supervisor Solutions) which was updated to reflect the activities which had been successfully implemented in the previous iterations.

One activity included in the novice research supervisor program was based on the assumptions articulated by Brew and Peseta (2004) that new supervisors draw on their prior experience and it encouraged participants to reflect on those experiences being supervised. This activity involved three reflective statements:

- When I was doing my doctoral studies the best thing about it was…..
- The most troubling thing about it was…
- Together, these two things give me a research supervision agenda of….

Participants were asked to complete these sentences and to identify what they believed was one agenda that was coming out of their prior experiences.

The activity consistently generated a range of responses. By the third iteration these responses were able to be documented and included:

- Hold regular meeting with my students and provide feedback on their writing.
- Encourage rigorous debate among students
- Read their writing and provide feedback and provide useful links and resources
- Encourage students to build research skills and research network skills
- Help students establish their research agenda
- Keep students focused on the big picture of their research and how all the bits fit together.
- Provide feedback and guidelines on their written work
- Continually updating research and learning plans
- Providing guidance and clear objectives to students about their research.
- Attempt to bring students together to help them avoid intellectual isolation.
- Focus on empowering the students about their research
- Encouraging them to publish and to get peer reviewed feedback on their research before submitting it

The range of prior knowledge and identified agendas was broad and so I sought to organise them based on a framework for the knowledge of research supervision that I had previously explored (Hill, 2008)

This model had been developed from the literature on research supervision, identifying the dominant discourse around research supervision as pedagogy (Connell, 1985; Parry and Hayden, 1994; Manatunga, 2002; Pearson and Brew, 2002; Green, 2005) and an alternate discourse around supervision as management (Vilkinas, 2000). In addition to these two discourses there was also literature on conflict resolution, typically from Interpersonal Communication, as well as an historic discourse which explored how research and research supervision had evolved over time

As moderator of the on-line program, I used this framework to respond to each participant's submission of the prior knowledge and research supervision agenda and suggested appropriate on-line resources to fuel their nominated research supervision agenda. These resources included:

- Journeying Postgraduate Supervision (Aspland, Hill and Chapman, 2002) a collection of research supervisor stories.
- fIRST resources
- articles on the QPR site
- Learning Employment Aptitudes Program (LEAP)
- e Grad School modules

The philosophy behind this intervention was to affirm the participants' dominant area of interest and at the same time, using the four quadrant model, to raise awareness of other areas of professional development within research supervision that supervisors may be interested to explore at a later date.

This supported participants as they developed action plans for their ongoing research supervisor professional development and opened dialogue for them in the context of their broader professional development plans as part of their PPR.

References

Aspland, T., Hill, G. & Chapman, H. (Eds) (2002) *Journeying Postgraduate Supervision*. Queensland University of Technology, Brisbane: Australia.

Bourner, T. and Hughes, M. (1991) Joint Supervision of research degrees: second thoughts. *Higher Education*. **24** (1): 21-35

Brew, A. & Peseta, T. (2004) Changing postgraduate supervision practice: a programme to encourage learning through reflection and feedback. *Innovations in Education and Teaching International*, **41** (1): 5-22

Connell, R. W. (1985). "How to Supervise a PhD." *The Australian Universities Review,* **28**(2): 38-41.

Department of Education, Training and Youth Affairs (2008) Higher Education Report. Australian Government.

Green, B. (2005). Unfinished Business: subjectivity and supervision Higher Education Research and Development 24 (2), 151-163

Harman. G. (2002). Producing PhD Graduates in Australia in the Knowledge Economy. *Higher Education Research and Development* 21 (2), 179-190

Hill, G. (2008, April) Problematising "good" HDR Supervision: Developing a framework for a research supervision curriculum. Quality in Supervision Conference. Adelaide: Australia.

Kandlbinder, P. and Peseta, T. (2001) *In supervisors' words: an insiders view of postgraduate supervision*. Sydney Institute for Teaching and Learning, University of Sydney.

Manathunga, C. (2002) Detecting and dealing with early warning signs in postgraduate research education: a work-in-progress. *Quality in Postgraduate Research: Integrating Perspectives* Kiley, M. and Mullins, G. (Eds).. CELTS, University of Canberra

Parry, S. and Hayden, M. (1994) Supervising Higher Degree Research Students: an investigation of practices across a range of academic departments. Commonwealth of Australia. Canberra: Australia

Pearson, M. and Brew, A. (2002) Research Training and Supervision Development. *Studies in Higher Education*. **27** (2), 135-150.

Phillips, E. and D. S. Pugh (1987). *How to Get a PhD*. Buckingham, U.K., Open University Press.

Spooner-Lane, R., Henderson, D., Price, R. and Hill, G. (2007) *Practice to Theory: Co-supervisors stories.* International Journal of Research Supervision. 1, 39-51

Vilkinas, T. (2002). The PhD Process: The Supervisor as Manager. *Education and Training.* 44 (2/3), 129-137

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Getting industry supervision right: Lessons from RHD candidates

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A major aim of any Research Higher Degree (RHD) program is to provide research training in a manner that fosters the development of candidates' independent research skills. To further enhance skill development, RHD candidates may choose to engage with an industry partner and possibly an industry supervisor or mentor as part of their research training. This industry interaction generally provides candidates with a richer research-training environment and the close interaction between the candidate and industry partner enables them to develop a real industry perspective on the benefit of their research. However, as the candidate's research progresses, there can be situations that cause tension amongst the candidate, their university and the industry partner. By following the journey of two RHD candidates Zoe and Ben, this paper uses a narrative approach to explore several issues that can arise when industry is involved in RHD projects. The issues raised here may not be new, but the fact that they still occur in many academia/industry collaborations is alarming. It is hoped that prospective and current candidates, supervisors, industry partners and universities will use the lessons from Zoe and Ben's stories and get industry supervision right.

Zoe's story

Zoe was a PhD candidate who was one year into her project examining the life cycle of a globally devastating wheat pathogen. Zoe's stipend and project costs were funded by Wheat Germ Pty Ltd, a local wheat-breeding company. Upon commencement of her project, Zoe signed an Intellectual Property (IP) and Confidentiality Agreement with Wheat Germ Pty Ltd that gave them the right to commercialise IP developed from Zoe's project, while allowing Zoe to retain copyright in her thesis. Zoe's agreement was co-signed by the Research Director of the University of Plant Pathology.

Zoe had found her PhD challenging as the lab research was difficult and meaningful results were limited. Zoe's university PhD supervisor Professor Tom, a senior academic, realised that Zoe needed more motivation to complete her PhD, and suggested that Zoe apply for a Clever Country Award being offered by the Federal Government. After all, Zoe's research was world class and its outcomes had benefits to both the local and international wheat industries. Zoe was elated when she received the award and found the inspiration she needed to get back to the lab and complete her experiments. To receive the Clever Country Award, Zoe was required to sign an IP and Confidentiality Agreement with the Federal Government, and this agreement was again co-signed by the Research Director of the University. Under the Award agreement, the Federal Government had the right to commercialise and protect the outcomes of Zoe's PhD project, excluding the copyright to her thesis.

Twelve months later Zoe made a discovery that Wheat Germ Pty Ltd wanted to patent. Wheat Germ Pty Ltd filed a provisional patent application based on her results. When inventorship was being determined by the local patent attorney, it was discovered that Zoe and the University had assigned the rights to this discovery to the Federal Government as part of the Clever Country Award agreement. Wheat Germ Pty Ltd was furious! After all, they had financially supported Zoe's stipend and research project in the belief that they could

commercialise IP arising from her research. After countless discussions among Wheat Germ Pty Ltd, the University of Plant Pathology and the Federal Government, Wheat Germ Pty Ltd let the provisional patent lapse, thereby forgoing millions of dollars in potential income generated from the patent.

Throughout the agreement discussions, Zoe continued with her research. Zoe is now entering her fourth year of candidature and is yet to submit her thesis. Wheat Germ Pty Ltd has continued to support RHD candidates but is now more aware of the University's apparent lack of care regarding the terms of signed agreements and the potential forgetfulness or lack of understanding by students who sign such agreements at the beginning of their candidature.

Ben's story

Ben had received an Australian Postgraduate Award (APA) and was going to commence his RHD candidature under the supervision of Dr Barry on an industry-funded project at the University of Minerals. Ben was also going to receive an industry top-up scholarship from Coal Inc, an international mining company that had invested millions of dollars in research and development (R&D). In addition to his generous top-up scholarship, Coal Inc had offered Ben substantial funds to conduct his research project on optimising dozer operations in open-cut coal mines. Ben and Dr Barry were going through the final stages of RHD enrolment at the University of Minerals when Coal Inc withdrew its support for Ben's project. The global financial crisis had caused Coal Inc to re-evaluate its R&D portfolio and the project that was to fund Ben's thesis topic was cancelled. Coal Inc then offered to fund Ben's top-up stipend and project costs if he changed his thesis topic to work on another Coal Inc project. Ben re-evaluated his research interests and, after consultation with Dr Barry, took up Coal Inc's offer of the new research project. As the new project was outside the scope of Dr Barry's expertise, Bob, a senior researcher at Coal Inc, joined Ben's supervision team. Bob was an expert in his field and although he had never completed his PhD, Bob was a key inventor in several of Coal Inc's patents.

Upon commencement of his RHD, Ben signed an IP and Confidentiality Agreement with Coal Inc, which was co-signed by the University of Minerals. This agreement gave Coal Inc the right to commercialise IP developed from Ben's project, excluding the copyright of his thesis. The agreement also outlined that as a recipient of Coal Inc's support, Ben was required to provide the Coal Inc Research Manager with bi-monthly reports on his progress and was required to attend a Project Management and IP/Commercialisation Boot Camp organised by Coal Inc.

To conduct his research, Ben was required to regularly travel to the mine, and when onsite, Ben was able to participate in Coal Inc's team meetings. During these meetings, Ben could speak freely about his research project and provide the team with regular updates on his progress. However, when conducting his research back at the University of Minerals, Ben could not provide his university research group with details about his project. This was because Ben's Coal Inc agreement forbade him to speak to anyone other than Coal Inc employees or Dr Barry about his project. As his research progressed, Ben found this lack of scholarly feedback from his peers frustrating and his inability to discuss his research with them made him feel isolated from his university colleagues.

Ben's ability to publish his research findings in a timely manner was also a source of frustration for him: Coal Inc's Commercialisation Manager had to vet any potential publications prior to submission.

Ben submitted his Commercial-in-Confidence thesis for examination after three and a half years of candidature, and his examiners were required to sign a Confidentiality Agreement prior to receiving Ben's thesis. Ben made the necessary revisions to his thesis and submitted the final version to the University of Minerals for approval. Following acceptance of the final version, Ben's Commercial-in-Confidence thesis was embargoed and was not accessible in the University of Minerals' library for the next five years.

Academic versus industry research

Before exploring some of the issues highlighted in the stories above, it is important to acknowledge that academia and industry have fundamentally different purposes. Tasker & Packham (1993) suggest that:

> The purpose of industry is to generate profit for private gain, usually in competition with other companies. The profit generated may or may not benefit society; the concept of public good is not central to industry's concerns. The purpose of higher education is to generate knowledge through collaboration between scholars, not competition, and in such a way that society as a whole benefits. (Tasker & Packham, 1993, p. 134)

Industry researchers are, in turn, rewarded for product development and profit taking, whereas academic or university researchers are rewarded for 'publications and the preparation of students for university positions' (Slaughter et al., 2002, p. 289).

In addition to being rewarded for different outcomes, university and industry researchers also perceive different benefits and constraints to potential collaborations. University researchers perceive some of the benefits to industry collaboration as: the ability to work on 'real-world' problems; acquaintance with the market place and innovation process; and enhanced graduate employment opportunities (Powles, 1996; Table 1). In contrast, industry researchers perceive some of the benefits to collaboration as: ability to acquaint research students with the industrial research environment; access to an expert labour force; and a source of new skills and techniques for research (Powles, 1996; Table 1). University researchers can view perceived inhibition of creative research direction, inadequate appreciation by industry of nature and norms of academic work, and commercial confidentiality conflicting with the academic ethics of open publication as constraints to industry collaboration (Powles, 1996; Table 1). While for industry, the greatest perceived constraint when collaborating with university researchers may be the potential loss of control over a proprietary position (Powles, 1996; Table 1).

Table 1. Benefits and constraints of a cooperative relationship between industry and academia. Adapted from Powles (1996)

	Benefits	**Constraints**
University	• Research on 'real-world' problems • Acquaintance with the market place and innovation process • Access to more technical and physical resources • Additional resources for funding research • Enhanced graduate	• Inhibition of creative research direction • Redirection of basic research towards applied and development programs • Suspicion of exploitation of university resources for private benefit • Time constraints on research

	employment opportunities • Contribution to economic development • Supplemental income for individuals • Enhanced public credibility for service to society and contribution to economic development	projects antagonistic to long-term research approaches • Inadequate appreciation by industry of nature and norms of academic work • Commercial confidentiality conflicts with academic ethics of open publication and widespread dissemination • Research distorted by profit motive
Industry	• Acquaints research students with industrial research environment • Access to expert labour force • Source of new skills and techniques for research/access to technology • Increased access to peer review • Enhancement of public credibility through association with universities	• Loss of some control over a proprietary position • Doubts about relevance of university research to industrial problems • Lack of appreciation of time scales and norms of industry research

If the fundamental differences between academia and industry are not recognised and respected early in a collaboration, then there 'will inevitably be destructive conflict where the interest and concerns of industry and academe meet' (Tasker & Packham, 1993, p. 135), particularly where RHD candidates are involved.

Most candidates find undertaking an RHD on a traditional academic topic challenging, with the addition of an industry partner or supervisor to their project further complicating their studies. Despite these potential complications, RHD candidates choose to work on an industry-funded project for one or many different reasons including: the ability to work on a real-world problem while developing an understanding of the industrial research environment; greater access to financial resources, usually in terms of stipend and operating/travel costs; possibility of future employment; the ability to obtain an appreciation for the wider context of their research; the ability to obtain experience in inter-disciplinary research and team work; and the ability to develop skills which are useful in their future careers (Smith & Gilby, 1999).

After reflecting on some of the fundamental differences between academia and industry, the stories of Zoe and Ben can now be revisited.

Zoe's story revisited

Zoe was a bright student who, like many candidates, seemed to get lost in the middle of her RHD journey. Zoe was eager to work on a real-world project and felt that her research would make a difference to the wheat industry. At the time she commenced her RHD and signed the Wheat Germ Pty Ltd IP and Confidentiality Agreement, she did not fully appreciate the significance of what she was signing and just wanted to get started on her research project. Furthermore, when Professor Tom encouraged her to apply for the Clever Country Award, Zoe jumped at the opportunity to participate in such a prestigious award scheme. At the time, neither Zoe, Professor Tom, or the University of Plant Pathology seemed to consider whether it was inappropriate

for Zoe to apply for and accept the award even though Zoe and the University of Plant Pathology had signed a previous agreement with Wheat Germ Pty Ltd giving them the right to commercialise Zoe's IP. As outlined above, the ramifications for lost revenue for industry partners such as Wheat Germ Pty Ltd can be significant.

Ben's story revisited

Coal Inc effectively gave Ben an ultimatum even before his candidature commenced: work on this project or there will be no support for the top-up stipend and RHD project costs. After due consideration, Ben chose to work on the new project and at the time, seemed grateful to accept the offer. Over time however, Ben became frustrated with the industry interaction and reported feelings of isolation from his university peers. The inability to discuss his research with fellow graduate students put him outside the 'circle of socialization that takes place' in a typical university setting (Slaughter et al., 2002, p. 299).

Another issue raised at the commencement of Ben's candidature was that Coal Inc effectively told Ben his RHD topic, even though Ben held an APA. The question as to whether an RHD student should be recruited to an existing or already formulated project is common with industry-funded research (discussed by Marsh, 2006; Wallgren & Dahlgren, 2007). As one of the major aims of the RHD program is to provide research training in a manner that fosters the development of candidates' independent research skills, it is vital that the student, supervisor and industry partner jointly develop the project. That way, the project is developed around the student's specific interests and encourages the student to develop more independent research skills and a sense of ownership of the project. Furthermore, joint development affirms that the student is not low-cost, expert labour (Lee, 1996; Slaughter et al., 2002), or an employee of the industry partner that will 'do any "research" activity that arises within the company during the period of candidature' (Brown, 2006, p. 70).

Extra demands were placed on Ben during his candidature. He was required to give bi-monthly progress reports to Coal Inc and was also required to undertake training to develop additional skills in the area of IP and commercialisation, and project management. As these demands were made explicit to Ben at the beginning of his candidature, he entered the relationship with full knowledge of these additional duties.

During his candidature, Ben was also required to seek his industry partner's approval before submitting any research articles for publication. In his case, Ben was still able to publish but at times, submission of the publication was delayed until Coal Inc's Commercialisation Manager approved the draft or asked Ben to 'sanitise' it so that the publication did not interfere with commercialisation of potential IP. More experienced university researchers who are used to engaging with industry on research projects have learnt to 'deliberately pace [their] academic publishing so that it lagged far enough behind the patent application process to avoid conflict' (Slaughter et al., 2002, p. 302).

Lessons from RHD candidates

The RHD experiences of both Zoe and Ben serve as lessons for all parties involved in RHD projects. A summary of the lessons for candidates, university supervisors, industry partners and enrolling institutions that all engage in industry-funded RHD projects is provided below.

For the *candidate*, engaging industry in your RHD candidature can have potential complications. However, most of these complications can be avoided by meeting

with your university supervisors and industry partner/supervisor at the beginning of your candidature and discussing each partner's requirements and expectations of the RHD program. As part of these discussions, it is important to clarify any extra requirements you may have during your candidature, for example, signing an IP and Confidentiality Agreement, additional reports or training required by your industry partner, and publishing arrangements. These requirements were made very clear to Ben in his story. It is vital that if your industry partner requests you to sign an IP and confidentiality agreement, you seek independent legal advice before signing. The legal advisor should thoroughly explain what you are agreeing to and you should only sign the agreement if you agree to its terms. It is never appropriate to give away the copyright to your thesis as usually it is the only assessable item for your RHD program. And by signing an agreement such as the one prepared by Wheat Germ Pty Ltd, it may preclude you from applying for other awards such as the Clever Country Award in Zoe's story. As a candidate, you should also keep a copy of the agreement and file it for future reference.

For *university RHD supervisor/s*, as mentioned above for the candidate, it is also important to discuss your expectations of your candidate and industry partner at the commencement of the student's project. This can help you appreciate the extra requirements and expectations that the industry partner may have for your student. You should also familiarise yourself with your student's IP and Confidentiality Agreement and for you to also understand the exact terms of the agreement. An understanding of your student's agreement will enable you to better appreciate why they may be ineligible to apply for other awards during their candidature. It is also important that you consider that failure to uphold specified project outcomes or breaking agreement terms, as in Zoe's case, could be detrimental to your future collaborations with the specific industry partner and may 'affect the willingness of the industry partner to invest in other doctoral candidates' (Marsh, 2006, p. 61). Luckily for Prof Tom, this did not occur in Zoe's story.

For *industry partners and supervisors/mentors*, it is important for you to understand the RHD process and the university's requirements for RHD candidates. It is also important for you to understand that socialisation with other RHD candidates is a vital part of the RHD journey, as highlighted in Ben's story. Therefore, you need to teach your student how they can discuss their research project with their peers without disclosing important information. You should also be aware that even though your RHD candidates sign an IP and confidentiality agreement prior to commencement, it is still possible for these agreements to be breached.

For *universities* who enrol RHD candidates engaged in industry-funded projects, Zoe's story suggests that you need to implement a better process for managing student agreements to ensure you do not co-sign conflicting agreements. You also need to ensure you have procedures in place for Commercial-in-Confidence thesis assessment. University of Minerals' procedure for handling Ben's Commercial-in-Confidence thesis assessment was excellent.

In their research, Slaughter et al. (2002) commented that professors in their study perceived RHD candidates working on industry-funded projects as 'faculty members' "gifts" to industry' and in exchange, 'industry's gifts to the faculty were resources for research, ranging from equipment to money' (Slaughter et al., 2002, p. 284). This notion of gifting or exchanging 'graduate students with industry to build alliances with corporations' (Slaughter et al., 2002, p. 293) is irresponsible. Senior academics and researchers have a duty to guide their candidates through the RHD process, and develop their ability for conducting independent research. Moreover, acknowledgement early in the collaboration

that the fundamental principles of research conducted in academia and industry are different will reduce the possibility of destructive conflict among all parties involved in the RHD project. By learning from the experiences of RHD candidates Zoe and Ben, it is hoped that prospective candidates, supervisors, industry partners and universities will be able to get industry supervision right.

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References

Brown, P. (2006). University-industry links—the 'front line'. In: Denholm, C., & Evans, T. (Eds). *Doctorates Downunder: Keys to successful doctoral study in Australia and New Zealand*. ACER Press: Camberwell, Victoria. p. 68-75.

Lee, Y.S. (1996). 'Technology transfer' and the research university: A search for the boundaries of university-industry collaboration. *Research Policy* 25: 843-863.

Marsh, H. (2006). University-industry links—the big picture. In: Denholm, C., & Evans, T. (Eds). *Doctorates Downunder: Keys to successful doctoral study in Australia and New Zealand*. ACER Press: Camberwell, Victoria. p. 60-67.

Powles, M. (1996). *A longitudinal study of participants in the Australian Postgraduate Research Awards (Industry) Scheme*. Canberra: Australian Govt. Pub. Service.

Slaughter, S., Campbell, T., Holleman, M., & Morgan, E. (2002). The "traffic" in graduate students: Graduate students as tokens of exchange between academe and industry. *Science, Technology, & Human Values* 27: 282-312.

Smith, A., & Gilby, J. (1999). *Supervising students on industrial-based projects*. Society for Research into Higher Education & Times Higher Education Supplement: London.

Tasker, M., & Packham, D. (1993). Industry and higher education: A question of values. *Studies in Higher Education* 18: 127-136.

Wallgren, L., & Dahlgren, L.O. (2007). Industrial doctoral students as brokers between industry and academia. *Industry & Higher Education* 21: 195-210.

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What's exciting about the teaching—research nexus? Experiences that inspire undergraduates to become researchers

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Introduction

The long and ongoing debate about the teaching–research nexus in universities suggests that the vast majority of academics believe that there is an important and valuable link between teaching and research, even if they cannot easily demonstrate this in quantifiable empirical studies (see, for example, Verburgh et al. (2007); Krause et al. (2008); Trowler and Wareham (2008)). However, while much of the discussion focuses on integrating research into undergraduate programs, our project takes this debate into the arena of higher degrees by research (HDRs). Our main question is: 'Which aspects of their experience of the teaching–research nexus influenced the decision of undergraduates to undertake higher degrees by research?'

What is 'research'?

One strand of the debates surrounding the teaching–research nexus explores the precise nature of 'research' as it is understood in different disciplines. Leading this discussion is Angela Brew, who distinguishes between research in the external environment (e.g., presentations at conferences and seminars, publications) and in the internal environment (e.g., developing skills of data analysis, understanding of methodologies) (Brew, 2003). Trowler and Wareham (2008) have added to the complexities encountered in defining what constitutes 'research' across disciplines in their comparison of creative disciplines (e.g., graphic design, fine art) with other disciplines (e.g., hard sciences), using a characterisation of the disciplines themselves and their related research cultures as 'tribes and territories'.

Part of the complication in the debate about the teaching–research nexus is a certain amount of slippage in the terminology used, as well as in the interpretation of those terms (Brew, 2003, 2007; Griffiths, 2004; Healy & Jenkins, 2006; Robertson & Blackler, 2006; Krause, 2007; Simons & Elen, 2007; Trowler & Wareham, 2008; Visser-Wijnveen et al., 2010). Across the literature, the terms 'research-led teaching', 'research-based teaching', 'research-oriented teaching' and 'research-informed teaching' are employed with varying meanings attached; the accompanying terms for the student experience are 'enquiry-based learning', 'evidence-based learning' and 'problem-based learning'. It is this slippage that inspired us to find out what aspects of the teaching–research nexus students recognise and respond to. The survey used in the following study was designed to reflect something of this range.

The study

A small number of empirical studies have investigated students' perspectives on 'research' experiences as university undergraduates (Brew, 2007). Of particular interest for us in this context is the study conducted by Bauer and Bennett (2003), which asked: 'Does undergraduate research experience increase the likelihood of students' pursuing graduate study and successfully completing doctoral degrees?' (p. 215). They defined undergraduate research as 'direct

involvement of undergraduates in ongoing faculty research' (p. 227), focusing mainly on the formal Undergraduate Research Program run in their university, but also including those who reported themselves as having been involved in research through other means. In contrast, the current study works with a much broader understanding of what constitutes 'research', and seeks to determine how these varied experiences of research informed current postgraduates' decisions to continue into research degrees. Unlike Bauer and Bennett, who surveyed alumni who had completed their studies, we surveyed current HDR candidates who are involved in research at present, and therefore might have somewhat different interpretations of their related undergraduate experiences from those who are not currently in the process of doing academic research. We believe this cohort will have fresher (if not necessarily more accurate) memories about the relevant factors in their motivations to go into postgraduate research.

The survey

Our project surveyed current HDR candidates, asking 'To what extent does their experience of the teaching-research nexus influence the decision of undergraduates to undertake higher degrees by research?' The survey consisted of two parts: the first part enquired about general motivations (15 statements); the second focused in more detail on undergraduate experiences (27 statements ranging from discussion of research being included in lectures, assessment that required some level of research, and involvement in the research culture of the School or Discipline). Participants were invited to indicate the strength of the influence on a 7-point Likert scale. There were also opportunities to make qualitative comments at the end of each section.

Sample population

Of approximately 350 respondents, almost all (94%) were enrolled in PhDs or intended to upgrade their Masters degree to a PhD. More than half were in the age group of 21-30 years, and slightly more women than men completed the survey. Of those who responded, 57% had done their undergraduate degree at the university where they were currently undertaking their research degree; of the remainder, 22% had finished undergraduate study at other Australian universities, and 21% had done their undergraduate degrees in another country. The vast majority had completed their undergraduate degrees within the preceding five years. The spread of responses across faculties approximately mirrors the percentages of research students currently enrolled in those faculties.

Findings

1. General Motivations

The general motivations that received the highest overall ratings as being influential in decisions to undertake research degrees were:

- I wanted to do my own research
- I am driven by a desire to invent/create/discover new things
- I wanted to find out more about the topic I am studying
- I wanted to enhance my existing career

The qualitative comments indicated that other powerful motivators were difficulty in finding alternative paid employment and the availability of scholarships. There were also a few who cited idealistic, noble aspirations for continuing their formal studies. Family and friends rated the lowest overall as motivators for current postgraduates' decisions to continue into research degrees.

2. Undergraduate Experience

In response to the statement, 'As an undergraduate I was inspired to do a higher degree by research because…', the highest rating items were:

- I enjoyed doing project-based work
- Lecturers were passionate about their own research
- I enjoyed working on a vacation research scholarship

Discussion

Taken together, the survey results indicate that a genuine interest in research is the driving factor behind the majority of PhD students' decisions to undertake research degrees, and that this usually seen in terms of career options. For those of us working in higher education, these aspirations must be taken seriously and nurtured in both practical and educational ways. If we can create environments that encourage talented, curious undergraduates to develop research skills and can provide well-resourced opportunities for them to exercise those skills, the pool of potential PhD candidates is likely to grow significantly. This in turn may have a positive effect on recruitment of research degree students.

The data certainly supports moves in undergraduate courses to allow for lab-based, data-based, field-based and literature-based research projects – a high percentage of current research students indicate that these experiences of research were an important influence in their decisions to continue. When put alongside the importance of vacation research scholarships as inspiration to undertake research degrees, it is possible to speculate that perhaps students who have these opportunities as undergraduates have a clearer and more realistic idea about what a long-term research project might entail. Whether this has any impact on completion and withdrawal rates is yet to be determined, but it may well play a significant role in candidates being well-prepared for what lies ahead.

References

Bauer, K.W., & Bennett, J.S. (2003). Alumni perceptions used to assess undergraduate research experience. *The Journal of Higher Education, 74(2),* 210–230.

Brew, A. (2003). Understanding research-led teaching. *HERDSA News, 25(1),* 1–3.

Brew, A. (2007). Research and teaching from the students' perspective. Retrieved 19 June, 2009, http://portal-live.solent.ac.uk/university/rtconference/2007/resources/angela_brew.pdf.

Griffiths, R. (2004). Knowledge production and the research–teaching nexus: The case of the built environment disciplines. *Studies in Higher Education, 29(6),* 709–726.

Healey, M., & Jenkins, A. (2006). Strengthening the teaching–research linkage in undergraduate courses and programs. *New Directions for Teaching and Learning, 107,* 45–55.

Krause, K.-L. (2007, October 3). Juggling undergrads with new quests: A higher education special report. *The Australian* (online edition).

Krause, K.-L., Arkoudis, S., James, R., McCulloch, R., Jennings, C., & Green, A. (2008). The academic's and policy-maker's guides to the teaching–research nexus. Australian Learning and Teaching Council. Retrieved 1 September

2010 from http://www.altc.edu.au/resource-academics-guides-teaching-research-nexus-griffith-2008.

Robertson, J., & Blackler, G. (2006). Students' experiences of learning in a research environment. *Higher Education Research and Development, 25(3),* 215–229.

Simons, M., & Elen, J. (2007). The 'research-teaching nexus' and 'education through research': An exploration of ambivalences. *Studies in Higher Education, 32(5),* 617–631.

Trowler, P., & Wareham, T. (2008). Tribes, territories, research and teaching: Enhancing the teaching–research nexus. The Higher Education Academy.

Verburgh, A., Elen, J., & Lindblom-Ylanne, S. (2007). Investigating the myth of the relationship between teaching and research in higher education: A review of empirical research. *Studies in the Philosophy of Education, 26,* 449–465.

Visser-Wijnveen, G.J., Van Driel, J.H., Van der Rijst, R.M., Verloop, N., & Visser, A. (2010) The ideal research–teaching nexus in the eyes of academics: Building profiles. *Higher Education Research and Development, 29(2),* 195–210.

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Excellence in doctoral supervision: Competing models of what constitutes good supervision

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Across the world, higher education is increasingly being driven by quality agendas. These agendas seek to do two things, firstly, assure the quality of what is being done (that is Quality Assurance) and, secondly, enhance the quality of what is being done (that is Quality Enhancement). These agendas are at different stages of development in different jurisdictions, but the search for 'quality' and the associated concept 'excellence' are firmly on the contemporary higher education agenda. This is as true for the area of Higher Degrees by Research (HDR) as it is for any other activity undertaken by universities. However, the search for excellence as part of the drive for higher levels of quality is not simple. As Nulty *et al.* suggested in 2009, the identification of excellence in doctoral supervision remains a challenge both for universities and also for others involved in doctoral education.

Excellence in doctoral education

The drive for excellence in doctoral supervision is predicated in large part on the widely held understanding that the quality of the HDR student's experience and the outcomes of their period of study are related in a significant way to the quality of the supervision he or she receives. It follows, therefore, that if a student receives excellent supervision, their experience and the outcomes of their research experience are more likely to be positive. It is important, therefore, that the higher education community should try to identify what constitutes 'excellence in supervision' so that supervisors and their institutions will be able to deliver that excellence. In addition to individual supervisors being more readily able to reflect on their supervisory practice and identify where and the ways in which they can make improvements in their practice, agreement over the notion of 'excellence in supervision' would assist academic developers who would be able to draw upon a more agreed consensus in their supervisor development practices. Further, agreement would help universities and national bodies make more robust judgements about the Learning and Teaching awards made annually including awards in the area of HDR supervision.

Perspectives on doctoral supervision

There are a variety of perspectives from which the notion of excellence in supervision can be approached.[24] These are:

- The developing scholarly literature, which can be termed the 'academic' perspective.
- The codes of practice which have emerged since the mid-1990s, which can be termed the 'regulatory' perspective.
- The 'How to…supervise' literature, which can be termed the 'practitioner' perspective.
- The various 'Awards for Learning and Teaching', which can be termed the 'professional' perspective.

This paper sketches out an initial position on the issue of what constitutes excellence in supervision from each of these four perspectives.

[24] These are in addition to the 'student perspective' which will not be dealt with here.

The Problem of excellence in doctoral supervision

A number of factors contribute to the difficulty in identifying excellence in doctoral supervision. Firstly, the 'nature of research supervision is challenged by the changes in the nature of doctoral study' itself. (Green and Powell 2007, p. 151) The doctorate has changed in nature over the last 30 years as diverse forms of PhD have emerged and the purpose of the PhD has changed toward that of training for research rather than being focused simply on the research project being undertaken. Secondly, '*demonstrating* good supervisory practice is unlikely to be simple' (Nulty et al 2009). Thirdly, as Elton pointed out in respect of university teaching, whilst it may be relatively simple to say what is acceptable or competent practice, '(e)xcellence has many more dimensions than competence'[25] (Elton 1998, p. 35, cited in Chism 2006). Fourthly, in an era in which supervision can be regarded as something which is delivered by a university as a whole (or at least by a number of units within the university and the people working within them), there is a level of analysis problem. Citing Manatunga (2005 and 2005a), Nulty *et al.* say that 'greater emphasis on excellent supervision requires a mechanism to demonstrate the outcomes of such practices at the individual, faculty and university level.' (p. 694) This is compounded by the increasing dominance of 'supervisory teams' containing at least two but often three individual supervisors. (Nulty et al 2009, p. 697) Put simply, how can the input of a single member of staff to a complex process, such as the completion of a doctoral thesis has now become, be separated out from the totality of the input. Finally, to this we should add the variable student factor. Students do not constitute a homogenous group and are, in fact, becoming more heterogeneous with the development of different forms of doctoral degree, different modes of delivery and attendance, and an increasing incidence of lifelong learning.

It is not just the issue of excellence in supervision which causes problems for its identification, it is also the contested nature of the concept of excellence itself[26]. Excellence has a number of dimensions which can be summarised as follows:

- purpose-driven (i.e. goal-centric and measured by outputs)
- customer-centric (i.e. the extent to which the customer and other stakeholders are satisfied)
- process-oriented (i.e. the extent to which the process was administered in a smooth and timely fashion)
- structure-supported (i.e. the extent to which all the necessary inputs and supports were in place). (Emerson & Harvey, 1996 and Peters and Waterman, 1982)

In addition to issues arising from the nature of doctoral study and the various dimensions along which excellence can be demonstrated/assessed, there is a further key factor which those trying to define excellence in supervision must take into account, namely, the relationship between excellence and standards. A key part of the process of identifying or promoting excellence is the establishment of standards. Without agreed standards, judgements about excellence (or indeed, competence) simply cannot be made. This is an issue which has not been addressed with regard to supervision, and even in the area of teaching where it has been debated for a number of years, it remains

[25] Elton distinguishes between 'competence and excellence, which generally requires that the qualities of reflection, innovation, scholarship, and leadership be present to distinguish excellent teaching from competent teaching.'

[26] It is interesting to note that Nulty et al (2009) talks of 'effective', 'attentive' and 'good' supervision, and of 'highly successful' supervisors. This conceptual slippage between degrees of success in supervision is not uncommon in the literature and this is an added problem for those seeking to define excellence in supervision.

unresolved. Writing in the context of a discussion of standards in teaching awards, Nancy Chism points out that the 'literature on standards with respect to judging teaching excellence is not very extensive either' (2006, p. 607) and draws our attention to the following comments.

- Centra: 'Though there may not be complete agreement about all criteria to be used, there is even less agreement about what constitutes excellent, good, or unacceptable performance. (1993, p. 7)

- Gibbs: 'Even when institutions have well-defined criteria about excellent teaching, they seldom have standards' (1995, p. 18).

- Weimer: 'Most disciplines have standards for valuing scholarly and professional activities that direct and control practice: for teaching they are conspicuous by their absence' (1997, p. 55).

As Elton (1998) suggests, excellence is related to another concept, that of competence, and the relationship is not simple. Rather, it is multi-dimensional and Hounsell (1996, cited in Chism (2006, p. 607-8) identifies four dimensions by which excellence can be approached in the area of teaching, listing:

- impact on quality of students' learning;
- impact on quality of curriculum development efforts;
- impact on quality of teaching at the departmental, college, or university level; and
- impact on quality of the teaching of the discipline nationally or internationally.

A few years later, McAlpine & Harris (2002) specified levels of acceptable, good/excellent, and exemplary in conjunction with four levels of impact: engagement in learning, actual learning, transfer of learning, and institutional impact.

Whilst having been addressed in teaching (whether or not successfully is a moot point), the question of explicating the notion of excellence in HDR supervision remains to be undertaken in a systematic way.

Four perspectives on excellence in doctoral supervision

What this discussion so far demonstrates is that, in order to identify excellence in supervision, it is necessary first to identify the role and the elements involved in the performance of that role, second to establish standards of competence in the performance of that role, thirdly to identify the criteria along which a higher level of performance can be measured and, finally, to set the standard of performance at which excellence can be said to be present.[27]

The paper now moves to consider the issue of excellence in supervision through each of the four perspectives identified above. With regard to each, the following questions will be used to structure the discussion:

- Does it define the role of supervisor?
- Does it distinguish the contribution of the 'individual supervisor'?
- Does it identify 'competence'?
- Does it identify 'excellence' (using the four dimensions of excellence discussed above)?

[27] This discussion does not address the issue of measuring either competence or excellence in a systematic way. That is a task which would require more space than is available here. For one attempt, see Nulty *et al* 2010.

The paper draws on a sample of the literature and on examples within each of the perspectives to illustrate the argument. There is no pretence that the literature or examples are exhaustive and future work remains to be undertaken on the issue.

An academic perspective on excellence in the supervisor's role

In an early project at the ANU, Cullen *et al.* (1994) used the language of 'good' and 'successful' to Identify 'a model of the supervisory process which is common to all disciplines'. The key elements in this model are:

- 'negotiating/guiding the move from dependence to independence'
- 'varying the supervisory approach to suit the individual student's needs and personality, disciplinary differences and so on'
- 'recognising that a key to the process is the formulation of the problem/topic/question because it is that which ensures focus and engagement' (pp. 74-75)

They conclude that '(s)upervision should be seen as the total oversight by the institution of a student's progress and broad academic development. Many people are involved: academics other than supervisors, Heads of Department, fellow students, support services, technical staff, and administrative staff. Students get assistance and stimulation from seminars, conferences and talking to visitors...Supervision should be conceptualised to encompass a broad view of PhD education which includes more than the one-to-one interaction of a student and a supervisor.' (p. 108)

In a UK study three years later, Hockney (1997) interpreted supervision as involving two types of activity:

- Management of the student's program of study
- Education about research which can aid successful completion

noting also the blurring and overlap in these categories and also recognising the supervisor's role as 'complex and composite'. (p. 48)

In 1999, Linden identified three different models of supervision, therapeutic models, developmental models based on the various stages of the candidacy, and professional competence development and, in 2005, Pearson and Kayrooz isolated four analytically distinct roles which they saw supervision as involving. These were:

- Mentoring
- Sponsoring
- Progressing the candidature
- Coaching

More recently, Anne Lee (2008) drew on these and other studies noting that much of the literature focused on the functions of effective supervision and in an empirical study broadened this to develop a framework including the following elements of supervisory practice:

- Functional
- Enculturation
- Critical thinking
- Emancipation
- Developing a quality relationship

Manathunga (2009) identifies 3 roles for the supervisor, that is, mentor, supporter and disciplinary gatekeeper while, in the current year, Maxwell and

Smyth (2010) adopt a research management perspective which facilitates student learning. For them, supervision has three foci, the learning and teaching process, development of the student, and producing the research project/outcome as a social practice.

Figure 1 summarises the extent to which academic perspectives on supervision address the issue of excellence in terms of the four questions identified above. Whilst there is a lot of emphasis on the nature of the role (but no consensus), the issue of the individual as part of the 'supervisory team' is not addressed and there has been no real attempt to identify what might constitute excellence in supervision.

Figure 1: Excellence in supervision in the academic perspective

Question	Whether addressed
Define role?	Yes, but not definitively. Dimensions of excellence addressed: • Purpose-driven • Customer-centric • Process-oriented
Distinguish the contribution of the 'individual supervisor'?	Generally not considered. Language of 'the supervisor' generally used.
Say what competence is?	Yes
Say what excellence is?	No.

A regulatory perspective on excellence in the supervisor's role

During the last two decades, there has been a very significant increase in the amount of regulation directed at the doctoral degree and two of the most recent frameworks will be considered here. The first is the Council of Australian Deans and Directors of Graduate Studies (DDoGS) Framework for Best Practice in Doctoral Research Education in Australia (2007) which, surprisingly, has very little to say about the nature of supervision other than stipulating the form of the supervisory team, identifying the qualifications the principal supervisor should have, and allocating certain responsibilities relating to 'the provision and coordination of support and advice for the candidature' to this individual. The document also identifies institutional management of and support and training for supervisors and, in what appears to be a slightly strange addendum to this section, encourages prospective students 'to make the inquiries necessary to make an informed decision about the suitability of their proposed supervisors to meet their needs over the period of their candidature'. In terms of assisting the identification of excellence in supervision, this document offers little help.

The UK QAA Code of Practice (2004) seems at first sight to offer rather more assistance as it details a number of responsibilities which supervisors might expect to play. The Code states that 'supervisory responsibilities may include:

- providing satisfactory guidance and advice;
- being responsible for monitoring the progress of the student's research programme;
- establishing and maintaining regular contact with the student...and ensuring his/her accessibility to the student when s/he needs advice, by whatever means is most suitable given the student's location and mode of study;
- having input into the assessment of a student's development needs;
- providing timely, constructive and effective feedback on the student's work, including his/her overall progress within the programme;

- ensuring that the student is aware of the need to exercise probity and conduct his/her research according to ethical principles, and of the implications of research misconduct;
- ensuring that the student is aware of institutional-level sources of advice, including careers guidance, health and safety legislation and equal opportunities policy;
- providing effective pastoral support and/or referring the student to other sources of such support, including student advisers (or equivalent), graduate school staff and others within the student's academic community;
- helping the student to interact with others working in the field of research, for example, encouraging the student to attend relevant conferences, supporting him/her in seeking funding for such events; and where appropriate to submit conference papers and articles to refereed journals;
- maintaining the necessary supervisory expertise, including the appropriate skills, to perform all of the role satisfactorily, supported by relevant continuing professional development opportunities.' (p. 16)

Whilst these offer an overview of the role that the supervisor might play, and cover many of the aspects of the role that are addressed in the academic literature, they are problematic for those who want to address the issue of standards other than in terms of 'competence'. To illustrate this point, it is useful to try to think what 'excellence' in each task or activity might comprise other than by inserting the word 'excellent' into the element. The elements of the Code are, in the main, things that a supervisor should be doing and many are not capable of being moved beyond simple performance to 'excellent performance. Take, as an example, the first, which states that supervision might involve 'providing satisfactory guidance and advice'. This is something which is not capable of being performed excellently as opposed to being performed competently. Advice is either appropriate to the purpose for which it is being sought or it is not. Satisfaction with the way that an element of a role is provided may be capable of being determined either in terms of satisfaction on the part of a recipient or in terms of degree of compliance with the process requirements (for example), but these only go part of the way towards unpacking the notion of excellence and how it can be distinguished from competence.[28]

Figure 2: Excellence in supervision in the regulatory perspective

Question	Whether addressed
Define role?	Yes Dimensions of excellence addressed: • Customer-centric • Process-oriented
Distinguish the contribution of the 'individual supervisor'?	No
Say what competence is?	Yes
Say what excellence is?	No

Figure 2 summarises the extent to which the regulatory perspective on supervision address the issue of excellence in terms of the four questions identified above. The nature of the role is discussed, as are two of the dimension

[28] In order to illustrate the points being made here, the reader is invited to consider what 'excellence' in each of the supervisory responsibilities identified in the *QAA Code of Practice* might look like in comparison to what might constitute competent performance of the responsibility.

of excellence, and competence is addressed, but, as with the academic perspective, the issue of the individual as part of the 'supervisory team' is not and there has been no real attempt to identify what might constitute excellence in supervision.

A practitioner perspective on excellence in the supervisor's role

The past fifteen years have seen a massive growth in the literature giving advice on performance and how to improve that performance to all those involved in doctoral education including both students and supervisors. This literature regarding supervision (part of the 'DIY guides and advice books' genre on which—like that offering advice to students—very little systematic analysis has been undertaken[29]) is largely concerned with focussing on the role and how the supervisor should play that role, and can work to improve the way it is played, in relation to two aspects of practice. These are, firstly, the process-related elements of the doctoral degree and, secondly, the human dimension of the student's experience and the issues s/he may face. As a result, the genre defines the role of supervisor comprehensively addressing all four dimensions of excellence. However, the 'How to…' literature does not address the issue of what would constitute 'excellence in supervision', that is, despite being very clear about what constitutes competent performance in regard to supervision it does not address the issue of standards in respect of excellence.

Figure 3: Excellence in supervision in the practitioner perspective

Question	Whether addressed
Define role?	Yes Dimensions of excellence addressed: • Purpose-driven • Customer-centric • Process-oriented • Structure support
Distinguish the contribution of the 'individual supervisor'?	No
Say what competence is?	Yes
Say what excellence is?	No

Furthermore, while discussions of supervision in the 'How to...' genre almost always refer to the fact that the norm has become for there to be more than one supervisor attached to each student, their project and their development, they continue as through that had never been pointed out and couches their discussion of supervision practice explicitly in terms of the single supervisor. The supervisor's role as a member of a supervisory team, together with the issues this raises in terms of the complexity of relationship, power etc is ignored. To illustrate this, the second edition of Delamont, Atkinson and Parry, published in 2004, the same year as the *QAA Code of Practice* effectively mandated supervisory teams, refers to the routine use in some institutions of supervisory teams or committees (p. 85), but then focuses on the simple dyadic relationship. On page 180, the authors say that '(h)itherto in this book we have written implicitly as if the process and outcomes of higher-degree supervision were solely matters of individual students and their individual supervisor', but rather than consider the issues associated with team supervision, use this as a point of

[29] This point is made in Stokes and McCulloch 2006 and 2010, the only previous discussion of texts aimed at students having been discussed by Kamler & Thompson (1986, p. 507).

departure for a discussion of the supervisor as part of a member of a 'department, a research group or centre'. (p. 180) This type of pattern can be found in other examples of this type of text.

Figure 3 summarises the extent to which the practitioner perspective on supervision address the issue of excellence. The nature of the role is discussed along with all four of the dimensions of excellence, and competence is addressed, but neither the issue of the individual as part of the 'supervisory team', nor the notion of excellence in supervision, are tackled.

A professional perspective on excellence in the supervisor's role

Since the establishment in the UK in 2004 of the University of Durham's Vice-Chancellor's Award for Excellence in Research Supervision, a number of other awards for excellence in supervision have been established both within the UK and also within Australia. Together with the national learning and teaching awards that have been established in Australia and through which excellence in supervision is recognised, these awards reflect what can be termed the professional view of excellence in supervision. It is here, if anywhere, that one would expect to find a definitive answer. However, an examination of the criteria for these awards confounds those expectations.

Durham University's criteria for its award does what was asked earlier by explicitly defining competence stating that the 'University expects all of its supervisors to enable their students:

- to, where appropriate, initiate and plan a research project;
- to acquire the research skills to undertake it and gain adequate access to resources;
- to complete it on time;
- to produce a high quality thesis;
- to be successful in examination;
- to disseminate the results;

to lay the basis for their future career.'

The criteria statement then goes on to say that the University 'would expect that an excellent supervisor would be able to demonstrate:

- an interest in, and enthusiasm for, supervising and supporting research students;
- the ability to recruit and select good candidates and establish effective working relationships with them and, where appropriate, with co-supervisors;
- the ability to offer appropriate support to students' research projects, including encouraging and supporting them to write up their work, giving useful and prompt feedback on submitted work, advising on keeping the project on track, and monitoring progress;
- a concern to support the personal, professional, and career development of doctoral students;
- an ability to support students through the processes of completion of their thesis and final examination;
- an ability to critically evaluate their practice as supervisors and, where appropriate, disseminate it.'

The weakness in this is that the second list of criteria, that is those for the identification of excellence, are what would be expected of a competent rather than an excellent supervisor. Given a reasonably well-prepared candidate who has the appropriate intellectual capabilities and who doesn't fall foul of more than an average share of life's challenges, a competent supervisor should be

able to fulfil each of the elements contained in the first set of bullet points. He or she should also be able to demonstrate all the characteristics except that outlined in the final bullet in the second list.[30] It is hard to see how an academic staff member who did not, for example, have 'the ability to offer appropriate support to students' research projects, including encouraging and supporting them to write up their work, giving useful and prompt feedback on submitted work, advising on keeping the project on track, and monitoring progress' could be given the responsibility of supervising doctoral candidates. Certainly, in the event of a failure, a candidate would be highly likely to have a case for legal redress against the university that allowed such a situation to occur. To reiterate, with the possible exception of the final bullet point, the second set of bullet points represents not excellence, but competence. While the Durham award sets standards in respect of its criteria, it is not clear that these standards represent 'excellence' in supervision.

This issue of standards is sidestepped in the selection criteria for the Monash University Vice-Chancellor's Award for Postgraduate Supervision[31]. This award takes a different approach to that taken by Durham and, focussing on applicants rather than criteria, starts from the premise that there are a number of different perspectives on supervision (and therefore on the applicant) and links its criteria to evidence provided from each of those perspectives.

The first perspective takes the supervisor as a teacher and asks the applicant themselves to prepare a statement showing how they 'demonstrate excellence' in this respect suggesting that they should 'focus on the supervisor's enthusiasm for, commitment to, knowledge and understanding of the research candidate's learning processes in the conduct of thesis research.' It then suggests that this '(c)ould be demonstrated by things such as:

- effective approaches to guidance during the planning of research projects
- structures established for ongoing interaction with candidates
- timely reading and returning of candidate's work with appropriate comments
- critical analysis of candidate's work
- maintaining a balance between providing guidance and encouraging a candidate's independence
- fostering and facilitating the candidate's development of academic skills and self direction
- assistance with the candidate's accessing of specialist expertise (eg statistics, computing, language)
- successful interaction with candidates from other cultures
- engaging in practices which are inclusive and supportive
- arrangements made during supervisor absences '

The process is then repeated across the remaining three perspectives, in the first of which the supervisor's excellence as a mentor is evidenced in a statement about the supervisor from a 'nominator who is a current Higher Degree by Research candidate' which it is suggested 'should focus on the supervisor's commitment to and understanding of the candidate's welfare'. Suggested areas for comment include support and encouragement for the student, assistance with the development of networking (including conference support), use of grant funds to support candidates, knowledge of the university procedures and careers

[30] It may be worth considering whether, following Elton (1998), this is a necessary requirement for a claim of excellence.

[31] This section draws heavily on the Monash documentation for the award scheme which can be found at: http://mrgs.monash.edu.au/research/staff/superaward/index.html#Criteria. Please note that, for reasons of clarity in reading, not everything drawn from the documentation is indicated as constituting a quotation.

advice, together with the rather more nebulous 'provision of a sympathetic atmosphere'.

The applicant is required to provide evidence of their practice and outcomes over the previous five years. They are asked to provide at least the numbers of all candidates supervised in the five years (indicating whether they were full or co-supervision), details of candidate progression and completion rates, times to completion and the results of examination including whether revisions or re-submission was required, the areas of study of theses supervised, and the employment and post-doctoral histories of graduated candidates. Finally, a colleague of the applicant supervisor is asked to comment on the 'supervisor as model'. This includes the supervisor's enthusiasm for, and commitment to, knowledge and understanding of the candidate's area of study and relates to the supervisor's publication record and their ability in communicating their knowledge and expertise, and the extent to which that expertise is recognised externally by invitations to engage with the wider relevant academic community. Comment is also invited in the areas of collegiality, teamwork and open-mindedness.

Since 1994, the Australian Learning and Teaching Council (ALTC) has made awards for supervisory practice. However, none of these awards has been devised specifically with supervision in mind, as can be seen from their titles[32], and the one that universities tend to nominate their 'excellent supervisors' for is the Citation for Outstanding Contributions to Student Learning. This invites applicants to 'nominate one or (at most) two selection criteria for assessment', and these are:

- Approaches to the support of learning and teaching that influence, motivate and inspire students to learn
- Development of curricula, resources and services that reflect a command of the field
- Approaches to assessment, feedback and learning support that foster independent learning
- Respect and support for the development of students as individuals
- Scholarly activities and service innovations that have influenced and enhanced learning and teaching

As can be seen, these 'selection criteria' have been developed around the model of 'taught learning' rather than 'research learning' although they can, and are, used to structure successful applications. However, despite enabling this, it must be pointed out that they do not define excellence, they only allow an individual to claim excellence for themselves which is a very different thing.

There are two other categories of ALTC award, but one, the Teaching Award, is focused even more strongly on the 'taught' model of teaching[33] than the Citations, and the other, the Career Achievement Award, is awarded to individuals who have 'made an outstanding contribution to learning and teaching that is recognised across the higher education sector.' The latter does not identify standards of excellence in practice but, rather, an outstanding individual.

[32] These are Citation for Outstanding Contributions to Student Learning, Australian Awards for University Teaching, Career Achievement Award, and the Prime Minster's Award. It should be noted that the latter award has never been made on the basis of supervision, but always on the basis of teaching in the setting of the taught course.

[33] The 2009 guidelines, for example, include reference to 'developing and presenting coherent and imaginative resources for student learning… demonstrating up-to-date knowledge of the field of study in the design of the curriculum and the creation of resources for learning… integrating assessment strategies with the specific aims and objectives for student learning… using a variety of assessment and feedback strategies…coordination, management and leadership of courses and student learning'.

Figure 4 summarises the extent to which the professional perspective on supervision address the issue of excellence. The nature of the role is not always defined, although in the Monash model competence is clearly defined, although the issue of the individual as part of the 'supervisory team' is not addressed. While the issue of excellence in supervision is tackled, the attempt is not particularly successful.

Figure 4: Excellence in supervision in the professional perspective

Question	Whether addressed
Define role?	Monash – Yes ALTC - No Dimensions of excellence addressed: • Purpose-driven • Customer-centric
Distinguish the contribution of the 'individual supervisor'?	No
Say what competence is?	Yes
Say what excellence is?	Some attempt but, overall, No

Concluding Thoughts

This brief discussion has shown that none of the four perspectives on supervision currently really addresses the issue of excellence in a comprehensive manner. All address role definition and competence, but none address in a comprehensive manner either the issue of excellence or the vexed issue of the identification of excellence when the supervisor is an individual member within a team of supervisors or, as is increasingly likely to be the case, is seen as being part (albeit it a key part) of a wider university support structure. Until there is clarity about what the role of the supervisor is in a setting in which team or an institutional approach to supervision is regarded as the norm, the sector will be unable to define clearly what constitutes competence in supervision and only then will it be possible to consider what 'excellence' is. One implication of this is that until this can be done, the determination of supervision awards will remain more of an art than a science.

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References

Chism, (2006). Teaching awards: what do award? *The Journal of Higher Education,* 77(4) 589-617.

Centra, J. (1993). *Reflective faculty evaluation. San Francisco: Jossey-Bass.*

Council of Australian Deans and Directors of Graduate Studies (2007 [Updated July 2008]) *Framework for Best Practice in Doctoral Research Education in Australia*. http://www.ddogs.edu.au/

Cullen, D., Pearson, M. Saha, L., & Spear, R. (1994). *Establishing Effective PhD Supervision*. Australian Government Publishing Service.

Delamont, Atkinson & Parry (2004). Supervising the Doctorate: A Guide to Success. Open University Press, Buckingham.

Elton, L. (1998). Dimensions of excellence in university teaching. *International Journal of Academic Development,* 3(1), 3–11.

Gibbs, G. (1995, May/June). Promoting excellent teaching is harder than you'd think. *Change, 27(3), 17–20.*

Green, H, & Powell, S. (2007). *Doctoral Study in Contemporary Higher Education*. Open University Press.

Hounsell, D. (1996). Documenting and assessing teaching excellence. In R. Aylett & K. Gregory (Eds.), *Evaluating teacher quality in higher education (pp. 72–76). London:* Falmer Press.

Kamler, B. and Thomson, P. (2008). 'The failure of dissertation advice books: towards alternative pedagogies for doctoral writing', *Educational Researcher*, Vol. 37, No. 8, pp. 507-14.

McAlpine, L., & Harris, R. (2002). Evaluating teaching effectiveness and teaching improvement: A language for institutional policies and academic development practices. *International Journal of Academic Development, 7(1), 7–17.*

Peters, T. & Waterman, R. (1982). *In search of excellence: Lessons from America's best-run corporations*. New York: Harper and Row

McCulloch, A. and Stokes, P. (2006). 'Beyond the doctoral process: A call for the re-focussing of "How to…Get a PhD" literature', *Journal of Graduate Education*, Autumn, pp. 107-115.

Nulty D.,Kiley, M. & Meyers, N. (2009). Promoting and recognising excellence in the supervision of research students: and evidence-based framework, *Assessment and Evaluation in Higher Education*, 34(6), 693-707.

Smith, R. (2001). Formative evaluation and the scholarship of teaching and learning. In C. Knapper & P. Cranton (Eds.), Fresh approaches to the evaluation of teaching *(pp.* 51–62). *New Directions for Teaching and Learning, No. 88*. San Francisco: Jossey-Bass.

Stokes, P and McCulloch, A. (2010). 'A Generational and Construct Analysis of the "How to Get a Ph.D…" Literature: Towards a Classification of the Genre', paper presented to the 9th Quality in Postgraduate Research conference, Adelaide, South Australia, 13-15 April.

Weimer, M. (1997). Assumptions that devalue university teaching. *International Journal of Academic Development, 2(1), 52–58.*

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Supervision and cultural difference revisited: Imagining new doctoral pedagogies, divulging those already in action

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Overall Abstract

The interplay between 'culture' and the pedagogies of supervision surprises, puzzles and frustrates the players. The idea of 'culture' is rife with definitional, political and practical complexity; so too is the practice of supervision. Our symposium reprises an earlier one (from QPR 2008) but adds several new elements and insights to the conversation with implications for the future of doctoral education. Michael Singh's presentation explores how supervisors may make productive use of their ignorance of Chinese language and conceptual knowledge to assist international research candidates produce scholarship that makes vibrant new intellectual connections. Sally Knowles' contribution will look at different mechanisms used by two supervisors to mediate the power disparities between them and their AUSAID students, the students' tactics for managing the uncertainty and ambiguity they encountered, and an intervention into such dynamics. Catherine Manathunga's address investigates how supervisors' approaches can either seek to create opportunities for students to blend their existing cultural knowledge with aspects of Western disciplines to produce highly original scholarship or instead force students to assimilate to dominant knowledge formations. Barbara Grant and Liz McKinley's proffering focuses on the culturally responsive pedagogies in action (ako) shown by Maori (indigenous) doctoral students and their supervisors in order to attend to the unpredictable demands of an ethics of identity. Finally, Gina Wisker and Gill Robinson's presentation looks at issues tackled in supervising international students and considers ways of negotiating difference to enable the emergence of what is significant, contextual, new and useful while avoiding cultural imperialism and 'dumbing down'.

Symposium convenor

Barbara Grant

Symposium chair

Terry Evans

Educational uses of ignorance: Having international research candidates make transnational intellectual connections using knowledge you don't know

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Sociological issues concerning the transformative knowledge practices of intellectual strangers, arise from the engagement of Western research educators and international higher degree research candidates in world education research. Relating conceptual knowledge international research candidates from China bring with them (or which they access while studying abroad) to their theorisation of Western research evidence is a challenge for research educators who do not understand *Zhong Wen,* cannot speak *Putonghua* and cannot read *Han zi.* Studies of transnational knowledge exchange provide insights into possibilities for world education research that might transform the prevailing Western-centred paradigm for knowledge. Epistemologically, this means engaging the relations between ignorance and knowledge that is central to such an orientation to world education research. When it comes to the supervision – or in more contemporary terms *research education* – of international research candidates ignorance is narrowly conceived and has a negative connotation. Analysis of studies by international higher degree research candidates from China are useful for identifying the characteristics of 'Chinese knowledge' and the value of these transnational knowledge exchanges for giving meaning to a transformative orientation to world education research. Research informed by Ranciere (1991) suggests that we may make productive use of our ignorance to have international research candidates produce knowledge that makes just such intellectual connections. Accordingly, varieties of pedagogies can be identified for educating world researchers, some of which favour the transformative practice of transnational knowledge exchange such as pedagogies of *double knowing*; *zigzag language learning* and *counter-construction*.

References

Rancière, J. (1991). *The ignorant schoolmaster: Five lessons in intellectual emancipation.* (K. Ross, Trans.). Stanford: Stanford University Press.

Singh, M. (2010), Connecting intellectual projects in China and Australia: Bradley's international student-migrants, Bourdieu and productive ignorance. *Australian Journal of Education,* 54, (1), 31-45.

Singh, M. (2009). Using Chinese knowledge in internationalising research education: Jacques Rancière, an ignorant supervisor and doctoral students from China. *Globalization Societies and Education*, 7(2), 185-201.

Singh, M., & Fu, D. (2008), Flowery inductive rhetoric meets creative deductive arguments: Becoming transnational researcher-writers. *International Journal of Asia Pacific Studies*, 4, (1), 121-137.

Singh, M., & Guo, W. (2008), Centring students' bilingual capabilities in quality university teaching: Bringing "knowledge detours" and "zigzag learning" in

from the margins, in J. McConachie & others (eds.), *Changing University Learning and Teaching.* Brisbane: PostEd Press, pp. 221-235.

Singh, M., & Han, J. (2010) Peer review, Bourdieu and honour: Connecting Chinese and Australian intellectual projects. *British Journal of Sociology of Education.*

Singh, M., & Han, J. (2009). Engaging Chinese ideas through Australian education: Using Chengyu to connect intellectual projects across 'peripheral' nations. *Discourse: Studies in the Cultural Politics of Education,* 30 (4), 397-411.

Singh, M., Rizvi, F., & Shrestha, M. (2007), Student mobility and the spatial production of identities, in K. Gulson & C. Symes (ed.) *Spatial Theories of Education: Policy and Geography Matters.* New York: Routledge, pp. 195-214.

The united states of uncertainty and ambiguity in the supervision of intercultural students: Putting cultural 'second guessing' to good use

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At the 2008 QPR conference in my presentation "Writing in the gaps: Negotiating feedback to enable safer language crossings" I explored writing pedagogies, especially feedback, language and identity in relation to the themes of mystery and transparency, drawing from the interviews I conducted on the supervision of doctoral students' writing at Murdoch University over a five year period. I also drew on the experiences of two newly arrived AUSAID doctoral students – Acacio Amaral from East Timor and So Thea from Cambodia, both captured on DVD at the early stages of candidature. In these interviews, I was struck by the ways supervisors used different mechanisms to attempt to mediate the power disparity. The supervisors' mechanisms included giving feedback by standing back and watching; withholding feedback; filtering feedback and using invitational discourses; and downplaying the disciplinary nature of their work. Students sometimes expressed ambivalence towards their supervisor's feedback, and spoke of developing diplomacy or devising other tactics to obtain the feedback desired. For this symposium, I will show an excerpt from the DVD interview with the two AusAID-sponsored students. I will report back on their recent experiences from the middle stages of candidature and outline an intervention that shows how their cultural 'second guessings' can get them *in* and *out* of 'strife'. *I will* suggest why the exercise of power is never straightforward, is opaque and ambiguous and susceptible to misunderstanding and unpredictability, and conclude by reflecting on how safer language crossings and equitable power sharing can be achieved.

Moments of transculturation and assimilation: Post-colonial explorations of supervision and culture

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Dynamic interplays of power and identity circulate within any form of supervision. When supervisors and students also originate from diverse cultures and educational systems, these complex and often mysterious forces become overlaid with additional cultural factors that must be taken into account in

supervision relationships and pedagogy. In intercultural supervision, previous colonial discourses, stereotypes, histories and practices surface in challenging and perplexing ways (Kenway & Bullen, 2003; Manathunga, 2007). This paper explores the intercultural supervision experiences of culturally diverse supervisors and students in Engineering at an Australian university. Drawing upon several post-colonial tropes, this paper investigates how supervisors' pedagogical approaches can sometimes seek to create opportunities for students to blend their existing cultural knowledge with aspects of Western knowledge to produce highly original new knowledge and can, at other times, limit students' engagement and creativity by forcing them to assimilate to Western knowledge patterns and practices.

Difference pedagogies: Doctoral education of Maori students

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This paper addresses the doctoral education of Māori (indigenous) researchers within Aotearoa/New Zealand and enquires into what is needed to produce them. To do so, we draw on interview data with 38 Māori doctoral students and 20 Māori and non-Māori supervisors of such students (McKinley et al, 2009). While doctoral education generally can be understood as an identity-forming project (producing scholars, researchers and knowledge producers), in the case of many Maori doctoral students it is also implicated in their formation as Maori. They choose topics and projects that take them back to ancestral lands, into a deep engagement with their own or other tribal communities, with te ao Māori (the Māori world), matauranga Māori (Māori knowledge) and tikanga (correct procedure and lore). In such cases, we argue, the formation of identity as a *Māori* researcher *requires* pedagogical resources beyond the university's jurisdiction. These 'distributed pedagogies' not only require other kinds of 'supervisors' but will often also require more time than the standard allocation and, sometimes, extra monies. Thus, the politics of cultural identity force their way into the business-as-usual of Western higher education and demand a response from the institutions: how will we recognize and resource such a politics?

References

Durie, M. (2006). *Māori Education 2026.* Paper presented at the Post Primary Teachers' Association Conference 2006, Wellington.

Green, B. (2005). Unfinished business: Subjectivity and supervision. *Higher Education Research and Development, 24*(2), 151-163.

McKinley, E., Grant, B., Middleton, S., Irwin, K., & Williams, L. (2009). Supervision of Māori doctoral students: A descriptive report. *MAI Review, 2009*(1, Article 6), 12. Retrieved from http://www.review.mai.ac.nz

Metge, J. (1983). *Learning and teaching: He Tikanga Māori*. Wellington: Department of Education.

Pere, R. R. (1982). *Ako: Concepts and learning in the Māori tradition*. Hamilton: University of Waikato.

Smith L. T. (2005). On tricky ground: Researching the native in the age of uncertainty. In N D Denzin and Y S Lincoln (eds). *The Sage Handbook of Qualitative Research*. Thousand Oaks: Sage Publications.

Smith L. T. (1999). *Decolonizing Methodologies: Research and Indigenous Peoples.* London & Dunedin: Zed Books Ltd & Otago University Press.

The culturally inflected voice: negotiation and recognition without dumbing down

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Introduction

Most research into international doctoral students considers issues of language (Ryan & Twibell, 2000) learning differences, institutional provision (Wu et al, 2001) and supervisory relationships (Aspland & O'Donoghue, 1994; Cargill, 1998; Smith 1999; Wisker, 1998; 2003). Our research considers supervising international students, where issues of cultural capital and the 'culturally inflected voice' affect students' choice of topics, context, research methodologies and methods, and construction of knowledge. Several studies in the effectiveness of the doctorate indicate development of self-esteem, professional, social and cultural contribution such as "an altruistic sense of making a contribution and becoming a better, more critical professional" (Leonard et al, 2005 p. 141). There have been a range of studies considering the impact of PhDs (Boud & Tennant, 2006; Cryer, 1998; Dinham & Scott, 2001; Doncaster & Lester, 2002; Evans, 2002) but little on the cultural inflection of such impact arising from the work of international mid career professional PhDs (Wisker & Robinson, 2008). We argue that what we are calling the 'culturally inflected voice', the culturally contextualised, focused and conducted research project and processes and the postgraduate student's own articulation of these, can affect the ultimate , often transformative impact of the PhD on social, scientific, commercial, political, cultural and professional work and practices in the doctoral graduate's home country. Several studies have considered constraints upon and enabling of international students (Kiley, 1998; 2000). Here we consider empowerment of the culturally inflected voice in a global context. We also need to consider familiar issues of language facility, particularly tertiary literacy, and the language specific to higher level study in a discipline, which might hamper critical thinking and expression skills. What becomes important to identify are students' and supervisors' experiences of ways of negotiating difference, enabling the significant, contextual, new and useful, while avoiding cultural imperialism, deficit models of learning and 'dumbing down'.

Methodology, methods and research participants

Two studies form the basis of this paper: one is part of ongoing action research conducted by Gina Wisker, Gillian Robinson, Yehudit od-Cohen, Miri Shacham et al with a large (Israeli) PhD cohort-based programme (1997-2009) at Anglia Ruskin University and the second is cross-cultural supervision research by Jennie Jones and Gina Wisker (2008-2010) at the University of Brighton. Our data

derives from face to face and email interviews conducted with students and supervisors.

Most of the research evidence gathered in our study concerns recognising the culturally inflected voice and derives from action research conducted alongside our work as supervisors, programme facilitators and co-researchers with graduates from the programme. Both authors worked with others for 12 years on an international doctoral programme which has so far graduated nearly 200 PhDs. Those on the programme were mid-career professionals, studied part-time and at a distance, and represent the rich cultural mix of modern Israel i.e. Jewish and Arab, originally from Romania, Germany, Morocco, Afghanistan, Europe and Russia. Those involved in the second study were also part-time mid-career professionals from Italy, Sierra Leone, Hong Kong, Ireland and S.E Asia.

The participants, their research, interviews

Interviews conducted with doctoral students have produced data that leads us to determine a range of issues, difficulties and several practices that are seen to aid the support and success of international students involved in culturally inflected research. This leads to suggestions of what could be developed to encourage and support the 'culturally inflected voice' through to success. Students from different cultural contexts (to our own, whatever those may be) might work in culturally inflected ways in terms of research and learning behaviours; choose culturally and contextually inflected areas to work in and intend their research to make changes which are culturally significant. Many can make those social, cultural, political and scientific changes in their own cultural context because of the PhD award, which provides credibility and the right to speak.

What can we do to ensure avoidance of cultural imperialism and 'dumbing down'?

While we should assume that supervisors and research degree committees deciding on topics and proposals always have the student's best interests, the research cohesion and the 'do-ability' of the research in mind, both authors have experience of extensive querying that springs from the decision-maker's own cultural comfort zones. A fundamental question driving our research and related work is what we can do to support and empower the student's culturally contextualised voice, recognising both their authority to focus on local issues (If they wish) and the global as well as local effect of such research. Issues related to identifying and supporting students' choices of culturally contextualised research, the underpinning modes of knowledge construction and the cultural inflection include the importance of identifying context where it indicates the originality of the work and its potential for impact; topics themselves where they might be highly original in one context and less so elsewhere; the inflection of different terminology in a cultural context and the ways this leads to interpretations of the research topic and findings; modes of research learning where these may differ culturally (Manathunga 2003, Grant 2008), and issues about the impact or effectiveness of doctoral work where this might lead to transformation in the country of origin. However, as one of our supervisor participants and research colleagues pointed out, seeking the culturally inflected voice alone might well be a limiting factor since:

"I believe that in almost every research we have to search for universal contribution to knowledge as we are living nowadays in a 'global world' and not in a local culture." (Miri Shacham, a graduate herself of the Israeli doctoral, in an email interview)

Simultaneous with the academic research practice, process and skills we need to ask fundamental questions about:

- How far are learning & teaching and research methods and approaches culture free and just good practice?
- How far might we be insisting on a Western /masculinist/ positivist/post-positivist or other learning/teaching or research paradigm just from familiarity?
- Is such insistence a form of cultural imperialism? Or an enabling strategy for students to learn about diversity and flexibility of approaches and conceptualisation, presentation etc? Why does it matter?
- How can research both enable the culturally inflected voice and local influence and also have more widespread even global relevance and influence?

Some cultures consider knowledge is shared, so we might enquire about the impact here on the Western construct of the individual PhD (Grant et al, 2010). Some cultures consider it insulting to argue with elders or authorities, which affects critical debate (Biggs, 1992). Some students might not easily gain access to their population or 'truths' because of differences in culture, status, insider/outsider position.

Some culturally inflected and contextualised topics undertaken by the students in our studies reflect their transformational aims, and include: women's empowerment groups in Israel; cultural and professional effects of educated Muslim women in Sierra Leone; emotional intelligence in developing police in Tel Aviv (particularly in relation to the removal of settlers from the West Bank); the influence of belief in the Virgin Mary on the identity of immigrated Irish women; Arabs learning English (through Hebrew) as a foreign language and settling in, experiences of Chinese postgraduate students studying in the UK. Others such as coping with trauma from specific hostilities, or enabling access to higher education from more marginalised cultures, or those whose religious and other beliefs prevent such access, which are local and specific in focus, generate insights, new knowledge and suggest practices that can be transferred to and interpreted by other cultural contexts

Supervisors' expectations

Supervisors reported a disjunction in the expected modes of research and studying in the UK for postgraduates whose origin was outside the UK:

> "I think some international students find the need to work and study independently very hard, because there is a very wide spectrum of what people expect from a PhD in the UK. That is very hard."

Research learning approaches also present issues:

> "There are also the cultural differences where approaches and expectations are different from the two sides. I remember some comments made by my cohorts such as 'the English want it done this way, or they do not understand this issue like we do'". (Interview 24)

This supervisor sees mutual learning and exchange as a way forward, both recognising cultural inflection, and enabling a dialogue across cultures:

> "It is my impression that the way to surmount these cross-cultural difficulties is by a fully engaged dialogue which is fluid and continuous all along the duration of the process." (Interview 24)

Postgraduate experience

Instead of being overwhelmed and silenced by difference, some of the students studying in the UK context were pleasantly surprised at the engagement with ideas, dialogue and independence expected of them. Achieving the doctorate has widespread effects on sense of self worth, empowerment and the effect on local change. As one respondent said: "As a researcher, I feel that doors have opened for me, that my ideas and research are taken more seriously, as if having that degree entitled me to more serious consideration." (Interview 20)

Conclusions

Our early work extends research into cross-cultural supervision, international postgraduates' research as learning, and the impact of doctoral work in and from cultural contexts. We begin to develop the notion of the 'cultural voice', the culturally contextualised, focused and conducted research project and processes, and the postgraduate's own articulation of these, which can affect the ultimate, often transformative impact of the PhD on social, scientific, commercial, political, cultural and professional work and practices in their home country. We also challenge the 'dumbing down' and cultural deficit models within which international students' learning, including research learning, is often placed, showing supervisors' and students' perceptions about extending their research repertoire while conducting their specific research for which they have a culturally inflected angle and voice, in many cases able to acknowledge the UK or other Western context in which they are studying and move beyond it into engaging with a wide range of international literature and research practices and making the very locally focused individually and authoritatively theirs and yet simultaneously more global in its applicability.

Further, more explicitly focused research now needs to be conducted over a wider range of international postgraduates including Prof Docs and EdDs whose research is likely to have explicit transformative aims, and from doctoral students studying in a wider range of international contexts.

References

Aspland, T. & O'Donoghue, T. (1994) Quality in supervising overseas students?, in: Y. Ryan (Ed.) *Quality in postgraduate education* (London, Kogan Page), 59–76.

Biggs, J., (1992) "The Paradox of the Chinese Learner", Fourth Asian Regional Congress of Cross-Cultural Psychology, Kathmandu, Nepal, and later published in 'Approaches to learning of Asian students: A multiple paradox' in J. Pandy, D. Sinha, & P.S. Bhawuk (Eds.) *Asian contributions to cross-cultural psychology* (pp. 180-199). New Delhi : Sage, 1996.

Boud, D. & M. Tennant (2006) Putting doctoral education to work: challenges to academic practice. *Higher Education Research and Development*, 25(3), 293-306.

Cargill, M. (1998). Cross-cultural postgraduate supervision meetings as intercultural communication. In M. Kiley & G. Mullins (Eds.), *Quality in postgraduate research: managing the new agenda*. Proceedings of the 1998 Quality in Postgraduate Research Conference (175-187). Adelaide: Advisory Centre for University.

Dinham, S. & C. Scott (2001) The experience of disseminating the results of doctoral research. *Journal of Further and Higher Education, 25*(1), 45-55.

Doncaster, K. & S. Lester (2002) Capability and its development: experiences from a work-based doctorate. *Studies in Higher Education*, *27*(1), 91-101.

Evans, T. (2002) Part time research students: are they producing knowledge where it counts? *Higher Education Research and Development, 21*(2), 155-165.

Grant, B (2008) The New Global is Also Local: The Supervision of Indigenous Doctoral Students. The University of Auckland, New Zealand. In M. Kiley & G. Mullins (Eds). (17-18 April, 2008). *Quality in postgraduate research: Research education in the new global environment - Conference Proceedings*. Canberra: CEDAM, ANU.

Grant, B, McKinley, E., Manathunga, C., Knowles, S., Singh, M., Wisker ,G & Robinson,G. (2010). Symposium on cross cultural supervision, QPR 2010.

Guilfoyle, A. (2006). Peers, family, community, supervisors and governance: A review of key sites for supporting international postgraduate students' transitional learning experiences. In *Experience of Learning.* Proceedings of the 15th Annual Teaching Learning Forum, 1-2 February 2006. Perth: The University of Western Australia. http://lsn.curtin.edu.au/tlf/tlf2006/refereed/guilfoyle.html

Jones, J. (2009). The perceived influence of cultural factors on international doctoral students and supervisors in cross cultural supervision. Internal report, CLT, University of Brighton.

Kiley, M. (1998). 'Expectation' in a cross-cultural postgraduate experience. In M. Kiley & G. Mullins (Eds.), *Quality in postgraduate research: Managing the new agenda,* The University of Adelaide.

Kiley, M. (2000). Providing Timely and Appropriate Support for International Postgraduate Students. In *Good Practice Working with International Students,* SEDA Paper 110, Dec 2000, 89-106

Leonard, D., R. Becker, & K. Coate (2005) To prove myself at the highest level: the benefits of doctoral study. *Higher Education Research & Development, 24*(2),135-149.

MacKinnon, D & Manathunga, C 2003, Going Global with Assessment: What to do when the dominant culture's literacy drives assessment, *Higher Education Research & Development*, *22*(2), 131-44.

Ryan, M. E. & Twibell, R. S. (2000). Concerns, values, stress, coping, health and educational outcomes of college students who studied abroad. *International Journal of Intercultural Relations, 24,* 409-435.

Smith, D., 1999. Supervising NESB students from Confucian educational cultures. In: Ryan, Y., Zuber-Skerritt, O. (Eds.), *Supervising Postgraduates from Non-English Speaking Backgrounds*.The Society for Research into Higher Education and the Open University Press, pp. 146–157.

Taylor, S. (2007). The Post-Humboldtian Doctorate: Implications for Supervision, in Anglia Ruskin University Eds., *Research Degrees Supervisors' Handbook 2007-2008*

Todd, E. (1999). Supervising overseas postgraduate students: Problem or opportunity? In D. McNamara & R. Harris (Eds.), *Overseas students in higher education: Issues in teaching and learning* (173-221). London: Routledge.

Wisker, G. (1998). *IETI* Issue on Teaching Quality and Systems and Practices for Teacher Development and Accreditation. *Innovations in Education and Training International, 35*(2),85-88.

Wisker, G & Sutcliffe, N . (Eds.) (1999). *Good Practice in Postgraduate Supervision*. Birmingham, SEDA/Routledge/Falmer.

Wisker, G. (2000). Cross-cultural research supervision, and research at a distance: issues for postgraduate students and supervisors, in *Good Practice Working with International Students,* SEDA Paper 110, December 2000, pp 119-136

Wu, S., Griffiths, S., Wisker, G., Waller, S., & Illes, K. (2001). The Learning Experiences of Postgraduate Students: Matching Methods to Aims. *Innovations in Education and Teaching International, 38*(3), 292–308.

Wisker, G., Robinson, G., Trafford, V., Warnes, M. & Creighton, E. (2003) From supervisory dialogues to successful PhDs: strategies supporting and enabling the learning conversations of staff and students at postgraduate level, *Teaching in Higher Education, 8*(3), 383-397.

Wisker, G. & Robinson, G. (2008) Improving postgraduate student learning for sustainable social development, research capacity building and personal growth. In Chris Rust (Ed), Improving Student Learning, Oxford Centre for Staff and Learning development.

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Changing pathways to the Doctorate

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Introduction

Helene Marsh
Chair DDoGS

Issues related to pathways into, through and from the doctorate were the focus of this presentation with perspectives from a range of speakers

Quality and preparedness of Australian doctoral graduates for research careers in Australia: emerging insights from the Research Workforce Strategy

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Background

While as the title of this presentation suggests, I am here to talk about the development of the Australian Government's ('the government') research workforce strategy – what it is, why it's being developed, and progress to date, including insights for research training and research careers – I think it is important to start by defining the outcomes we are trying to achieve through our research training system.

In very broad terms, we can think about this in terms of quantity and quality. With respect to the former, the focus is on developing the numbers and breadth of higher degree by research (HDR) graduates that our workforce requires. For the latter, the focus is on not just the quality of the research training environment but the outputs and outcomes achieved through the training process, for example graduates' academic knowledge and skill sets, and graduate employability and career outcomes.

Not all these areas are easily measurable and a single metric is rarely appropriate for this purpose. What is important is that we draw on the suite of indicators that are available to monitor our progress in delivering desired outcomes and utilise this information to improve future performance.

Rationale for a research workforce strategy

One of the key reasons the government is developing a research workforce strategy is that a number of reviews and inquiries now have suggested we are not performing as well as we might like.

In particular, with respect to the quantity of HDR skills delivered through our research training system:

- While there has been strong growth in completions in recent years, domestic commencements have stalled;
- There may be underlying pressure points in some disciplines;
- The ageing profile of the academic workforce and targets for educational attainment suggest strengthened demand for HDR qualified individuals in the future; and
- Enhancing our R&D performance, in line with the government's innovation agenda, can be expected to require additional research skills in the future.

With respect to quality, recent reviews and inquiries suggest that:

- Australian researchers feel that there is a lack of clear research career paths in Australia; and
- The research training system has more work to do in preparing students for varied career outcomes and the changing nature of contemporary research environments.

The research workforce strategy is being developed against this backdrop. Its aim is to build and maintain a research workforce that can meet Australia's needs over the decade ahead to 2020.

It is important to note that the strategy is not just about academia but about all areas of research employment in the Australian economy. That said, the university sector is a particular focus of the strategy, given its role as both the major employer of researchers and the key provider of research training in Australia.

Progress and emerging insights

The development process for the strategy is being anchored in DIISR and has been underway now for some time.

A Reference Group comprising representatives from key stakeholder groups was established late last year to support the development process and three subgroups of the Reference Group have been examining issues in three key thematic areas (Employer Demand, the Research Training Experience, and Research Career Pathways).

The work-plan for the strategy has included a mix of analysis and consultation work. Particular areas of focus have included: the nature and outlook of employer demand for research skills; the projected supply of and demand for research skills over the decade to 2020; the perspectives of students and researchers on their research training experience and career pathways; and the nature of existing support across government for Australia's research workforce.

Work in each of these areas has shed insights on both the quantity and quality of supply of HDR qualified individuals through our research training system.

For quantity:

- There may be an aggregate unmet demand for HDR qualifications if modest increases in completion rates are not achieved;

- While there is evidence for a decline in attrition this still has a significant impact on total HDR supply;
- Some disciplines are seeing a decline in their 'share' of HDR output
- There may be scope to improve Australia's HDR graduate output relative to other countries

For quality:

- While there are some positive areas of performance, there also appears to be scope, from students' perspectives, to improve the research training experience;
- Some HDR completion times are longer than desirable, given the maximum time-periods associated with support;
- While overall there appears to be a good match between skills garnered through a HDR and employment requirements, there is also some room for improvement (from both graduates' and employers' perspectives), particularly in generic skill areas such as teamwork, planning and organising and communication; and
- Employment prospects of HDR graduates are good but we need to understand better to what extent employers value the HDR above and beyond other qualifications.

Next steps

The strategy's development process is expected to be completed in the second half of 2010. Some key next steps include:

- Further exploration of attrition;
- Some in-depth discipline-specific case-studies;
- Examination of best-practice in both Australia and other countries;
- And further consultation – including a consultation paper which will seek feedback from all interested stakeholders.

I'll finish with some questions for DDOGS. Essentially we are keen to hear what the key issues and priorities are from your perspective!

Qualities and skills in applicants for doctoral programs: what DDOGs consider important

Margaret Kiley
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If you attended the symposium on Tuesday by Pearson et al you will have heard of the research reporting on the variety of PhD and career paths of 91 interviewees in an ARC funded study and this presentation takes up from that session.

Firstly some data (from a paper presented at the last QPR by Pearson, Cumming, Evans, Macauley, & Ryland, 2008). It is commonly reported that the mean age of candidates commencing a PhD in Australia is 34 and, as outlined in Table 1 below, respondents to a large-scale study of Australian doctoral candidates confirm that. However, as one might expect, the mean varies across disciplines, for example, in the Physical Sciences and Engineering it is more likely to be 28 and in the Creative Arts and Education the mean is over 40 years of age. So,

where have many of these candidates been and ***what have they been doing*** before they commenced their doctoral program?

Table 1. Age of respondents across BFOS: means and Standard Deviations (adapted from Pearson et al. 2008)

Broad Fields of Study	**Mean**	**Std. Deviation**
Agriculture, Environmental and Related Studies	32.89	9.196
Architecture and Building	38.26	9.407
Creative Arts	40.03	11.931
Education	45.15	10.134
Engineering and Related Technologies	28.95	6.970
Health	34.47	10.343
Information Technology	34.09	10.466
Management and Commerce	38.31	10.429
Natural and Physical Sciences	28.63	7.809
Society and Culture	37.26	11.545
All respondents	**34.75**	**11.011**

Let's just imagine the following for a moment.

Gary

Gary has been a successful accountant managed a small business for many years and undertook numerous professional development activities. A few years ago he undertook an MBA. To his surprise he enjoyed the study much more than he had as an undergraduate when it was a bit of a grind. Over the next two years he was asked to come and give guest lectures and run some tutorials which he found, again to his surprise, he was good at. So much so, when one of the accounting lecturers retired, Gary was asked to take his place. After three years Gary felt that there was considerable pressure on him to do a PhD – certainly if he wanted promotion in academia, and although he still spent one day per week in his accounting practice, he decided that he would undertake doctoral study – but in education as he had been doing the Graduate Certificate in Higher Education and realised that it was education in accounting he wanted to research rather than accounting itself.

So….

At the age of 48 Gary applies for a PhD with:

- An 'OK' Bachelor of Accounting
- An MBA (with one research project course)
- A Graduate Certificate in HE (with one project course),
- 20 years of experience as an accountant
- 20 years of professional development courses
- Five years experience as a tutor/lecturer, and
- Fierce determination to complete a PhD part-time while he works as an academic and in practice full-time.

Helen

Helen had a difficult adolescence and when she got to university she found it not at all to her liking and had dropped out before the end of her first year as an undergraduate. After several years of 'bumming around', she got work with the public service where she found she was very organised and could mange and lead small work teams effectively. At 30 she decided to enrol in the course she has always thought would suit her, Computer Science. She found she did extremely well, partly because much of it related to her work over the years. At the end of her course, during which she had her first child, it was strongly recommended that she undertake a coursework Masters program. It was during that course, where she had to do a research project, that she realised she really enjoyed research and decided, with the support of her partner, to apply for a PhD and scholarship.

So, at the age of 35 and with one child Helen applies to enrol in a PhD with:

- A very good Bachelor of Computing Science
- A coursework Masters
- Experience in the public service over some years particularly in computing science
- A clear idea of the research project she wants to undertake
- A very keen and supportive potential supervisor
- Outstanding time and project management skills
- Leadership skills

Irena.

Irena had a University Entry Score that could have got her into any undergraduate course of her choosing, she decided to do a double-degree in Arts/Law immediately after Year 12, unlike most of her friends who took a Gap Year. Her results in the philosophy subjects she undertook were outstanding and, unsurprisingly, she was invited to do Honours. With a first class Honours result, due mainly to her focus and ability to work alone with little in the way of distraction from peers, she was encouraged to enrol in a PhD. Her Honours supervisor strongly recommended that she move to a more prestigious university interstate to do her PhD, although Irena is quite nervous about moving away from home.

At 23 Irena applies for entry to a PhD and a scholarship based on:

- An excellent undergraduate record
- First Class Honours
- A very strong recommendation from her Honours supervisor for a project which is only tangentially related to most of the research in the more prestigious university where she is not known and she knows no one.

And note, I haven't even touched on potential international candidates!

How could each of those applicants demonstrate to an applications committee that they had the knowledge, skills and aptitude to undertake a PhD?

At a recent Deans and Directors of Graduate Studies (DDoGS) meeting participants were invited to identify the knowledge, aptitudes and skills that they thought were essential for entry to a PhD, and how evidence of that knowledge and skill might be demonstrated. Based on those comments, let's see how Gary, Helen and Irena would be likely to fare.

Table 2: Evidence of knowledge skills and aptitudes for entry to a PhD

Knowledge	
Deep disciplinary knowledge (although not necessarily in the discipline of the PhD)	Final year exam results Prior learning, interview, references and interviews with referees
Awareness of epistemological issues to inform research and facilitate disciplinary work and lateral thinking	Interview, references and interviews with referees
Intelligence	Test e.g. UMAT Exam results

Aptitudes	
Persistence, drive Creative Intelligence Imagination Critical and analytical writing and reading Capacity to learn to be independent Self motivated Capacity to work hard	Interview, references and interviews with referees

Skills	
Ability to solve extended problems	Significant role and experience in completing major research projects - interviews
Base communication Academic writing at a high level Critical and analytical writing and reading Ability to organise ideas and present an argument Team making Capacity to analyse, synthesise, contextualise and solve problems	Research proposal and exemplars of previous work
Ability to inter-relate and work with experienced researchers Organisational capacity, time management, project management, ability to complete extended project Ability to learn from mistakes Team making	Interview, references and interviews with referees
Ability to produce and communicate knowledge	Results of relevant courses from Testamur - interviews

Conclusion

Honours, at least in Australia has been a 'handy' way of potential candidates demonstrating, and potential supervisors being assured, of certain knowledge, skills and aptitudes. But given the varied pathways candidates take through life

generally, and their academic program more specifically, maybe it is time to develop a more sophisticated approach to admitting potential candidates to a PhD, one which reflects the current knowledge we have of the wide range of pathways to, and through, a PhD.

What might this mean for universities, supervisors and candidates if we are going to place increasing reliance on interviews, of both potential candidates and referees?

Reference

Pearson, M., Cumming, J., Evans, T., Macauley, P., & Ryland, K. (2008). Exploring the extent and nature of the diversity of the doctoral population in Australia; A profile of the respondents to a 2005 national survey. In M. Kiley & G. Mullins (Eds.), *Quality in postgraduate research: Research education in the new global environment-Conference proceedings* (pp. 90-114). Adelaide: CEDAM, ANU.

Should first class honours be the preferred qualification for applicants for Australian doctoral programs? Honours As Entry Into PhD

Max King
Monash University

Background

Because the views that follow have been formed over a long period from my various roles at Monash University, I thought I should first give some background. Since late 1993, Monash has had a formal first-class honours (H1) equivalence process for scholarship purposes. That has also led to a second-class level A honours (H2A) equivalence process for admission purposes. As a consequence I have been involved in many discussions about what an honours year is covering for a large range of disciplines. I have investigated the possible use of the GRE as an admission tool and came to the conclusion that the honours year with its honours research project is a better predictor of potential as a researcher than the GRE. I chaired a review of Honours at Monash during 2009. During that year I was also a member of the review panel for the Bachelor of Science honours program. I have read various market research reports on what honours students think about their experience, particularly when they look back at their honours experience as PhD students.

There are a number of different forms that honours can take. My remarks in this paper relate to the honours year which is an additional year after completion of the three-year Bachelor's degree.

Issues – Positives

In my view the positives of the honours' year are:

- It is an extremely efficient introduction to research (a one-year intensive).
- Many honours students report being turned on to research by their honours experience.
- The honours thesis component has some predictive power in determining success at writing a Ph.D. thesis (unlike the GRE).
- It is a time we extend our best students.

Issues – Negatives

The negatives of the honours' year are:

- Honours is not well known internationally.
- Admission to the Ph.D. degree is less and less via honours these days particularly as the proportion of international students grows.
- As an admission path to Ph.D. we find it difficult to explain and use at our Sunway Campus in Malaysia.
- Funding is a big problem because it is funded as for an under-graduate degree.
- Honours students are more expensive to supervise than Ph.D. students in the research component because they need more one-on-one supervision and are often less efficient than Ph.D. students in conducting experiments in the lab. They are more likely to break things and to have to repeat experiments.
- Numbers seem price sensitive. When HECS went up, honours numbers went down.
- We are asking our best students to take on more debt in order to do a research degree.
- Some honours programs are not doing the best job of preparing for Ph.D., the most obvious need being more on research methods.

Really the honours year is a hybrid coursework/research year and needs to be funded that way. It seems to typically be an efficient preparation for a Ph.D.

Globalisation: How Do We Line Up With Bologna?

With the increased globalisation of higher education, particularly in regard to research degrees, it is important to ask how does Australia's current system fit with the Bologna model.

Cycle	**Bologna**	**Years**	**Australia**	**Years**
1st cycle	Bachelor	3	Bachelor	3
2nd cycle	Masters	2	Bachelor (Hons) 1st year Ph.D./ Research Masters (pre-confirmation)	1 1
3rd cycle	Doctorate	3	Ph.D. post-confirmation	3

The above table suggests that our three year bachelor degree, followed by an honours year and the first year of the Ph.D. being a probationary year, does line up well with the 3-2-3 Bologna model. We see that the honours year equates to the first year of Masters in this model with the probationary Ph.D. year equating with the second year of Masters.

A Major Problem For Australia

In Australia, largely because of the funding model known as the Research Training Scheme, the Research Masters degree and the Ph.D. have the same entry requirement. This means that the Research Masters degree is a mini Ph.D. rather than second-cycle degree providing research training in preparation for the Ph.D. Australia's model in this regard seems very much out of step with the rest of the world. It has also led to a decline in Research Masters numbers which

leads to the obvious question: Is this desirable? At a time that Australia's Qualification Frame is under review, this is in need of our urgent attention.

A Possible Solution

My advice is that the honours year degree becomes a Masters degree – perhaps the best title is Master of Research. There should be a new funding model for this degree that recognises that it is a hybrid coursework/research degree. We should also provide scholarships for our best students and make it an attractive degree in the sense that it does not need the student to commit to more debt. After all, our best students deserve our best efforts in designing a smooth path for them to the Ph.D.

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Communicating Research: Audiences, Academics and Research Students

Wendy Bastalich,
Monica Behrend,
Robert Bloomfield,
Judy Ford,
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Alistair McCulloch
University of South Australia

The traditional focus of the PhD is the production of a research thesis[34]. In recent years, a second purpose for the PhD has developed that emphasises the development of researchers. This emphasis is sometimes referred to as the 'generic skills agenda'[35] which, among other things, emphasises broader communication skills than those implicit in the ability to produce and defend an academic thesis. This focus has resulted in the development of what are effectively 'curricula' for doctoral education through the promulgation of documents such as the 1999 Australian Deans and Directors of Graduate Studies *Statement on Skills Development for Research Students* (DDOGS 1999, revised in 2005) which included reference to communication skills as one of four generic skills which Higher Degree by Research (HDR) students should attain as part of their training. In the UK, 2001 saw the Research Councils and the then Arts and Humanities Research Board issue a Joint Statement of the Skills Training Requirements for Research Students (RCUK 2001). There has been an associated and increasing emphasis on 'employability' post-PhD. In the Australian context, these developments have been discussed most recently in *Innovation: Inspiring Australia—a national strategy for engagement with the sciences* (DIISR 2009).

The policy emphasis on generic research skills training has led many universities to employ academic or professional staff to work with HDR students within a variety of existing organisational structures for research support. Within the Learning and Teaching Unit at the University of South Australia (UniSA), there is a Research Education Team consisting of Research Education Advisers that work with HDR students, and academic developers that work with supervisors. Much of the work undertaken is dedicated to developing the research writing capacity of HDR students and their supervisors. Discussions within the team have often led to reflection upon the educational rationales that inform our work, from which a framework for the development of writing curriculum has emerged. This paper is the first step in attempting to articulate this rationale and framework.

The paper presents the framework and educational rationale upon which individual elements of the overall writing support program are built. It is hoped that the paper will encourage further conversation and scholarly debate about the development of writing and communication curriculum within doctoral education.

[34] There is a developing body of doctoral work which is based on the production of an artefact or other piece of creative work, but even here, in most cases, there is a requirement to produce a well-crafted and extended piece of research writing.
[35] An example, to which we will refer later in this paper, is the UK Research Councils' Joint Statement of the UK Research Councils' Training Requirements for Research Students (RCUK 2001)

Communicating research to academic/disciplinary audiences

Communicating research through writing is of crucial importance in contemporary research education, although the complex nature of the activity and the fact of multiple audiences are not typically elaborated in discourse about generic skills training. The primary audience for doctoral students and their supervisors is the academic and research community, engaged through journals, conferences and books. This engagement has been intensified by the increasing spread of the culture of publish or perish. Driven initially in the US by the system of tenure, the need to be both expert and efficient at communicating research in writing to academic audiences has been given a significant transatlantic boost by the UK's Research Assessment Exercise (and its slightly mutated offspring, the Research Excellence Framework) in the years since 1992. Australia and New Zealand have also developed research assessment mechanisms that have given the same sort of impetus to academic publication and the associated skills. (These exercises are called respectively Excellence for Research in Australia [ERA] and the New Zealand Performance-Based Research Fund (PBRF). Other countries have also followed suit leading to considerable pressure upon doctoral students and early career researchers to publish their research findings.

Writing support for doctoral students, as is also the case with writing support for other students in higher education, has traditionally drawn on one of three traditions or disciplines in its support of academic writing. These are:

- applied linguistics (genre, social constructionism, often offered through student support services and units);
- Teaching English to Speakers of Other Languages (TESOL) (which typically informs the work of language centres, student support services and units);
- rhetoric, composition studies (English literature, communication studies, traditionally embedded within disciplines).

These different fields, together with the variety of other disciplinary backgrounds (including genetics, sociology and political science from which the staff are drawn) inform the practice of the UniSA.

Communicating to the public

Education, particularly in the area of doctoral studies, does not take place in a vacuum. It is situated in a highly politicised social environment. The work of the UniSA Research Education Team is situated within an environment characterised *inter alia* by a number of elements including:

- CP Snows' 'Two Cultures' (1957) which we believe is still reflected as part of a dominant discourse in Anglo-American societies;
- an increasing emphasis by government on science (and doctoral education as a key part of science, generally understood in terms of STEM [Science, Technology, Engineering and Maths—or Medicine]) as the engine of economic development;
- the development of 'popular science' as a social genre;
- significant coverage of science in the mass media;
- the development of a public policy agenda around the issue of Public Communication and the Understanding of Science;
- the development of an increasing lack of trust in science and scientists and experts more generally;
- the rise of 'evidence-based policy' ([UK] Cabinet Office 1999, Chapter 2, [Australia] Banks 2009).

This environment provides two audiences traditionally neglected in the process of researcher development: firstly, the mass media and, more directly, the general public; and secondly, policy-makers within the different levels of government. Doctoral students, and those who support them, are increasingly expected to be aware of, and prepared to interact and communicate effectively in this wider non-academic context.

A framework for research communication development

In developing a framework to support and inform the development of writing curriculum, we identify two dimensions. These are 'Audience' and 'Stage of Career'.

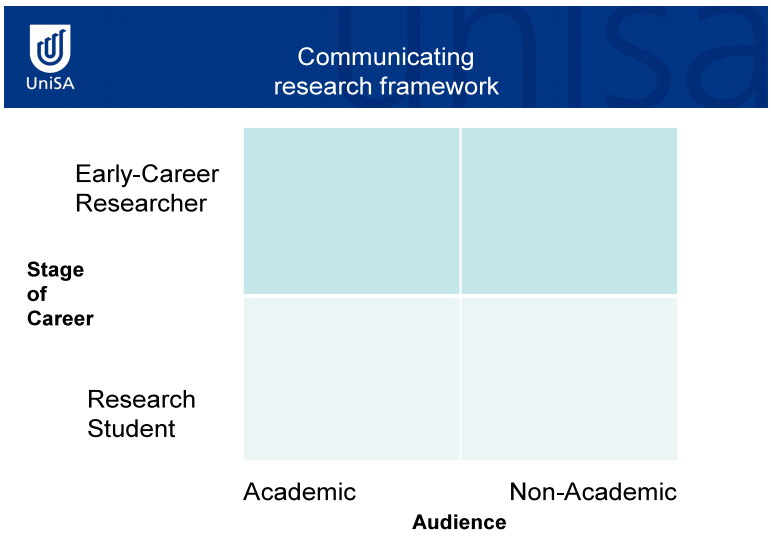
Audience

In any form of communication, audience is crucial and the key audience for academics, at least in the first instance, is other academics. However, as has been suggested above, audiences outside academe are becoming increasingly important. While taking account of the existence of a number of different forms of communication (research papers, conferences, books, posters), we use the dichotomy 'academic - non-academic' as our first axis.

Stage of Career

We have argued that the policy perception of the HDR student has changed from being one of 'student' to being one of what may be termed 'research trainee'.[36] Over the same period, there has been increasing concern over the transition from HDR student to post-doctoral or early-career researcher and the realisation that these are not separate stages but points on a career continuum.[37] Accordingly, for the dimension of our second axis, we use the 'research student - early career researcher'. These dimensions give us the outline framework shown in Figure 1.

Figure 1: A Framework for Research Communication Development



[36] In the UK, the terms 'research training' has been much used by policy-makers to describe the research degree.
[37] In the UK, this shift has been recognised by the development of the organisation VITAE out of the previous UKGRAD. The latter provided support in generic training and its development to HDR students while the former includes Early Career Researchers within its remit. (See www.vitae.ac.uk)

Figure 2: A Framework for Research Communication Development as Applied to the Work of UniSA's Research Education Team

Early career supervisors and researchers

A series of four workshops is open to Early Career Supervisors, Researchers and those intending to work with doctoral students at some point in the future. First offered in 2007, the series builds on Kamler and Thomson's 2006 work and was originally designed and delivered by Barbara Kamler of Deakin University. In 2009, the series was redesigned and taught by Dianne Bills of UniSA, and has since been further developed and taught by Academic Developers Cassandra Loeser and Alistair McCulloch. The series utilises an interactive workshop approach to develop and enhance the skills of supervisors and researchers in both writing and the provision of feedback.

Currently, the four workshops that form the series are:

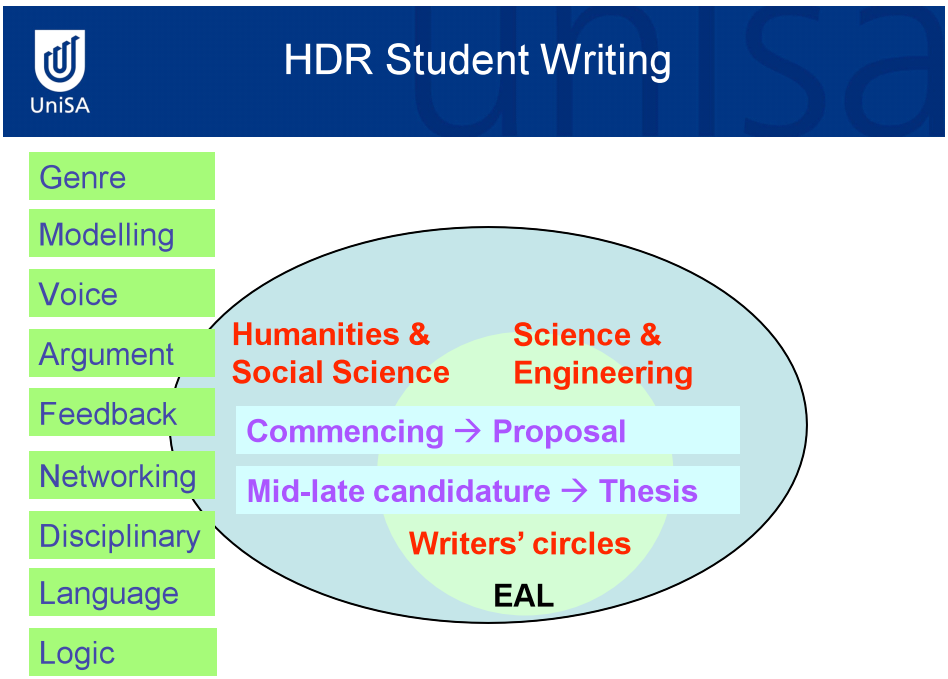
- Creating and sustaining a research-writing culture: explores the nature of writing and research writing and the possibility of a writing culture, set within the context of the research degree and developing policy around HDR work;
- Developing authority in writing, which explores what makes a 'good' piece of research writing and what makes writing 'authoritative' starting with pieces of writing the participants believe to be 'authoritative';
- Providing feedback on writing, which focuses on the pedagogical function and significance of providing constructive feedback on research writing (including that of HDR students) and different strategies for doing so;
- Writing for publication, which focuses on the publication process, the writing of abstracts and articles and explores strategies that facilitate a move beyond descriptive writing to engage a strong theoretical argument/position.

Workshop evaluations from 2007 to 2009 show that participants value networking with colleagues from across the University, and they value the space the workshops provide to think, share and discuss general issues with colleagues. Two recurring positive comments refer to the cross-disciplinary engagement and learning that takes place within the workshops, and the encouragement the workshop facilitators provide in the identification and analysis of research writing and feedback approaches from different 'actor' perspectives (students, teachers, editors, reviewers).

Research student writing

Writing support at UniSA is offered across disciplines. Specific programs of workshops are designated for disciplines in the humanities and social sciences, and disciplines in the sciences and engineering. In addition, writing support across disciplines is offered to HDR students with English as an additional language (EAL). Inclusive in the writing support programs are sessions tailored for commencing students — with a focus on writing the proposal within the first 6 months of candidature — and sessions catering for mid-late candidature students who are engaged in writing papers and the thesis. The disciplinary support for writing is delivered by Research Education Advisers Wendy Bastalich (humanities and social sciences) and Judy Ford (science, technology and engineering). 'English for Research Writing', or 'Writers' circles', are delivered by Research Education Advisers Monica Behrend and Robert Bloomfield. The interconnected structure of these sessions is summarised in Figure 3.

Figure 3: Structure of Research Writing Support Offered to UniSA Doctoral Students

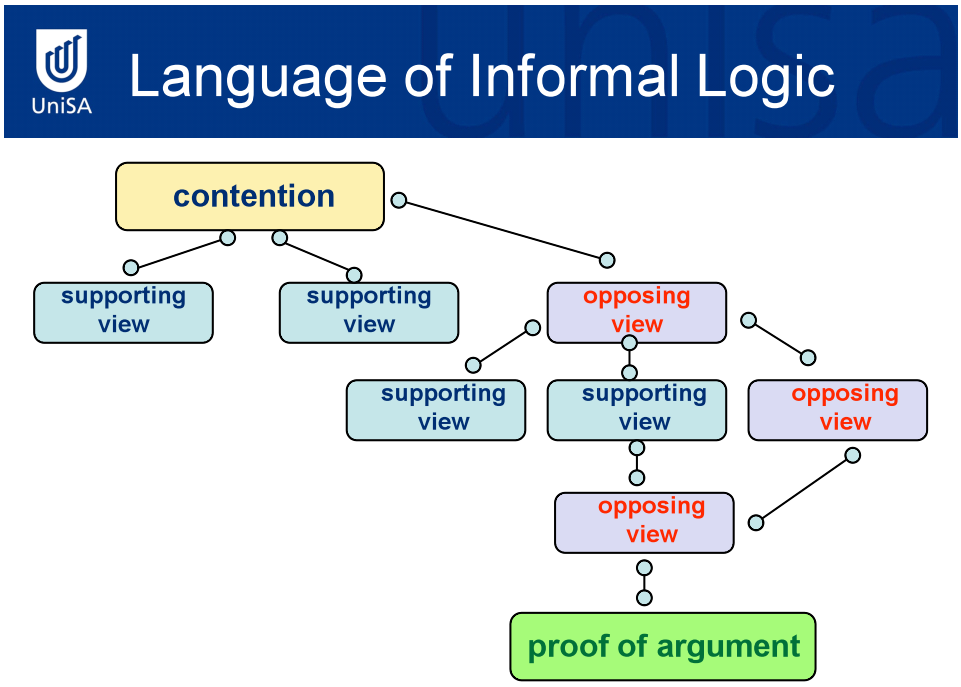


Workshops are informed by English for academic purposes, a sub-field of applied linguistics, which aims to introduce students to the target product of specific discourse communities, and the ideologies, values, beliefs and expectations of those communities (Swales, 1990; Bhatia, 1993; Swales and Feak, 2004). The program aims to induct HDR students into the contexts in which research texts are produced, interpreted and evaluated. Taking a genre approach, these sessions involve providing opportunities for students to explore the different research genres, academic styles and structures within and across disciplines and methodologies within which research findings are conveyed. Specifically, students are introduced to the 'moves' within different types of research text — for instance, the rhetorical move from topic and problem to solution. Consideration is also given to author positioning, inter-textual practices (referencing strategies), and variation of verb tense, modality and aspect. One key principle is the clarification and strengthening of the writer's voice and stance within sections of text, such as the literature review (Feak and Swales

2009). At the whole text level, the clear articulation of argument within sections and across entire texts is emphasised, including aspects such as assumptions, premises, threads of arguments and counter-argument underpinning the argument.

Building on the concept of writing groups for doctoral students (Aitchison 2009), Research Education Advisers work with students on draft texts and facilitate peer feedback (in itself a necessary doctoral-level skill). Another important principle of these writing sessions is to provide the opportunity for students to network with one another across disciplinary bounds and to encourage students to engage with matters of audience and purpose (Swales and Feak, 2004). A range of writing groups have been established that aim to provide feedback to students from both peers and facilitators, and to promote the development of critical feedback skills within a constructive and supportive (and often interdisciplinary) environment. Such peer feedback processes can improve the quality of student writing (Topping, Smith, Elliot 2000). In addition, the Writers' Circles examine research writing from the perspective of the range of English language choices that must be made to develop cohesive, well-written research texts. While previously noted principles underpinning the development of writing skills are reinforced within these sessions, the focus ranges from sentence level grammar to enhance communicative meaning — such as building nominal groups — to the use of references and thematic development to enhance cohesion. In addition, these sessions respond to the initial fears and concerns of second language writers, who often report that 'English is my problem', by developing productive writing practices and establishing a 'safe' environment for peer feedback.

Figure 4: Structure of the Concept of Argument Mapping Approach



A recent development, initiated by Robert Bloomfield, has been a set of workshops aimed at teaching logic to HDR EAL students. This program starts from the premise that, while logical judgment and conclusion may be determined by the goals and values of a given culture (Stojković 1999), the *process* of

reasoning is universal, and all students, regardless of background, have an equal facility to learn and practice the style of logical thinking prevalent in the west. This is based on research by anthropologist Donald Brown (2004) who includes binary discrimination, classification, and 'elementary logical concepts' in his catalogue of human universals. The workshops assume that, in common with many domestic students and others with English as their first language, international HDR students require support in the area of the 'language of logic' and the framework necessary to support the proper use of this language. This program of workshops:

- introduces the structure of argument and its characteristic linguistic markers;
- will produce a glossary of the technical terms used in reasoning, with particular emphasis on the needs of the group. (Currently available glossaries often include circular definitions and are prone to unexplained switching of near-synonymous terms. The proposed glossary will progress logically with each term described and contextualised on its first appearance.)
- introduces key elements of traditional rhetoric.

Finally, the concept of argument mapping is introduced to students, the structure of which is shown in Figure 4.

All aspects of writing and language development support are supplemented by individual consultations.

Communicating research to industry and the public

The teaching of science communication skills is relatively new. When Turney (1994) reviewed the teaching of science communication in the UK he identified two broad approaches. The first was usually presented to graduates or postgraduates in small groups (12 to 20 people), targeted at how to relate to the media, and usually run by an eminent science journalist. The second included undergraduate university courses that were broader in nature, but focussed on the development of careers in science journalism or science communication. These approaches remain the norm in universities worldwide. There seem to be a lack of programs that teach broad communication skills to scientists who wish to work in research or various professional roles other than science journalism. Furthermore, communicating with the public implies far more than working with the media — public meetings of various types, schools and personal education courses, community access radio and TV, the Internet — all provide venues for direct communication with the public. Increasingly, scientists and researchers will require a wider range of essential skills and competencies than are currently developed. The program developed by Judy Ford seeks to address these needs

In 2007, an opportunity arose for students to be interviewed for thirty minutes each ("on air" time including advertisements and promotions) on a Sunday evening on a popular commercial Adelaide radio station. The listening audience at this time is thought to be in the older age sector and since the station itself has developed from the previous TAB (the Australian Totalizer Agency Betting for horse and dog racing), the audience is far from academic. Altogether, nine students were interviewed on radio at one month intervals. Recordings were made of each interview. Prior to the interview each student met with Judy Ford who helped them find the 'story' in their research and to understand the difference in their own knowledge level and what might be expected from the audience. Strategies for communicating the student-specific complex concepts to a non-academic audience were discussed in some detail. Students were unanimous in their enjoyment of the experience and most said that it made them reflect on the real significance of their PhD projects. They felt that they would like to make their future research more relevant.

Emanating from this initial program, a research project was undertaken in 2009 to determine the requirements for an ongoing course in communicating research to the public and to trial a pilot course. The project identified the stages of teaching students how to communicate with the public as:

- finding the story or stories in the research;
- defining the target audience and outlets for each story;
- discovering the language used by each audience or audiences in each genre;
- assisting students write a background story suitable for use by a marketing or public relations department;
- training students in interview techniques appropriate for use in the public media;
- conducting trial interviews in a studio and having the students give one another feedback on the recorded interviews.

Conclusions

A number of common critical themes or values are embedded in the rationale and framework for writing support developed by the UniSA Research Education Team in collaboration with doctoral students, supervisors and other key research staff in Divisions, Schools and Research Centres and the Graduate Studies Office. Programs designed to enhance skills in the writing and communication of research should:

- build on insights from a number of research traditions and literatures such as rhetoric, applied linguistics, TESOL, and also on the specialist research on doctoral education and academic development;
- address both discipline-specific, but also shared and cross-disciplinary research languages;
- depart from an understanding of the importance of a relatively sophisticated understanding of the notion of audience, including an appreciation of the specific requirements that different audiences place on research communication;
- depart from an understanding of the importance of genre and the way it can vary across different disciplines, or discipline clusters and methodologies;
- be geared to the different and overlapping needs that accompany the early phases of a research career;
- emphasise the importance of the social, political and economic contexts within which students, their universities and other researchers operate. This involves understanding both academic culture and the process of peer review and other forms of research gate keeping; and
- understand that a key part of the development of a researcher is the development and maintenance of a set of networks to support both existing and future research and also more general engagement with economic and social development.

These themes and values are directly relevant to the supervisors of HDR students. As such, they also inform the work that UniSA's Research Education Team undertakes with supervisors in the area of research writing.

References

Aitchison, C. 2009, 'Writing groups for doctoral education', *Studies in Higher Education*, 34(8), 905-916.

Banks, G. 2009. *Challenges of Evidence-Based Policy- Making*. Australian Public Service Commission, Canberra.

Bhatia, V. K. 1993. *Analysing genre: Language use in professional settings*. London: Longman.

Brown, D. E. 2004, 'Human Universals, Human Nature & Human Culture', *Daedalus*, 133, 4, 47-54.

Cabinet Office 1999. *Modernising Government*. White Paper Publisher: CM4310 London: The Stationery Office

DDoGS (1999 revised in 2005) *Statement on Skills Development for Research Students.* www.ddogs.edu.au/download/1522830306 *(accessed 27 April 2010)*

DIISR 2009. *Innovation: Inspiring Australia—a national strategy for engagement with the sciences*. Canberra, DIISR.

Feak, C. and Swales, J. 2009. *Telling a Research Story: Writing a Literature Review* Ann Arbor: University of Michigan Press.

Kamler, B, & ***Thomson, P.*** 2006. *Helping Doctoral Students Write: Pedagogies for Supervision*. New York: Routledge.

RCUK 2001. Joint Statement of the UK Research Councils' Training Requirements for Research Students. http://www.vitae.ac.uk/cms/files/RCUK-Joint-Skills-Statement-2001.pdf *(accessed 27 April 2010)*

Snow, C. P. 1957. *Two Cultures and the Scientific Revolution*. New York: Cambridge University Press,

Stojković, M 1999, 'Logic and Culture', *Philosophy and Sociology,* 2 (6/2) 235 - 238

Swales, J. and Feak, C. 2004. *Academic writing for graduate students: Essential tasks and skills, Second Edition.* Ann Arbor: University of Michigan Press.

Swales, J. 1990. *Genre Analysis: English in Academic and Research Settings*. New York: Cambridge University Press.

Topping, K. J, Smith, E.F., Swanson, I. and Elliot, A. 2000. 'Formative Peer Assessment of Academic Writing Between Postgraduate Students', *Assessment & Evaluation in Higher Education*, 25(2), 149-169.

Turney, J. 1994. Teaching science communication: Courses, curricula, theory and practice. *Public Understanding of Science* 3, 435-443

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Extended Abstracts

Liminal spaces and doctoral examining: evidence of research learning

Margaret Kiley
The Australian National University

Gina Wisker
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Conceptual thresholds and liminal spaces

The work of Meyer, Land, and colleagues (2005, 2006) raised awareness of discipline specific threshold concepts, differentiating between core learning outcomes that represent 'seeing things in a new or transformed way' and those that do not. It is argued that threshold concepts are *transformative.* Once grasped, they lead to changes in identity (ontology), and perception and construction of knowledge in the subject (epistemology). In our work with doctoral Research Higher Degree (RHD) candidates we developed the notion of conceptual threshold crossing (Kiley & Wisker, 2009; Wisker, 2010) to recognise particular stages in a doctoral candidate's learning journey and their written thesis in which their thinking and articulation reached or exceeded conceptual , critical and creative levels sufficient for the standards expected for the award of a PhD. Evidence reported on in previous publications (Kiley & Wisker, 2009, Kiley & Wisker, in press) indicates that doctoral students and their supervisors are aware of moments of conceptual threshold crossing involving transformed ways of understanding, interpreting, viewing and articulating 'something'. Without such awareness it is argued the candidate does not seem to be able to make a contribution to knowledge which is sufficient to progress at the level required for research and doctoral achievement.

Transformations may be one or several, sudden or protracted over a considerable period of time, which latter Meyer and Land describe as *liminality* or the state which precedes actual threshold 'crossing' and seems to be characterised by oscillation, confusion, and a mimicry of the language and research behaviours seen as expected of them at this level. Doctoral candidates might well feel "stuck", and confused and we have argued that enabling them to become aware of the threshold crossing moments, the importance of these moments, and manageable examples or evidence of conceptual critical and creative work at this level can help them move forward. Understanding threshold concepts and the liminal state in research education can more adequately assist students during this time.

In our work with examiners and doctoral research we wished to discover if , how where and what the evidence was of conceptual threshold crossing in doctoral students' theses, which loosely translates to when, and on what evidence, doctoral examiners recognise that the work they are examining is of sufficient quality to merit the PhD award. Our question about the experience of *liminality* was intended to identify if the examiners could perceive whether candidates had approached but not quite achieved such crossings. As Wisker (2010) argues there are 'examiner thresholds' where the examiner identifies points at which he/she recognises doctoral level work and conceptual threshold crossing.

Questions we set out to address

Given our previous research on examination (Kiley, 2009; Kiley & Mullins, 2004; Mullins & Kiley, 2002) and on threshold concepts and liminal spaces

(Kiley, 2009b; Kiley & Wisker, 2009 Wisker, Kiley, Aiston, 2006) we decided to ask the following questions of thesis examiners and of written examiners' reports:

- How do examiners recognise and comment on doctoral level achievement?
- How do they discuss theses considered marginal?
- What are the characteristics of marginal theses at examination –that is, those candidates who might be considered to still be in a liminal space?
- What are the characteristics of doctoral level achievement and conceptual threshold crossing at examination?

Methods

We attempted to answer the research questions by utilising two main sources of data:

- Examiners' reports, and
- Interviews with examiners from a pilot study which incorporated both early work on the UK Doctoral Learning Journeys study (Wisker et al 2010) and parallel research with international examiners.

What do the examiners' reports say?

Mullins & Kiley, (2002) reported that a 'good' thesis demonstrates:

- Critical analysis & argument
- Confidence & a rigorous, self-critical approach
- A contribution to knowledge
- Originality, creativity & a degree of risk taking
- Comprehensiveness & scholarly approach
- Sound presentation & structure
- Sound methodology.

For example:

> Its strength lay in the depths to which the candidate was able to pursue numerous disciplinary insights and the capacity demonstrated to keep these various insights focussed on his complex topic. (Sci 12)
> It shows an extensive knowledge of relevant literature, a comfort with conceptual development, an ease with qualitative research techniques, a talent for the analysis of data, and a facility for writing up results. (Soc Sci 55)

On the other hand a 'less than ideal' or marginal thesis has:

- Too much detail with lack of analysis
- Lack of confidence, energy & engagement by the candidate
- Lack of argument and rigour
- Shoddy presentation (typos etc)
- Lack of critique of own analysis/ sweeping generalisations based on opinion rather than analysis
- Inadequate or poorly expressed methodology & scope.

According to three examiners:

> What he provides instead is a comprehensive historical/political description of...It is certainly a well-written account but it is also quite superficial. (Soc Sci 71)

> The thesis requires a critical analysis of the method chosen (Soc Sci 85)
> It is clumsy and repetitious, and too much emphasis is given to trivial matters…and too little to the actual implications of the results (Sci 104)

What do interviewees say about theses?

When interviewed, examiners reported that they considered a 'good' thesis to be have:

- Sound design, methodology in action
- Good qualities and cohesion throughout plus that extra 'newness' and 'flourish' which goes beyond the thesis
- Engagement with the literature in dialogue
- Real sense of mastery and adding something new
- 'The magic ingredient'

For example:

> I'm looking for somebody who really, really knows this subject so well that they're able to step beyond the subject and go somewhere new with it. That for me is, it demonstrates their confidence, that they thoroughly comprehend where their subject is situated, that the theoretical underpinnings of it, but also the margins of the theory that they're using, because then when they get to the margins of the theory and they're challenging the theoretical underpinnings they're then ready to move into a new realm and taking the methods of enquiry into that new realm to produce something, as an extension of the knowledge that they already had. (Education 1)

On the other hand a marginal thesis was described as:

- Too complex without order or focus 'too many beads'
- Too mechanistic

For example

> If they've really significantly missed something. (Education 1)
> It's not illuminating, I want to see lights come on in what the person is saying and what they've achieved, if it's flat, I'm using expressive language here, sorry. If it's pedestrian and flat, you know they can tick the boxes, they have done this, they have done this, and they have done that, then that's the straightforward thesis work but something that's moving on from that, the exception is where I see illuminated thinking coming through in the sections. Workaday – OK? The odd PhD programmes in some of our best universities where the sciences you know, you come along you knock on the door and somebody says well the team's down there, this is the actual metaphor that was used when I was first told this story, there's a gang of people down there in the quarry we'll give you a bucket and a pick and you can get down there and when your bucket's full we'll pull you up. (Soc Sci 2)

What do they say about poor theses?

- The lack of cohesion of conceptual/critical level seems to be a result of poor supervision
- The student has been drawn into a research group and just carried out the workaday work
- It is competent enough but lacks the magic ingredient
- The cohesion and spark only emerge during the viva (and so what happens in systems without one?)

Poor work and poorer supervision

> To be brutally honest his internal supervisors were not that hot, in terms of their knowledge of the subject area, kind of dumped on... one way or another he got dumped on them, they got dumped on him. (Education 5)

Too busy and unstructured

> About four things wrong with it which are relevant to this discussion. One was that the hypotheses weren't followed through, two was it wasn't particularly up to date, with some quite old references, some key references and some key ideas hadn't been explored, and the final thing, where you think at the end of the thing, things will come together into a nice coherent whole and in particular he was offering a model, which was a diagram, and the links between the components of what you call the model were linked in the diagram but were not explained, so it was a kind of conglomerate. (Health 5)
> Because he had about six hypotheses, some of which he dabbled with (Health 5)

In the interviews some examiners raised the role of the viva in assessing the candidate's research learning. The purposes of the viva according to the interviewees are:

- To confirm the quality and enable a collegial dialogue
- Explore the decisions made
- Question certain errors and complexities Sometimes this enables students to make a more coherent form and argument – in person, in context – move through the conceptual threshold on the viva .

For example, Interviewee 7 (Social Sciences) commented:

> #7: In the viva we were able to ask questions in such a way that he indicated that he had made some of the connections and so we said okay.
> INT: So the viva added a conceptual level to the paperwork?
> #7: Yes. And that's how I see it, I know there's a whole range of different approaches but I think the viva is so important in that to establish a relationship…with the student or candidate however we refer to them and to ask the kind of questions no-one will ever ask them again, to you know honour their work and take it seriously and ask pressing questions.
> Those where there's a leaning forward and they're enjoying the conversation because you're taking it seriously, and they often think that you're there to catch them out.
> My own viva I learned something in the viva, I understood something from the question they asked me and I thought 'Ah oh I see yes'.
> INT: You went through a conceptual threshold in the viva.

Conclusion

Both the examiner reports and the interviews with examiners indicate recognisable characteristics of successful theses. Additionally, the interviews provide evidence of examiner awareness of the particular elements or stages in the thesis which they see as indications of acceptable quality of critical, creative, conceptual work of a level which merits a doctorate. These pilot interviews do not offer any evidence of examiner awareness of liminality, the stages students might be in before they achieve doctoral quality, but that could be the case because they were all discussing successful theses rather than those which did not achieve a doctorate. Evidence from the interviews also begins to provide early insights into the contribution of the viva in enriching both the learning achievement and its articulation for the candidate.

References

Kiley, M. (2009). You don't want a smart alec: Selecting examiners of doctoral dissertations *Studies in Higher Education, 34*(8), 889-903.

Kiley, M. (2009b). Identifying threshold concepts and proposing strategies to support doctoral candidates. *Innovations in Education and Teaching International, 46*(3), 293-304.

Kiley, M., & Mullins, G. (2004). Examining the examiners: How inexperienced examiners approach the assessment of research theses. *International Journal of Educational Research, 41*(2), 121-135.

Kiley, M., & Wisker, G. (In press). Learning to be a researcher: The Concepts and Crossings. In J. H. F. Meyer, R. Land & C. Baillie (Eds.), *Threshold Concepts and Transformational Learning.* Rotterdam: Sense.

Kiley, M., & Wisker, G. (2009). Threshold concepts in research education and evidence of threshold crossing. *Higher Education Research and Development, 28*(4), 431-441.

Meyer, J., & Land, R. (2005). Threshold concepts and troublesome knowledge (2): Epistemological considerations and a conceptual framework for teaching and learning. *Higher Education*, 49, 373-388.

Meyer, J., & Land, R. (Eds.). (2006). *Overcoming barriers to student understanding: Threshold concepts and troublesome knowledge.* Abingdon: Routledge.

Mullins, G., & Kiley, M. (2002). 'It's a PhD, not a Nobel Prize': How experienced examiners assess research theses. *Studies in Higher Education, 27*(4), 369-386.

Wisker, G (2010) The Good Enough PhD: Crossing thresholds and building communities. *Acta Academica*

Wisker, G., Kiley, M., & Aiston, S. (2006). Making the learning leap: Research students crossing conceptual thresholds. In M. Kiley & G. Mullins (Eds.), *Quality in Postgraduate Research: Knowledge creation in testing times* (pp. 195-201). Canberra: CEDAM, The Australian National University.

Wisker, G., Morris,C, Cheng,M., Masika,R., Warnes,M., Lilly.,J., Trafford, V. & Robinson,G (2010) *Doctoral Learning Journeys – final report of the NTFS funded project.*

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Building research supervision and training in Australian universities: Implications for student supervisors of the future

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Introduction

In this paper we present outcomes from a recently completed ALTC project *Building Research Supervision and Training in Australian Universities*. The project, was undertaken with the aims of identifying existing higher degree research supervisor training provisions; identify current and future needs of supervisors and making recommendations that assist universities in their on-going development of effective higher degree research supervisor training.

Outcomes from the project as a whole highlight the importance of the changing place of knowledge in contemporary society and resulting implications for higher education. They also highlight the significance of the changing context of research education for both supervisors and their students; and the impact of such changes on the roles and responsibilities of supervisors and on supervisor development. Specific outcomes, implications and recommendations from the project have been addressed in the report under four major headings:

- professionalisation and formalisation of research education;
- growth and diversity in research education;
- changes for supervision practices and
- changes for supervisor development.

The project provides evidence that pressures within universities for *increasing professionalisation and formalisation of research education* have resulted in supervision of research students becoming more transparent and accountable, and supervisory practices becoming increasingly subject to scrutiny. A major finding from the project is that, with these changes, there is a need for increasingly sophisticated and constructive conversations about supervision pedagogy that engage all supervisors, both new and more experienced. Such conversations need to go beyond issues of compliance to address quality of supervision and good supervisory practices. A further finding from the project is that there is a need in many universities for greater emphasis on professional leadership in research education. (Recommendations 1, 2 and 3 in the project report address the need for rich and sustained conversations and the need for further leadership in research education).

All project participants identified *diversity* is a major factor in research education: in the linguistic and cultural diversity of students; in diverse process of and modes of study; in the role of technology in mediating supervision and /or conducting research; in non-traditional and interdisciplinary outcomes from research education; and in the diverse career paths followed by students on completion of their degrees. Project outcomes suggest the need for greater acknowledgement within universities of the theoretical and practical challenges of supervising and examining interdisciplinary and non-traditional research education projects. They suggest the need for at least some universities to update their systems, rules and regulations governing supervision and

examination of theses. They also suggest the need for universities to further acknowledge and address the issue of research students' academic literacies. (Recommendations 4, 5 and 6 in the project report address the need for universities to keep pace with the changing nature of research education; ensuring appropriate support for supervisors and addressing academic literacy in research degrees).

The changing context of research education has resulted in *changes to supervision and supervision practices*. Project outcomes provide evidence that the roles required of supervisors are changing and expanding. At the same time supervisors are expected to comply with QA processes. Outcomes highlight the additional demands placed on supervisors by international and local students who are experiencing difficulties, and indicate the need for further/better support and resources to assist supervisors address these demands. Outcomes also show that supervisors are concerned about their workload pressures, not from supervision per se, but from the need to balance time for supervision against demands of teaching, research and administration. (Recommendations 7 and 8 in the project report address supervisor pressure and support.)

Changes in research education and supervision have resulted in *changes for supervisor developmen*t, and point to new challenges for those responsible for supervisor development and training. Project findings indicate general agreement on the need for systematic support for new supervisors to introduce them to roles and responsibilities of supervision; to key QA processes; to issues of compliance and possible pitfalls; as well as to good supervisory practices. However, the findings also indicate considerable resistance from more experienced supervisors to compulsory, centralised and formal training programs; and a strong preference for locally and informally supported learning, especially that addresses 'just in time', and on-demand supervisor support and development. The project thus provides evidence of the need to rethink some of the ways in which supervisor development is currently conceived and organised. Further, it suggests the need for locally situated programs that can engage experienced supervisors in creative and innovative ways. (Recommendation 9 in the project report addresses supervisor development).

Project outcomes provide evidence of overall levels of dissatisfaction amongst supervisors regarding existing levels of resources, and indicate the need for additional targeted resources for supervisors and for supervisor training and development. (Recommendation 10 in the project report address resources for supervisors).

As a result of time constraints, the conference paper addresses a selection only of major outcomes and recommendations. Further details are available in the project report. Once final feedback from ALTC has been received, this report will be available on the fIRST website (www.first.edu.au), or from ALTC.

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Mechanisms for ensuring quality in postgraduate research education: A review of ten years' experience

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Abstract

This poster reviews the range of mechanisms used by the author's institution since 1999 to ensure the quality of a master's degree and a professional doctorate, both of which involve assessed coursework and a research thesis. The mechanisms include:

- approval and accreditation by the New Zealand Qualifications Authority;
- internal pre-moderation of assessment items;
- internal and external post-moderation of student assignments;
- internal and external examination of theses;
- feedback from students and staff;
- visits and reports by an external monitor; and
- five yearly review

The process involved in each mechanism is described and comparisons are made with mechanisms used in other institutions.

Introduction

Most tertiary institutions offering postgraduate research qualifications, such as masterates and doctorates, have a variety of mechanisms for ensuring the quality of the courses and supervision they provide for students. These mechanisms commonly involve academics external to the institution in various capacities, for example moderating assessed course work, examining theses, or monitoring the postgraduate programme as a whole. In the case of a professional doctorate, one or more industry representatives may be involved.

Approval and accreditation

Unitec's Master of Computing (MComp) was approved by the New Zealand Qualifications Authority (NZQA) in 1999 and the Doctor of Computing (DComp) was approved by the NZQA in 2002. In each case the approval was based on the recommendations of a panel appointed by the NZQA board and consisting of two external academics, an industry representative, an internal (Unitec) academic and a chair. The external academics were drawn from universities in Australia and New Zealand.

Moderation of assessment

MComp and DComp assessments are pre-moderated by the programme director. Each MComp course has two written assignments and one or two assessed presentations. For every MComp assignment an internal academic moderates a sample of marked student work (one each from the upper quartile, median and lower quartile). Every semester two or three MComp courses (usually those offered for the first time or being taught by a new lecturer) are selected for moderation by an external academic, who receives the same sample as the internal moderator. Each DComp course has one written assignment and one or two assessed presentations, all of which are assessed by panels of internal academics. All DComp written assignments are moderated by an external academic.

Examination of theses

MComp theses are assessed by an internal academic and an external academic, neither of whom may be a supervisor. DComp theses are assessed by three academics (at least two external to Unitec, including at least one from outside New Zealand), none of whom may be a supervisor.

Student and staff feedback

Every semester two or three MComp courses (usually those offered for the first time or being taught by a new lecturer) are selected for an online student survey. Staff and students are represented on the programme committees and staff meet regularly to discuss the programmes. DComp thesis supervisors and their students report progress to the programme committee.

Degree monitors

The NZQA appoints external monitors (usually academics from universities in Australia or New Zealand) to write annual reports on the programmes. When the monitors visit Unitec they meet the programme committee, staff and students.

Five Year reviews

Every five years each programme is reviewed by a panel consisting of an external academic, an industry representative, an internal academic and a student from a similar programme. The external academics are drawn from universities or research institutes in Australia and New Zealand.

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Co-creating new guidance materials for supervising inter - and transdisciplinary postgraduate research students

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Introduction

Inter- and trans-disciplinary research is materially different from discipline-oriented research. This short paper reports the outputs of an ALTC Fellowship that sought to address two key questions raised by this material difference: how can we discern its quality and what skills do postgraduate research students and supervisors need to ensure quality in the products (thesis, papers, etc) of such research? In particular, this paper explores how the design of the process enriched the project outcomes.

Deep discipline-based research is essential but not sufficient to address the complex issues that arise in modern society: we need interdisciplinary (ID) and transdisciplinary (TD) research also. For us, ID research combines theories and generates knowledge and insights from different disciplinary frames with a practical, problem solving intent. TD research starts with this, embraces emergence and change, includes lay knowledge, encourages values to be made explicit and allows for disciplinary knowledge to be questioned from other disciplinary perspectives. For related insights into these distinctions, see Wickson et al., (2006) and Max Neef (2005).

Through these characteristics TD research seeks epistemological shifts in thinking, and transformative shifts in practice. The implications for postgraduate research - processes, supervision, administration, outputs and outcomes – are profound.

Action research: design for ongoing co-creation

The project was designed to align with and emulate TD research and therefore to create change through the process of the project. The co-creation approach identified participants who were experienced, reflective and articulate academic developers, researchers, and students from many different 'home' disciplines, and affiliated with a broad sweep of institutions (other faculties at UTS, other institutions, and other regions across Australia).

In all, three action research cycles (see Figure 1) engaged 60 academic staff, students, and developers from 12 universities across Australia in learning from literature, international assessment processes, and each others' reflective practice in ID and TD research.

The workshops and retreat were designed to uncover and share experiences, and create new insights and practices, in both summative elements (i.e. quality criteria) and formative elements (i.e. practices for students and supervisors that assist the development and explication of the quality criteria). The fourth loop in Figure 1 indicates that the guidance materials were designed to encourage those who engage in later cycles to structure their own local conversations and reflective practice.

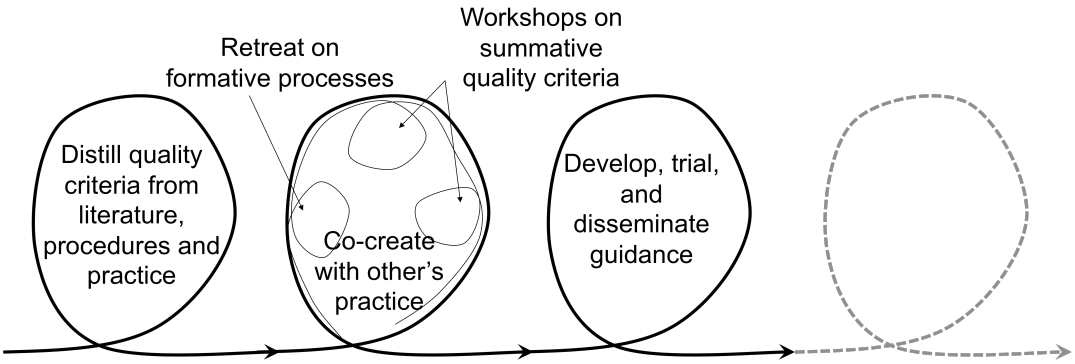

Figure 1. Depiction of the action research cycles embedded in the project.

Participants reported changes in thinking and practice

Independent evaluation of the action research project revealed the co-creation approach had significant benefits for participants and led to shifts across broad ranges of thinking and practice. Amongst other outcomes, it enriched the insights into and explications of the quality criteria and practical guidance materials; it increased user's confidence in the validity of the guidance materials; and it connected people who previously felt isolated in their attempts to practice ID and TD research. What follows are quotes from participants provided through the independent evaluation to exemplify this range:

An opportunity for reflection:

> I found […] attempt[s] to spell out the components [of quality] useful…as a practitioner already working in this way, I have not been forced to reflect on that way of working so this is potentially useful…

Transforming the examination process:

> The retreat got me thinking about examination, I sit on an examination committee and recently we had an ambitious thesis where one examiner said it was the best thesis they had ever read and very innovative, and another thought it should fail…we need better ways of examining, the [quality] criteria need to be highlighted to examiners; they need to use the criteria when marking…. training of examiners needs to happen, that came out of the workshop.

Validating transdisciplinary resesarch:

> I am a great admirer of […] the work of the fellowship…its use is spreading to a wider group of people, when this kind of work happens it validates the field for the rest of us…for example; I am going to be presenting at an Engineering Education conference, and just knowing that this work is out there validates what I am doing, I am able to point to this work, it is theoretical support for what we are doing…

Enhanced supervisory skills:

> Probably the main impact for me is instead of operating as individual supervisors like before, we are having group sessions with students…Previously we had found this difficult and

> counterproductive…the workshop provided strategies that helped with this…For example, we had a student working across very different disciplines – anthropology and astrophysics, as supervisors we were speaking different languages, which risked leaving the student confused…so we used to meet separately but now instead of straight separate supervision sessions, we get involved in a project and each have different roles in the project, and get involved in different ways instead of having intellectual arguments, we can work collaboratively without engaging in these sorts of theoretical debates.

Resources available on ALTC website

The three products of this Fellowship are published under the terms of the Creative Commons Attribution-Noncommercial-ShareAlike 2.5 Australia Licence and are freely available on the ALTC website under http://www.altc.edu.au/altc-associate-fellow-cynthia-mitchell. Taken together, the products provide a comprehensive set of insights that form one response to the summative and formative questions associated with ensuring quality in ID and TD research. They are designed for interaction through various means:

- **ID and TD Postgrad Quality Criteria**: a monograph that describes key summative criteria for judging the quality of ID and TD work. These criteria are synthesised from international literature, international administrative processes, textual analysis of examiner's reports and the practice of our participants.
- **Ideas for Good Practice**: a compendium of formative processes – more than 50 practical, innovative activities for supervisors to work with students to improve their ID and TD practice.
- **Workshop Resources**: a ready-made set of materials to guide local conversations on discerning and supporting quality in ID and TD research (includes powerpoint slides that describe activities, facilitator's run sheet that explains the activities and has suggested timings, activity worksheets, and an evaluation sheet).

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References

M A Max Neef (2005) Foundations of transdisciplinarity. *Ecological Economics* 53:5-16.

Wickson, F., A L Carew and A W Russell (2006) Transdisciplinary research: characteristics, quandaries and quality. *Futures* 38(9):1046-1059.

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Enhancing ethical practice in thesis supervision: Looking for spaces between discourses

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Students drop out of the research process for many reasons, though supervisors are often at a loss to deal effectively with such situations. There are well known problems of retention for part-time tertiary students who are poor or from minority cultural groups (see Coolbear, 2008). Staying the course on a thesis can be increasingly unlikely for students whose lives include responses to trauma. Supporting supervisors (and therefore students) in their work at the outer edges of 'pastoral care' is the focus of our ongoing work.

Our theoretical approach brings into conversation the different discursive frameworks surrounding thesis supervision as opposed to more clinically informed supervision in health-related professions, building on our view (Cornforth & Claiborne, 2008a, 2008b) that thesis supervision has many resonances with clinical supervision practices that provide suggestions beyond unexamined notions of pastoral care. Moving beyond the hierarchical assumptions of traditional clinical supervision, we instead support more recent moves towards reflexive, collaborative examination of current practices by professionals (in this case, research supervisors) themselves (Crocket, 1999).

This presentation gives an initial report on the implications of our approach for several senior supervisors and postgraduate administrators across two universities in New Zealand. Drawing on our work with academic and administrative professionals committed to inclusion of university students with impairments (Claiborne, Cornforth, Gibson & Smith, in press), we describe ongoing research using critical focus groups (Kamberelis & Dimitriadis, 2005). In face-to-face groups supplemented by ongoing online discussion, we use visual image and simulated supervisory dialogue to explore implications for exploring supervisory practices, particularly those that stretch the boundaries of support-work with research students in situations of extreme distress. To reduce ethical difficulties involving discussion of specific cases of difficulty in supervision, we draw on detailed personal memories that are re- constructed through a collective, biographical memory-work model (cf. Claiborne, Cornforth, Davies, Milligan & White, 2009). Texts of these discussions will be discursively analysed to identify both traditional framings of pastoral care and knowledge expertise as well as emergent practices that point to new possibilities for re-scripting narratives of support. Our goal is to provide exemplars of practice that could be useful for supervisors in other settings, as well as a potential model for establishing networks for collegial support for supervision practice that deal with difficulties for which traditional supports (e.g., workshops and informal discussion) appear to be inadequate .

We are currently exploring the possibilities that supervisory practices offer as organisational spaces with ambivalent power relations that may have untapped potential for enhancing our *ethical* responsiveness. In our work mentoring new supervisors, we consider possibilities for taking supervision beyond the rational domain of containment within administrative practices (Firth & Martens, 2008).

We explore the borderlands between the simultaneous cultures in which we and our students live (Manathunga, 2009) to push thesis supervision beyond accountability structures to a more inclusive and reflexive practice. Such innovative support for supervisory work with research students could enhance senior researchers' supervision skills and also have potential to enhance student researchers' perseverance in difficult times.

References

Claiborne, L. Bird, Cornforth, S., Davies, B., Milligan, A. & White, J. (2009). Inclusion and mastery: Variations on the theme of subjection. *Gender and Education*, *21* (1), 47-61.

Claiborne, L. Bird, Cornforth, S., Gibson, A. & Smith, A. (in press). Supporting students with impairments in higher education: Social inclusion or cold comfort? *International Journal of Inclusive Education.*

Coolbear, P. (2008). Research priorities in the tertiary sector: An interview with Dr Peter Coolbear. Retrieved April 12, 2009, from http://www.tlri.org.nz/assets/pdf/background-paper-pdfs/tertiary-sector.pdf

Cornforth, S. & Claiborne, L.B. (2008). When educational supervision meets clinical supervision: what can we learn from the discrepancies? *British Journal of Guidance and Counselling, 36* (2), 155-163.

Cornforth, S. & Claiborne, L.B. (2008). Supervision in educational contexts: Raising the stakes in a global world. *Teaching in Higher Education, 13* (6), 691-701.

Crocket, K. (1999) Supervision: A site of authority production. *New Zealand Journal of Counselling, 20* (1), 75-83.

Firth, A. & Martens, E. (2008). Transforming supervisors? A critique of post-liberal approaches to research supervision. *Teaching in Higher Education,* 13 (3), 279-289.

Kamberelis, G., and Dimitriadis, G. 2005. Focus groups: Strategic articulations of pedagogy, politics, and inquiry. In *The Sage handbook of qualitative research 3rd edition*, ed. N.K. Denzin and Y.S. Lincoln, 887-958. Thousand Oaks, CA: Sage.

Manathunga, C. (2009). Research as an intercultural 'contact zone'. *Discourse: Studies in the Cultural Politics of Education, 30* (2), 165-177.

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Academic support for doctoral students really does work!: Evidence from a study of "Proposal Writing" workshops

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Purpose of the study

In their first six months of candidature, PhD and Masters students at the University of South Australia (UniSA) are required to prepare a detailed proposal of their PhD thesis. This has to be approved by the Division or Research Institute before they are fully accepted for candidature. To support the students, series of workshops are promoted under the banner of RESA (Research Education Support Activities) 'Workshops for Commencing Students' and these series are offered to students who have recently enrolled. Attendance at the workshops is encouraged but not mandatory hence the purpose of this study was to determine whether attendance at some or all of the workshops made a measurable difference to timely completion of the proposal.

This analysis was restricted to students in the Division of ITEE (Information Technology and the Environment) and the related Science Research Institutes. Students within ITEE but not the Institutes are offered a $500 financial incentive to complete their proposals on time. This money can be spent on travel or activities related to the student's research. Workshops for ITEE and Science are held in April- May and July-August to coincide with the peaks of enrolments. Parallel workshops are held on two campuses for the first series and because of fewer enrolments, on only one campus for the second series.

Study Methods

Each workshop was advertised by its title and a short description of the proposed content. The times and locations of the workshops were promoted on the University's Research website that had a link to the registration site. Reminders were emailed to all registrants a day or two prior to the workshop and those who attended were asked to tick their names on a printed copy of the registration sheet.

An Excel spreadsheet was setup from information held by the University's Graduate Studies Office. The names of all students who had enrolled between 1st February and the 30th April 2009 or between the 1st June and the 31st August 2009 within the Division of ITEE and the Research Institutes of the Ian Wark (IWR) and Telecommunications (ITR) were recorded. The name of their Divisional School and the exact date of their enrolment were also recorded. The six-month expected completion date was then determined for each student. Student attendances at individual workshops were recorded on the spreadsheet and at the completion of the workshop series, the number of workshops attended by each student was calculated.

When a student's proposal is accepted, status is changed from 'provisional' to 'enrolled student'. Hence, the University records were examined twice monthly and each student's status at that date was checked. The time to acceptance of proposal was then calculated. At the completion of data collection, the Excel data were imported into SPSS for statistical analysis. Where appropriate new variables were created or calculated from the initial data. The results of *Chi squared* analysis and *student t* tests were used to discover whether workshop

attendance was consistent with improved performance in terms of proposal completion time.

Students who attended the workshops were also invited to evaluate the workshops through an anonymous online survey administered at the completion of each series. The information obtained in the questionnaires was used to create a student group profile, individual workshop ratings, assessment of the lecturer's effectiveness and perceived usefulness of the workshop series.

Results

Student group profile

Of those who attended the workshops, 95% were enrolled as full time students and 95% were enrolled for a PhD. Only 5% were enrolled for a Masters degree. Thirty per cent of the students were working with an Industry partner. Twenty seven per cent of the students were female and 73% were male, 75% were classified as International Students but only 21.5% spoke English as their first language.

Students used a variety of different research techniques and some used more than one major technique. Laboratory techniques were most common at 37% and database analysis and mathematical modelling were each used by 19.6%. Field work was used by 23.9% of students: 15.2% used field work involving people and 8.7% used other field work.

Students worked in different ways. Nearly 26% of the students said that they worked as part of a research team whilst the other 74% worked independently. Of those who worked independently, half described themselves as 'isolated' – there were no other students working on similar or related projects whereas the other 37% were working independently but there were others who worked with similar techniques.

Individual workshop ratings

Students were asked to name the workshop that they found most helpful. They were also invited to make a comment if they wished. Several students made the comment that all the workshops were helpful and some didn't answer the question. The relative ratings of the workshops were determined from the responses that gave a clear preference (Table 1).

Table 1: Ratings of individual workshops according to an anonymous Tell-Us survey *Students' perceptions of the usefulness of the workshops*

Workshop name	Workshop rating
Research proposal: introduction & requirements	Equal favourite (rated 1)
Critical thinking skills	Rated 2
Managing and organising references and information	Rated 2
Finding the gap in the literature to define your project	Equal favourite (rated 1)
Academic writing	Rated 2
Writing your literature review: developing an argument	Equal favourite (rated 1)
Evaluating proposals: what does a great proposal look like?	Rated 3

Students were asked to rate the whole series of workshops with respect to their usefulness in completing their research proposal. Slightly less than 25% said

that they found the workshops very helpful and another 47% said that they found them helpful. A further 28% of students said that they found they workshops somewhat helpful and none reported finding them unhelpful.

Evaluation of Lecturer

Students were requested to rate the lecturer according to three different criteria that are outlined in Table 2. The possible responses were 'strongly agree', 'agree', 'neutral', 'disagree' or 'strongly disagree'. The 'disagree' or 'strongly disagree' categories and the 'strongly agree' and 'agree' categories have each been merged into a single category.

Table 2: Evaluation of lecturer according to an anonymous Tell-Us survey *Evaluation of the relationship between workshop attendance and completion of the proposal*

Aspect evaluated	Agree/ strongly agree	Neutral	Disagree/ strongly disagree
Structures difficult topics in easily understood ways	94%	6%	0%
Helps us understand relationships between topics and ideas	90%	10%	0%
Suggests specific ways we can improve performance	91%	9%	0%

Statistical analysis was undertaken to determine whether there was any demonstrable relationship between student attendance at workshops and performance with respect to timely completion of the research proposal. Of 68 students who enrolled in the ITEE Division and its key Institutes between January and April or June and August, 28 did not attend any workshop in the series. Seven students attended only one workshop, four attended two, five attended three, four attended four, six attended five, eight attended six and five attended all seven workshops. It was not possible to demonstrate that attending any versus no workshop had a significant effect on completion but attending no or only one workshop had a significantly different outcome. The results of this analysis are shown in Table 3.

Table 3: Analysis of the relationship between time to completion of the proposal and attendance at workshops. $\chi^2 = 9.89$, $p < .05$)

Proposal completion	No workshops or one workshop	Two or more workshops	Total
Early	12	6	18
On time	8	16	24
Late (after 6 months)	9	5	14
Not completed at 9 months	10	2	12
Number of students	**39**	**29**	**68**

The effect of the workshops is most obvious on those who are late or were yet to complete at the time of final analysis. If the early and on-time classifications are merged into group 1 and compared with the merged classification of later or not completed at 9 months as group 2, we see that there are 20 students in group 1 who attended none or only one workshop and 22 students who

attended two or more workshops. However, 19 of the students in group 2 attended no or only one workshop compared to only seven who attended two or more workshops ($\chi^2 = 4.26$, $p < .05$).

If these two groups are examined by a *t* test of the independent means we find that students who completed on time attended an average of 3.3 $\pm$ 2.54 workshops compared to those who were late or not yet completed of 1.33 $\pm$ 2.10, ($t = 2.25$, $p = <.05$).

Discussion

The high attrition rate of doctoral students is a significant problem in Australian and overseas universities and this has led to various approaches to attempt to identify the key causative factors and to discover ways of overcoming them (McAlpine & Norton, 2006). At UniSA the introduction of a probationary period in which the student writes a comprehensive research proposal is one such attempt to overcome attrition. In addition, UniSA has developed a Research Education support system that involves both online and personal support for students and their supervisors. Part of this support is the provision of several series of on campus workshops that are delivered by members of the Research Education team. The workshops are offered in two different streams: (1) Social Sciences and Humanities, presented by a PhD Social Scientist and (2) Engineering, Technology and Sciences, presented by a PhD Scientist. In addition, there is ongoing support for students for whom English is not their first language.

Typical course evaluation involves either paper or online evaluations by the students of the course and the lecturer (Alemoni & Hexner, 1980). It has been demonstrated that students give quite reliable and valid evaluations of instructional quality and this approach has been used here in the form of an anonymous online evaluation. In this case, such an evaluation may not, however, reflect whether the content of the workshops and their mode of delivery were sufficiently effective to influence the outcome of as difficult a task as writing a research proposal. Despite the fact that the students enjoyed the workshops and found them valuable, other factors such as the offering of a financial incentive, the instruction or support from individual supervisors or other instruction given within individual departments, might be the major factors influencing completion of the proposal.

This analysis demonstrates quite convincingly that attending two or more workshops has a significant effect on timely completion of the proposal. Attendance does not seem to influence whether the proposal will be completed on time or earlier but it greatly reduces the chance of the proposal being completed after the due date.

This analysis was not able to discover whether the way students worked, that is independently or part of a team, influenced the time of completion. Some students whose projects formed part of a grant or industry relationship may not have had to undertake as much independent work in the early part of their candidature and may thus have had an advantage over the independent researchers. It will be possible to discover this by following up individual students but was not a component of the research undertaken to date.

In conclusion this analysis demonstrates that student attendance at workshops designed to assist them complete their research proposals within the nominated six month period do actually work! The workshops do not influence those who are likely to complete the proposal early but they do significantly increase the likelihood of students completing their proposals on time. Given

that there was a financial incentive for most of the students to complete on time, this is an extremely pleasing result. Students' anonymous evaluation of the course content and of the lecturer was consistent with this positive outcome.

References

Aleamoni L.M. and Hexner P.Z. (1980) A review of research on student evaluation and a report on the effect of different sets of instructions on student course and instructor evaluation. Instructional Science 9: 1573-1952

McAlpine L. and Norton J (2006) Reframing our approach to doctoral programs: an integrative framework for action and research. Higher Education Research & Development 25: 3-17

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Writers' circles for second language research students: Developing as research writers

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This poster presents an example of good practice which builds on the theory and practice of developing student research writers for whom English is an Additional Language (EAL). Using the concept of a *Writers' circle*, this poster explores the purposes, approaches, possibilities and successes of writing workshops held with EAL research students.

Writers' circles are framed around the peer experience of giving and receiving positive encouragement regarding a piece of writing. Adopting this position can be challenging when the writers have a deficit view of themselves as writers—for example, 'English is my problem'. Nevertheless, Writer's circles have enabled these students to generate appropriate pieces of writing, develop more positive attitudes towards their writing, address issues of writers' block, and ultimately become more confident and accomplished research writers.

The poster aims to engage conference participants in conversations about working with students to foster their ability to become successful research writers and use writing as a tool for doing research. The poster—illustrated with evaluation data, photographs and students' quotes—will present key insights which have contributed to the effectiveness of these Writers' circles.

- What is a *Writer's circle*?—theory supporting the concept
- Writing facilitation strategies—the activity of 'forced' writing
- Students responses—student quotes
- Providing peer review—the process of modelling peer feedback
- Principles reinforcing the practice—the space, the relevance
- Challenges and a research agenda—ideas, questions, new directions.

Introduction

Writers' circles are:

- productive places for writing research artefacts—proposals, papers and theses—for students with English as an additional language (EAL)
- part of Research Education Support Activities (RESA) for research students at UniSA
- safe motivating generative writing spaces with critical friends based on *Writers' circles* principles established by fiction writers
- valued workshops influencing students' productivity and attitude to research writing.

Writers' circles have been established due to:

- Increased numbers of International and Australian EAL research students (> 30% at UniSA)
- Students lack confidence in research writing, say 'English is my problem' and experience 'Writer's block'
- Supervisors identify writing as key issue for EAL research students
- Peer writing groups are beneficial for participants (Aitchison 2009, Richardson 2002)
- Time and cost effective compared to individual appointments.

The key theoretical framework is based on:

- Writing pedagogy—considering both the writing products and processes using tools from applied linguistics and discourse analysis
- Academic literacies approach—identifying specific ways in which research writing is a social practice and will vary based on discipline, methodology and culture
- English for research writing—explicating structure and language functions in a variety of text types (e.g. Swales & Feak 2000, 2004, 2009, Partridge & Starfield, 2006)

Methods

Writer's circles are premised on several essential activities: which generate aim so generate some key characteristics. The essential activities are:

- Writing—15 min 'free writing' (Elbow) time after relaxation activity (Somerville)
- Talking—student explain their research to other to discover 'expert' voice
- Working with text—analysis and manipulation of text to examine language choices
- Reading—of one other's writing-in-progress
- Providing feedback—critical comments to strengthen meaning in each other's text
- Teaching—activities on alternative language choices for cohesion, style, grammar

These activities aim to generate some key characteristics within the Writers' circles, namely:

- informality to create a safe space—ice-breaker activities to enhance networking, chocolates as 'brain food', humour, using Aussie slang, discussing cultural dimensions of the research experience (e.g. negotiating with supervisor)
- 'obsessiveness' about writing—all the activities are linked to a sociocultural view of writing:
  > … writing does not stand alone as the discrete act of a writer, but emerges as a confluence of many streams of activity: reading, talking, observing, acting, making, thinking, and feeling as well as transcribing words on paper' (Prior 1998, p. xi).
- respect—working as equals as most international students are lecturers at home
- learning from one another's experiences—'My supervisor would say …'
- inspirations and motivators—saying what works, stories, stickers, writing books,

The program that has been established and continues to evolve consists of ongoing *Writers' circles* throughout the year, namely:

- *Commencing*—doing research 'downunder', reading critically, using literature, use of grammar for research writing, providing peer feedback (3 x 3 h + 6 x 2 h sessions)
- *Mid-late candidature*—fortnightly 2h workshops providing peer review on drafts

This program is also supplemented by occasional sessions which are developed based on demand, for example:

- *English for research writing*—intensive 5 day January 'holiday' workshops focusing in detail on a range of writing topics e.g. literature review, metadiscourse, hedging, …
- *Writing a research paper*—focus on language choices within research articles and conference papers, examine A* award winning papers (2 x 6 h twice a year)
- *Thesis writing*—focus on language choices and construction of argument ((2 x 6 h)
- Discipline specific groups negotiated with Research Coordinators in research groups —e.g. TESOL (writing data); Telecommunications (thesis completion)

Results

Over the five years of *Writers' circles*, noticeable changes are occurring in relation to the research writing (see Table 1). Students are focusing more on communicating their meanings and become more confident and productive as research writers.

Table 1 Changes as research writers reported by Writers' circle students

Writing aspects	Initially	Later
Perspective	'English is my problem'	How to express meanings
Quality	Difficult to make meaning	Communicate meanings
Attitude	'I hate writing'	'I love writing'
Confidence	Lacking, 'biggest fear'	Belief in self as a writer
Output	Reluctant irregular writers	Write every day

A selection of quotations from three students indicate the

> You make me love language. Before the writing doesn't have a taste, but now I taste it, I feel it. I start to feel something in there. I love to come to Writers' circles. [Australian EAL Year 2 student, Nov 2009]

Email to January Writer's circle after Proposal panel:

I just wanted to let you know that I'm officially a PhD Candidate!!!! I'm so glad, I received good feedback and I was told that my WRITING was really good and they wanted to see more. Well, I had to share with all of you this, because this is all because of our WRITERS' CIRCLE!!! and workshops and great feedback from Monica and all of you. [International commencing, April 2010]

> Before I used to think writing is horrible. It is hard. I was completely scared of writing. I never thought of writing as my luxury ... Now every time I get up, I think write first. I go to my desk & write sometimes more than 15 minutes. I need to link what I have read & talked about in my research. Writing is no more scared [sic]. I can do it. I can write. Maybe one day I can become a writing teacher … I have changed my thinking. It is so lovely. Magical! [International Year 2 student, Dec 2009]

In addition, noticeable changes are occurring to attendance patterns. Over the 5 years of *Writers' circles* increasing numbers of students are selecting to participate, with average attendance steadily building to more than 7 students per session. Word of mouth is strengthening with students recommending to commencing peers and supervisors encouraging their students to attend. Some students are attending even prior to enrolment as HDR student. In addition visiting International scholars eager to participate and welcomed.

Other outcomes are that ongoing evaluation of *Writers' circles* result in 100% satisfaction rate with up to 84% of strong agreement that the sessions are effective. Furthermore, students recommend further topics which are incorporated e.g. from writing discussions to developing research writing style. Students are adapting the concept of *Writers' circles* and have started to form their own interdisciplinary writing groups to provide ongoing peer feedback to one another on their writing. One graduating International research student has established an effective weekly *Writers' circle* in her home institution working with fellow academic completing their PhDs.

Conclusion

The *Writers' circles* have improved the quality of research writing of EAL research students and also had a significant impact on their self belief as research writers. In the process students are becoming more positive as research writers. Nevertheless, *Writers' circles* do not suit all second language students and some supervisors do not necessarily endorse these groups.

The next steps are to extend the *Writers' circles* assistance by adding an online dimension, particularly for students who are unable to attend the face-to-face sessions. Furthermore, the sessions can continue to refine their focus and develop in slightly alternative ways, for example for students who are completing their thesis. Ultimately, further development of the *Writers' circles* concept will be attained through research to consider ways in which *Writers' circles* can have a broader impact on EAL research students and ways to support International graduates in establishing writing groups in their home institutions.

References

Aitchison, C 2009, 'Writing groups for doctoral education', *Studies in Higher Education*, vol. 34, no. 8, pp. 905-916.

Elbow, P 2002, *Being A Writer*, McGraw-Hill, London.

Feak, C & Swales, J 2009, *Telling a research story: writing a literature review*, The University of Michigan Press, Ann Arbor, Michigan.

Kamler, B & Thomson, P 2006, *Helping doctoral students write: pedagogies for supervision,* Routledge, London & New York.

Paltridge, B & Starfield, S 2007, *Thesis and dissertation writing in a second language: a handbook for supervisors*, Routledge, London & New York.

Prior, P 1998, *Writing disciplinarily: a sociohistoric account of literate activity in the academy*, Lawrence Erlbaum Associates, Publishers, Mahwah, New Jersey

Richardson, L 2002, 'Writing: a method of inquiry', in *Handbook of qualitative research*, 2nd edn, eds. NK Denzin & YS Lincoln, Sage Publications.

Swales, J 2004, *Academic writing for graduate students: essential tasks and skills*, The University of Michigan Press, Ann Arbor, Michigan.

Swales, J & Feak, C 2000, *English in today's research world: a writing guide*, The University of Michigan Press, Ann Arbor, Michigan.

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To be I/TD (inter- or transdisciplinary) or not to be I/TD?

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Background

Undertaking inter- and transdisciplinary (ID and TD) research as a postgraduate student is vexed on many levels, particularly in a climate of tight timeframes for completion of research degrees. Sources of vexation include:

- Finding a defensible balance between breadth and depth of engagement with theories, insights and methodologies from wide-ranging disciplines;
- Developing adequate competence in and seamless combinations of methodologies based on quite different worldviews;
- Aligning and arguing for particular combinations of epistemologies, theoretical frameworks, methodologies, data, analysis, and claims;
- Balancing the tension between different kinds of outcomes (e.g. contributions to knowledge vs change on the ground);
- Identifying high quality and well-respected outlets for publications; and
- Finding reviewers and examiners who 'get' the difference and respect the value of such contributions.

It is for these reasons and more that some supervisors who themselves undertake inter- and transdisciplinary research actively advise their students to avoid such approaches during their research studies. To others, this represents a tragic lost opportunity: shying away from equipping some of the new generation of researchers with the breadth of skills and insights needed to improve our society's most perplexing situations. As Wilhelm Krull noted in his QPR 2010 keynote address, the doctoral experience is formative for researchers and therefore decisive in how they conduct the rest of their careers.

The Symposium: Panel and Process

The symposium explored diverging views, perspectives and experiences on this topic of students and supervisors, and engaged the panel and the audience in actively reflecting on and sharing their own experiences as well as exploring implications for their own work.

The background and experience of the panel members who kicked off the discussion are provided below. The audience mirrored the diversity of the panel, including mature-age part-time doctoral students (some working in the sector), research administrators, deans of graduate schools, researchers, and practicing supervisors.

Ms Karen Adams: Karen is Director of the Engineering Communication Unit at The University of Adelaide and a doctoral student based in Mechanical Engineering. Karen has extensive experience in developing and delivering engineering communication curricula, as well as experience in running a small business. Her doctorate is a sociological study, investigating what employers really want in graduates, and is supervised by an engineer, a linguistic ethnographer, and an educational developer.

Dr Kath Fisher: In her previous role as Associate Dean of Graduate Studies at Southern Cross University, Kath supported and mentored postgraduate research students across all disciplines. She currently teaches into Graduate

Certificates in Research Management and Higher Education (Teaching and Learning). Her research interests are in reflective practice and deliberative democracy.

Prof David Karoly: David is a Professor of Meteorology and an ARC Federation Fellow at the School of Earth Sciences at the University of Melbourne. David is one of Australia's leading climate scientists and is also a member of the Wentworth Group of Concerned Scientists. David was present by video, and his thoughts are available at

http://www.earthsci.unimelb.edu.au/~dkaroly/Karoly%20ID%20PG%20research.mov

He is happy to be contacted directly on email: dkaroly@unimelb.edu.au.

Prof Cynthia Mitchell: Cynthia is a Professor of Sustainability at the Institute for Sustainable Futures at UTS, where she has directed the inter- and transdisciplinary Postgraduate Program since 2001. In 2006, Cynthia was awarded a Fellowship from the Australian Learning and Teaching Council to investigate summative and formative components of quality in inter- and transdisciplinary postgraduate research.

The Discussion: Discord and Diversity

The panel's views varied – all recognized that ID and TD postgraduate work is good in theory and hard in practice. For some, the way to manage that difficulty is to hold to one discipline as the core – to develop depth in that discipline, and to build bridges out to other disciplines. Others argued for breadth accompanied by demonstrable critical thinking and critical reflection – mastery of process rather than content.

Much of the discussion in the structured activity centred around the difficulty of the examination process. Issues raised here included:

- the difficulty of finding experienced examiners; the need for (and lack of) a cohort of examiners who understand ID and TD PhDs;
- the ethics and pragmatics of briefing examiners adequately without instructing or leading;
- a broad spectrum of experiences with international examiners – sometimes more open and sympathetic, but steeped in their own doctoral examination culture which can be problematic in ID and TD scenarios; and
- the politics of the examination process – the need to choose the discipline of examination carefully.

Four other themes were elicited in the discussion:

- University structures and processes are unprepared. They are at best unhelpful and in some cases actively mitigate against this kind of research, so what is needed here is recognition at the institutional level for the value of ID and TD research, and internal processes to ease ID and TD practice.
- A key role for the supervisor is to help the student deal with doubt and develop confidence – this is an issue for many doctoral students, and seems to be more profound for ID and TD students. This requires reflexive supervision and has training and development implications for supervisors.
- The terminology of disciplines, ID and TD makes many assumptions that do not hold in all cases. For example, whilst some disciplines are narrow, some disciplines are far from homogeneous, whilst others do not have a publishing culture. It may be that worldview is a more profound differentiator than discipline or how disciplinary concepts are employed.

- ID and TD research students are not alone in this space – professional practice has to be interdisciplinary, and so there may be useful lessons to be learned from the emerging practice of professional doctorates.

Resources available on ALTC website

Through an ALTC Fellowship, resources were developed that might help practitioners (students and supervisors) of ID and TD postgraduate research. These resources draw on the international literature, international administrative processes, textual analysis of examiner's reports and the practice of 60 or so enthusiastic and experienced participants from a dozen universities across Australia, Sweden and England. The work is published under the terms of the Creative Commons Attribution-Noncommercial-ShareAlike 2.5 Australia Licence and so is freely available on the ALTC website under http://www.altc.edu.au/altc-associate-fellow-cynthia-mitchell. Taken together, the products provide a comprehensive means of exploring responses to the summative and formative questions associated with ensuring quality in ID and TD research. They are designed for interaction through various means:

ID and TD Postgrad Quality Criteria: a monograph that describes key summative criteria for judging the quality of ID and TD work.

Ideas for Good Practice: a compendium of formative processes – more than 50 practical, innovative activities for supervisors to work with students to improve their ID and TD practice.

Workshop Resources: a ready-made set of materials to guide local conversations on discerning and supporting quality in ID and TD research (includes powerpoint slides that describe activities, facilitator's run sheet that explains the activities and has suggested timings, activity worksheets, and an evaluation sheet).

Acknowledgements

The symposium would not have been possible without the generous and reflective contributions of the panel members. Likewise, it would not have been lively or interesting without the thoughtful and willing engagement of the audience to share their ideas, concerns, experiences, and suggestions for the future. The facilitator/author would like to offer sincere thanks to both groups.

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Researchers leading their own tailored education

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Research staff societies

Empowering research staff to take control of their own career development – the growth and impact of Research Staff Societies at the University of Edinburgh

For key policy initiatives [1] to have the desired impact it is vital that researchers are empowered and supported to take control of their own professional and career development. A significant step towards this at the University of Edinburgh has been the rapid growth of Research Staff Societies in several Schools and Research Institutes. These societies are run exclusively for and by research staff, and are already having a direct impact on researchers and on the support they receive at the University.

The Researcher Development Programme [2] has worked closely with enthusiastic and motivated researchers who have been supported and encouraged to take the initiative in setting up societies with fellow research staff in their School or Institute. This is localised, grass-roots activity which helps to foster feelings of collegiality, recognition and belonging. These societies provide highly valued opportunities for networking and mutual support amongst researchers in a large university like Edinburgh. Their aim is to improve communication, interaction and engagement amongst researchers, and to provide a forum for discussion of issues and sharing of interests, knowledge, skills and experience.

There is an emphasis on themes relating to professional and career development, with researchers being helped to take responsibility for their own careers through local awareness raising and context setting. Society organisers, who are enhancing their skills of teamworking, communication, project management, and leadership, have formed committees and organised activities, after local consultation, that include:

- networking/social events;
- seminars on sourcing funding, science communication, commercialisation, career planning and mentoring—drawing on expertise from several University departments;
- talks from those developing successful careers inside and outside academia;
- creation of society websites highlighting news/activities/further support.

In turn, societies are helping the University to engage researchers more directly in the tailoring of institutional support to local needs, and to embed key initiatives. For example, the dissemination of the UK Concordat to Support the Career Development of Researchers [3], and the University of Edinburgh Code of Practice for the Management of Research Staff [4], can be encouraged through these societies to maximise impact. Our Code of Practice has been developed in consultation with researchers, with one society member serving on its Working Group.

Societies have been encouraged to apply to the Researcher-led Initiative Fund [5] for money to help support their activities (and see below). Societies

currently measure success by interest generated in, and feedback from, their events, and by the influence they have exerted locally, e.g. one successfully requesting more regular appraisals, another achieving committee representation. Feedback from societies indicates that researchers are experiencing a sense of community, and of satisfaction in addressing their concerns about visibility and integration into University life.

The Researcher Development Programme provides guidance on its website to assist society formation [6] and encourages existing societies to grow, for example, by hosting networking event for organisers to share ideas, issues, and experiences.

Researcher-led Initiative Fund

From a festival of legal theory, to a CD of new music, an arts-science collective and researching the public interest, researchers are doing it for themselves thanks to the University of Edinburgh Roberts' fund for researcher-led initiatives [5]. This has enabled PhD students and research staff to establish a wide range of innovative, tailored, local development opportunities. In many cases these are collaborative, building links between disciplines and between research staff and PhD students. All are focussed on career and professional development with an emphasis on skills development and application.

The Roberts Report 'Set For Success' 2002 [1] emphasised the importance of researchers having a choice in how they develop their transferable skills. Principle 5 of the UK Concordat to Support the Career Development of Researchers highlights the need for individual researchers to "pro-actively engage in their own personal and career development, and lifelong learning" [3]. The researcher-led fund supports these principles, building on well-established University-wide support for both postgraduate students and research staff [7].

Researcher-led initiatives are being organised by PhD students and research staff across the whole University. Activities supported through the fund include workshops and conferences, an arts-science collective, postdoctoral societies, science outreach events in local schools, as well as networks to support collaboration and interconnectivity between individuals, and career development. Several funded initiatives have continued beyond the project stage, some generating follow-up bids, and others finding alternative sources of funding or in-kind support. The researcher-led fund works and this model has been taken up by several academic Schools and other institutions.

The operation of the fund is straightforward. A simple application form, the criteria for funding and examples of successful applications are all provided online [5]. Applicants are able to seek advice and feedback on draft applications from fund organisers. There are two competitive funding rounds each year. Three senior academics drawn from the University's three Colleges judge the proposals and successful applicants produce an end of project report, including an evaluation of the success and impact of the funded initiative.

The initiatives funded so far have had a positive impact on both participants and applicants. In addition to the main outputs of each initiative, a key benefit of the scheme has been the skills developed by applicants as a result of devising, applying for, managing and reporting on the initiative. This comes through very strongly in many of the evaluation reports.

The creativity and enthusiasm of applicants to the fund has been inspiring. Their dedication to their own development and the development of fellow

researchers, in such innovative and imaginative ways, is broadening the ownership of the wider Roberts' agenda.

Footnotes

1. Roberts Report 'Set For Success' 2002
   http://www.hm-treasury.gov.uk/ent_res_roberts.htm
2. The University's Researcher Development Programme
   http://www.ed.ac.uk/researcher-development
3. UK Research Concordat http://www.researchconcordat.ac.uk
4. University of Edinburgh Code of Practice for the Management of Research Staff
   http://www.ed.ac.uk/schools-departments/researcher-development/code-of-practice
5. University of Edinburgh Roberts Fund for Researcher-Led Initiatives
   http://www.ed.ac.uk/schools-departments/researcher-development/staff/researcher-led-activities/initiative-fund
6. Research Staff Societies – further information
   http://www.ed.ac.uk/schools-departments/researcher-development/staff/researcher-led-activities/staff-societies
7. University-wide programmes of professional and career development support for postgraduate research students:
   http://www.transkills.ed.ac.uk
   and research staff:
   http://www.ed.ac.uk/researcher-development

Conference workshop outcomes

Working in groups, workshop attendees shared examples of effective practice in their institutions for the development of postgraduate skills, focussing postgraduate-led and relatively inexpensive approaches.

Examples included:

- University of Western Sydney have a skills development programme from central services which was requested by students.
- Monash Faculty of Education have a research community funded by the faculty. Students initiated the research community, arranging a wide range of activities, including skills development, community development, conferences, social activities and writing circles.
- A group including Canberra, Glasgow, Lund, Birmingham and Murdoch listed: Postgraduate journals, Writing Retreats, a Career Program for post docs, including a seminar series on career skills and a post doc webpage.
- A group including Adelaide – and others not listed, identified: Students running their own research Expo event, mentoring between PhD students and postdocs, and Peer training sessions.

Suggestions from the groups for further/potential activity included:

- building an organic community at the local level and using social activities to build the community,
- student-driven networking,
- liaison representatives who can engage in dialogue with central administration,
- the building of communities to serve more isolated areas.

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Abstracts

The professionalisation of the doctorate: New roles for faculties and the universities

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The doctorate is changing from an apprenticeship model of developing independent researchers to a professional model with a broad-based team extending beyond the individual supervisor. These developments in the nature of doctoral education stem from responses to the growth in doctoral student numbers and, in Australia, government policy changes to the funding of research students. Such changes create pressures which exert a fundamental influence on how universities look at and manage their doctoral students. This paper discusses the process of the professionalisation of the doctorate. The data come from a national study of the doctorate as well as a multi year institutional case study on the transition into doctoral research.

Professionalisation in this context refers to more formalised and specialised management and administration of all aspects of doctoral education. The process involves the strategic alignment of research education as a core component of the institutional research effort and incorporates more formal roles for the faculty and institution in the doctoral education process combined with strong, proactive institutional leadership in research. The research studies show that in the professionalised doctorate the pre-eminence of the student-supervisor relationship now includes more explicit expectations alongside specialised roles and responsibilities for the department, faculty and the institution. The findings underline the need for a doctoral service focus at all institutional levels; the importance of communication and information prior to commencement; the transparent resourcing of doctoral research projects; and, the management of expectations and workload of students and supervisors. Doctoral students explicitly become early career researchers and the quality of institutional research cultures are subject to greater public scrutiny.

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The research proposal assessment matrix: A framework towards developing multiliteracies in HDR candidates

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Institutional goals for Higher Degrees by Research candidates as articulated in typical University Graduate Attribute statements highlight the importance of leadership, awareness of social and ethical issues, development of independent thought and creativity. Although the literature abounds with descriptions of the required attributes, their practical demonstration remains underexplored. In addition, the supervision pedagogy facilitating the development of these high level 'multiliteracies' requires further examination.

In the research supervision context, effective supervision involves provision of and opportunities for active participation in a rich research culture. However, despite this immersion in discipline-specific research culture(s), many research candidates complain about a lack of support and it is clear that some overt instruction is needed. Researcher education programs along with overt instruction by the supervisor, called by some 'positions mentoring', helps make institutional and academic demands explicit. Unfortunately, immersion and overt instruction alone could result in reproduction of unsatisfactory academic practices. Thus critical framing is necessary.

This paper outlines a pedagogical tool to enable this framing, the *Research Proposal Assessment Matrix*. Consistent with contemporary standards for supervision pedagogy, and the theory of multiliteracies outlined by the New London Group, the *Matrix* aims to develop high level literacies. It guides HDR candidates through situated practice, overt instruction and critical framing towards transformed practice. The aim of the *Matrix* is to 'defamiliarise' what the research candidates have already learnt and mastered in order to obtain distance from it and enable critique. Finally, the *Matrix* helps research candidates to theorise, and thereby, move towards transformed practice.

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"I don't want to do a PhD anymore" Speaking the unspeakable in an online discussion forum

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There has been considerable research documenting the emotional demands associated with PhD candidature, which may include dealing with social isolation, coping with uncertainty and change, and the fear of negative evaluation by significant others, such as supervisors, peers, or family. However, the ways in which these emotional demands are managed at the level of the individual student, and the impact on persistence with doctoral candidature, have not been adequately explored in the literature.

This study explored the use of online discussion forums for PhD students, and their potential to assist students in managing the emotional demands of candidature. Initial content analyses of the public domain data from an online discussion forum were conducted, and these suggest that greater student anonymity and forum accessibility may facilitate student self-disclosure and help-seeking in discussions regarding the management of emotional demands. A study of responses to students in crisis highlights the interplay of emotional, metacognitive, cultural, and social factors in the doctoral journey, and the potentially supportive and educative role of peer interaction.

In summary, this study suggests that while an independent online doctoral discussion forum might assist individual doctoral students in learning how to manage the emotional aspects of candidature, there appear to be limitations that require further exploration. The study concludes by discussing issues for forum use by PhD students, for forum establishment, and recommendations for future studies.

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Troubling Talk: Assembling the PhD student

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Within the literature on research education there has been a growing fascination with what we might call 'academic identity work'. The concept of identity has become a useful way of thinking about PhD student practices, particularly in the production of thesis texts (Kamler and Thompson, 2007; Dunleavey, 2003). When PhD study is thought about as a process of fashioning or crafting a scholarly identity, questions about agency are fore-grounded. This approach opens up fruitful territory and encouraging us to explore the various ways in which 'PhD studenting' – can be done. In this paper I explore talk and interaction, specifically how PhD student identity is made in and through the telling of stories about the self. I style this candidate story telling activity, after Jefferson (1984), as 'research student troubles talk'. In order to understand this phenomena of research student troubles telling I reach into the body of work in the Actor Network Theory (ANT) literature for theoretical leverage. ANT offers a post humanist way of regarding troubles talk; positioning it as an achievement of humans and non humans acting together. ANT supplies a useful sensibility because it shifts the questions about troubles talk from a psychological frame and starts to explore issues of power and subjectivity, while not overly reducing complexity.

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The 'internationalisation' of education – too 'foreign' for Australia?

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Almost half a million international students are enrolled in higher education institutions in Australia. As a major source of income for Australia, these students constitute a valuable commodity. Unfortunately, the debate about internationalisation in Australia has been confined to the question of how international students can be attracted and how they should be supported, rather than about the benefit Australia can derive from exposure to international students.

Internationalisation is a multilateral process. In such a process Australians need to position themselves as international students. At the moment in Australia, international students are regarded as foreign students. They are acknowledged as 'other', often perceived as less than adequate because of a lack of fluency in English and/or difficulties adapting to local culture.

International students enrolling at postgraduate level generally possess experience, skills, knowledge, and have access to networks that often go unacknowledged and are therefore, underused. This underuse has implications not only for the way international students feel, but also ensures that Australian industry, research and culture are denied the benefits of readily accessible knowledge, skills and potential networks. This paper discusses ideas that will help to encourage changes in attitudes and the adoption of practices that would allow Australia to contribute to—and gain full benefits from—internationalisation.

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Supervision and culture: Using cultural lens to reconceptualise the supervision of pasifika students

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Supervision of research students has been described as the most advanced level of teaching in higher education, but at the same time is also one of many complexities. What exists in the literature strongly points to good supervision as the key to successful completion of research students. However, there is still limited literature on cross cultural supervision and of the research journey of students from different cultural backgrounds. Indigenous students are required to work within a western model whereby the onus is firmly placed on their shoulders for successful completion. This model fails to recognise the significance of indigenous views and knowledge bases as valid ways of being for these students.

This paper proposes that there is a need to reconceptualise how supervisors work with indigenous students (Pasifika students). Further the relationships of Pasifika research students with their supervisors need to be constructed within a cultural framework that is based on shared responsibility. Here the concept of *va (space or relationship between people)* is critical to the success of the supervisory relationship. This paper explores how both parties can maintain and nurture their relationship based on a greater sense of understanding and cultural responsibility towards one another. Emphasis is placed on the need to re-connect at regulated points throughout the research journey and for students and supervisors to recognise that 'nurturing' their relationship is critical to achieving successful outcomes.

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Glonacalling doctorates? The international and global connectedness of Australian PhD graduates

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Simon Marginson and Gary Rhoades coined the term 'glonacal' the express the interconnectedness of global, national and local social relations, especially in terms educational systems and experiences. This paper presents some selected data from a recent ARC Discovery Project entitled *Research capacity-building: the development of the Australian PhD programs in national and emerging global contexts.* Some of selected data show the extent Australian PhD theses have addressed topics in South and East Asia as an illustration of how research capacity-building may be created in/for Australia through topics which address problems or ideas located in other (in this case East and South Asia) national and local contexts. Other data relate to the international movements of—particularly astronomy and chemistry—PhD graduates out of Australia, some of whom return to Australia. The paper discusses these movements in terms of PhD culture being 'glonacal' in nature from its programs and postdoctoral relations.

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Theorising students' perspectives of impacts of doctoral education as the acquisition of Aristotle's intellectual virtues

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Around the world quantitative metrics are frequently used to measure, assess and discuss the impacts of doctoral education. Such metrics tend to privilege *outcomes* of the PhD and, by implication, define impact in terms of static, quantifiable products. In contrast, this presentation draws on interviews with current full-time, final year PhD students enrolled at a large Australian metropolitan university to identify impacts of the doctoral *process* that students value. These impacts were identified using a grounded theory data analysis. They make visible the personal and social learning that is frequently left out of dominant economic discussions on the outcomes of higher education and highlight the broader, non-economic effects of investing in doctoral education. The students' perspectives also contribute the viewpoints of a major, but largely under-represented group of stakeholders to the debate. The presentation concludes by theorizing the impacts of the doctoral process on students as the acquisition of Aristotle's intellectual virtues of phronesis, sophia, epistèmè, nous and technè (*Nicomanchean Ethics Book VI*) – more commonly understood as practical, intellectual and productive knowledge. It is argued that theorizing impacts of the PhD process as the development of intellectual virtues offers a rich and inclusive framework for understanding the diverse and complex range of impacts of the PhD process on students. As the impacts of the PhD process are of concern and interest to stakeholders in higher education around the world, the insights emerging from the research may have potential value and applicability beyond Australia.

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Crossing methodological boundaries: Using critical self-reflection as the bridge in postgraduate supervision

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Moving from a quantitative to a qualitative research paradigm can be a painful challenge for the research student who has been trained in the 'hard' sciences and believes that randomised controlled trials represent the pinnacle of research rigour and validity. However complex research problems, particularly in the health sciences, often demand appreciation of both quantitative and qualitative methodologies. The tension experienced by the research student challenged by crossing paradigmatic boundaries can be explored most directly within the supervision relationship, particularly when the supervisor is willing to engage in critical reflection with the student. Through deep inquiry into the values, beliefs and assumptions underlying the different ways of knowing in the 'hard' and 'soft' sciences, the research student can become more aware of what lies behind their own methodological biases. This interactive workshop will begin with a demonstration of a postgraduate supervision meeting in which the PhD student doing a cross disciplinary project and her supervisor engage in critical self-reflection to uncover beliefs and assumptions underlying what they each consider to be 'real' research. The audience will be invited to participate in a reflective process themselves and engage in a broader discussion about the issues of rigour and validity in different research methodologies.

Objectives

Participants in this session will:

- explore their own research issues related to qualitative data collection and analysis by identifying their individual values, beliefs and assumptions underlying these issues
- experience the process of systematic critical self-reflection

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Multidisciplinary postgraduate theses: Boom or bust

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In recent years there has been an increasing trend to multidisciplinary postgraduate studies, especially in doctoral education. As disparate academic disciplines look to furthering professional development through postgraduate studies, there is an escalating need to combine the specific academic discipline with that of postgraduate education. At the Centre for Educational Development and Academic Methods (CEDAM) and the ANU there are postgraduate students from engineering, medicine, dentistry and project management pursuing multidisciplinary doctoral degrees in their specialty and postgraduate education. A number of case studies will be discussed that explore the specific issues of preparation, supervision and assessment of multidisciplinary post doctoral degrees. I will conclude by drawing on experience from the field of project management and explain how its application can prepare both students and supervisors in the planning and execution of multidisciplinary research.

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Researchers of the future? Building research capacity among postgraduate students in English

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The recent trend in higher education towards building research capacity places particular emphasis on postgraduate study as the incubator of research skills that drive the knowledge economy. For some humanities disciplines, such as English, this shift from traditional notions of scholarship to transferable skills has posed significant challenges (Williams, 2003). This paper will assess responses to the introduction of a compulsory research component in the BA(Hons) degree at The University of Auckland's Department of English. Previously conceived as a one-year programme undertaken by coursework, the inclusion of a research component in the BA(Hons) in English responds to a national regulatory change that reflects a commitment to building future research capacity as measured by higher-degree completions. Supportive of the University's strategic objective to enhance the research experience of postgraduate students but aware of the range of academic abilities reflected in the Honours cohort, English department staff set about designing a platform for supporting staff-defined research projects via a mix of staff-led seminars with a skills-development focus, student peer-group seminars and one-on-one supervision. This research initiative represents a significant shift from prior graduate research culture. In this paper, we report on the initial findings of a research project developed to assess the impact of this initiative over a three-year inception period (2008-2010). Our analysis of data generated from focus group discussions and interviews with students and staff in the first two years highlights the challenges and benefits that the ascendency of the skills agenda in research degrees poses for disciplines like English.

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Reworking the thesis: Refocusing, reconstructing and reforming

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This paper contributes to the increasing literature on the research writing process focusing on the complexity of the thesis writing in humanities and social sciences which results in part from the dynamic interplay of reading, writing and research. The organic research process involves researchers in ongoing change—for example, modifying their research focus, dealing with unexpected findings, and reviewing theoretical assumptions. This 'messiness' is often considered as anomalous or irregular and contrasts with the process-based model adopted by most thesis writing manuals. In reality, the research experience is more like to be one of ongoing refocusing, reconstructing and reforming.

In reflecting on my own thesis writing experiences, I provide examples of thesis reworking and elucidate the rationale for these changes. The first example was a changed research participant recruitment strategy due to the failure of the first strategy. The second was a changed focus on data artefacts as the interactional data provided an unexpected sociocultural richness. The third was my reconsideration of a theoretical framework which could adequately deal with the findings.

This ongoing reworking, I argue, is a completely normal and regular process, yet unpredictable. The complex activity of writing a thesis involves many intertwined components and is not a straightforward, pre-planned process but rather one which deals with various complications, tensions and contradictions making each student's experience of writing their thesis unique. These complexities are discussed using activity theory. Finally, the implications for the quality of research education are discussed.

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A multidisciplinary postgraduate conference format that maximises transferable skills development

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Conferences can be excellent for developing the skills of a researcher and if handled properly can develop both subject-specific and transferable skills. To maximise transferable skills development the Universitas 21 Deans and Directors of Graduate Schools (U21DDOGS) group has established relatively small but international Graduate Research Conferences focused on globally important cross-disciplinary themes bringing together researchers from science, engineering, arts and social sciences. Key elements are that postgraduates are involved in the organisation, that all participants present an oral paper, a poster and submit a short paper for publication, that they are involved in editing these papers before publication on the web, that the sessions are not strictly divided by theme but grouped to be complementary and excite interest, that additional activities are incorporated to promote team work, creativity and networking. The first of these conferences ran in 2008 on the topic of Water and the second ran in 2009 on the topic of Sustainable Cities for the Future. The success of these conferences was assessed quantitatively by a questionnaire completed immediately after the conference and qualitatively by interviews with selected attendees. For U21GRC2008 attendees were also contacted more than one year afterwards to re-assess the event. While participants gained enormously from having to view their research from different perspectives and to present it in language and concepts that transcended discipline boundaries it was not so easy to make them feel that this had helped them develop as a researcher, so further refinement of the programme may be desirable.

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Mentorship, supervision and their crossover developmental relationships in postgraduate education

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Mentorship has probably always existed as an important developmental relationship for doctoral students in the academy, although it has not received much attention yet. Rather, the main concern has been directed to *supervision* which is evident e.g. in the number of conferences and educational programs that have been arranged on this topic. The same focus on supervision appears in scientific literature, where research on mentorship in higher education is almost non-existent. Thus in line with an increasing interest in implementing formal mentorship in Swedish postgraduate education, there is an urgent need to develop further knowledge in this area. Against this background, the aim of present pilot study was to open up for such an inquiry by exploring important issues as they emerge in the experiences of doctoral students, mentors, and supervisors. The research design consisted of three triads, each including one doctoral student, his/her formal mentor and his/her supervisor. Hence, nine respondents were interviewed in order to capture how they conceptualized the characteristics and outcomes of mentorship and supervision respectively, and also in respect to how they experienced the relationship between these two. The results showed that the respondents understood the meaning of mentorship differently, both within and across the triads. Neither was the distinction between mentors and supervisors always clear, although most of the respondents agreed that it was important to keep the roles apart. In most cases the mentoring relationship had positive outcomes for both mentors and mentees, who mainly expressed the benefits in terms of reciprocal learning.

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Crossing disciplines and other boundaries: The role of metaphor in thesis writing

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In our role in a Centre for Academic Development we work to assist doctoral candidates in developing their writing practices. While postgraduate researchers must engage with the discipline-specific conventions of academic writing, they also grapple with the expectations and conventions that are common to the thesis genre. We have found that a common difficulty for thesis writers is to find a structure for their thesis that retains its complexity. This paper will consider the potential of metaphor, that famous traveller across borders, for thesis-writers. We argue, following Richardson (1997), that metaphor is not limited to 'literary' texts nor is it merely ornamental. Metaphor can enable thesis writers to conceptualise their thesis *and* to establish a structuring strategy that allows for complexity, at the same time as it promotes coherence. In addition, metaphor can draw on knowledge that lies beyond the discipline, or beyond formal academic research practices, revealing ways of thinking that reflect writers' cultural conceptions of how knowledge is produced. In this paper, we will examine specific (sometimes unexpected) metaphors used by thesis writers in the conceptualisation and articulation of their research, using samples from completed theses and from survey data collected from current research students. The theses that we analysed have employed metaphors of the concerto, the double helix, and the woven mat to conceptualise and articulate complex ideas about their research findings that also draw on *other* unique, individual or cultural ways of knowing.

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Developing measures of metacognitive and affective attributes of doctoral students, and their use in tracking the doctoral journey

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The notion of doctoral students as elite learners brings with it a number of presumptions about the quality of learning behaviours associated with successful candidature, and as a corollary, an assumption of the presence of these qualities within individual candidates. In this paper we report on the preliminary phases of an ARC discovery project aimed at investigating the learning characteristics of doctoral candidates both nationally and internationally. Underlying this study is a questioning of the assumption of homogeneity in the learning attributes of doctoral students. Whilst it is reasonable to accept that conventional indicators of learning competencies, as might be applied to school and undergraduate contexts, are present in doctoral candidates, we hypothesised that the nature of the doctoral task imposes demands that go beyond skills based accounts of learning competence to incorporate a broader conception of learner attributes that include higher-order dispositions. We argue that there are critical dispositions associated with both developing metacognitive competencies at the doctoral level of learning, and with the associated affective dispositions utilised in managing the doctoral environment, that are potentially central to timely and successful completion of the doctorate.

In this paper we focus on the methodology of this study, including both the development of appropriate metacognitive and affective measures, and of determining a methodology for tracking metacognitive and affective management across time. Refinement of instrumentation utilised in a pilot study will be reported, along with theoretical and methodological issues associated with the development of a journey-tracking methodology.

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SOAR-ing through candidature – a peer-to-peer support service

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The SOAR Centre (Support, Opportunities, Advice and Resources) is a recent initiative launched by the Graduate Research School (GRS) at Edith Cowan University. It is a student-led service available to all HDR and Honours candidates, and seeks to address some common issues in research training:

- improving the research culture and intellectual climate;
- helping overcome the feeling of isolation that is common amongst HDR candidates;
- engaging HDR candidates in *relevant* work experience, that builds closer links with the institution; and
- assisting HDR candidates to develop career aspirations for beyond completion.

At the core of the Centre are the 'Ambassadors'. Ambassadors are a talented group of HDR candidates who are willing to learn and build on their skills base for career development, but more significantly, are keen to train their peers in the knowledge and expertise they have acquired in employment and in their research.

The SOAR Centre adopts an integrated approach, linking into, rather than duplicating existing services. It has built collaborative relationships, for example, with supervisors, Career Services, student counselling, the Library and Professional Development. The SOAR Centre provides a focus for general services and information for research students, who can drop in at any time to seek guidance.

This showcase will discuss establishing the SOAR Centre—some early indicators of success and strategies for overcoming initial obstacles. It will also outline possible future directions, such as expanding the SOAR mandate to include a mentoring programme and brokering employment opportunities for HDR candidates.

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Centralising HDR admissions and the quest for online applications at Monash University

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Over the past year the Higher DREAMS project at Monash University has sought to centralise all HDR admissions to the Monash Research Graduate School as well as introduce an online application process. This presentation will look at some of the challenges this project has presented and some of the issues surrounding centralising admissions and making online application forms available.

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Tracking the tidal flows: Themes of QPR conference presentations 1994-2008

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Since the first QPR conference was held in 1994 there have been fundamental changes in the ways that graduate research programs are conceptualised and managed in Australia and New Zealand. These changes have taken place in an environment that has included government initiatives changing the ways that programs are funded and supported in the face of burgeoning student numbers, continuous technological change in research methods, the broadening of research methodologies and acceptability of new ways of presenting research outcomes and, more recently and possibly in the future, responses to international changes in postgraduate research programs in Europe and Asia.

This poster traces the way that these and other changes in the Australasian higher education environment have been reflected in the discussion of supervision, institutional management and the student experience of postgraduate research. It uses an analysis of the abstracts and (where available) conclusions of nearly 400 posters, papers (including symposium contributions), workshops and keynotes offered at the eight QPR conferences. Visual timelines show the titles of the conferences (which reflect contemporary concerns) along with themes identified in individual papers. These are mapped against the publication of Australian government documents (reports, green and white papers etc) and policy changes that have affected the way that Australian Higher Education has operated in the area of postgraduate research. This poster thus demonstrates the dynamic nexus between Australian higher education policy and discussion of the practices of research education in Australasia.

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An endeavour experience

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The Australian Government's Endeavour Executive Award provides professional development opportunities for high achievers in business, industry, education or government from participating countries. The Award focuses on building skills and knowledge through a host work environment and not through formal enrolment in a study program, nor does it intend to fund direct academic research.

Building on the existing linkage between my current University and the Host institution in China, my project aimed to help our University gain a better understanding into the administrative process of the Host institution's research student recruitment, and to identify key mechanisms for this decision-making process. The project also aimed to provide some understanding of the higher degree research candidature management in China in general and how this may differ from the Australian system.

Through participating in a shadowing program with this Host institution, I successfully gained insights in the following areas:

- The Rules for their admission criteria
- The process of selecting candidates
- The management of scholarships, how they are offered and how they are managed
- The length of their selection process
- The candidature management of these candidates after enrolment
- The funding model for supporting research candidates
- The key performance indicators for successful completion

A summary of the comparison of candidature selection and management processes between Host institution and our University was identified and will be shared with fellow administrators in the conference.

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Analysis of PhD completion performance in a business studies: What factors impact on timely completion of a PhDs?

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This project aims to analyse PhD completion times and completion rates for the Division of Economics and Financial Studies to extend our understanding so we can develop evidence-based strategies, policies and procedures to improve completion performance.

Most of the variables for analysis are obtained from the routine collected datasets at the university. And others are added from publicly available research outputs (publications) and resources (where are the graduates now and what are they doing).

Researching the research is an important part of research management because it enables us to identify the variables that positively or negatively affect the timely completions of PhDs, late completions or no completions at all (drop outs).

The most important variables identified with this project are a) whether the candidates published at all (with or without their supervisor), b) age at the beginning of PhD. These findings are based on a data set that includes all the PhD enrolments, completions and drop outs from 1982 to 2007.

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Meeting the challenge! Developing sustainable international collaboration for PhD students in nursing

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Current global nursing/health challenges include nursing shortages, professional/care giver migration, violence, inequities in health care access, and limited international initiatives for knowledge translation and exchange. To tackle these, nurse researchers need to produce knowledge that is simultaneously rigorous and socially relevant for the international community.
The International Nursing PhD (IN-PhD) Collaboration – started in 2002 as a short-term collaboration to develop staff in a Spanish university through doctoral preparation. This extended by 2004 to include nursing doctoral programs from Canada, Spain, Australia and Mexico. IN-PhD aims to develop a collegial network of researchers and students interested in long-term, sustainable collaborative sharing of innovative ways to study nursing, care giving, and health promotion from international and global perspectives.
While IN-PhD provides opportunities for research capacity building in a discipline with a short history of doctoral work, it also presents the following challenges for institutions and individuals:

- The need to be inclusive and creative in context of the breadth of international goals/expectations of doctoral education for nurses
- Planning and managing an international curriculum within a dynamic international doctoral education environment
- Developing ways to safely communicate interculturally—that is both social and educational cultures.

How IN-PhD students and faculty have risen to these challenges will be explored. The current impetus for globalization of research and education means more similar collaborations will be needed; however, as the tangible benefits of such initiatives aren't immediate the long-term sustainability of such doctoral collaborations must be addressed.

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Creating an Inclusive Research Culture on Campus

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Purpose:

- To invite an exchange of ideas and experiences on how other institutions in Australia build a research culture among postgraduate research students?
- To present and share our experience in building a Research Culture at Edith Cowan University (ECU), our achievements and challenges.

Abstract

Every year at ECU, we run the 'In-Progress Postgraduate Research Experience' survey (or IPREQ), which gives us some insights into the specific areas that students perceive as satisfactory or in need of improvement. Access to information on relevant university policies and guidelines, student services and the desire for a stronger intellectual climate have been reported as areas in need of development. These needs were particularly emphasised among external students and students in our regional campus (Bunbury, WA). We consider each of these aspects of educating postgraduate research students foundational to what we term 'Research Culture'. In the last two years we have consistently developed new initiatives to build a stronger Research Culture at ECU, keeping in mind that we work across three campuses and provide support for students across multiple disciplines. We would like to share our successes and discuss our challenges in the process.

Discussion Forum Outline

- Framing policy that suits and responds to postgraduate research students' needs
- Designing and delivering research training to heterogeneous and multi-disciplined groups of students
- Developing individual and peer-to-peer support programs (Online Induction and SOAR Centre)
- Organising social events to facilitate researchers' informal gatherings
- Promoting research activities and building an institutional research profile (marketing, i.e. 'Research Week)

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The pedagogy of supervision in the technology disciplines

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This poster will showcase key outcomes from a recent exploration of the pedagogy of higher degree supervision in the technology disciplines. The technology disciplines include many sub disciplines associated with the fields of Information Technology and Engineering, which span technical, social and creative research orientations.

The poster will identify different types of outcomes constructed through and from conversations with supervisors with varying levels of experience:

- Processes – workshops and interviews
- Theoretical outcomes – nine pedagogies and a pedagogical framework
- Resources – handbook, cases and resources for use with students
- Recommendations – to the technology disciplines, ALTC and other stakeholders, and Student Research Centres or similar agencies.

The poster will:

- take the form of a short rolling powerpoint presentation,
- highlight responses from supervisors involved in the development of outcomes to such discipline specific materials
- be augmented with handouts that will allow interested parties to follow up the materials.

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Informing practice through honours in allied health

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This doctoral research illuminates the experience of honours for allied health students at two Australian universities, one regional and one metropolitan. Through a series of interviews, undergraduate students in occupational therapy, physiotherapy, podiatry and speech pathology explore honours and the nexus between clinical and occupational practice is an emerging theme.

Honours students in allied health choose to research an area of practice which has relevance to them, either directly or indirectly. Informing clinical practice and making a contribution to professional knowledge are important factors in honours decision making. Whilst a fundamental motivating factor for honours is exploring clinical practice, the students' choice of research area may be guided more by occupational experience. Occupational practice signifies work that the students are involved in outside of university and although it links closely with their profession and clinical interests, it is separate to their academic work.

A dichotomy exists whereby students researching a self-generated topic will clearly see the personal and clinical relevance, but may not conceive the value of honours research to the wider professional community. Students working as part of a research team on a pre-determined topic are more likely to appreciate their contribution to professional knowledge, but may lack the clinical and occupational motivation for honours research. If students are enabled to develop honours research projects informed by both clinical and occupational areas of interest this may encourage more students to engage with honours, enhance the viability of honours programmes and increase the pool of novice practitioner-researchers in allied health.

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Transformative learning through honours: The experience of allied health students

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Intrigued and concerned by the small number of students enrolling in honours, my interest is in exploring the experience of honours students in allied health. Working with student participants from occupational therapy, physiotherapy, podiatry and speech pathology at a regional and a metropolitan university, I am capturing their experiences through a series of interviews.

Recently it has been proposed that the three core features common to honours curricula are advanced disciplinary knowledge, research training and the production of a substantial independent research thesis/project (Kiley, Nursoo et al. 2009). These are expected outcomes of an honours programme but what do students learn through honours?

This presentation will share some of the students' experiences of learning as they work through honours. Students discuss honours as a very different way of learning and managing an honours workload with the competing demands of other subjects and clinical placement, requires a high level of self-motivation and self-belief. Learning about writing is for some students a motivation to undertake honours and for others, an unexpected benefit. Students find that their relationship with academic staff and other researchers is changed and their acceptance into the research community of practice comes as a surprising learning experience. Of particular interest is what students learn about themselves and how this learning through honours influences other areas of their lives.

Students are no doubt transformed by the learning experience of honours and perhaps articulation of the impact of this learning can be used as a positive influence, in encouraging more students to consider honours.

Reference

Kiley, M., I. Nursoo, et al. (2009). Honours: where does the future lie? Preliminary findings of the Australian Learning and Teaching Council Project: *The role of honours in contemporary Australian higher education*., Centre for Educational Development and Academic Methods at the Australian National University: 1-12

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Scientific knowledge, skills and proven experience in supervisors' education

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Since 2006 supervisors training is a prerequisite for supervising graduate students in Sweden. Each graduate student is entitled to at least two supervisors of which one is a main supervisor. One of the supervisors should have taken the training course which is equivalent to two weeks of work (80h). This new requirement has created an unprecedented demand for training courses for supervisors. Every research university has now its training course.

Analysis of one such a course given at The Royale Institute of Technology shows that the content of such a course is composed of

- Rules, regulation and frame factor
- Scientific reports
- Pedagogy
- Psycho-social aspects
- Supervision experience

The content of many other courses in the Swedish universities follow the same pattern. In practice the scientific part of the documentation in the courses is mainly used as background material. What stands in the fore is the trainers' experience and experience the course participants. But what it the base of such knowledge and how can we assert that it is equivalent to scientific knowledge. In Sweden all what constitutes academic education should be based on scientific knowledge or proven experience. In what sense can the experience based knowledge be considered as proven to qualify as part of the supervisors' education? In other words how can experience based knowledge be proven?

The second issue this paper will discuss is how are skills and judgement, like how to write papers, independence, creativity, ethical standards etc developed in research students' education?

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Authorship management systems to improve collaborative research outcomes

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Universities and research organizations across the world generally lack appropriate policies and procedures for managing authorship in collaborative research projects. A recent examination of the authorship policies of the 39 Australian universities revealed that seven institutions did not meet the requirements of the *Australian Code for the Responsible Conduct of Research* (the 'Code') (National Health and Medical Research Council, the Australian Research Council and Universities Australia, 2007; Morris, 2010). Moreover, no university in any country appears to provide specific training for staff and students on negotiating and managing authorship in research collaborations. The research collaboration outcome for many postgraduates and researchers who encounter issues in authorship assignment may be an unwillingness to collaborate or publish in the future, or even withdrawal from their postgraduate degrees (Morris, 2008).

Appropriate institutional authorship management systems are required to significantly reduce issues and encourage ethical authorship practices amongst researchers from any discipline and at any stage of their career. In addition to an institutional authorship policy that encompasses the Code, an ideal authorship management system should incorporate the *Vancouver Protocol* (for establishing authorship; ICMJE, 2006) and authorder® (for establishing author order; Beveridge & Morris, 2007) as these are the two major authorship issues cited in the literature (Jones, 1999).

The poster format provides an excellent opportunity for the author to display examples of unethical practices in authorship assignment, and provide readers with an outline of an appropriate authorship management system that could be implemented in their research organisation to reduce potential conflict and maximise outcomes and longevity of collaborative relationships.

References

Beveridge, C.A., & Morris, S.E. (2007). Order of Merit. *Nature* 448:508.

International Committee of Medical Journal Editors. (ICMJE) (2006). *Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and editing for biomedical publication*, updated February 2006. (Retrieved 09 10 07) http://www.icmje.org/.

Jones, K.D. (1999). Ethics in publication. *Counseling and Values* 43: 99-105.

Morris, S.E. (2010). Assessing institutional compliance with the Australian Code for the Responsible Conduct of Research. *Australian Universities' Review* in press.

Morris, S.E. (2008). Authorship Dilemmas for Research Higher Degree Students. *Refereed Proceedings of the 2008 Quality in Postgraduate Research Conference,* 17-18 April, p 43-53.

National Health and Medical Research Council, the Australian Research Council and Universities Australia, (2007). Revision of the Joint NHMRC/AVCC Statement and Guidelines on Research Practice: Australian code for the responsible conduct of research. Australian Government: Canberra.

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International research student administration: The agony and the ecstasy

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With the growth of research intensity across Australian universities, the need for growth in research student numbers is a continuing focus. Given Australia's limited population such growth can only be achieved through increased international research student enrolments. There is encouraging data to suggest International students enjoy research studies in Australia, are successful in achieving timely completions and believe in the value of their experience for their future careers. However, many aspects of international candidature administration continue to be a challenge some heightened by growth in the cohort. This presentation explores some of these issues/concerns.

This paper explores some of the key challenges surrounding administration of International Research Students. As the size of the cohort continues to grow, so does the challenge to support and administer international students. System-based solutions can assist administration of international students, but there are many other challenges that cannot be addressed through these solutions.

Some of the key challenges:

a. How do we assess the equivalence of overseas qualifications/institutions and research experiences as part of the admissions process?
b. How do we assess the readiness of applicants for research study in Australia (i.e., their capacity to adapt to our research related language and cultural expectations)?
c. What is our duty of care?

Some implications:

d. Assessment Challenges:
    i. Sources
    ii. Expertise
    iii. Information
b. Assessment of Research Capabilities
    i. Previous Research Studies
    ii. Previous research experience
    iii. Evaluating written and analytical skills.
c. Our duty of care
    i. Reporting requirements
    ii. Scholarship providers
    iii. Risk management

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Developing professional research identities: Challenges and opportunities for supervising and training the mid career PhD student

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The mid career PhD student brings a wealth of professional experience to postgraduate studies. This includes academic, teaching, or practice expertise that may not correlate with research skill levels. Successfully studying for a PhD requires the student to transform existing professional identities and embrace a research identity. Further to this, the PhD project is often perceived as a major commitment that competes with work, family and social lives. The challenge is to overcome competing demands and engage students in developing a researcher identity that energises and raises the quality of the PhD.

This paper discusses and problematises our conception of quality and the aims and strategies of our PhD program. The aims are to provide students with a constructive experience that steers away from isolation, stress, and competitiveness. The focus is on both, individual supervision and group learning. By using peer learning, presentations, writing tasks, and critical reflectivity an informal group environment is created that facilitates engagement, self-efficacy, support to completion, publications, and development of a research identity. This PhD program aspires to create a learning environment that stimulates a critically thinking community of scholars.

The professional backgrounds of our PhD student cohort includes nursing, executive coaching, dietetics, advertising, physiotherapy, paramedic professionals, and speech pathology. Fostering a research identity amongst this diverse group of scholars is a challenge and this paper addresses the opportunities and challenges involved in supervising and training a group that is motivated to study by a mix of personal and career development, professional practice, and external drivers.

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Development and evaluation of resources to enhance skills in higher degree research supervision in a cross-cultural context

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Most universities have developed professional development programs for postgraduate research supervisors, and several national projects have provided best-practice guidelines and resources to facilitate this process. However, these pay only cursory attention to cross-cultural communication issues. This showcase will present the outcomes of a project conducted at three universities that created five types of resources designed to trigger reflection regarding the supervisory and research process when the supervisor and candidate identify with different cultural backgrounds. The resources were developed to be used by tertiary institutions as an adjunct to existing supervisor training programs, and by candidates and supervisors to reflect on their own culturally related views and practices.

The showcase will present a selection of the deliverables (e.g. a video clip of a candidate and supervisor discussing how their expectations about appropriate supervisory style were not met; written scenario on when candidate's academic English is hindering completion of the research; suggested strategies; best practice guidelines in the form research readiness guides; an annotated bibliography). The nature of the deliverables dictated our preference to present the work as a show case rather than an academic paper. The session will be run in part as a simulated development session so that participants can both experience the use of the materials and then discuss how they may be used in their own professional situations, and be asked to reflect on how to use them in their own practice to enhance the quality of their supervisor practice and outcomes for candidates.

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Pathways to the PhD in Australia: A symposium

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Currently the main criteria given for allocating research places and scholarships, whether Commonwealth funded, or university funded, is a first-class honours degree or equivalent. This practice ignores the significant change in the role of honours documented in a recent study of honours across Australia, the lack of consistent standards for honours awards, and the questionable appropriateness for recruiting among professionals who are often mid, or late, career, and for industry linked scholarships and programs. At issue too is whether the such awards are seen to denote a general capacity for research, or sufficient grounding in disciplinary basics, an issue of importance in multidisciplinary fields. In response to such concerns the House Standing Committee on Industry, Science and Innovation ('Building Australia's Research Capacity' 2008) suggested more flexibility in research training opportunities, and '...a review of the ranking criteria for Research Training Scheme places and Australian Postgraduate Awards for greater consistency ... and to account for diverse backgrounds and entry points.' (recommendation #24). The Federal government sees this as a matter for individual universities.

It is timely therefore to examine what have been and are possible pathways to the Australian PhD. Drawing on their recent ARC and ATLC funded research, the presenters will raise questions for discussion including:

- what does/can flexibility of research training opportunities mean?;
- what are the implications of the suggested changes for curriculum and quality?; and
- can 'consistency' be reconciled with diversity and flexibility?

A Discussant will open a plenary discussion following two 15 minute presentations.

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Is there space for morality in postgraduate education?

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The vice chancellor of Macquarie University has called for the re-moralising of the university (Schwartz 2009). The university, he says, long ago gave up, and now shuns, any moral responsibility. Properly so according to former University of Illinois dean Stanley Fish (2008). Yet in the 1990s and 2000s many universities—new and established, in Australia, the United Kingdom and beyond—have been adopting the concept of generic qualities, and many of the sets of generic qualities contain explicit references to ethics, integrity, or moral behaviour; qualities which go beyond research ethics, plagiarism or other such aspects of academic integrity.

If personal ethics belongs in postgraduate degree does something else have to be excluded to make space? More fundamentally, does it belong there at all?

This paper provides an argument for answering "yes" to both questions. After dealing briefly with the well-rehearsed arguments in favour of graduate qualities in general and the inclusion of ethical elements, attention is devoted to the value of these qualities in the research degree. This section includes consideration of public pressure for change, fuelled by the global financial crisis; growing understanding (or rediscovery) of the importance of virtue in professional life; recognition that the Enlightenment project may not have resulted in the anticipated society free from morals; and that not all problems can be solved by quantitative methods.

The second section discusses contemporary evidence for the ability to teach and assess ethics in the research degree and how this can be achieved without proselytising.

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Towards ethical authorship practices: Discussion tools facilitating negotiation and discussion

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Since publications are considered a benchmark of research excellence, the pressure on academics to improve publication outputs is ever present. Accordingly, there is increasing pressure on HDR students, who can account for up to 70% of University research (Siddle, 1997), to publish. The benefits of HDR authorship for candidates, supervisors and institutions are well recognised; in contrast, the responsibilities associated with publication and authorship can be a site of tension.

The *Australian Code for the Responsible Conduct of Research* (Australian Government, 2007) compels institutions to establish policy on criteria for authorship and admonishes researchers not to offer authorship to anyone not meeting these requirements; indeed the *Code* stipulates formal agreement on authorship, comprising written acknowledgement. Yet, despite the *Code's* guidelines, issues still arise in relation to authorship practices. Written acknowledgement implies negotiation of authorship, which may not always occur equitably where unequal power relations exist such as between HDR supervisors and students.

This paper reports on the development and evaluation of e-learning tools that facilitate discussion concerning authorship and improve researcher appreciation of the criteria for authorship. The accessibility, content and value of the e-learning tools were evaluated and the publication experiences and expectations of HDR students and their supervisors were ascertained. Research findings might be used to: (i) tailor existing induction programs to better inform students and supervisors about potential authorship issues and resolution strategies; and (ii) assist supervisors and institutions fulfil their responsibilities to "foster ethical behaviour among their more junior researchers" and "reduce potential authorship dilemmas" (Morris, 2008).

References

Siddle, D. (1997) Submission to the Committee conducting the review of Higher Education Financing and Policy, Deans and Directors of Graduate Education, 23 April.

Australian Government (2007) Australian Code for the Responsible Conduct of Research In Council, N. H. M. R. C. (Ed.). Canberra, ACT, Australian Government.

Morris, S. (2008) Authorship dilemmas for Research Higher Degree students. *Quality in Postgraduate Research* Adelaide QPR.

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Student publishing in doctoral education: Pressures, promises and pedagogies

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The pressure on doctoral students to publish is fuelled by global factors such as the international competition for employment-ready research graduates, as well as a variety of regional and national policies aimed at driving increased accountability and dissemination of research output. This demand for greater student 'productivity' is causing universities, supervisors and students to rethink taken-for-granted practices as they search for new ways to respond to the push to publish.

This symposium brings together a panel of doctoral education researchers from three countries in a dialogue about their own pedagogical practices with respect to writing for publication within the doctorate. The purpose of this dialogue is to debate the issues involved, and explore pedagogical possibilities and strategies. The Chair will set the scene by exploring the problematic of the push to publish. The bulk of the symposium is dedicated four presentations of pedagogical work in relation to writing for publication. Contrasting cases studies are presented; one draws from a curriculum framed within the pedagogical traditions of North American rhetoric and composition (Pare), and the other draws on academic literacy pedagogy to explore students' voluntary participation in collaborative writing groups oriented to publication (Aitchison). Lee and Abrandt-Dahlgren refer to their own experiences as inter-country collaborators in a doctoral education network. They discuss a 'PhD by publication' doctorate, which develops and habituates writing for publication.

The four presenters will each present for 15 minutes. This will be followed by chaired open discussion for participants to share their experiences and to articulate different positions within this complex sphere.

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Mapping current practices in creative arts doctoral programs

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This paper reports on an ALTC funded project designed to investigate current practices in creative arts doctoral degrees in Australian universities. The study documents the development of creative arts doctoral programs and identifies variations in form and implementation of doctoral programs in the visual arts. Such disparity has significance for both the integrity and growth of the sector. The results of the project therefore aim to inform future developments in research training and strategic leadership in the sector. Data was gathered from interviews with a sample of postgraduate coordinators in relation to the admission process, confirmation and progress reviews, coursework, examination models, outcomes, and supervision. Focus groups with examiners and doctoral candidates, and roundtable events were also held. The findings are relevant to academic and professional staff, policy makers, researchers and other stakeholders in decision making about doctoral programs in the visual arts, and more broadly in the creative arts. However many of the issues identified reflect general trends and concerns of other disciplines.

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Student experience of undergraduate research projects: A perspective on honours in Australia

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This exploratory study investigated the student experience across a range of fourth year undergraduate research programs in an Australian university. There is currently great interest in the role of research to improve the national wealth and well-being, and until recently there has been little attempt to understand the relevance of fourth year research projects within Australian higher education. The study focussed on the student experience of research, and how the journey prepared them for research-based work within their profession or for further research study. The role of coordinators as stewards of the discipline emerged as a strong theme, with these senior staff members acting as gatekeepers and nurturing potential researchers within their discipline. Storied text illuminated the rich and diverse nature of fourth year research programs offered at the site. Overall, students were motivated to complete their research, and were confident in their ability to carry out the tasks involved in the research process regardless of the program they were undertaking. A construct of 'research preparedness' was developed from several factors. Fourth year students showed varying levels of preparedness for research, with male students more likely to show evidence of research preparedness than their female counterparts. On the whole students enrolled in an End-on Honours program were more positive about their research project at the start of the journey than those in other programs, had the strongest intent to continue on to further research studies and were more likely to show evidence of research preparedness.

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Feedback on research skill assessment of honours and postgraduate education using research skill development framework

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One of the challenges faced by higher education supervisors is how to go about the process of explicitly informing and developing the candidates' research skills to enable effective research. It is equally challenging to provide quality diagnostic, formative and objective feedback on the candidates' performance during their degrees. A potential solution to these challenges has been developed as the Research Skill Development Framework (RSDF), and its use is examined here within the context of Honours and Masters level projects. In many Australian engineering schools, aspiring Honours candidates are required to complete a research-themed final project (minor thesis). Over the years, it was observed that these candidates routinely needed varying degrees of research training in order to perform an adequate level of research. Since 2007, the authors led a pilot study within their School on the use of the RSDF to provide ongoing developmental feedback and summative assessment of projects, the success of which resulted in the adoption of RSDF principles in all projects from 2010 onwards. In this paper, the implementation details and results are discussed, along with the potential extension to non-research themed projects.

Since 2006, the authors have also successfully used RSDF in supervising the minor thesis component of coursework Master programs. It was well-suited to the supervision of candidates from industry without an awareness of the expectations in a research environment. RSDF was also effective in developing research skills for international students, with a useful but unexpected outcome of an observed reduction in plagiarism of their outputs.

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‘I can tell that English is not your first language’. Examiner comments and recommendations on the theses of students with ESL

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There is now a substantial literature on the pressures and challenges faced by students writing a thesis when English is not their first language, but little empirical research into the outcomes for this group and no exploration of examiner report text for this group in Australia or elsewhere. This study draws on two sources of data. The first is case based annual report data for students who have completed their PhD thesis, which in combination with the literature allows the key communication issues facing international students to be categorised. Secondly, a separate body of examiner reports for 173 International students from eight institutions divided into those with English as their first language and those for whom it is not. The report text is divided into 29 categories of content including four types of evaluative comment and two types of comment specifically related to communication skills. The main questions addressed are: Do the communication issues faced by international candidates during candidature find expression in examiner evaluation of their theses; are there substantial differences in report text for international students and all students (N = 2121); does this differ between those who nominate English as first and second language, and is there any difference in examiner comment and recommendation of examiners that is linked to examiner location?

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Research as cultural practice among international students in Perth

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Conducting research requires more that the fulfilment of formal steps required by educational institutions. Students need to be able to work independently and have a good understanding of what the academic and institutional requirements are. What happens when students come from different cultural, linguistic and educational backgrounds and are faced with sets of rules, expectations and ways of doing things that are different to what is familiar to them? While Australian tertiary institutions have embraced 'internationalisation' programs to reach and attract overseas students, the implementation of institutional strategies that take into account international students cultural backgrounds has not been developed accordingly. Drawing on a critique of western epistemological assumptions of research programs in Australia, the anthropology of commodities and the field of cross-cultural communications, I elaborate on the notion of 'research' understood as cultural practice. The purpose of this paper is two-folded: 1) to present multiple perspectives to the same subject, namely, conducting research as a postgraduate student, and 2) to account for better strategies of cross-cultural communication with international students. This paper will also draw on the results of an in-progress pilot research project on the experiences and cultural practices of international students from Africa, the Middle East and South East Asia.

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The researcher skill development framework

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Australian, Canadian, Irish and Dutch universities have been utilizing the Research Skill Development (RSD) framework to guide the explicit and coherent development of undergraduate and masters by coursework students' discipline-specific research skills. Whilst evaluations in numerous contexts suggest that use of the framework does enhance students' self-assessed and academic –assessed research skills, uptake in HDR supervision has been limited.

An extended version of this framework—The Researcher Skill Development (RSD7) framework clearly describes the movements towards- and well beyond-successful PhD completion. The addition of 2 extra 'levels of autonomy' on top of the 5 levels of the original RSD has enabled academics to place themselves within this framework, before thinking about the supervision of HDR and honours students.

Picard and Velautham show elsewhere in this conference that the RSD7 works well when adapted specifically to the context, in their case generating marking criteria for an Integrated Bridging Program for international students. One major advantage of the RSD7 is that it can inform the development of research skills from the First year of university, and so make the university journey towards PhD more coherent. This is demonstrated by Ng and Al-Sarawi in their presentation on the use of the RSD in Masters and Honours.

The RSD7 captures and elaborates the conceptual domain of research, and also incorporates the affective domain. The framework is not prescriptive but suggestive of supervision pedagogies, and has shown potential for helping supervisors and students to match their expectations and standards early in the PhD candidature.

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Co-supervision, a position of negotiating in a practice of governing

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In the early 1990s the societal governance changed, which came to have a major impact on how PhD supervision was affected. In Sweden, a collaborative process in PhD education and supervision was adopted. The new intention was to enhance quality, effectiveness, and to develop knowledge, skills and capabilities in the needs of the society. The PhD student received the status of 'employee' for a period of four years. At least two supervisors were involved in every PhD process; man/woman, different disciplines and of theoretical/methodological perspectives. The main supervisor had to take courses in supervision and be appointed as associate professor. The roles of the co-supervisors were not paid the same attention.

Our focus is the new preconditions, and the construction of the 'role taking' and 'role giving' of the co-supervisors. The data consists of individual interviews (10 supervisors) and of a survey (two faculties, 150 supervisors). Our interest is the formation processes and the techniques that are used in 'the process of becoming rather than being' and to understand the relationship between 'subjectification' (becoming the entity) and 'subjectivity' (the lived experience of being a subject).

In our findings we present that the dominant discourses, as well as the discursive practices, are some of several agencies' that construct the co-supervisors. Certain ideas and 'mind patterns' seems to allow the co-supervisors to talk about, give meaning and significance to the phenomenon of 'being co-supervisor'. What these roles are about and how they are governed, is what is discussed in this paper.

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Demystifying the original contribution: How supervisors conceptualisations facilitate creativity in doctoral education

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Doctoral study is inherently a creative endeavour through which a student creates a scholarly contribution extending the knowledge boundaries of a discipline. A variety of literature from across the world implies the notion of creativity as a central feature of doctoral education in that the student is expected to create an original, significant and independent knowledge contribution. However, creativity is not well-defined within the context of doctoral education, even though it underlies the notion of *doctorateness* (Trafford & Leshem, 2009:305). This paper explores the conceptualisation and facilitation of creativity as both a process and a product in doctoral education (Sternberg & Lubart, 1999).

A qualitative case study approach was followed in the research, starting with a conceptual framework of creativity within doctoral education as a basis for further inquiry. Semi-structured interviews with ten experienced supervisors (professors) in a Faculty of Education explored how they conceptualise and facilitate creativity in guiding students along the doctoral journey towards the eventual product in the form of a PhD dissertation. The particular doctoral programme is research-based, and student-supervisor interactions are mostly conducted on an individual and project-specific basis. Supervisors therefore play a key role in doctoral students' understanding of the creative process that leads to an original contribution.

The results reveal creativity as a multi-dimensional concept that can be facilitated in various ways in different contexts. However, the evident similarities lead to the development of a generic conceptual framework that may be useful in facilitating creativity at the doctoral level.

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Writing and doctoral supervision: A cross-disciplinary study of doctoral writing practices at Canadian research-intensive universities

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Although writing development has been widely studied in undergraduate education, writing development in doctoral education has remained largely under examined (e.g., Aitchison & Lee, 2006; Kamler and Thomson, 2006; Lee & Aitchison, 2008). Increasingly, though, as knowledge moves centre stage in all sectors of society, doctoral education has been declared a vital infrastructure issue by governments around the world. At the same time, trends toward growing competitiveness in higher education have added more pressure on doctoral students and their supervisors for timely degree completion and a strong early publication record (Aitchison & Lee, 2006; Kamler & Thomson, 2006; Lee & Boud, 2003).

These trends raise new questions about writing development in doctoral education. For example, what writing demands and pressures do doctoral students and supervisors identify? What are the consequences of this increasing competitiveness for doctoral writing? How are these consequences addressed in different disciplinary and institutional locations?

This paper reports on the first phase of a longitudinal, multi-institutional study of doctoral writing practices at Canadian research-intensive universities. The presentation will focus specifically on the concerns expressed by doctoral supervisors about their ability to provide writing instruction, their students` readiness for dissertation writing, their institutions` support for doctoral writing, and other issues.

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Writing a thesis by publication: Challenges and concerns

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There are clear benefits for research students from publishing high quality research papers during their candidature so there is strong pressure to publish. Many students, particularly in technical and medical disciplines, concentrate on publishing the results of each stage of their research quickly, and by the end of their candidature, they have reported the outcomes of their entire project in journal papers, usually in papers coauthored with their supervisors. The students may then choose to write a thesis by publication.

The possibility of writing a thesis by publication rather than a conventional thesis raises a number of challenging questions about the research conducted and about the eventual writing in the thesis. These questions include questions about the nature of the research project as a unified body of work; about whether the research in some way becomes dictated to by the need to publish; about the ways of establishing the student's contribution to the research and to the writing; and about the demands of the writing itself.

This paper presents a number of case studies of research students who have chosen to write a thesis by publication. The attitudes to the thesis by publication and the experiences of these research students and their supervisors are presented, and then discussed in the light of the questions outlined above. Some implications for students, for supervisors and for academic support lecturers are also explored.

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Learning to negotiate roles and responsibilities within the private spaces of a doctoral supervisory relationship

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Universities are under pressure to improve the quality of the doctoral processes and outcomes, that is, to perform in a way that was not expected in times when the apprenticeship model of the student/supervisor relationship prevailed. This performativity requires supervisors to ensure "their student knows and understands what is expected of them" (1).

Educational workshops raise awareness in prospective supervisors about supervisor and student expectations, roles and responsibilities, the local doctoral context and how to develop effective supervisory practices. However, the establishment of effective supervisory practice should be a developmental journey by the supervisor, with the student(s), to discover what works and what does not. Gaining an understanding of self requires an appreciation of experiential learning cycles incorporating appropriate reflection on supervisory practices and the use of feedback to drive subsequent cycles of learning to inform future practice.

This paper analyses the first six months in the journey of a new supervisor building relationships with two doctoral students. Tools used to establish a foundation with the students included a list of tips for success, the use of a questionnaire-style tool to explore commonalities and mismatches between the expectations of the student and those of the supervisor, and a supervisory disclosure statement. A journal kept by the supervisor captured the process and its outcomes. The on-going role of these tools within this context, and their potential application beyond these relationships, will be explored.

Reference

Chubb, I. (2000). The impact of the white paper on universities: Some possibilities. In M. Kiley & G. Mullins (Eds.), *Quality in postgraduate research: Making ends meet* (pp. 15–23). The Advisory Centre for University Education, University of Adelaide. Online at: http://qpr.edu.au/

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Seekers after truth: Researchers as detectives in twenty-first century education narratives

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A powerful idea that persists in postgraduate education is that the goal of a research project is to contribute to new knowledge, sometimes in the form of a discovery. Part of the legacy of Enlightenment ideas about the aim and purpose of education involves regarding research as the pursuit of new knowledge, or of truth. This paper builds on an earlier paper in which I considered the ways in which supervision is represented in cultural practices (Kelly, 2009), and on Gregory's (2007) assertion that the proliferation of education narratives in Western culture create ideas about the purpose of education and the kinds of students and academics that we become. In this paper, I want to turn from looking specifically at supervision to examine the ways in which recent fictional education narratives draw on and contribute to the maintenance of an idea about research. If research is imagined, as it is in these fictions, as a process of locating and amassing clues, leading to the revelation or discovery of a truth, what are the implications for how graduate researcher identity might be constructed? In the fictional texts that I have analysed, published between 2005 and 2009, the metaphor of the graduate-researcher-as-detective, or as a seeker-after-truth, is re-inscribed. How is this figure problematic, and how does this idea about research *fit*, in the educational environment of the twenty-first century?

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Successful researchers' notions of research pedagogy and research success

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The ways in which researchers understand research philosophies and practice is significant to the ways in which they develop in-practice research pedagogies. In a study exploring senior researchers' strategies for research success, it became apparent that these successful researchers integrated theories and practices of research pedagogies that encompassed not only graduate and HDR contexts but also were for use in the undergraduate context. In this session we will present the findings of this study, which reveal the scope of leading researchers' vision of successful research and how it functions in the broad remit of a university mission. The findings illustrate the embodiment of research pedagogies through academic life trajectories and the influence of discipline-based norms, practices and constraints on student movement from undergrad to honours to PhD. The study also reveals these researchers beliefs about student knowledge and independence and about the need for academics to display initiative and engage in interdisciplinary collaboration. Participants in the study also discussed the impact of institutional policy and the (in)appropriateness of defined time-scales for research work. The gaps they identify between an ideal practice of research pedagogy and their lived reality are important issues for future planning and change.

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Creativity as an employability attribute of research higher degree graduates

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The debate about employability readiness of higher degree by research (HDR) graduates has focused largely on adjustments to 'traditional' research education in order to foster empirically identified graduate attributes sought by employers. The research findings presented here add to our knowledge of employability attributes by providing evidence that implicit, personal theories, argued here to be associated with beliefs about creativity, strongly influence employers' decision-making processes when they consider whether to accommodate HDR graduates in their workplaces.

These results are from research that interrogated employers' understandings of the nature, content and outcomes of HDR study in the discipline areas relevant to their industries. Semi-structured interviews with employers of Engineering HDR graduates revealed that their main concern centred on notions of creativity as the term is defined by a number of theorists and as it is manifest in innovative people, products and processes. The employers' valuing of creativity was not dependent on stated organisational aims or size, or educational qualification attained by the employer. Rather, their notions of creativity as it pertained to HDR graduates are explained as implicit, personal theories about the nature of research, researchers and academia. Once commonly known employability attributes such as commercial acumen, practicality, and communication skills were set aside, these theories informed underlying decision-making processes, modelled here as 'Filtering for fit', that influenced the employers' likelihood to hire an HDR graduate. It is suggested that making explicit this filtering process would provide a useful frame of reference for alternative approaches to the HDR graduate employability agenda.

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Interventions by QUT Postgraduate Careers Service Facilitate an Understanding of Postgraduate Skills and Attributes

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Interventions by QUT Postgraduate Careers Service Facilitate an Understanding of Postgraduate Skills and Attributes

One agenda in the postgraduate research domain is the development and promotion of postgraduate capabilities or attributes. However, a common theme at meetings of the Postgraduate Careers Advisors Network (PCAN – a national network of career practitioners specialising in HDR cohorts) is that supervisors and students are unaware of how university careers services can assist HDR students to understand the skills and capabilities they are developing throughout their research degree. Postgraduate Careers Services can complement the supervision process by providing a range of activities which promote HDR students' career development and enhance students' understanding of their employment potential.

This showcase aims to improve awareness of the activities undertaken by careers services and how these activities enhance the research degree experience. A number activities, such as experiential workshops, skills auditing, and one on one career counselling sessions, conducted by the Queensland University of Technology Postgraduate Careers service will be showcased. Postgraduate career development trends will be discussed and interspersed with brief activities to highlight the variety of activities undertaken at QUT to facilitate career development for postgraduate research students. Additionally, the contribution of QUT Postgraduate Careers Service to supervisor training and development will be discussed.

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The impact of the CRC program on outcomes for Australian doctoral graduates

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The Australian Cooperative Research Centre (CRC) Program has been a fixture of the Australian research and innovation system since the early 1990's and represents the federal government's largest single effort to increase collaboration across the university, government, and industry sectors. Education, including of doctoral candidates, has been a consistent focus within the Program, as has the involvement of industry in the education process. It has been claimed that this industry involvement has resulted in positive outcomes for graduates in aiding their development of 'industry-ready' skills and for end-users in the production of research workers who are ready and able to work within industry settings. The 2008 review of the Australian National Innovation System and the CRC Program provides an ideal point from which to look back at the educational aspects of the program, and its impact on the research training of PhD graduates. A national survey examining the research training experiences of CRC PhD graduates, their preparedness for employment, and their outcomes in the 5- to 10-years post-PhD will be discussed, along with comparative data from graduates not involved in a CRC during candidature. As the CRC Program moves into its next phase, lessons from the past can be used to guide the future of the educational aims and procedures of the program.

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Technologists talking about supervision as teaching and learning

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The technology disciplines include many sub disciplines associated with the fields of Information Technology and Engineering, which span technical, social and creative research orientations. There is presently a comparatively limited understanding of the nature of higher degree research supervision in these disciplines.

This paper will report on the different ways in which HDR supervision is viewed as a teaching and learning practice in the technology disciplines. Conversations were held with 22 technology supervisors representing varying level of experience in order to construct understandings of their view of supervision as a teaching and learning practice. Through the conversations and subsequent analysis, which focussed on identifying significant variation, nine views were constructed:

- Upholding Academic Standards
- Imparting Academic Expertise
- Promoting Learning to Research
- Promoting Supervisors' Development
- Enabling Students' Development
- Contributing to Society
- Venturing into Unexplored Territory
- Drawing upon Student Expertise
- Forming Productive Communities

These different views of supervision as a teaching and learning practice reveal a wide range of different aspects of interest to the community of supervisors. They also represent a broad territory across which supervisors can locate their present practice, or identify areas to explore with their candidates and colleagues.

These views of supervision have been used as the basis of a range of resources now available to HDR supervisors in the public domain.

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Developing research leaders for the 21st century

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One key to sustaining the vision for the future of universities is a good supply, at all levels, of capable research leaders. Once considered to be acquired largely on-the-job, research leadership skills are now taught through explicit training courses at many universities. A recent development in this respect is the Future Research Leaders Program (FRLP). Developed by the 'Group of 8' consortium of research-intensive Australian universities, and with its first full roll-out in 2008, the Future Research Leaders Program (FRLP) is aimed at mid-career research leaders, both established and emerging. The program is broad in scope, and represents a more cohesive and wide-ranging attempt at upskilling the next generation of research leaders than any of the participating universities have previously engaged in.

This paper, then, provides some review of the FRLP by way of reporting on the commentaries of 20 participants of the program at the University of Adelaide, analyzing transcripts of structured interviews using standard narrative analysis methods. While most participants have expressed strong overall satisfaction, at the same time their responses can be interpreted as indicating that the University of Adelaide version of the program functions most effectively as an orientation to the basics of research management and least effectively in the area of leadership development. The paper identifies a number of ways in which this imbalance might be addressed, but suggests that these may be ineffective in the absence of an organizational culture more conducive to widespread learning about leadership (Hill, 2008).

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A study program for doctoral supervisors – a vehicle for development

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A study program for doctoral supervisors is currently being implemented at two higher education institutions: One large and traditional research university and one university college. The overall aim of the program is to improve supervision as well as local practices for doctoral education and doctoral research in departments and research groups but also at the institutional level. In planning the program three important considerations were made. The program should:

- be aligned with existing qualification frameworks for tenure and promotion;
- serve as a platform and source for knowledge building and organisational learning on doctoral supervision and doctoral student learning;
- serve as an arena for supervisors, educational developers, and educational researchers to collaborate on doctoral student learning and doctoral supervision.

These considerations will be discussed in relation to enhancement of supervision and doctoral student learning, the scholarship of teaching and learning movement, and compulsory higher education teacher training. The study program of Lund and Kristianstad will be used as a case. The presentation will be made against a contextual backdrop in which doctoral education is claimed to be under increasing tensions. On one hand doctoral education has become increasingly important for research production and research funding. On the other hand there is a strong push for doctoral education to focus learning and employability and to serve a wider purpose than the re-growth of the academy. In Europe this is most visible through the Bologna process.

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Doctoral pedagogy: What helps students most?

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Conversations amongst doctoral students regularly centre on frustrations with the supervision experience. In order to address those frustrations, participants' experiences of pedagogical practices need to be explored. Identifying the practices which doctoral candidates find beneficial can help supervisors become more effective and suggest how candidates might best exploit learning opportunities. Previous research has identified variables which impact on effective doctoral supervision (Kiley, 2009) and highlighted the potential of writing experiences as a site for pedagogical intervention (Kamler & Thomson, 2006, Lee & Kamler, 2008, Thein & Beach, 2010). But few studies have canvassed student views of doctoral pedagogy. Using interview data from eight international and three domestic doctoral candidates, the paper first reports the pedagogical practices the students have encountered and then discusses those which students found most helpful. The paper concludes by recommending a number of additional activities suggested by recent research into doctoral pedagogy.

References

Kamler, B., & Thomson, P. (2006). Helping doctoral students write: Pedagogies for supervision. London: Routledge.

Kiley, M. (2009). Promoting and recognising excellence in the supervision of research students: An evidence-based framework. Assessment and Evaluation in Higher Education, 34(1), 1-15.

Lee, A., & Kamler, B. (2008). Bringing pedagogy to doctoral publishing. Teaching in Higher Education, 13(5), 511-523.

Thein, A. H., & Beach, R. (2010). Mentoring doctoral students towards publication within scholarly communities of practice. In C. Aitchison, B. Kamler & A. Lee (Eds.), Publishing pedagogies for the doctorate and beyond (pp. 117-136). London: Routledge.

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‘If you build it, they will come’: An equity focussed cross-campus and cross-continent framework for developing and teaching HDR academic literacies

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The Multi-Modal Framework (MMF) is an international collaborative project addressing two issues in future research education:

- isolation / lack of engagement with academic peer / discourse communities experienced by distance and rural doctoral students
- the ethics of sharing access to knowledge production across a globalising academic world.

MMF is a framework within which we can communicate with others. It has enabled us to make infrastructure changes and open communication with intra, inter and remote off campus students. Beyond standard meeting use, through AARNET and Tandberg video conferencing systems we have the technological capability for remote viewing, recording via videoconferencing, immediate video taping, post-production CDROMs and web. We have delivered HDR academic illiteracies programs via MMF in these modes.

MMF offers a turnkey concept as one solution to inequities in technological access for some partner institutions that may not have access to high-level technologies to support HDR academic literacy programs. Whatever technology we use is standards-based, not proprietary. It is scalable—usable with highest to highest quality technology, highest to lowest, lowest to lowest, and flexible—1 to 1, 1 to many, many to 1. Because it is standards-based, MMF offers technology-poor institutions the capability to 1) use /adapt our content for their HDR communities of practice 2) develop their own locally and culturally contextualised HDR academic literacy content. HDR students here are future knowledge producers. Sharing access to knowledge production can contribute to capacity building and forge equitable and collegial links for the future.

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Students becoming researchers, researchers becoming renowned

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Research-intensive universities need to produce graduates who are motivated and equipped to move into research degrees. Therefore, the embedding of a disposition for research as well as the training in practical research skills that take place in undergraduate, honours and masters by coursework degrees are vital in the production of research-ready PhD candidates. Furthermore, these candidates are more likely to earn early career success, which is crucial for the subsequent elevation of the researcher's profile.

This symposium will present a framework for Researcher Skill Development (RSD7) which was devised to enable academics and students to conceptualise the journey from novice to expert researcher, from First Year university to Early and Mid-Career Researcher. The audience will review the RSD7 and apply it to their own research agendas. Then each of the following contexts of RSD7 use will be briefly overviewed by members of the panel, with questions and discussion after each segment:

- Programs for research degree supervisors and early career researchers in Australia
- Bridging program for international students commencing research degrees in Australia
- Masters and PhD supervision for a school of Nursing and Midwifery in Ireland
- Honours programs and Masters programs in Electrical Engineering, Australia
- Undergraduate research in a variety of contexts in Australia and Canada

Finally, opportunities for collaborations and other potential applications will be canvassed. The 90 minutes of presentation and discussion will be moderated by Dr John Willison.

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