



CRAC
Career Development – FOR LIFE

conference
report



profiting from postgraduate talent

securing the best doctoral talent
making the most of higher level qualifications
changing mind sets

**Report of a conference held at the New Connaught Rooms,
London on Tuesday, 11 June 2002**

A national one-day conference, arranged by CRAC with support from The Wellcome Trust, CSU, the Engineering and Marine Training Authority, the Economic and Social Research Council, the Medical Research Council, the Arts and Humanities Board, the Biotechnology and Biological Sciences Research Council, The Independent and the Research Councils' Graduate Schools Programme.

Postgraduate research training is in an exciting period of profound change. Traditionally the function of the PhD has been to train future academic workers. The research content, not the training of the researcher, has been its main outcome. For some time this single-purpose qualification has no longer fitted the expectations of students and employers. Increasingly, Government, funding bodies and higher education institutions (HEIs) are questioning the nature of the PhD. Major initiatives are underway to create a new and more diverse postgraduate landscape, where high quality research training will be rewarded and students will be better equipped to profit from their learning and skills.

- Research Councils' Graduate Schools Programme

What is Profiting from postgraduate talent all about?

Professor Sir Gareth Roberts set the challenge for the day when he cited the HEI view from a previous conference on postgraduate education that there should be:

- a period of at least four years between a first degree and a PhD;
- more time for formal study aimed at consolidating knowledge; and
- a thorough training in modern research methods and generic skills.

It was sobering to realise that this conference took place in 1956. Changing mindsets, so that real change takes place in academia, is the hardest challenge of all.

Profiting from postgraduate talent was informed by two important reviews, the results of which are being fed into the Government's current spending review.

Following a fundamental policy review in 2000, which identified a need for threshold standards in research training, the Higher Education Funding Council for England (HEFCE) joined forces with Scotland and Wales to undertake a Joint Standards Review. The aim of this is to identify existing good practice and use this to develop threshold requirements which university departments would need to satisfy in order to be eligible for funding for research degree programmes (RDP).

In 2001 Professor Sir Gareth Roberts was commissioned, as part of the Government's strategy for improving the UK's productivity and innovation performance and to examine the supply of scientists, engineers and mathematicians. Professor Roberts' recommendations in 'SET for success' cover the whole educational supply chain, and particular areas of concern that cut across all subject areas, as well as those specific to Science and Engineering.

What needs to be achieved? And why?

John Rushforth, Head of Infrastructure and Management Improvement, Higher Education Funding Council for England

The UK has an exceptional research base by such measures as: Research Assessment Exercise (RAE), citation analysis, growth in external income for research and market share for international research degrees. But the research base is in danger of eroding through lack of funding, international competition and labour market changes:

- Insufficient investment in the human and capital infrastructures over a long period makes major investment essential for the research base to be sustainable in the long term;
- Funding councils must keep pace with the evolving menu of qualifications offered by institutions. New types of qualifications and qualifications in new subjects create the diversity that is important for an effective knowledge-based economy;
- A PhD should offer students a portable qualification as a progression from A levels and first degree, as well as being the qualification for careers in academia;
- Quality of training must be the driver to sustain HEIs competitive advantage in an ever tougher global market;
- Quality and diversity of qualifications are also essential to meet the changing and varied needs of employers;
- The Joint Standards Review steering group has reported with a Good Practice Framework that will shortly be published for consultation. Underlying principles include the need for:
 - standards to be rooted in good practice within institutions;
 - explicit codes of practice developed by each HEI;
 - appropriate balance of transferable skills;
 - fit with the QAA Code of Practice in RDPs; and
 - assessment processes rooted in HEIs existing processes;
- To deliver the standards additional funding will be needed. A survey to identify the costs associated with current provision and the load that implementing the standards will place upon institutions will take place, to give a robust case to put to the Treasury and sponsor departments; and
- The recommendations of the Joint Standards Review will form part of a sector-wide reassessment, including the future role of the RAE. A balance needs to be struck between investing in excellence and investing in new capacity.

Professor Sir Gareth Roberts, President, Wolfson College Oxford; Chairman, Research Careers Initiative Strategy Group

'SET for success' attributes the declining attractiveness of PhD study to a number of factors. Stipends that have declined in real terms while average graduate starting salaries have grown considerably, form a major disincentive in an era of substantial student debt. PhD funding is generally available only for three years: completing a PhD often takes longer. Many employers do not reward PhDs with higher starting salaries, viewing the training, particularly in transferable skills, that PhD students receive as inadequate career preparation. Current moves to improve the quality of PhD training are welcome but institutions are not adapting quickly enough to the needs of industry or the expectations of potential students.

- Sir Gareth Roberts' main recommendations for postgraduate education are:
 - That the Government and the Research Councils raise the average stipend over time to the tax-free equivalent of the average graduate starting salary (currently equivalent to just over £12000), with variations in PhD stipends to encourage recruitment in subjects where this is a problem;
 - That the Government and the Research Councils should fund their present numbers of PhD students on the basis that full-time students need funding for an average of 3.5 years; and
 - That HEFCE and the Research Councils should make all funding related to PhD student conditional upon students' training meeting stringent minimum standards. These minimum standards should include the provision of at least two weeks of dedicated training a year, principally in transferable skills, for which additional funding should be provided and over which the student should be given some control.
- Culture change in universities is vital, but is very difficult to achieve. The quality of PhD supervision has been ignored by the RAE. The new RAE will address the human dimension of managing research departments;
- The Joint Funding Councils need to design a standards scheme that is not overly prescriptive but is rigorous enough to ensure a change of culture does occur. It is crucial to reward good supervision through the staff appraisal process;
- Arts and Humanities departments should work more closely together to overcome the isolation of many PhD students and their supervisors. The University of Sheffield, for example, has set up a Humanities Research Institute;
- In large Science departments, the main danger within the research training environment is that the PhD student may have little choice or control over his or her PhD and effectively is used as a technician;
- One third of the review's recommendations relate to improving provision in schools. These include the recommendation for a Government scheme to pay undergraduate and postgraduate students to support Science teachers; and
- Concerted action is needed across the whole of the educational supply chain, not least by industry. The UK's investment in R&D remains only half that of our competitors.

How the RCGSP can help

Dr Janet Metcalfe, Director of the Centre of Excellence, Research Councils' Graduate Schools Programme

The current Gradschools are five-day national workshops for PhD students in personal skills training (PST). Participants overwhelmingly report greater confidence working in teams, improved employability and greater skills awareness including better career planning. In recent years the Research Councils' strategy has been to help raise the volume and quality of postgraduate skills training through joint initiatives with HEIs and good practice workshops for practitioners.

- National residential workshops have advantages and disadvantages:
 - Removal from the research environment gives space to think about personal goals and take ownership for development. However the multi-objective courses cannot be meaningfully integrated into the research training;
 - Gradschools reach only a third of Research Council funded students, or 10% of the total PhD population; and
 - Five days training is insufficient. There is not time, for example, to focus on helping students improve their research management (although over 70% do report this as a by-product).

- The good practice workshops concluded that PST is the responsibility of the HEIs, but practitioners need external support;
- The RCGSP will be refocused and the new GRAD Programme will:
 - support HEIs to enhance and embed personal skills development for postgraduate research students;
 - encourage and share good practice within the sector;
 - provide mechanisms for quality assurance and evaluation of training; and
 - continue to provide personal and career skills training at national level for specific purposes.
- CRAC is leading the partnership delivering the new GRAD Programme, organised through a Centre of Excellence and HEI-based regional hubs. Arrangements for Scotland, Yorkshire and the North West are already in place; and
- Institutions are invited to consider how the RCGSP's expertise in skills development, resources through the GRAD programme, and experience of the changing employment environment might assist development of the transferable skills component of their RDP.

What will it take to get there?

Melvyn Giles, UK Chemistry Collaborations Co-ordination, AstraZeneca

If the quality of students undertaking a PhD drops, it will be more difficult to improve the outputs from postgraduate research training. The decline in the appeal of science at sixth form and undergraduate level is a serious problem for R&D employers outside and within academia. Industry should play a bigger role in addressing this than it has hitherto.

- The structure and framework for postgraduate study needs to incorporate flexible timings and funding. Assessment methods and criteria are rightly under review and the supervisor's role is key to future success;
- Employers wanting to recruit high quality graduates and postgraduates have a vested

interest in the quality of their training. It is therefore important to employers that highly talented people also pursue academic careers;

- Depth and breadth within the subject area remain very important prerequisites for many R&D jobs;
- Science and Technology employers need to demonstrate to young people that they value their scientists. Career structure, recognition, reward, training and good management are all important factors; and
- To increase the visibility and appeal of Science and Engineering, employers need to interact more, and in more varied ways, with schools and HEIs.

Dr Nick Munn, Assistant Director, Knowledge Transfer and Value Creation, Innovation Unit, Department of Trade and Industry

Dr Munn contested that the UK profits most from postgraduate talent, HEIs the least. The lasting benefits of a PhD to the individual are research-related skills and knowledge, enhancing employability. For the UK, productive employment and creativity increase, as do the cultural benefits. 'Profiting' does not only mean money!

- The Government is supporting **prosperity for all** in key areas: knowledge transfer, higher education-business links and recent changes in work permits as well as in career development;

- Reflecting on **what will it take to get there?** as someone who does not work in the field of their PhD, a personal view is:
 - Value the student not the study;
 - Profiting always requires generic skills – rarely specifically taught studies ones; and
 - Demonstrate the benefits of study to the students before they start their research – employment prospects, self-fulfilment – along with the risks.

Workshops

Participants chose three workshops. The following outlines summarise the key issues and points for action that emerged during each session. Where workshops were run more than once the outcomes have been amalgamated.

A – Improving the quality of postgraduate research training programmes

Dr Janet Metcalfe, Director of the Centre of Excellence, Research Councils' Graduate Schools Programme

Dr Metcalfe led the Higher Education Funding Councils joint project to review good practice in RDP and identify indicators that could form the basis of threshold standards for research training. The Framework and recommendations to the funding councils were presented at the workshop:

- Participants generally welcomed the Framework of Standards for Research Training, but stressed the need for HEIs to be able to implement it flexibly;
- The key to success in improving RDP will be 'culture busting': changing the mindset of all supervisors. Training schedules should be required for all, not just new supervisors;
- The framework is marred by its dependence on RAE measures for some standards;
- Linking funding to the quality rather than to the volume of RDP training was welcomed, but some participants feared the consequences of possible reallocation of resources and the administrative burden of implementation; and
- The focus on the responsibilities of the student is very positive.

B – Developing skills to enhance employability: Opportunities for institutions to broaden horizons working with the Research Councils' Graduate Schools Programme

Dr Jon Turner, Director, Transferable Skills Programme for PhD students, Faculty of Science and Engineering, University of Edinburgh; and **David Thomas**, Chief Executive, CRAC

The workshop facilitators posed the questions: What will the new Research Councils' Graduate Schools Programme Centre of Excellence be able to offer institutions? How can you and your institutions be most effectively involved?

- The UK Grad Programme can work with institutions to support transferable and employment-related skills in ways such as sharing training materials, promoting the national courses and running joint events;
- There is potential to broaden the GRAD Programme's partnership approach by involving professional bodies or institutions outside the UK;
- It is important to be aware of the needs of postgraduate students who are based outside universities, eg in research institutes or industry;
- Potentially, the GRAD Programme could develop skills evaluation on behalf of institutions; and
- Institutions can become involved as regional hubs.

C – What are employers looking for from their researchers?

Dr Denise Rafferty, Manager, Learning and Development, GlaxoSmithKline

Dr Rafferty began by reviewing the skills needs and gaps between academia and industry, as highlighted by the Roberts Review and the Pharmaceutical Industry Competitiveness Task Force. The session then focused on identifying how employers currently address these skills gaps and discussing how partnerships between employers, universities, Research Councils and other interested bodies could reduce skills gaps in the future.

- HEIs need to help postgraduate researchers build awareness of the transferable skills they are developing throughout their research. To do this, they need to be equipped with necessary tools from the outset of their PhD;
- Universities have a role to play in convincing employers of the added value of postgraduate research; and
- HEIs and industry should consider greater employer involvement in curriculum development, particularly the skills training components. At undergraduate level, there are more partnerships and much good practice: this should be drawn upon and developed at postgraduate level.

D – What are the benefits of collaborative studentships for students and employers?

Melvyn Giles, UK Chemistry Collaborations Co-ordination, AstraZeneca; and **Dr Tom Loeffler**, Head, Training Awards Policy, Biotechnology and Biological Sciences Research Council

Collaborative awards - PhD studentships which provide research training in a partnership between an academic institution and a company - have been part of the Research Councils' funding 'landscape' for many years, but the Roberts Review has given the concept renewed impetus. How might collaborative schemes maintain their current success and be developed for the future?

- There should be consideration of flexible arrangements for industrial placements throughout the PhD, both within and outside the CASE system;
- Industrial placement schemes for PhD training need increased appeal and visibility, in order to be seen as the premier choice for students, and so improve recruitment; and
- Employers need to engage more with the education system at all levels, to encourage Science and Technology career choices.

F – Opportunities in the Arts, Humanities and Social Sciences

Dr Michael Jubb, Director of Policy and Programmes, Arts and Humanities Research Board; and **Phil Sooben**, Director of Postgraduate Training, Economic and Social Research Council

Offering insights into the policies and objectives of the AHRB and ESRC, this workshop enabled participants both to explore issues specific to Arts, Humanities and Social Sciences and those concerns shared with the Natural and Physical Sciences. Discussion focused on developing strategies for recruitment and retention and addressing current skills deficits, both amongst those seeking a research career and those seeking other employment.

- Participants endorsed the four year pattern of postgraduate training, for example a 1+3 year funding model, requiring students to complete an appropriate Masters course before starting a PhD;
- Full integration of research training, skills training and advanced subject/discipline training is needed;
- There is an urgent need for career tracking data to be collected, for the benefit of prospective students, employers, HEIs and Government as well as funding bodies. Better career path understanding would then inform the decisions of those employed both within and outside academia; and
- The experience of the AHRB and ESRC is that the best means of ensuring quality of students (and provision) is a high level of competition for the awards.

G – The findings of the Wellcome Trust review of its PhD research training support

Dr Liz Allen, Senior Policy Adviser, The Wellcome Trust; and **Dr Sally Woodward**, Head of Department for Career Scheme and Clinical Initiative, The Wellcome Trust.

The Wellcome Trust has provided formal PhD training since the mid-1980s and over time has developed a broad ranging, mixed portfolio of support for students. The Trust attaches considerable importance to finding the 'best' ways of supporting training and determining the career outcomes of those individuals it supports. Reflecting on the Trust's experience and its broader implications for the sector, participants shared ideas on issues facing PhD trainees and trainers in the light of the Roberts Review.

- Roberts' recommendation that the PhD stipend be linked to the 'average graduate starting salary' was viewed negatively by some participants, as not representing the worth of the high quality graduate;

- There was concern that an increased stipend might lead to a reduction in the number of funded PhD students: open debate on quality versus quantity should take place;
- The lack of value placed upon PhD supervision leads to some departments taking on postdoctoral researchers and RAs in preference to PhD students. Any new assessment arrangements must tackle supervisor reluctance; and
- Wellcome's four year PhD model, where the first year is a 'rotation' period leading to a more informed choice of three year project, offers the possibility of enhanced student/supervisor relationships.
- There are similarities in the recent labour market experiences of US and UK postgraduates, for example the decreased probability of holding a permanent academic post;
- The US could learn from the UK's concern to support students looking for employment outside as well as within academia. In the US, graduate training only focuses on preparation for academic jobs and students lack information on alternative careers; and
- Data concerning career outcomes of postgraduates provides feedback to providers and information to prospective students.

H – International research student training and challenges for UK universities

Professor Richard Balment, Dean for International Graduate Education, University of Manchester

International research students are important to the UK's research culture and activity, bringing breadth of experience and one of the few areas of growth in postgraduate numbers. The session explored some of the challenges facing international student recruitment, training and support, and discussed ways in which these can be met.

- There is a need to review the basis for, and the actual, costings for overseas PGR student fees on both an institutional and national basis;
- PhD training programmes should be flexible, while ensuring quality and standard of PhD. The New Route PhD is not the single answer; and
- Quantifying the value associated with having high calibre international PGR students in the UK would help make the case for expanding tuition fee schemes.

J – The US experience

Professor Paula Stephan, Professor of Economics, Andrew Young School of Policy Studies, Georgia State University, USA

Career tracking data is available in the US, from the Survey of Earned Doctorates (SED), a census of all PhD recipients and from the Survey of Doctorate Recipients, a biennial survey that samples from the SED. Recent changes in US trends include: increased time to degree, increased likelihood of holding a postdoctoral appointment and increased likelihood of having a 'non-faculty' job.

K – Improving human potential

Dr Clair Watts, European Adviser, UK Research Office

The continuing need to enhance research expertise as well as utilise more trans-disciplinary approaches means that the modern research fellow should seek out the best possible training in order to remain at the cutting edge. The European Commission's Improving Human Potential programme paved the way for European mobility. Framework Programme 6, the latest scheme, will offer an international dimension to researcher exchange.

- Areas of useful EU funding are often overlooked by institutions;
- There are opportunities both for individual researchers and on a departmental basis for postgraduate development programmes; and
- Participants identified ways to gain European funding that would support students for the full duration of a PhD, and could that be exploited by both UK and international students.

Summary of issues raised by participants during the day

- Is there a danger that originality and creativity, so important in a PhD, will be sacrificed in the new training programmes in favour of more easily measured personal skills and attributes?
- Does the Roberts Review recommendation on stipends send the wrong message to students? Will high quality graduates really be attracted by an eventual increase to the 'average graduate starting salary?' Does the stipend then need to be graduated to keep pace with graduate annual pay rises?
- Should there be more emphasis on improving the public perception of science, engineering and indeed of higher level study? Would it help to find another term for PhD researchers other than 'students?'
- How can we ensure that departments' compliance with minimum quality standards is not merely 'window dressing?'
- How can regional partnerships between industry, education and government agencies help us profit from postgraduate talent?

Points/issues for reflection

- 'Currently PhDs do not prepare people adequately for careers in business or academia
- Securing a high calibre of entrants to PhD programmes will not of itself ensure that PhD graduates are attractive to employers in education and in business
- The definition of quality as it applies to PhD training and PhD graduates to some extent depends on what a PhD is meant to achieve
- Today's PhD student is the highly skilled academic or business researcher of tomorrow, and will need interpersonal and management skills to fill these roles effectively.'

SET for success, 2001



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