

'Radical Thinking,
Creative Solutions'
Career Issues in
UK Academic Research

3-4 July 2001

TR16-2419/500/08-2001/SV



The Wellcome Trust

**'Radical Thinking,
Creative Solutions'
Career Issues in UK
Academic Research**

3-4 July 2001

Table of contents

	<i>Page</i>
Acknowledgements	5
Summary and recommendations	6
1 Introduction	7
1.1 Aims	7
1.2 The participants	7
1.3 The workshop structure	8
2 ‘My question’ – issues submitted by participants before the meeting	9
2.1 The task	9
2.2 Results	9
3 UK academic career paths	11
3.1 The task	11
4 Task 3: The obstacles and barriers in an academic research career	13
4.1 The task	13
4.2 Results: The benefits of an academic research career	14
4.3 The obstacles and barriers to an academic research career	16
4.4 The reasons for leaving or contemplating leaving academic	18
5 Task 4: Purpose and benefits of UK academic careers	21
5.1 The task	21
5.2 Purpose and benefits	21
6 Task 5: Strengths, weaknesses, opportunities and threats	23
6.1 The task	23
6.2 SWOT outcomes	23
7 Key issues	25
7.1 The task	25

8	Towards creative solutions	27
8.1	The task	27
8.2	Group 1: Nuclear or revolution option	28
8.3	Group 2: UK career structures	31
8.4	Group 3: Protecting the 'stars'	32
8.5	Group 4: Good management practices	33
8.6	Group 5: PhD training	35
8.7	Group 6: Science teaching in schools	36
8.8	Group 7: Flexible career structures	38
9	Calls to action	39
	Appendix 1: Participants	40
	Appendix 2: 'Radical Thinking, Creative Solutions' programme	42

Acknowledgements

The Wellcome Trust would like to thank Dr Gillian Griffiths (University of Oxford), Professor Martin Raff (University College London), Professor Jim Smith (University of Cambridge) and Professor Sir Stewart Sutherland (University of Edinburgh) for their significant contribution to the planning of this event through the original Organizing Committee. Their work was taken forward by a Trust project team; Debbie Carley, Patricia Chisholm, Lucy Criddle, Iain Frame, Jonathan Grant, Philip Green, Judi Kennedy-Clarke and Steven Wooding whose efforts are gratefully acknowledged. We would also like to thank the Trust staff who facilitated the discussion sessions with such enthusiasm and the Hinxton Conference Centre staff for their organizational support.

Finally, the Trust would like to thank the participants at the meeting who rose to the challenge of trying for the 'Radical Thinking' and 'Creative Solutions' we demanded of them and so willingly contributed the views and material presented to you in this report.

Copies of this report can be obtained on request from Dr Philip Green at the Wellcome Trust Policy Unit (Tel: +44 (0) 20 7611 8446; Fax: +44 (0)20 7611 8742; E-mail: p.green@wellcome.ac.uk).

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means electronic, mechanical, photocopying, recording or otherwise without the prior permission of the Wellcome Trust.

Design and production: Wellcome Trust Publishing Department
First published 2001.
© The Trustee of the Wellcome Trust, London 2001

The Wellcome Trust is a registered charity, no 210183.
Trustee: The Wellcome Trust Limited
Registered in England, no 2711000
Registered office: 183 Euston Road, London NW1 2BE

TR16-2419/500/08-2001/SW

Summary and recommendations

The 'Radical Thinking, Creative Solutions – Career Issues for UK Academic Research' meeting at Hinxton Hall in July 2001 provided a discussion forum to consider the realities and difficulties of contemporary UK academic research life, and to explore and develop solutions to address the most pressing of these. Participants included university researchers, staff from university support departments, senior university figures, representatives from research funding bodies, individuals from outside the UK and individuals from other sectors. After two days of intensive discussion, the participants were invited to produce a number of 'calls to action' on which could be based the recommendations of this report.

These were:

- that a research institute-based model for university research, which would allow greater flexibility and autonomy, be developed and piloted in one or a handful of universities;
- that smaller research laboratories be grouped within each university within a federal structure and be provided with core infrastructure support, including research support staff, to provide continuity over the long term;
- that research principal investigators in universities be persuaded of their direct responsibility for management of research staff, and of the need for substantial change and improvement to current practices;
- that a working party urgently address the particular problem faced by senior fellows at the end of their research tenure, for whom university-funded positions are either unavailable or unattractive;
- that university teaching be returned to its previous position as a high-status, valued activity and that university teachers be rewarded in terms comparable to the full-time, independently funded researchers working in the universities;
- that a four-year PhD be introduced as standard, with 'respectable exit points', for example after taught Master's or MRes, after additional research training for example to MPhil, and, for a smaller number of students, at completion of a PhD;
- that postdoctoral research training and experience be deemed a valued qualification for science teaching in schools, and that an appropriate, specific, entry pathway to school teaching be created.

1 Introduction

1.1 Aims

This workshop was designed by the Wellcome Trust to provide a discussion forum where academics from all career stages from both the UK and overseas, along with representatives from higher education funding bodies, Research Councils, industry, policy makers and individuals who have left academia to pursue alternative careers could discuss the difficulties faced at the various stages of an academic research career and identify the key obstacles to a long-term career in academic research. The workshop was structured to encourage participants to indulge in the ‘radical thinking and creative solutions’ of its title to avoid it being simply a ‘talking-shop’ which catalogued, yet again, the problems faced by UK academic researchers. Participants were encouraged by various exercises to step away from their usual stances in thinking about academic research, and to try to develop cutting-edge, innovative proposals for change.

The Wellcome Trust has invested substantially for many years in providing personal support awards, that is fellowships and PhD scholarships, to both established individuals, young graduate students and early postdoctoral researchers based in UK university research departments. The considerable importance attached by the Trust to the careers of the individuals it supports through this kind of award is manifest in a number of ways: through provision of salaries to its fellows which are substantially enhanced over the normal university academic scales; through studies which follow the career paths of Trust-funded individuals and which seek their opinions on important aspects of their career choices¹²³⁴; and through representation of Trust staff at high-level on a number of forums charged with addressing key national issues (e.g. HEFCE Fundamental Review of Research, Roberts’s Review, and Research Careers Initiative). The Trust has, it believes, a deserved reputation for radical and creative thinking on research careers issues and this workshop presented an opportunity for the Trust to broker further dialogue between the various stakeholders in UK academic research, including the researchers themselves, the research funding agencies, the policy makers and the universities, on the key issues of the day and to help set the academic research agenda for the 21st century.

1.2 The participants

Participation at the workshop was by invitation only, and was limited by constraints of space and design to a maximum of 70 people, including the necessary Trust support staff. The majority of invitations were sent to research-active individuals at various career stages working in UK universities, including recent PhD students, young postdoctoral researchers, career or tenure-track research fellows and established academic post holders. A proportion, but not all, of these individuals were, or had been at some time, supported by the Trust – others were UK Research Council-funded and others worked outside the university system in Research Council or charity-funded research institutes. Non-research representation from the universities included Vice-Chancellors or other senior-level individuals and staff from human resources departments. A number of UK policy makers were invited from the Research Councils, Higher Education Funding Councils, research charities and Government. The international perspective was provided both by researchers and policy makers from outside the UK and from the personal experiences of the UK-based researchers themselves, many of whom had spent some years outside the UK during their academic careers. A significant number of the women who took part had successfully combined a research career with having and bringing up children. A full list of the participants is included in Appendix 1.

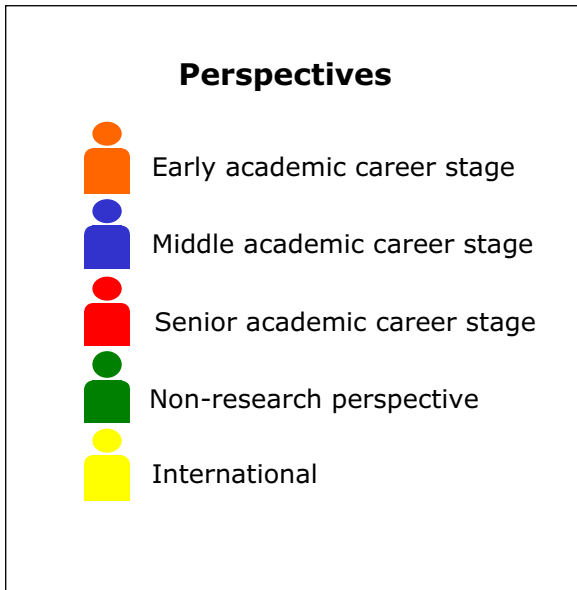
The exercises or tasks to be undertaken during the proposed discussion groups required participants to be classified into groups of various sorts. Participants arrived at the workshop to find that they had been ‘colour-coded’ depending on their professional, that is scientific, age (early, middle and senior). Two additional groups had been created of individuals from outside the UK (international) and of individuals no longer working directly in academic research (non-research), and these were assigned different colours (see box below).

¹ *Review of Wellcome Trust PhD Research Training: Career paths of a 1988–1990 Prize Student cohort.* London: The Wellcome Trust, March 2000.

² *Review of Wellcome Trust PhD Research Training: The student perspective.* London: The Wellcome Trust, March 2000.

³ *Review of Wellcome Trust PhD Research Training: The supervisor perspective.* London: The Wellcome Trust, July 2001.

⁴ *Who Applies for Research Funding?* London: The Wellcome Trust, July 2001.



The early, middle and senior academic groupings were, inevitably, somewhat arbitrary and overlapped to an extent. The non-academic perspective group included policy makers, people from industry, ex-academics and representatives from research funding bodies. The international group included senior academics, policy makers and research funders both from elsewhere in Europe and from the USA.

1.3 The workshop structure

The structure of the workshop included:

- key-note addresses;
- short ‘witness’-type presentations from successful, non-tenured university researchers at various career stages and ‘perspective’ presentations from individuals outside the university sector;
- substantial facilitated discussion groups which reported the results of their discussions back to plenary session in various ways.

The structure of the facilitated discussion sessions was designed by external consultants⁵ working with Trust staff to encourage the airing of difficult issues around careers in academic research and to help point the way forward towards solutions.

A full programme for the meeting is included in Appendix 2.

⁵ Strategis (Human Resources Consultancy) Limited. E-mail: info@strategis.co.uk.




















2 ‘My Question’ – issues submitted by participants before the meeting

2.1 The task

Prior to arriving at the workshop, participants had been asked to formulate a question which they felt would stimulate people to think more widely and creatively about the future of academic research careers in the UK. In the opening session of the meeting, individuals were invited to choose a partner at random, to discuss the question each had raised and to identify the experiences that had led them to consider that question important.

2.2 Results

Table 2.1 A summary of questions posed by workshop participants.

Feature	Early	Middle	Senior	Inter-national	Non-research
Recruitment and retention of the most talented individuals (including research training quality issues)					
Academic research career pathways and the quality of the academic research environment					
Human management/mentoring					
Family issues and work/life balance					
Academic vs industry-driven research					
Science in schools/public attitudes to research					
Policy issues					

A majority of the questions posed concentrated on how to recruit and retain the most talented individuals into academic research – and focused specifically on how academic career paths could be strengthened and how the quality, in the widest sense, of the work environment in university research could be improved (Table 2.1). Questions related to poor human resource management and mentoring in universities, together with family issues concerning part-time working and career break opportunities for women were the next most frequent categories of question posed. Policy issue questions focused on the impact and influence research funding agencies made on the nature of the academic research environment and on academic career pathways. Figure 2.1 lists all the questions posed by the participants.

Figure 2.1 The questions posed by the workshop participants.

Recruitment and retention of the most talented individuals (including research training quality issues)

- How can we ensure that there are funding mechanisms to retain highly skilled support staff, e.g. postdoctoral research officers who maintain continuity of skills, expertise etc. within university research labs?
- Can a sufficient number of the best and brightest students continue to be attracted to advanced research training if the number of academic positions is limited?
- Many talented individuals are lost to academic research immediately after graduating because they perceive an academic career as a second rate choice compared with other opportunities. Have they got it wrong, and what can be done to change attitudes at this crucial juncture?
- The 'apprenticeship' for those wishing to become career academics is long and very hard work (PhD, postdoc, Royal Society/Research Council fellowship, etc.) How well does this system handle exceptional talent? Is there a fast track to a Chair for someone in their early 20s or is this possibility all but extinguished? Is there a correct balance of risk taking in academic recruitment?
- How can we better support young scientists?
- How can science graduates be encouraged to stay in science?
- Is it wise for new graduates to begin a PhD straight after graduation, without first experiencing working in research, which would allow them to assess whether research is really suited to them?
- What is the most realistic and most effective way to attract the best young minds into careers in science?
- How can we ensure a bigger pool of high-calibre potential graduate students?
- Are we training too many PhDs?
- How would the research environment be altered if there were fewer postdoc recipients?
- Why are many of the best British graduates deciding against a career in research? Low salaries vs uncertain career prospects?
- How can we better equip PhD students/postdocs with transferable skills?
- How can training be modified to ensure a uniformly high level of proficiency amongst individuals who aspire to careers as biomedical scientists?

Academic research career pathways and the quality of the academic research environment

- How can we better manage career expectations?
- Where is the career path for the 'career postdoc'?
- Who should manage the careers of contract research staff?
- Can we improve academic research careers in the UK by adopting policies used in other European countries?
- Could senior fellowships be made into rolling five-year contracts?
- How can we encourage all those involved to improve the planning of research careers?
- Is there such a thing as career structure for academic researchers?
- Those contemplating life in academia see their future career as much too precarious. The circumstances which influence success or failure are not at all clear. How can this uncertainty be reduced? Many find the American system, albeit a bit brutal, more predictable and manageable.
- Is it possible, or desirable, to alter the workload of an academic on tenure so that the eight years or more of training in practical science are actually used?
- How can we find the right balance between the 'career' aspects of scientific research and the importance of risk-taking and aggressive pursuit of scientific discovery?
- How can we best provide appropriate support and recognition for the contribution made by postgraduate supervisors in the development of future generations of academics?
- Where should one go for career advice?
- Many developments do not have a critical mass of postdocs to operate an effective career development programme. What is the most effective way to set up these programmes? Should they be run by universities, funding bodies or professional societies?

Human management/mentoring

- Can we identify and then foster the organisational, financial, and cultural changes that will create a more positive framework for 'principal investigators' to support the career development of research staff working with them?
- How should Universities and Research Councils respond to the pressure from the government and trade unions to employ CRS on open ended contracts?
- To what extent would a scientific research Department's signing up to a 'Code of Practice' covering all facets of lab activity, help to raise self-confidence and avoid marginalization of the young and the under-represented?
- Whose responsibility is career management in higher education?
- How do we assess scientific competence? Do we use subjective or objective criteria?
- Biomedical research will increasingly depend on large collaborations from which the output is a resource; a database, a chemical inhibitor of a protein, a collection of patient samples. Those who do this work may well not obtain high-profile publications. What sort of academic reward model will we use to encourage work of this sort?
- What are the basic elements of a mentored research experience and how do institutions assure that they are understood by mentors as well as those being mentored?

Family issues and work/life balance

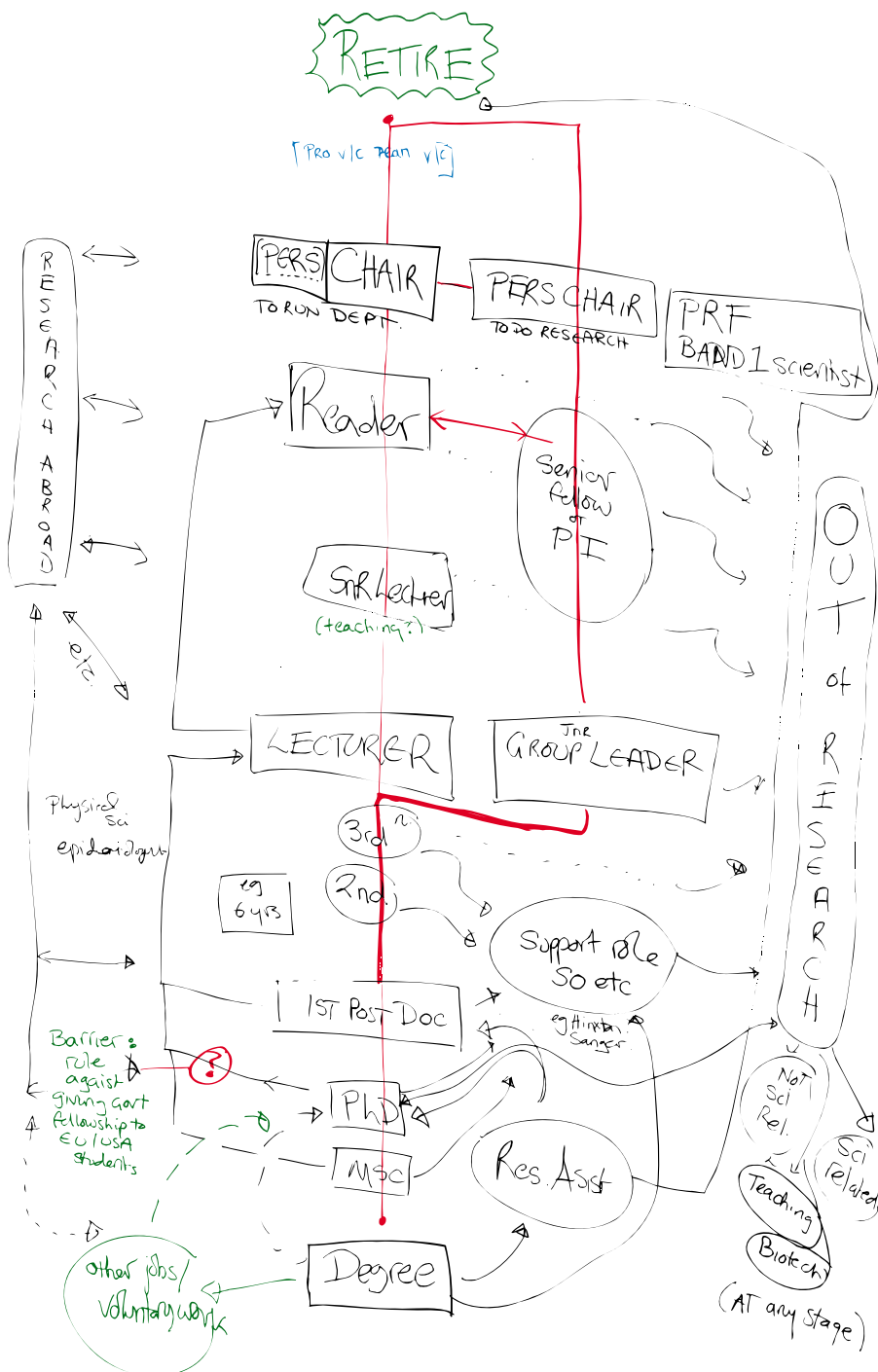
- How can we alter working patterns to achieve a better work/life balance?
- How can we help scientists (particularly women) to manage all stages of raising a family whilst maintaining a truly competitive research and academic career?
- How can we encourage young students – especially female ones – to continue in academic science beyond a PhD or first postdoc?

3 UK academic career paths

3.1 The task

For this exercise, workshop participants were assigned to one of seven pre-arranged groups of eight to ten people. Each group contained individuals of different academic ages and seniority who represented a number of different research, academic, and non-academic sectors and perspectives. The task of each group was to create real models of the different UK academic career paths using their own experiences and those of people they knew – and to create diagrams and observations which could be the starting point for further group work on how academic research careers might be envisaged for the future. The output from the exercise was to be a group poster which would accurately represent the reality of the past or current academic research career of all members of the group, accompanied by any additional interesting observations or ideas which had emerged during discussion. Figure 3.1 shows the work of one group.

Figure 3.1 A model of the different UK academic career paths



The most striking feature of all six posters created was their extraordinary complexity and diversity.

There were, however, some themes which appeared in all of them, including:

- multiple career tracks, some of which converged and diverged repeatedly, and some of which remained resolutely parallel, for example the university established teaching career track and the independently funded research fellow career tracks;
- multiple entry and exit points across the whole of each career path, from the immediate postdoctoral stage through to retirement age;
- a great diversity of funding sources;
- many of the exit pathways could be clearly seen to feed the needs of the UK for a research-trained workforce across the whole spectrum of industry, business, government and other education sectors;
- considerable career advantage to research experience or training outside the UK.

Additional observations and ideas generated during the discussions included:

- too little weight/credit given to teaching;
- the need for a better career structure for those who leave after some years postdoctoral research experience – the respectable exit issue;
- that perhaps there should be fewer PhD students, that is the numbers entering the academic research career track should be reduced;
- that the bar on Research Council support for PhD students from the EU is inappropriate since it restricts the size of the talent pool – as does the failure of the UK to compete successfully with the USA in recruiting the best non-EU/non-UK young talent;
- that good academic mentoring helps maintain motivation and provides positive role models for young researchers – but pressure of work on academic staff discourages them from accepting and embracing these multiple roles enthusiastically;
- that the quality, for an individual, of their PhD research supervisor and early research mentors has a fundamental impact on career motivation and career choices, and that this role could perhaps be more widely shared to reduce the risk of too-exclusive a relationship;
- that staff with mentoring/research training responsibilities should be established post holders, with recognized academic, not just research, obligations;
- that the over-competitive, aggressive work environment in academic research demands long hours and creates an unacceptable work/life/family balance.

4 Task 3: The obstacles and barriers in an academic research career

4.1 The task

The groups were asked to collect real life examples from their own experience which highlighted:

- when and why people leave UK academic research;
- the barriers and difficulties faced by people who remain within academic research; and
- times when the system was working well.

All submissions were colour-coded as before (early, middle, senior academic, non-academic, international). In addition they were classified according to the decade during which the difficulty for the individual or decision to leave academic research had occurred, by the career stage of the individual at the time, and by the sex of the individual. There was no limit to the number of submissions an individual could make.

The collected submissions from all the groups were then displayed on a time-line of academic career age (i.e. years post-PhD). This produced a 'notice board' which, reading left-to-right, covered a timespan from the immediate post-PhD years through to academic retirement and which became covered with variously coloured notes, each of which raised an issue. This made an immediate visual impact and permitted the viewer to see whether or not there was a concentration (by colour) at any particular stage of academic careers of any particular difficulties or obstacles (Figure 4.1).

Figure 4.1 The 'obstacles', 'barriers' and 'worked well' experiences of conference participants.



All the submissions and comments posted were then collected and analysed in greater detail, following the meeting.

The submissions could be grouped into three broad categories;

- structures or strategies which were felt to have been supportive of individuals’ academic research careers;
- descriptions of barriers or obstacles to progress for individuals in an academic research career; and
- issues or obstacles which had resulted in individuals either leaving or contemplating leaving academic research.

These categories were then sorted according to the academic age of the individual.

4.2 Results: The benefits of an academic research career

There was a remarkable consensus across all age groups about the positive aspects of an academic research career, namely, that it provided individuals with a unique degree of personal and professional freedom to pursue their own research passions, and that the university structure was sufficiently flexible to accommodate a variety of different sources and types of research support (Table 4.1). Additional recognized benefits were good-quality academic peer support and mentoring.

A selection of some of the opinion expressed is given in Box 1, with the ‘vintage’ of the opinion and the sex of its author given after the quotation.

Table 4.1 The benefits of an academic research career

Feature	Early	Middle	Senior
High-quality work environment, freedom, autonomy			
Family-friendly structures, institutional flexibility			
Good mentoring/management			

Note: the views of the international and non-research groups concerning their own academic careers are included in the table according to their academic ages.

Box 1: The benefits of an academic research career

Senior academics

- “Twelve years on soft money – then head of a large investments research department followed by head of a biomedical research institute. I could not think of a better career, but I have been exceptionally lucky.” (70s)
- “Thirty years on soft money, salary from programme grants x30 years. Worked well, [in giving me] complete freedom to do full-time science.” (70s M)
- “University allowed me to have my research laboratory in an industrial company. Half the research grants were industry, half in academic setting.” (70s F)
- “Being given five-year programme funding with full infrastructure support at the age of 33. This would not have happened in any other system with which I am familiar.” (80s M)
- “Move to MRC Research Institute, tenure-track, freedom, trusted to do something interesting, [with] efficient support.” (80s M)
- “Holder of Senior Fellowship with an underwritten position provided by the university gives the best of both worlds, with well-funded research, minimal teaching and security of long-term position.” (80s M)
- “Combined senior position in industry with senior academic position. [Both the] University and [the] individual saw it as a ‘win-win’ situation.” (80s M)
- “Working in a university allowed me the freedom to spin out a brother company.” (90s F)
- “Senior Fellowship enabling a return to academia and the development of an academic group.” (90s M)

Middle-stage academics

- “Sympathetic and supportive lab head promoting independent career.” (90s F)
- “Had good advisers, always aware of what was required for the next step and therefore worked towards it.” (90s)
- “In the UK because of its fellowship schemes and because the academic community contains so many bright young things on fellowships.” (00s M)
- and from a two-scientist couple;
- “The university offers four-year rolling contracts to fellows. Funders allow flexibility to work part-time, so she’s kept in the system.” (00s)













Early-stage academics

- “Did PhD very successfully, and moved to lab funded by both industrial and academic sources – five years on now, and setting up to move again – options very broad.” (90s M)
- “Given freedom to pursue the line of work to which I was committed.” (90s F)
- “I like the freedom, intellectually and time-wise. Interesting and exciting opportunities e.g. media, science communications, writing, consultancy, politics. Good to work with interesting people, nice to be invited to give talks etc.” (00s F)

4.3 The obstacles and barriers to an academic research career

The comments describing obstacles and barriers differed across the academic career stages (see Box 2 for a selection). The early-stage academics commented on job insecurity and lack of career prospects, combined with the need to become competitive very early for research grant funding (Table 4.2). The most important barrier for the middle-stage academics (which produced more than half of the comments submitted) concerned the family-unfriendly, inflexible, structures within universities and in research funding structures, which created difficulties both for women in taking career breaks and for couples where both sought professional or research careers. Job insecurity and poor academic mentoring also figured for this group (Table 4.2). The comments from the senior academic group again focused on the insufficient rewards, often but not always financial, and the too-rigid structures or poor career paths in the university environment (Table 4.2).

Table 4.2 The obstacles and barriers to an academic research career.

Feature	Early	Middle	Senior
Insufficient rewards/ opportunities (£, low status)			
Job insecurity/ lack of career prospects			
Family issues/ family-unfriendly practices			
Non-competitive for research grant funding			
Poor personnel management/ mentoring			

Note: the views of the international and non-research groups concerning their own academic careers are included in the table according to their academic ages.

Box 2: Obstacles and barriers to an academic research career

Early-stage academics

Barriers

“Two postdoctoral positions, one-year family break. Want biotech job, now in another postdoctoral position because no jobs are available – holding pattern.” (00s F)

“Young scientists doing PhDs then postdocs, leaving research when having a family and then being unable to find a route back in, owing to the dearth of returnee schemes.” (F)

Leaving

“Disillusioned by the lack of enjoyment senior scientists get from their job.” (00s F)

“Left to work in management consultancy because it is higher paid, more secure and less depressed/[has a less] depressive atmosphere.” (00s M)

Middle-stage academics

Barriers

“Partner also an academic, young children needing child-minding. Man travels to conferences and meetings to set up grants – woman feels unable to travel because she does not want to be away from young children – a real barrier to her future promotion. Another barrier to her career is the research environment where the ‘late hours culture’ make her feel guilty at leaving early.” (00s)

“Inefficient and uninspiring group leader.” (90s M)

“Difficult to find funded research position, took a mainly teaching position as second best.” (90s F)

Senior academics

“A series of short-term funding which stopped me from extending my research area. It required extra effort to develop research with enough innovative projects to sustain a programme.” (F)

“Inadequate career structures for people who want to do science but do not want to be a group leader.”

“Conflict between the institution and the grant-funding body on salary and grade i.e. an issue of academic status for limited-contract research staff.” (90s F)

4.4 The reasons for leaving or contemplating leaving academic research

All four groups identified the insufficient rewards and opportunities associated with a university research career, with more senior individuals and those who had left academic research citing specifically low pay and job insecurity (Table 4.3; Box 3).

There were fewer comments on the poor quality work environment and over competitive, aggressive work ethic or about the need to be competitive for research funding from middle-stage academics – suggesting perhaps that people identify these features as unattractive either at an early stage or a late stage.

Other important issues, particularly from individuals who had elected to leave academic research, were family unfriendly practices and poor management or mentoring. Half of all comments submitted by this group were from women who felt they had been discriminated against because they work part-time or who had experienced inappropriate attitudes from (male) colleagues.

Table 4.3 The reasons for leaving or contemplating leaving academic research careers.

Feature	Early	Middle	Senior
Insufficient rewards/opportunities (£, low status)			
Job insecurity/lack of career prospects			
Non-competitive for research grant funding			
Poor quality work environment			
Over competitive, aggressive work ethic			
Family issues/family-unfriendly practices			
Poor personnel management/mentoring (including inappropriate attitudes to women)			

Note: the views of the international and non-research groups concerning their own academic careers are included in the table according to their academic ages.

Box 3: Reasons for leaving or contemplating leaving academic research

Early-stage academics

Barriers

“PhD with two years postdoc who could have certainly pursued an academic career – opting out because he feels the academic route to be not a good option, with no career opportunities, extreme competitiveness, and difficulty in balancing all aspects of career.” (90s M)

Leaving

“Joined industry immediately after PhD – knew that would be unlikely to run a group in an academic setting and industry offered a good opportunity for team work, and security.” (90s F)

“Became a school teacher after PhD – academia incompatible with having a family.” (00s F)

Middle-stage academics

Barriers

“Lack of sensible management structure in an academic department, poor management of a series of placements.” (80s M)

“To accountancy/health service. Money, security, location.” (80s F)

“Problems of struggling on short-term contracts and having a family.” (80s F)

“Established academic researcher employed on a succession of fixed-term contracts, deterred by the insanity of management’s unwillingness to offer staff longer-term contracts.” (90s M)

Leaving

“Left academia due to lack of lectureship opportunities and disillusionment with the lack of respect from academic staff for postdocs.” (90s F)

“Left for industrial post for higher salary and job security, i.e. lack of career structure and poor salary.” (90s M)

“Usual PhD/postdoc career pattern, ending up with lectureship at a research-active university – overwhelmed by teaching, admin and student care duties – resigned in order to move into law.” (90s F)

“Very bright postdoc with the talent to get to the top found the demands of motherhood and research incompatible. A part-time job would have solved this.” (00s F)

Box 3 continued >

Box 3 continued

Senior academics

Barriers

“Outstanding researcher (2x3 year postdoctoral positions), then temporary lectureship made permanent but turned down because of workload pressures of lectureship post, competitiveness of research funding schemes and (poor) salary.” (90s M)

Family issues

“Problems of a dual scientific career couple and the inability to have a reasonable standard of living in London. One of the pair moved into the pharmaceutical industry.” (80s M)

“Moved cities when (female) partner moved job and resigned research post. Part-time job at local university. Resigned later when partner had child in order to maximise household income by taking higher paid full-time job outside university.” (M)

“Two women, 15 and 18 years postdoc and both part-time (families), excellent publications, and left because of discrimination against part-time workers.” (F)

“Resigned tenured lectureship for academic/family four years out. Returned through re-entry scheme but facing barrier through absence and loss of visibility.” (90s F)

Poor management mentoring

“Sexual harassment by head of department – too young and inexperienced to deal with it.” (90s F)

“Continued inappropriate attitude of senior managers which patronizes women – referring to women academics as girls.” (90s F)

5 Task 4: Purpose and benefits of UK academic careers

5.1 The task

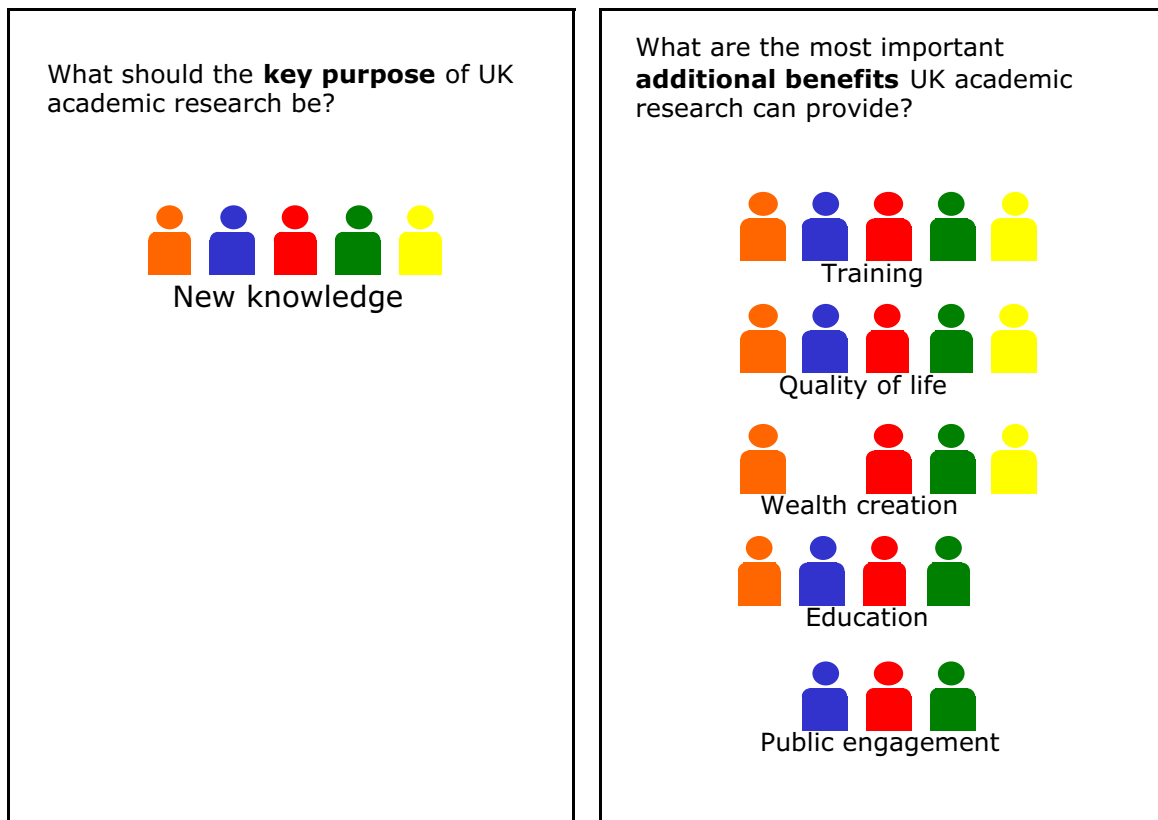
Each group was asked:

- What should the **key purpose** of UK academic research be?
- What are the most important **additional benefits** UK academic research can provide?

5.2 Purpose and benefits

The results for each of the five perspectives are summarized in Figure 5.1.

Figure 5.1 The different *group* perspectives on the key purposes and benefits of UK academic research.

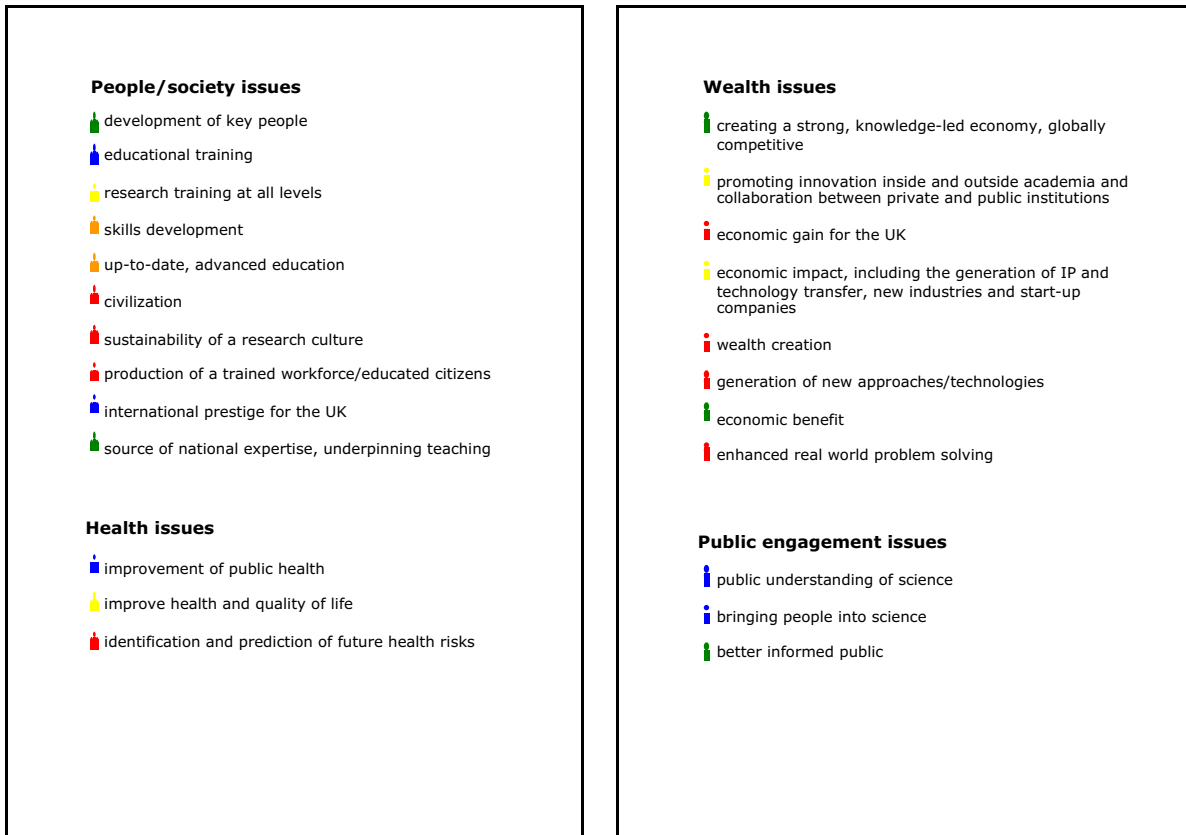


There was clear agreement that the purpose of UK academic research was “to develop and support the (UK) knowledge base to produce new knowledge and insights in order to support increased wealth creation and improved quality of life”. A significant rider, which illustrated the special importance, for some, of academic as opposed to commercial research, was that this creation of new knowledge could be carried out “in the spirit of independent inquiry and in an atmosphere of free dissemination”.

There was a general consensus that additional benefits of UK academic research included improving quality of life, wealth creation, education and public engagement. Universities were also seen to be sources of national expertise and international prestige for the UK and, for those who worked in them, as offering opportunities for great intellectual satisfaction and an extremely flexible lifestyle.

The multiple perceived benefits described by the various groups were couched in various but often similar terms (Figure 5.2).

Figure 5.2 Additional benefits of UK academic research.



6 Task 5: Strengths, weaknesses, opportunities and threats (SWOT)

6.1 The task

In the same 'single' perspective groups as Task 4 each group was asked:

- to identify the strengths (S) and weaknesses (W) of the current system in supporting the purpose and benefits of UK academic research;
- to identify opportunities (O) and threats (T) from within or outside the current academic system that need to be exploited or defended against.

6.2 SWOT outcomes

The SWOT analysis is shown in Figure 6.1, coded as before by perspective.

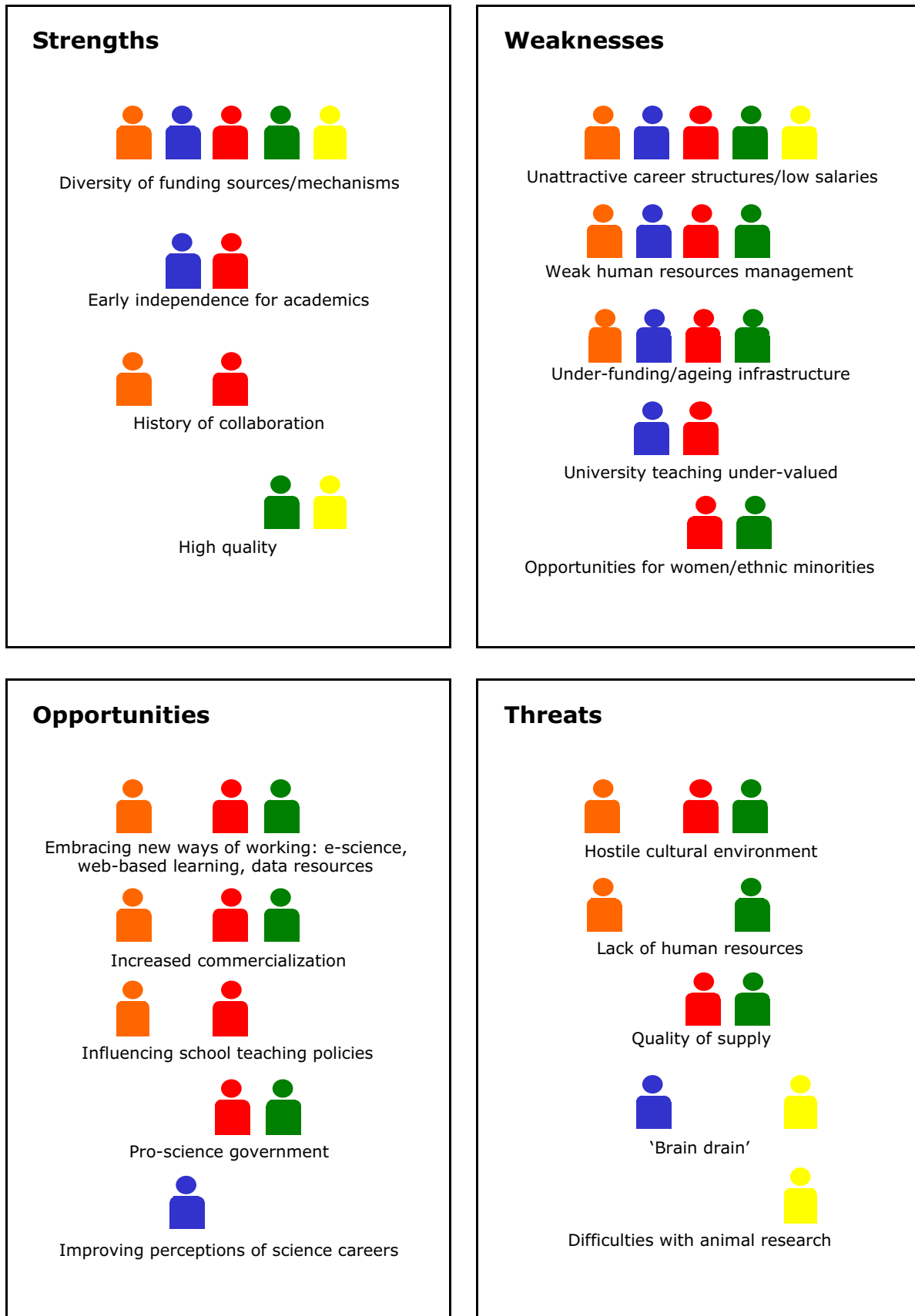
A key strength of the UK system, on which all perspectives were agreed, was the diversity of funding sources and efficient mechanism for the distribution of those funds. Interestingly only the 'non-research' and the 'international' perspectives noted the high quality of the UK academic research base.

There was far greater agreement on the weaknesses present in the current system with unattractive career structure/low salaries, under-funding, and weak human resource management all being mentioned by a number of different perspective groups.

Key opportunities to be exploited by the academic sector included embracing new technologies and methods of work, and making the most of the pro-science stance of the current government.

The threat that was highlighted by a number of the different groups was the need to counter the perceived anti-science culture, and the need to engage with and listen to the public on scientific issues.

Figure 6.1 Different group perspectives on the strengths and weaknesses of UK academic research, and the opportunities and threats that need to be exploited or defended against.



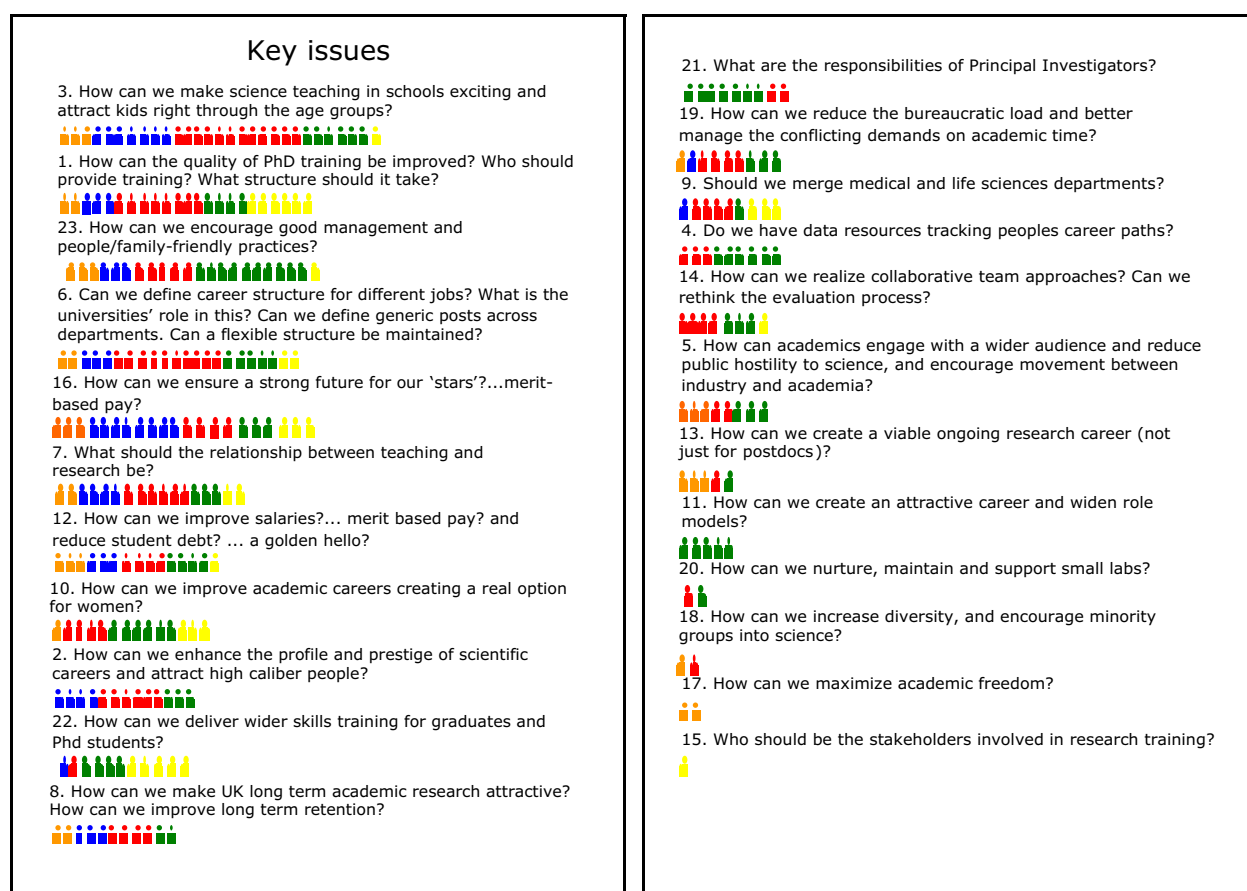
7 Key issues

7.1 The task

Participants started day 2 by identifying, collectively, the key issues that need to be tackled to improve UK academic careers. Twenty-three issues emerged in open forum (Figure 7.1).

Individuals were then asked to vote for the issues they thought were of greatest importance and could vote up to five times. In order to determine if some issues were of particular importance to particular perspectives, the votes were colour coded as before (Figure 7.1).

Figure 7.1 The 23 key issues defined by the workshop participants and the number of votes allocated to each by individuals from each of the five perspective groups.



Note: the different perspective groups were not of equal size (31 orange, 41 blue, 64 red, 80 green and 29 yellow votes cast).

The issues that received the most votes were:

- How can we make science teaching in schools exciting and attract kids right through the age groups? **[29 votes]**
- How can the quality of PhD training be improved? Who should provide training? What structure should it take? **[23 votes]**
- Can we define career structure for different jobs? What is the universities' role in this? Can we define generic posts across departments. Can a flexible structure be maintained? **[22 votes]**
- How can we encourage good management and people/family-friendly practices? **[22 votes]**

The 23 issues were then distilled and grouped under six broad titles, based in part on the numbers of votes cast and in part through combining similar or very closely-related topics. A seventh group was created and given the opportunity to redesign the UK academic research system from scratch in a 'nuclear' or 'revolution' option. In a 'Chinese market' exercise, participants were then invited to assign themselves to the issue of their choice by collecting under one of the seven signposts (topics) in the courtyard (market-place) (Figure 7.2).

Figure 7.2. The 'Chinese market'



Interestingly, people were reluctant to assign themselves to one of the two topics which had been deemed the most important i.e. which had received the most votes: encouraging good management by principal investigators of their research staff;



A certain amount of encouragement and persuasion of individuals to re-assort themselves resulted in the creation of groups of a reasonable size for each of the six topics.

8 Towards creative solutions

8.1 The task

Workshop participants spent the remainder of the day working towards creative solutions to the six key issues. The box below defines the seven discussion groups, with the issues in bold being the main focus for each group's discussion.

Group 1

Nuclear or revolution option

Group 2

How can we make UK long term academic research attractive? How can we improve long-term retention?

How can we improve academic careers creating a real option for women?

How can we create a viable ongoing research career (not just for postdocs)?

Group 3

How can we ensure a strong future for our 'stars'?... merit-based pay?

How can we enhance the profile and prestige of scientific careers and attract high-calibre people?

How can we improve academic careers creating a real option for women?

Group 4

How can we encourage good management and people/family-friendly practices?

What are the responsibilities of principal investigators?

Group 5

How can the quality of PhD training be improved? Who should provide training? What structure should it take?

Who should be the stakeholders involved in research training?

How can we deliver wider skills training for graduates and PhD students?

Group 6

How can we make science teaching in schools exciting and attract kids right through the age groups?

How can we increase diversity, and encourage minority groups into science?

Group 7

Can we define career structure for different jobs? What is the Universities role in this? Can we define generic posts across departments. Can a flexible structure be maintained?

What should the relationship between teaching and research be?

Groups were asked to design and produce a display board, or poster, which presented persuasive arguments for the suggested solutions.

8.2 Group 1: Nuclear or revolution option

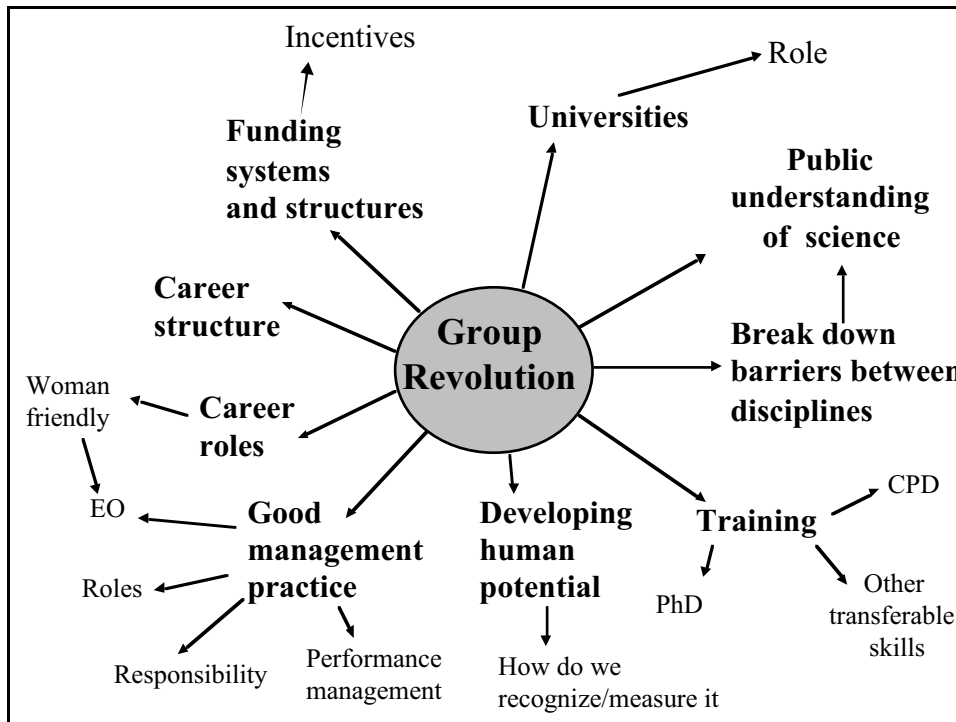
Group 1 was given a blank sheet to recreate the UK higher education system after an imagined ‘nuclear disaster’ or ‘revolution’. The group was instructed to assume that the whole university system had been flattened or was lying empty and that, with the economy now recovered, there was an opportunity to design a completely new academic research structure. The only constraint was that the costs should not be higher than before.

The group started by agreeing on a number of assumptions on which to build their design namely that:

- universities exist;
- universities cover far more than science;
- there is a diversity of funding stakeholders;
- research and training should be linked within an institution;
- students will behave as consumers/customers of HE;
- not all researchers are good managers;
- the wider public feels that it has a right to know what’s happening in science.

The group then drew up a ‘mind map’ of all the areas they would need to consider in their design (Figure 8.1).

Figure 8.1 Revolution ‘mind map’.

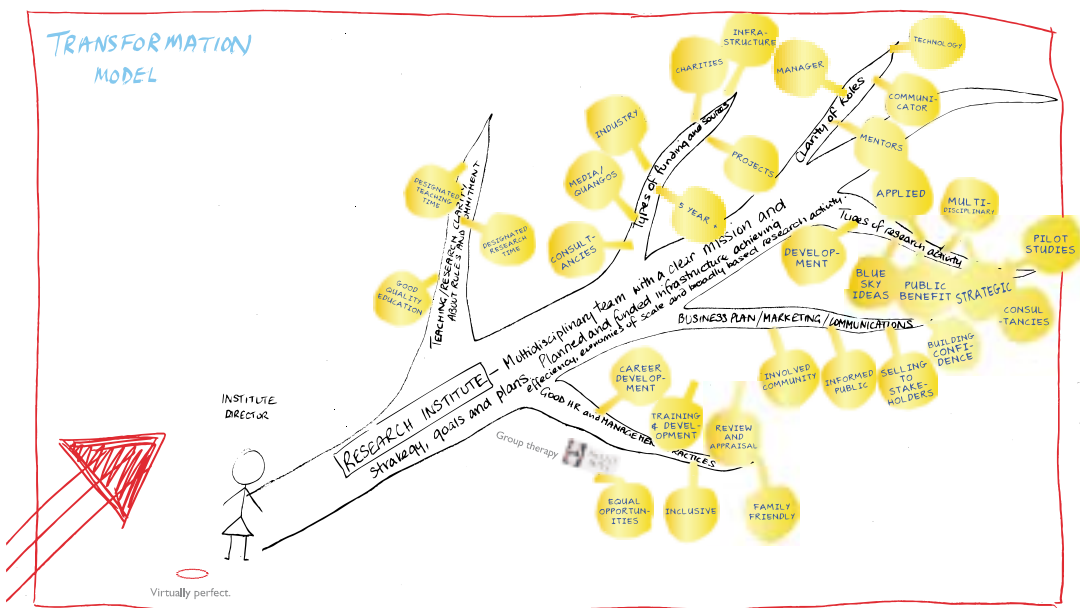
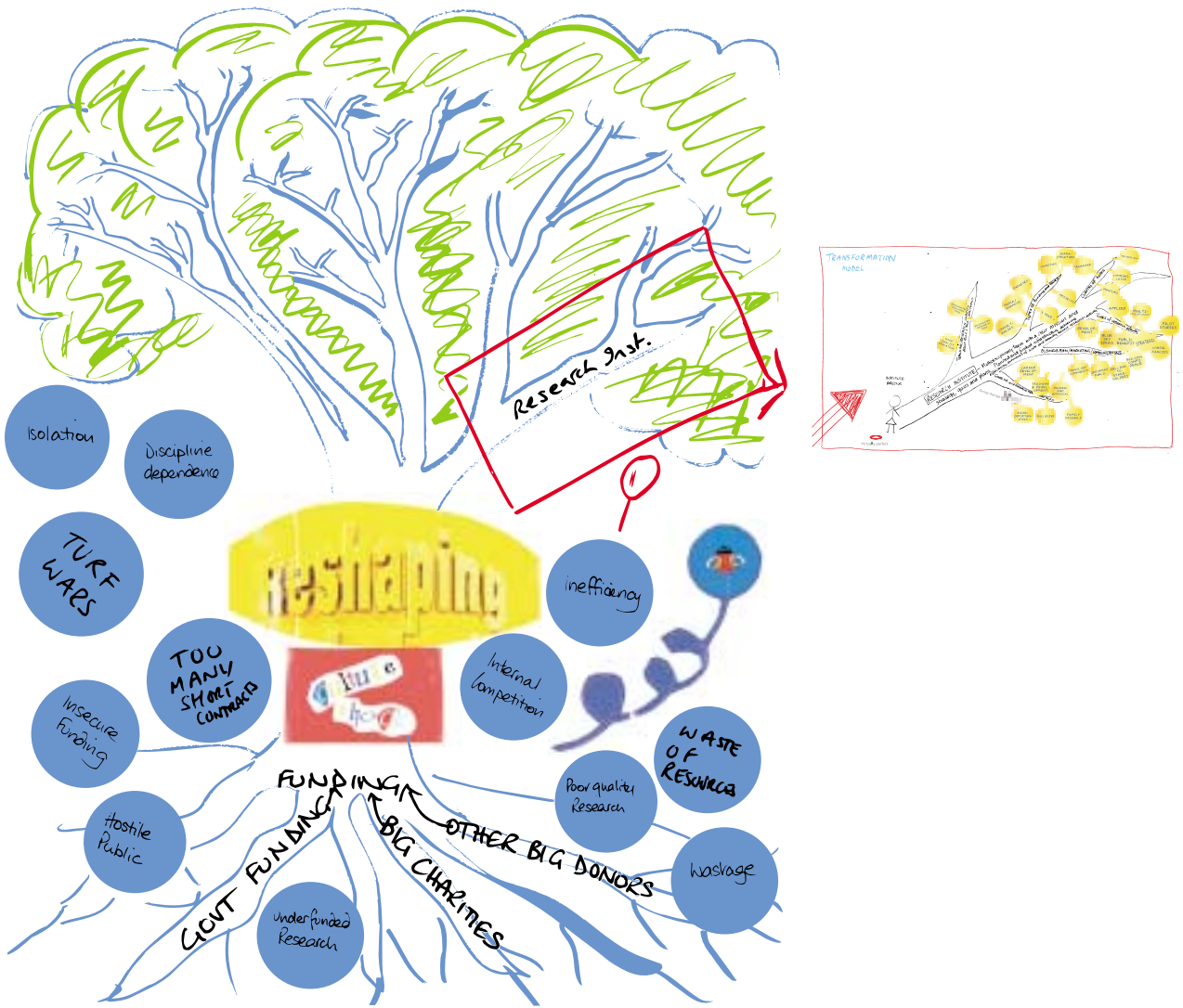


A brainstorming session on what features could be included in a completely new system produced a number of ideas:

- creation of a separate national ‘pot’ for young scientists;
- universities should develop clear research mission statements and strategies;
- teaching should be funded separately (from research);
- potential funders should collaboratively opt for what they will support;
- Research Councils be given charity status;
- Research institutes be set up within the university framework of the University – to include Inter-disciplinary institutes (new universities would be set up like this at the outset);
- teaching contracts be redefined and teaching be organised in a generic way (core biomedical science programme and modules);
- a unified funding stream be created;
- strong leaders/managers be chosen;
- appointed for eight years plus two;
- large(r) cost centres be created with opportunities for virement of funds;
- that there be a lobby for legislative change;
- that the multiple roles and competencies be clearly defined.

The group focused on transforming and reshaping the current academic research system in the UK through the development of research institutes. The consensus view was that the institutes would be multidisciplinary, have clear missions, and carefully planned infrastructure and funding arrangements (Figure 8.2a and b).

Figure 8.2a and b The 'transformation model'.



8.3 Group 2: UK career structures

Key issues

How can we make UK long-term academic research attractive? How can we improve long-term retention?

How can we improve academic careers creating a real option for women?

How can we create a viable ongoing research career (not just for postdocs)?

The first issue for this group was to identify some of the key problems with the present academic research career structure. These were thought to include;

- no viable career option for those who didn't want to progress to head their own lab;
- no risk sharing at the end of projects grants – the risk being carried currently by the researcher, rather than shared with the university and the research funder (e.g. offering six months' employment after research grants end);
- significant problems with the current way of assessing research work (by citations etc.) with large groups that contained many postdoc/RA researchers and specialist technicians, and that new ways of assessing and developing such people needed to be found.

The group discussed the specific problems facing 'small science' that is research carried out in laboratories too small to benefit from some of the large-scale planning and structures created for national, strategic activities e.g. the Human Genome Project. The group felt that there were currently two types of small lab in the UK: those where the principal investigator (PI) did only research (e.g. in research institutes or units and in reasonably autonomous research centres within some universities); and those where the PI both taught and did research (e.g. most university labs). Both types of small lab suffered from a lack of research continuity, with research staff not in place for longer than three to five years. One suggested solution was that small labs be grouped within federal structures, each managed by a PI, and provided with long-term research support staff ('lieutenant' and 'research assistant') on five-year rolling contracts, with a sensible salary structure (possibly based on the current MRC model). The research PI would be responsible for directing and running the research programme and would be 'paired' with a teaching/researching lecturer who would have teaching responsibilities as well as some research activity but who would be free of the additional burden of running the research lab. This person would be assessed on the quality of their teaching and would enjoy rewards equivalent to the full-time research PI, based on performance assessment using criteria which explicitly recognized each element.

It was felt that such a system would provide two clear benefits:

- better management of research – there would be a lieutenant whose job was to share running the group with the PI and one of their valued characteristics should be management skills;
- a non-PI career structure which would provide options for research assistants and lab lieutenants who wanted to remain at the bench and in science long term, but didn't want to head labs.

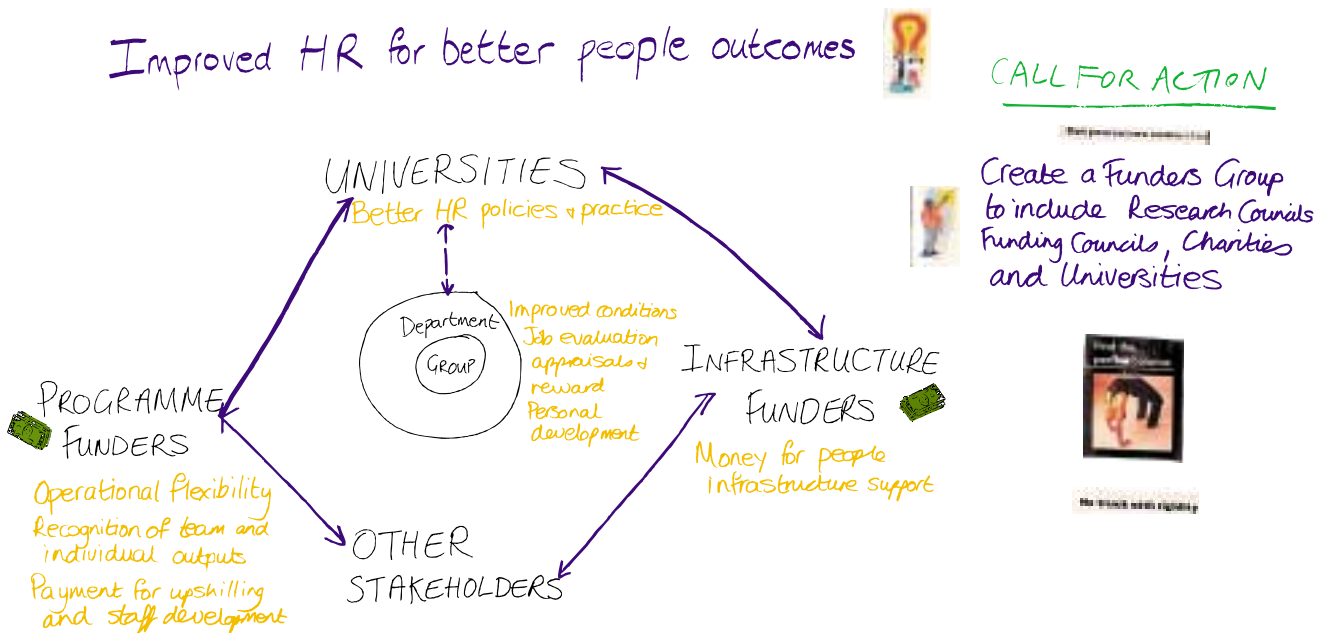
The group discussed the 'costs' of this proposal and made a number of observations:

- that universities would be required to shoulder more of the risks associated with the long-term research staff who would be on five-year rolling contracts and be able to move between different labs, if for example the PI left the institution or if the research funding was not renewed;
- that people would be able to remain in a particular lab for the long term, which would provide stability and continuity;

- there would be fewer people in the redesigned system, although some would be more highly paid (e.g. lieutenant) than before. The proposed change would therefore probably be financially neutral, at least on salaries.

The group also explored the different factors which influenced the success of a research group (Figure 8.3). There would be a need, it was felt, to create a funders consortium, including Research Councils, Funding Councils, universities and charities, which could explore how the proposed new system could be implemented.

Figure 8.3 Factors influencing the success of a research group



8.4 Group 3: Protecting the 'stars'

Group 3

How can we ensure a strong future for our 'stars'?...merit-based pay?

How can we enhance the profile and prestige of scientific careers and attract high-calibre people?

How can we improve academic careers creating a real option for women?

Group 3's discussions focused on the lack of long-term research career prospects for senior and career development fellows within universities – and proposed the following solution:

- that a career pathway be developed that was indefinitely renewable, through rolling five-year periods of support. Posts that would be underwritten by the host university, should individuals be unsuccessful at fellowship renewal after three or more five-year periods of independent support.

The following case was made for the proposal:

- that it would enhance the prestige and image of this research career pathway;
- that the proposed structure would make economic sense, as it would reduce staff turnover and lost productivity due to the constant need to grant write/job hunt/relocate;

- that it would address both the career issue for individuals and for the universities, which would benefit from improved recruitment and retention of research-active staff;
- women, in particular, would be provided with a greater degree of security. Given that women represent a higher proportion of fellowship holders than established academic position holders, this would, in addition, maintain/promote a larger pool of women in the academic sector;
- the proposed extension of the career window for the senior fellows would eliminate the need for schemes such as the Wellcome Trust's Principal Research Fellowships – thereby allowing the consolidation of both budget/schemes, and minimizing the need for additional funding;
- by allowing established university staff to move to the proposed alternative career pathway, there would be an increase in university positions available;
- there would be improved quality control of university researchers – due to continual review/renewal process. This would lead to the retention of higher-quality researchers and, consequently, a higher standard of PhD training;
- the UK 'brain drain' would be reduced.

The group proposed that a high profile/influential working party be established, perhaps under the auspices of the UK Life Sciences Committee (UKLSC), to examine this proposal. Such a working party could include representation from Research Councils, relevant research charities, universities UK, and senior university figures and its terms of reference would be:

- to collect data/determine the rate and effect of the loss to the university research sector of fellows at the end of senior fellowships;
- to propose both short- and long-term solutions which would reduce this loss;
- to make recommendations to the UK funding bodies and universities.

8.5 Group 4: Good management practices

Group 4

How can we encourage good management and people/family-friendly practices?

What are the responsibilities of principal investigators?

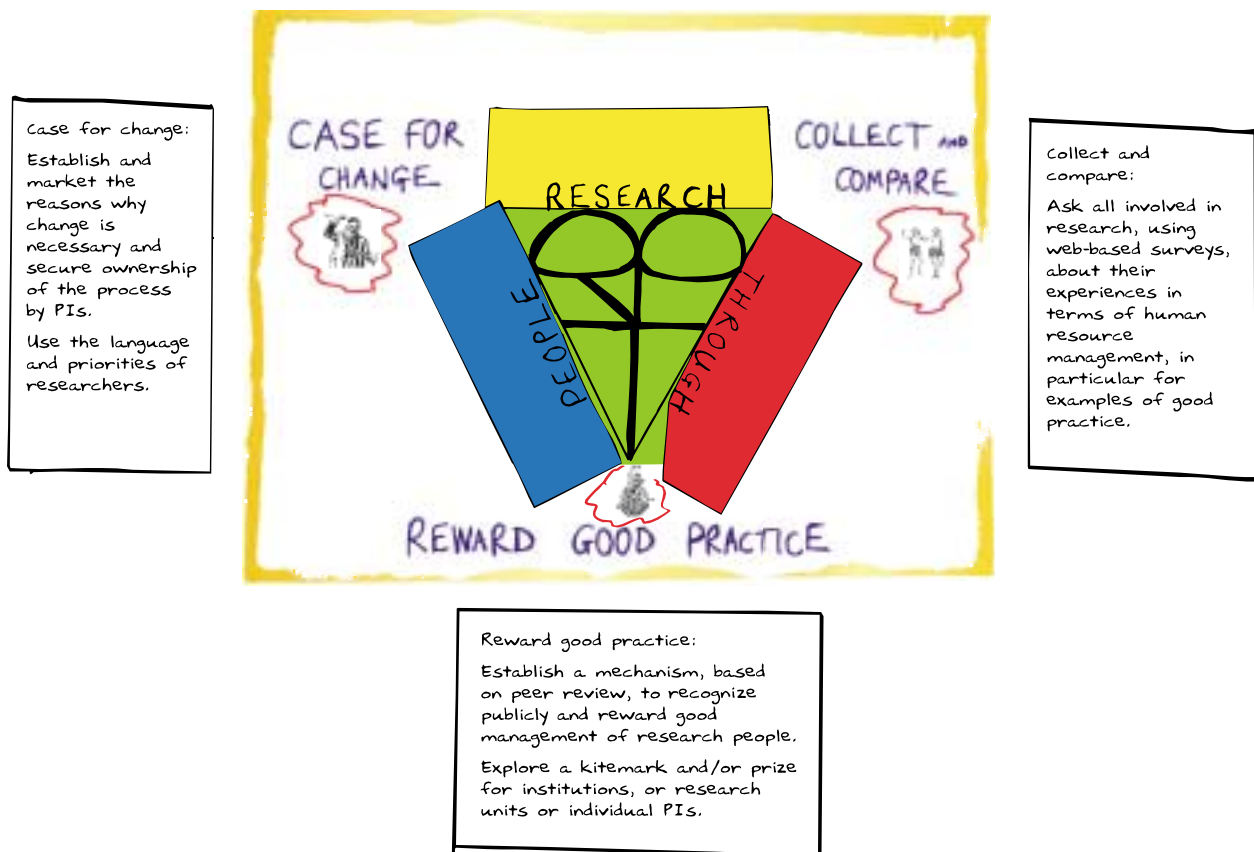
Group 4 discussed a variety of ways of encouraging good management practices, including finding mechanisms or structures which would:

- stimulate better management and to agree good management practices;
- accredit and reward good managers;
- encourage acceptance of the need for change/improvement by research managers themselves (the PIs);
- effect the major cultural change required in the management of contract research staff (CRS) both on the part of institutions and research PIs;
- encourage PIs to accept direct responsibility for research staff management/mentoring;
- implement new management frameworks;

- appoint dedicated staff to manage staff, if PIs are to be left to manage the research;
- introduce a requirement for grant applicants to include explicit plans for research staff management in research funding proposals;
- fund PhD students and young postdocs through training awards or grants separated from the PIs funds, therefore creating more of a 'buyer's market' for young researchers.

The group focused on the idea of awarding a 'kitemark' to institutes or departments or individuals which had demonstrated good management practice (Figure 8.4). This kitemark would be similar to the UK's national Investors in People award and would be associated with provision of extra funding or, in the case of an individual, salary enhancement. The group emphasized the absolutely crucial need to encourage the participation of principal investigators in the development of new systems and to create an environment which would encourage PIs to be open to the need for change.

Figure 8.4 Good management practice.



8.6 Group 5: PhD training

Group 5

How can the quality of PhD training be improved? Who should provide training? What structure should it take?

Who should be the stakeholders involved in research training?

How can we deliver wider skills training for graduates and PhD students?

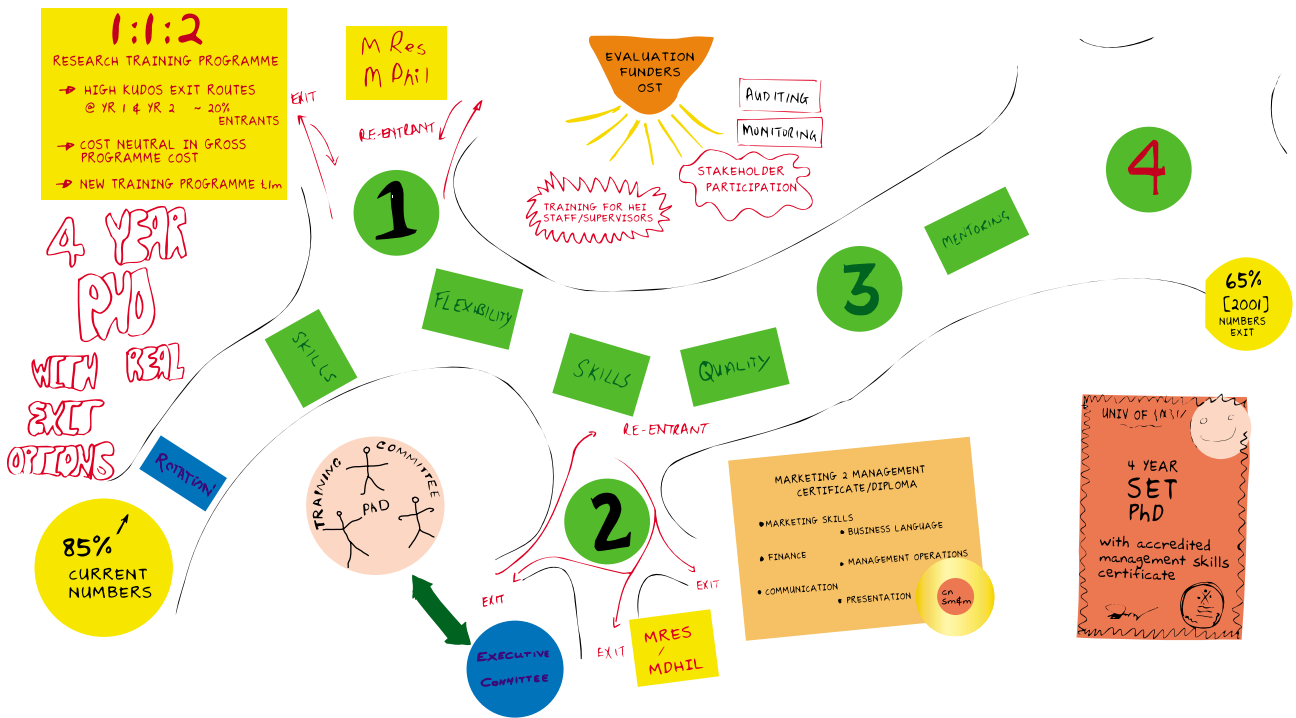
Group 5 discussed PhD training, including the following issues:

- the structure and management of individual student progress (quality, auditing, evaluation);
- the need for a broad skills training, enrichment (academic and industry), four year with first year lectures and lab rotation, student choice (e.g. three labs, PhD, with MRes, MPhil as opt-outs at years 1 or 2);
- the place for flexible training pathways, especially beyond the PhD stage;
- the need to encourage collaborations with industry/other institutes or universities during PhD, including placements such as BBC or OST;
- that access to quality external training should lead to an accredited qualification (e.g. contract out training to Chartered Institute of Marketing);
- the need to improved career path data collection and dissemination, and for the production of better and more informed career advice for potential PhD students;
- the need for improved image/value of scientists in society;
- the general issue of women in research.

The group focused on the training pathway and presented a '1:1:2 PhD' as a solution (Figure 8.5). The 1:1:2 PhD would entail a contract with each student to provide a mentored flexible four-year PhD programme. The programme would have the following features:

- first year rotation round three labs;
- exit/entrance points at years 1 and 2, to obtain an MPhil or MRes;
- top-quality training in business skills and other transferable skills;
- access to collaborations in industry or secondments.

Figure 8.5 The '1:1:2 PhD'.



8.7 Group 6: Science teaching in schools

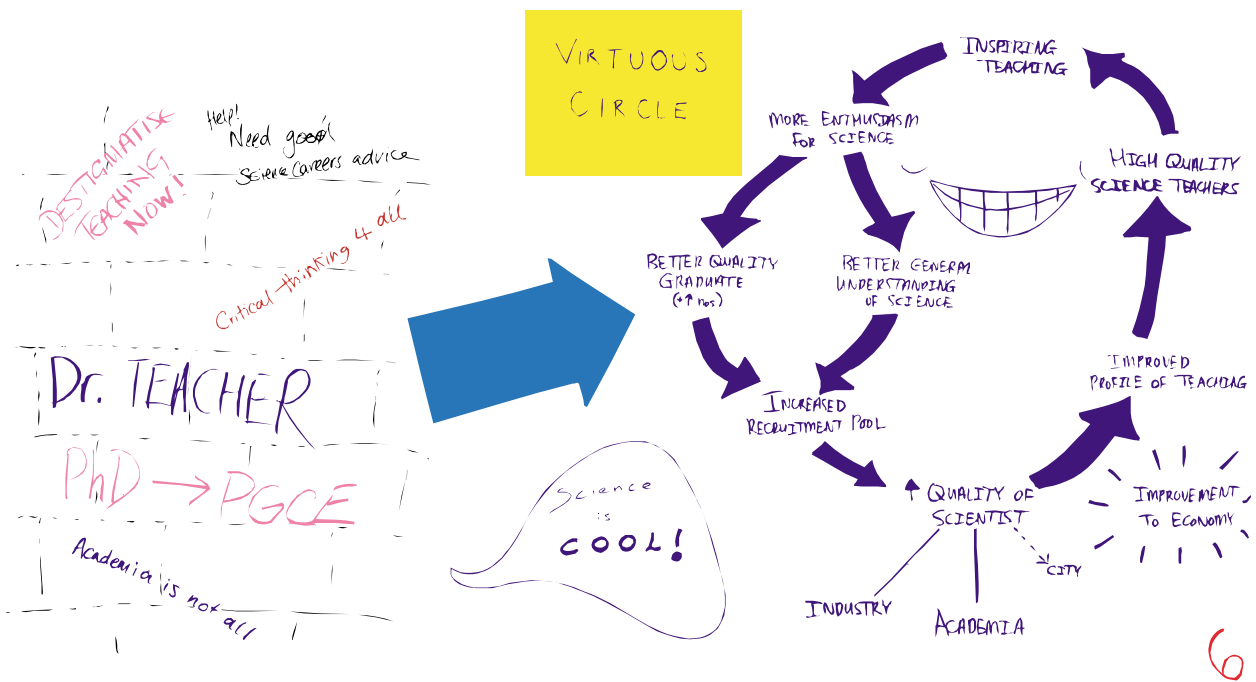
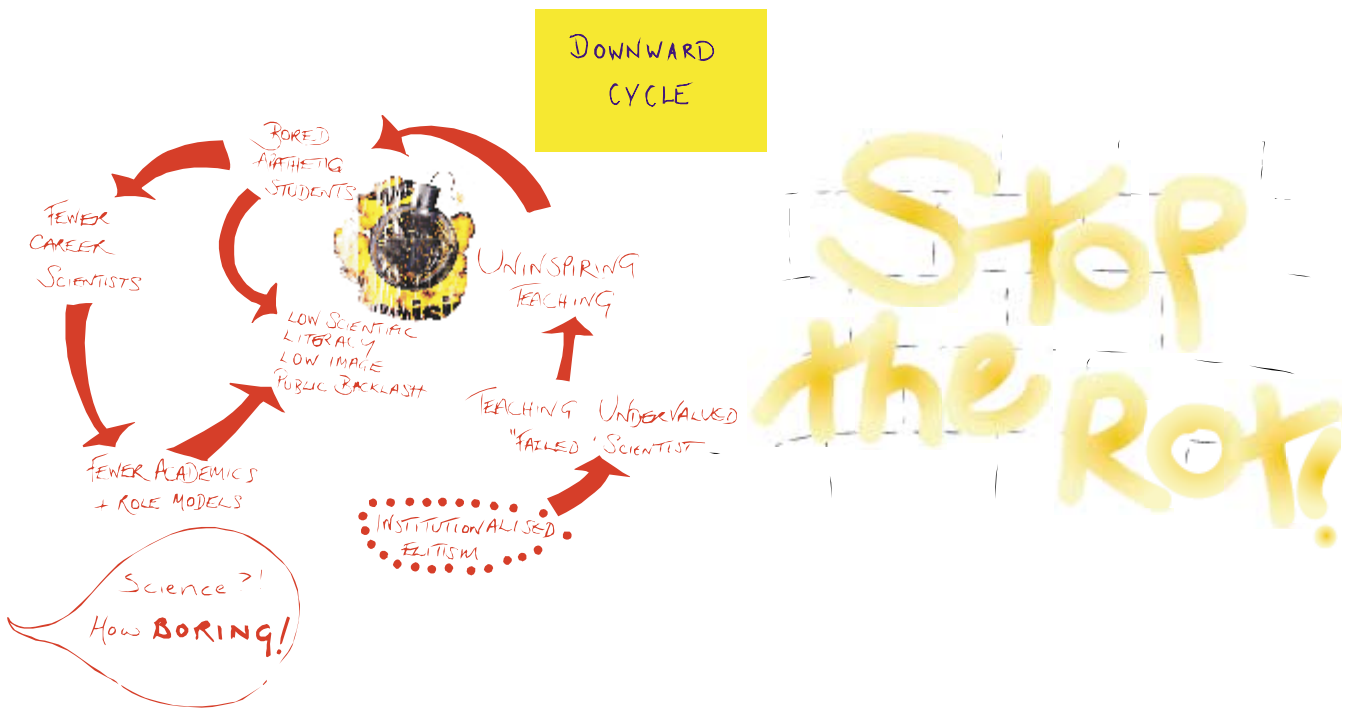
Group 6
 How can we make science teaching in schools exciting and attract kids right through the age groups?
 How can we increase diversity, and encourage minority groups into science?

Group 6 felt that the current poor perception of science in schools stemmed from a combination of low morale among the profession (pressures of national curriculum) and a cadre of uninspiring teachers.

It was felt that institutional elitism – particularly among academics where a career as a school science teacher is perceived to be a ‘failure option’ (i.e. failed scientist) – was detrimental to the profession. Currently school teaching is not a career option for the ‘best’ scientists and the opportunity for enthusiastic scientists to generate inspiration for future generations (of scientists/science-literate population) is lost.

This ‘crisis’ in the profession has led to a ‘downward cycle/spiral’ where students are, on the whole, uninspired by the science they are taught, and where much of the inherent questioning and exploration is removed from the curriculum (Figure 8.6). Over time, the population becomes less science literate and tolerant – and the relationship between scientists and the media becomes poorer.

Figure 8.6 Science teaching in schools.



6

The Group's solution was to attempt to reinvent school teaching as a key and (high-status) profession for trained scientists (Figure 8.6). Suggested mechanisms to bring about this change, thereby creating a 'virtuous circle' included:

- allowing postdocs to enter teacher training via a 'fast-stream' perhaps not requiring full PGCE training/doing it part time (also removing the cost implications involved in taking a pay-cut from postdoc to PGCE student);
- placements of postdocs in schools via work sharing/case studies;
- allowing greater freedom for teachers to teach 'new' things peripheral from the national curriculum – thus introducing greater creativity into a subject which is inherently creative and constantly evolving.

8.8 Group 7: Flexible career structures

Group 7

Can we define career structure for different jobs? What is the universities' role in this? Can we define generic posts across departments? Can a flexible structure be maintained?

What should the relationship between teaching and research be?

Group 7's discussions focused on ways of making long-term academic research careers attractive, with a focus on four main possible solutions:

- creating a funding stream for teaching excellence and redefining the academic career path;
- making management more attractive for academic researchers;
- running universities on business lines.

The group discussed the creation of a funding stream for teaching excellence. This would revolutionize the QAA by creating a system mirroring the RAE and through the strengthening of financial management. The new system would:

- assess teaching excellence *not* teaching administration;
- link university teaching funding to QAA;
- improve national assessment of degrees by creation of national standardization body;
- award points for research elements in undergraduate teaching;
- simplify QAA by comparing output vs input;
- raise the status of QAA to that of RAE;
- reduce administrative burden on academics of both;
- devolve finances to departments/faculties;
- reward teaching and teachers;
- ensure an audit trail for both teaching and research.

The group also felt that management roles could be made more attractive for researchers. It was suggested that there be collective, rather than individual, responsibility for academic research management. Management teams might consist of a chairperson and individual, devolved, responsibility for staff structures, finance, research strategy and teaching strategy. The management team would be supported by a team of well-qualified, well-paid career administrators.

9 Calls to action

In planning and designing the structure for this meeting the Trust had hoped to provide a forum where participants could be encouraged not only to debate the realities and difficulties of contemporary UK academic research life but, more importantly, to explore and develop solutions which would address some of the most pressing of these. In the various discussion groups and exercises undertaken at the meeting, the participants lived up to the Trust's expectations and hopes in proffering a huge number of opinions, attitudes and creative suggestions. These have been collected together for this report with only a very light editorial hand – and the report is offered as a source of first-hand opinion from the university research players themselves, directed towards those policy makers and university planners charged with sustaining and supporting a healthy and successful UK university research base. The detail of two days' intensive discussion is to be found within the report's various chapters. In final session, however, the meeting's participants were invited to produce a number of 'calls to action' which could form the basis for the recommendations of this report. These were:

- that a research institute-based model for university research, which would allow greater flexibility and autonomy, be developed and piloted in one or a handful of universities (Group 1);
- that smaller research laboratories be grouped within universities within a federal structure and be provided with core infrastructure support, including research support staff, to provide continuity over the long term (Group 2);
- that a working party address the particular problem faced by senior fellows at the end of their research tenure, for whom university-funded positions are either unavailable or unattractive (Group 3);
- that research principal investigators in universities be persuaded of their direct responsibility for management of research staff and of the need for substantial change in and improvement to current practices (Group 4);
- that a four-year PhD be introduced as standard, with 'respectable exit points', for example after taught Master's or MRes, after additional research training for example to MPhil, and, for a smaller number of students, at completion of a PhD (Group 5);
- that postdoctoral research training and experience be deemed a valued qualification for science teaching in schools and that an appropriate, specific, entry pathway to school teaching be created (Group 6);
- that university teaching be returned to its previous position as a high-status, valued activity and that university teachers be rewarded in terms comparable to the full-time, independently funded researchers working in the universities (Group 7).

Appendix 1: Participants

Claire Ainsworth
New Scientist

George Banting
University of Bristol

Sarah-Jayne Blakemore
INSERM

Gillian Breen
Medical Research Council

Julia Buckingham
Imperial College of Science, Technology and Medicine

Angus Cameron
University of Glasgow

Julie Campbell
University of Sheffield

Purnell Choppin
Howard Hughes Medical Institute

Geraldine Clough
University of Southampton

Paul Crocker
University of Dundee

Tony Crook
University of Sheffield

Maggie Dallman
Imperial College of Science, Technology and Medicine

Leela Damadoran
Loughborough University

Mary Dawson
Imperial College of Science, Technology and Medicine

Mike Dexter
The Wellcome Trust

Christina Downing
University of Oxford

Declan Doyle
University of Oxford

Brian Fender
Higher Education Research Council for England

Diana Garnham
Association of Medical Research Charities

Jonathan Grant
The Wellcome Trust

Gillian Griffiths
University of Oxford

Fiona Hemsley
Cancer Research Campaign

Kairbaan Hodivalan-Dilke
St Thomas' Hospital Medical School

Simon Hughes
Kings' College Medical School

Martin Humphries
University of Manchester

Robin Jackson
UniversitiesUK

Andrew Jarman
University of Edinburgh

Bernard Kellet
University of Manchester

David Lane
University of Dundee

Nancy Lane
University of Cambridge

David Leech
Engineering and Physical Sciences Research Council

Roland Levinsky
University College London

Laura Machesky
University of Birmingham

Martin Maiden
University of Oxford

Isla Mathieson
Loughborough University

Douglas McGregor
Cornell University

Luke McNeill
University of Oxford

Peter Mertens
Institute of Animal Health

Ben Newbound
Office of Science and Technology

Margareta Nikolic
Kings' College Medical School

Paul Nurse
Imperial Cancer Research Fund

Peter Oliver
University of Oxford

Mary Osborn
Max Planck Institute

Jan Peters
Department of Trade and Industry

Maraisa Placzek
University of Sheffield

Delphine Purves
The Wellcome Trust

Martin Raff
University College London

Andrew Read
University of Edinburgh

Peter Rigby
Institute of Cancer Research

Stefan Roberts
University of Manchester

Gareth Roberts
University of Oxford

John Rushforth
Higher Education Research Council for England

Howie Scarffe
The Wellcome Trust

Malcolm Skingle
GlaxoSmithKline

Jim Smith
University of Cambridge

Daniel St Johnston
University of Cambridge

Paula Stephan
Georgia State University

Rosie Valerio
University of Sheffield

David Watson
University of Brighton

Anne White
University of Manchester

Richard Wyatt
National Institutes of Health

Wellcome Trust Staff

Liz Allen	Facilitator
Patricia Chisholm	Meeting Chair
Lucy Criddle	Conference Manager
Iain Frame	Facilitator
Philip Green	Facilitator
Anne Hamill	Conference Design
Ailsa Harpur	Facilitator
Candace Hassall	Facilitator
Judi Kennedy-Clarke	Facilitator
Shelia King	Facilitator
Valerie Snewin	Facilitator
Steven Wooding	Facilitator

Appendix 2: 'Radical Thinking, Creative Solutions' Programme

Tuesday 3 July 2001

- 1.00 p.m. Introduction Mike Dexter, The Wellcome Trust
- Session I: Personal Perspectives**
- 1.40 p.m. Young Postdoc Sarah-Jayne Blakemore, INSERM
1.50 p.m. Tenure-track Scientist Gillian Griffiths, University of Oxford
2.00 p.m. Vice-Chancellor Robert Freedman, University of Kent
- Session II: Discussion Sessions**
- 2.10 p.m. Exercise 1: 'My Question'
2.30 p.m. Exercise 2/3: UK Academic Career Paths
3.55 p.m. Examining the Time-line
4.15 p.m. Exercise 4/5: Perspectives on Academic Research
- Session III: Reporting Back**
- 5.45 p.m. Plenary discussion

Wednesday 4 July 2001

- 9.00 a.m. Welcome back from the Chair
9.10 a.m. Key Note Speaker: U.S. Perspective Paula Stephan, Georgia State University
- Session IV: Towards Solutions**
- 9.40 a.m. New Funding Approaches David Leech, EPSRC
9.50 a.m. An Industry Perspective Malcolm Skingle, GlaxoSmithKline
10.00 a.m. Universities: The good employer? Leela Damodaran, Loughborough University
10.10 a.m. The Way Forward Martin Raff, UCL
- Session V: Discussion: Towards Solutions**
- 10:20 a.m. Exercise 6: Key Issues to Tackle
11.05 a.m. Exercise 7: Creative Solutions
3.00 p.m. Poster Session
- Session VI: Summing Up**
- 3.30 p.m. Calls to action
4.30 p.m. Close of Meeting