

Reorganisation of the Science Research Councils

Research Paper 94/19

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The science White Paper, published in May 1993, announced that the existing structure of the science Research Councils would be modified. The Science and Engineering Research Council was to be divided into two new Research Councils, and its biological and biotechnological activities were to be merged with the Agriculture and Food Research Council to produce a third new Research Council.

Draft Orders allowing for the creation of these new Councils have been laid before the House and are to be debated on 2 February 1994. This paper describes the functions of the Research Councils and outlines relevant developments which have occurred since the publication of the White Paper.

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A. Introduction

In May 1993, following an extensive consultation process, the Government published a White Paper on UK science policy, the first major review of Government policy in this area for over twenty years^{1,2}. The White Paper emphasised the importance of scientific research in the context of wealth creation and the needs of industry, and announced, amongst other changes, that the research councils would be reorganised from 1 April 1994:

"The Science and Engineering Research Council will be converted into an Engineering and Physical Sciences Research Council [and a Particle Physics and Astronomy Research Council. The Agriculture and Food Research Council will be modified into a Biotechnology and Biological Sciences Research Council. All the Research Councils' missions will be reformulated to make explicit their commitment to wealth creation and the quality of life. Their management structures will be modified to give each one a part-time Chairman and a full-time Chief executive.

The functions of the Advisory Board for the Research Councils will be absorbed within the Office of Science and Technology. A new post of Director-General of Research Councils will be established within that Office."

B. Structure and functions of the Research Councils

The structure of the present five Research Councils has remained largely unchanged since 1965 when the *Science and Technology Act 1965* allowed for the creation of three new Research Councils: the Science Research Council (SRC), the Natural Environment Research Council (NERC) and the Social Science Research Council (SSRC). The other two Research Councils, the Medical Research Council (MRC) and the Agricultural Research Council (ARC) had already been in existence for over thirty years. In April 1981 the SRC changed its name to the Science and Engineering Research Council (SERC), the ARC changed its name to the Agricultural and Food Research Council (AFRC) in October 1983, and the SSRC changed its name to the Economic and Social Research Council (ESRC) in January 1984.

The Councils are funded by the Office of Science and Technology, within the Office of Public Service and Science. They award grants for scientific research to universities and other academic institutions. Such grants can be awarded by *responsive mode* funding or by *directed mode* funding. In *responsive mode* funding, researchers submit grant applications to a Research Council to undertake a specific, costed programme of research. Applications are considered by peer review committees which decide whether the research should be

¹ *Realising our potential: A Strategy for Science, Engineering and Technology* Cm 2250 May 1993

² HC Deb 26 May 1993 cc 923-37

eligible for funding. Although the broad area of research may be specified by the Research Council, the details of any programme of research are entirely specified by the researchers making the application. The idea behind this type of funding is that it is the researchers themselves who are at the forefront of research and who have the new ideas for conducting research. *Directed mode* funding occurs where a Research Council decides it wishes to commission research in a specific area on a specific topic, and invites researchers to submit applications to undertake that research.

In 1993/94 the total Science Vote for the Office of Science and Technology amounted to £1,165 million. The allocation of this amount between the different Research Councils is shown in the table below:

Science Vote Allocations for 1993-94	£ million
AFRC	109.8
ESRC	53.5
MRC	256.9
NERC	140.0
SERC	582.1
The Royal Society	18.5
The Royal Academy of Engineering	1.7
Other, including OST initiatives, ABRC science policy studies and CEST subscription	2.0
TOTAL	1,164.6

Source: HC Deb 10 February 1993 c.631W

The allocations for the individual Research Councils for 1994/95 have not yet been announced, but the total science vote for next year is £1,242 million³. Of this total, £1,236 million should be available for allocation to the Research Councils and other bodies. The total budget for next year has been increased by £73 million over the estimated out-turn for this year, representing a small increase in real terms. At a time of severe constraints on public expenditure, this settlement has been welcomed, and has been seen as fulfilling the promise made at the time of the White Paper that funding for the science base would be protected.

The Research Councils are not the only source of research funds for universities, in fact as far as civil research and development is concerned, such funds only accounted for 16% of funds in 1990/91 (approximately £280 million). The bulk of their funds for research, approximately 50%, come from the Department for Education via the Higher Education

³ OPSS News Release 132/93 30 November 1993

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Funding Councils (HEFCs). This arrangement of funding for university research, with funds coming from both the Research Councils and the HEFCs is known as the *dual support mechanism*.

Further information on the establishment and structures of the Research Councils can be found in Library Research Paper 93/34, *Forthcoming Science and Technology White Paper*.

C. Establishment and missions of the new Research Councils

Section 1(1)(c) of the *Science and Technology Act 1965* allows for new research councils to be established by Royal Charter but Section 1(4) states:

"No recommendation shall be made to Her Majesty to make an order in Council declaring a body to be a Research Council under subsection (1)(c) above unless a draft of the order, specifying the objects or principal objects of that body, has been laid before Parliament and approved by a resolution of each House of Parliament".

Three such draft orders were laid before the House on 17 December 1993:

*Biotechnology and Biological Sciences Research Council Order 1994*⁴
*Engineering and Physical Sciences Research Council Order 1994*⁵
*Particle Physics and Astronomy Research Council Order 1994*⁶

Each Order has a schedule which defines the *objects* of the Research Council. These are of similar form for each of the new Councils, including objectives "to promote and support, by any means, high quality...research and related post-graduate training", "to advance knowledge and technology, and provide trained scientists and engineers", and "to provide advice, disseminate knowledge, and promote public understanding" in the fields of their research.

The White Paper stated that the Government had decided to "provide each council with a mission statement which recognises the importance of research undertaken to meet the needs of users and to support wealth creation" and such statements are included in the *objects* of the Research Councils described above. The BBSRC has the object to "advance

⁴ Unprinted Paper: UP 224 1993/94

⁵ Unprinted Paper: UP 225 1993/94

⁶ Unprinted Paper: UP 226 1993/94

knowledge..." which "meets the needs of users and beneficiaries (including the agriculture, bioprocessing, chemical, food, health-care, pharmaceutical and other biotechnological-related industries), thereby contributing to the economic competitiveness of Our United Kingdom and the quality of life". Similarly, the EPSRC has the object to "advance knowledge..." which "meets the needs of users and beneficiaries (including the chemical, communications, construction, electrical, electronic, engineering, information technology, pharmaceutical, process and other industries), thereby contributing to the economic competitiveness of Our United Kingdom and the quality of life". The PPARC object is worded slightly differently in that it has to "advance knowledge..." which "have potential to contribute to the economic competitiveness of Our United Kingdom and the quality of life, through meeting the needs of users and beneficiaries (including the communications, electronic and other industries)".

The objects to "contribute to the economic competitiveness" of the United Kingdom and to meet "the needs of users" have been introduced as a result of the White Paper. This can clearly be seen from a comparison with the objects for the Science Research Council as defined in the 1965 Act which were for:

"the carrying out of scientific research, the facilitating, encouragement and support of scientific research, the facilitating, encouragement and support of scientific research by other bodies or persons or any description of bodies or persons and of instruction in the sciences and technology, and the dissemination of knowledge in the sciences and technology."

The emphasis on wealth creation in the missions of the new Research Councils has raised concerns that funds may be directed away from basic science research. In a recent report on *Priorities for the Science Base*^{7,8}, the Lords Select Committee on Science and Technology examined the evidence that Research Councils may have to start funding other bodies apart from universities. Commenting on evidence from Sir Mark Richmond, the current Chairman of SERC, the report stated (para 4.73):

"...The SERC was already funding work conducted in the institutes of other Councils; its successors are now obliged, in Sir Mark's view, to receive applications from Government research laboratories, and other laboratories of a public nature including privatised ones, though probably not from the out-and-out private sector. The DTI favours this development. Sir Mark accepts the consequence that, overall, the universities are bound to get less."

The Committee concluded that:

⁷ House of Lords Select Committee on Science and Technology *Priorities for the Science Base* 15 December 1993 HL 12-I 1993/94

⁸ "Lords lay into Waldegrave's partnership plans" *New Scientist* 29 January 1994 p.8

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"4.86 In this climate, it would be the final straw if the Science Base were forced to share the Science Budget with the private or semi-private sector (paragraph 4.73). It might be possible to "buy" research more cheaply from institutions without the university overheads related to teaching and research training; but this would be an altogether false economy, and would further undermine the capacity of the Science Base to contribute to the health and wealth of the nation in the long term. We recommend that the Research Councils set their faces firmly against any extension of their present funding field".

D. Boundaries of the new Research Councils

In order to define the boundaries between the new research councils, William Waldegrave, the Minister responsible for science, asked Sir David Phillips, Chairman of the Advisory Board for the Research Councils to conduct a *Research councils boundary study*⁹. The study was begun on 5 June 1993, and the report was published on 16 July 1993. Most of the allocations of research areas were straightforward, but there were arguments over some of SERC's biotechnology and biological sciences programmes. After consultation, Sir David decided to transfer the biotechnology to the BBSRC, and decided that the biomolecular sciences and microbiology programmes should be jointly controlled by the BBSRC and the EPSRC.

William Waldegrave announced on 21 July that he had "accepted all of Sir David's recommendations, and invited him to continue to oversee the further work of the Office of Science and Technology designed to effect a smooth transition to the new research council system by 1 April 1994"¹⁰.

E. Chairmanship of the new Research Councils

The White Paper also announced that all research councils should have part-time chairmen and full-time chief executives. The posts of chief executives for the EPSRC, PPARC and NERC were advertised in September 1993¹¹. It was announced that the chairmen were to be selected "with a view to securing representation for the users of research and in order to bring in relevant experience from the industrial and commercial sectors most closely related to the

⁹ OST *Research councils boundary study: report from David Phillips to the Chancellor of the Duchy of Lancaster*
Deposited Paper 9536 16 July 1993

¹⁰ HC Deb 21 July 1993 c.237W

¹¹ *New Scientist* 18 September 1993

Councils' missions". No changes in personnel have been required at the AFRC (due to become the BBSRC) or at the MRC as their management structures already reflect those advocated in the White Paper.

The first appointment under the new arrangements was made at the beginning of October 1993 when Robert Malpas CBE FEng was announced as the new chairman of NERC¹². This was followed by an announcement in November 1993¹³ that Dr Alan Rudge OBE FRS FEng would become the Chairman of EPSRC from 1 August 1994 and that Dr Peter Williams CBE would become the Chairman of PPARC from 1 April 1994. All three Chairmen have strong industrial backgrounds, Mr Malpas is the Chairman of Cookson Group plc, Dr Rudge has been the Managing Director of Development and Procurement at British Telecom since 1990 and Dr Williams is the Chief Executive and Chairman of Oxford Instruments Group plc.

Following the advertisement of the Chief Executive posts at EPSRC, PPARC and NERC, Professor John Krebs FRS, Royal Society Research Professor in the Department of Zoology at Oxford University has been appointed as Chief Executive of NERC from 1 April 1994¹⁴ and Professor Kenneth Pounds CBE, FRS, Professor of Space Physics at the University of Leicester has been appointed as the first Chief Executive of PPARC¹⁵. No announcement has yet been made of the new Chief Executive for EPSRC.

F. Director-General of Research Councils

The White Paper announced that the Advisory Board for the Research Councils (ABRC) would be abolished with its functions being absorbed within the Office of Science and Technology, and that a new post of Director-General of Research Councils would be created within the OST. The ABRC was formed in 1972, replacing the Council for Scientific Policy, "to advise in future on the allocation of the science budget...between the Research Councils and other bodies in the Research Council system". The Board was an independent body and its members included the Heads of the Research Councils and senior academics and industrialists. The advice it offered each year on the allocation of the science budget has always been published in recent years¹⁶.

The White Paper stated that the Director-General would assist the Chancellor of the Duchy of Lancaster in allocating the science budget and be responsible for helping the Chancellor

¹² OPSS News Release 100/93 8 October 1993

¹³ OPSS News Release 128/93 19 November 1993

¹⁴ OPSS News Release 8/94 18 January 1994

¹⁵ OPSS News Release 147/93 22 December 1993

¹⁶ ABRC *Allocation of the Science Budget 1993-96: Advice to the Chancellor of the Duchy of Lancaster*
Deposited Paper 8859 1993

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"to secure the successful and high-quality operation of the Research Councils in pursuit of their new missions". To help him with his work, it was announced that the Director-General would be advised by a small standing group of independent experts.

The post of the Director-General was advertised, and it was announced in November 1993 that Sir John Cadogan CBE FRS Hon FEng would become the Director General of Research Councils from 1 January 1994. He was director of research at BP from 1981 to 1992.

In their recent report (see above) the Lords Select Committee on Science and Technology expressed concern that there seemed to be some uncertainty "as to the real authority" of the Director-General and his relationship with the Heads of the Research Councils and with the Chief Scientific Adviser (CSA) at the OST. For instance, the Director General will not be the Accounting Officer for the science budget, nor will he be the line manager of the Heads of the Research Councils. However, he will have direct access to the Minister, and will not have to pass his advice on the science budget through the CSA. The Committee recommended that the Director-General's advice on allocation of the science budget should be published, and that to enhance his authority, he should be given personal control of annual sum of approximately 1% or 2% of the science budget "to touch the tiller of the science base in ways which could make an important difference over a number of years".

G. Future of government research establishments and research council institutes

The White Paper stated that [para 1.18(9)]:

...The Government believes that many of the services currently provided by Government research establishments could be carried out in the private sector, and that privatisation is a realistic prospect for a number of establishments. There will be a further scrutiny of the best organisational and management structures for those laboratories which are likely to remain in the public sector"

However, it was not clear whether this statement was meant to include the Research Councils' Institutes, some of which undertake research themselves, others of which primarily provide services for the science research community.

The issue of research council institutes is directly addressed in paragraph 3.28(4) of the White Paper which states that the Director-General of the research councils will be responsible for "encouraging the Councils to keep under the review the arrangements for managing,

monitoring and funding their institutes...". Some further clarification was provide in paragraph 5.13 of the White Paper, but there was no explicit mention of Research Council institutes:

"The Government therefore intends to undertake a scrutiny of the public sector research establishments to review, sector by sector, the future status of establishments, looking in depth at privatisation, rationalisation and different options for ownership. It will build upon reviews in progress, or which have recently been completed, as part of the regular appraisal and review process undergone by all Next Steps Agencies. It will also take account of special reviews already underway, such as those announce recently by the President of the Board of Trade."

A recent article in the *New Scientist*¹⁷ has confirmed that the future of Research Council institutes has been included in the review of public sector research establishments. The article stated that the future of up to 30 research council institutes is "now being sketched out by a panel of 'efficiency' experts, sent around the country looking for candidates for privatisation" and that the "scrutiny" exercise will last 90 days during which the 14-member team will judge the research institutes against comparable operations in the public sector.

The Lords select committee, see above, made the following comments about the institutes:

"4.84 We are concerned by evidence that the institutes maintained by the Research Councils may be becoming over-dependent on contract income, to the detriment of their basic research programmes. We urge the Councils to monitor this tendency, and if necessary to include in their contract prices a modest surcharge to contribute to the cost of other longer term work.

4.85 We see nothing to fear in scrutiny of Research Council institutes for possible privatisation, provided that the scrutiny is conducted with intelligence. The scrutineers must appreciate the value of the institutes' basic research programmes, and must assess the level of support which these can expect from the commercial user community."

H. Postgraduate training

Currently the Research Councils support students undertaking one-year MSc courses and those

¹⁷ "Privatisers on the prowl" *New Scientist* 22 January 1994 p.5

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studying for PhD (over three years). Many PhD students embark on their studies immediately after completing a first degree, and so do not obtain MScs.

The White Paper stated that [para 1.18(12)]:

"The arrangements for the training of post-graduate scientists and engineers will be developed so that the MSc can become the normal initial post-graduate degree in science, engineering and technology, and that PhD training for those who progress beyond the Master's degree is properly underpinned. Greater attention will be given to the relevance of post-graduate training for all careers. Those post-graduates who go on to a career in academic research should be better managed."

and that [para 7.23]:

"The Government will invite the Research councils to work with the Higher Education Funding Councils and the universities to develop plans for the phased implementation of this policy...Institutions will need time to adapt and develop their course provision to allow for the new structure and to generate the requisite involvement of non-academic employers. Research Councils will need to change the balance of support, providing more post-graduate awards for Master's level training and fewer awards for the more highly-selected group who will go on to undertake a further period of research training normally for three years".

However, this policy of changing the balance of postgraduate training has been criticised by some. A report issued by the National Commission on Education in November 1993 said that since the Government does not intend to provide any more money for the revised research degrees, the number of students taking doctoral courses will inevitably fall. The Commission believe that this will increase the difficulty UK universities already face in employing researchers at rates competitive with industry, or with universities in other countries¹⁸.

In their recent report, see above, the Lords Select Committee stated:

"2.82 We endorse the concerns of our witnesses...regarding the intention that a PhD funded by the Research Councils should normally be preceded by an MSc. The result will be a weaker Science Base. We recommend that the plans for MScs for all be reconsidered. We note that the issue is currently being examined by the Royal Society.

¹⁸ "UK report criticizes plans for PhDs" *Nature* 18 November 1993 p.192

2.83 As for applying industrial/commercial constraints to research training, with a view to relating it to the needs of potential employers, the message from our industrial witnesses is clear. What industry wants from the Science Base is world-class researchers with firm understanding of the fundamentals of their science."

However, it would appear that this policy on postgraduate training is being reconsidered. In December 1993, the *New Scientist*¹⁹ reported that William Waldegrave, the Minister with responsibility for science, had said that the new Masters degree - Master of Research or MRes - may not be needed in some disciplines:

"'We don't want to be too mechanistic and prescriptive,' said Waldegrave. 'We have had a radically different response from different parts of the scientific community.' Disciplines such as chemistry and mathematics, where the reaction has been coolest, may be treated different from engineering, he said."

The *New Scientist* article went on to state that no decision will be made quickly and that a consultation paper will be published this year, quoting Mr Waldegrave as saying "ultimately, it is a matter for the research councils and the universities".

¹⁹ "Second thoughts on research degree" *New Scientist* 25 December 1993 p.8