House of Commons

Innovation, Universities, Science and Skills Committee

Pre-appointment hearing with the Chair-elect of the Science and Technology Facilities Council, Professor Michael Sterling FREng

Ninth Report of Session 2008–09

Report with appendices, together with formal minutes and oral evidence

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The Innovation, Universities, Science & Skills Committee

The Innovation, Universities, Science & Skills Committee is appointed by the House of Commons to examine the expenditure, administration and policy of the Department for Innovation, Universities and Skills.

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The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the Internet at www.parliament.uk/ius
A list of reports from the Committee in this Parliament is included at the back of this volume.

Committee staff

The current staff of the Committee are: Sarah Davies (Clerk); Glenn McKee (Second Clerk); Dr Christopher Tyler (Committee Specialist); Andy Boyd (Senior Committee Assistant); Camilla Brace (Committee Assistant); Kerrie Hanley (Committee Assistant); Claire Cozens (Committee Assistant); Jim Hudson (Committee Support Assistant); and Becky Jones (Media Officer).

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Summary

On Monday 13 July 2009 we held a pre-appointment hearing with the Chair-elect of the Science and Technology Facilities Council, Professor Michael Sterling FREng. On the basis of the evidence provided at this hearing we have concluded that he is a suitable candidate for the post.

1 Introduction

Pre-appointment hearings

1. Government proposals for pre-appointment hearings were set out in the 2007 Green Paper *The Governance of Britain*. The Government sought to "involve Parliament in the appointment of key public officials" to "positions in which Parliament has a particularly strong interest because the officeholder exercises statutory or other powers in relation to protecting the public's rights and interests".[1] The paper continued:

> The hearing would be non-binding, but in light of the report from the committee, Ministers would decide whether to proceed. The hearings would cover issues such as the candidate's suitability for the role, his or her key priorities, and the process used in selection.[2]

2. The Liaison Committee subsequently produced a set of guidelines to ensure pre-appointment hearings are conducted appropriately, and in order to "maintain an appointments process which is proportionate and continues to attract high-quality candidates".[3] The Liaison Committee also consulted with select committee chairmen on which posts should be subject to such hearings.[4]

Scrutiny of Research Council appointments

3. Between 2003 and 2007, prior to the introduction of pre-appointment hearings, the former Science and Technology Committee held introductory hearings with newly appointed Chairmen and Chief Executives of Research Councils soon after they had taken up their posts.[5] These hearings aimed to "satisfy parliament that the post has been filled with someone of sufficient calibre", and to facilitate understanding of the role and interests of both parties.[6] Following the *Governance of Britain* proposals, the Science and Technology Committee stated:

> We are pleased that the Government is taking steps to involve select committees more fully in the scrutiny of public appointments. We believe that pre-appointment hearings with the relevant Select Committee will improve accountability and help ensure that the right people are appointed to key positions. We recommend that

1 Ministry of Justice, *The Governance of Britain*, Cm 7170, July 2007, p 28

2 *As above*, p 29

3 House of Commons Liaison Committee, First Report of Session 2007-08, *Pre-appointment hearings by select committees*, HC 384, March 2008

4 *As above*, para 11 and Annex B

5 Sir John Chisholm, Chairman of the Medical Research Council (MRC), July 2007 (HC 746); Mr Ed Wallis, Chief Executive of the Natural Environment Research Council (NERC), April 2007 (HC 747-i); Prof Philip Esler, Chief Executive of the Arts and Humanities Research Council, February 2007 (HC 310-i); Prof Keith Mason, Chief Executive of the Particle Physics and Astronomy Research Council, January 2006 (HC 808-i); Prof Alan Thorpe, Chief Executive of NERC, October 2005 (HC 491-i); Prof Colin Blakemore, Chief Executive of MRC (HC 55), December 2003; Prof Ian Diamond, Chief Executive of the Economic and Social Research Council, January 2003 (HC 277-i).

6 House of Commons Science and Technology Committee, Eighth Report of Session 2006-07, *Chairman of the Medical Research Council: Introductory Hearing*, HC 746, July 2007, para 1

> Chairpersons and Chief Executives of the Research Councils be included in the proposed list of appointments that should be subject to these hearings.[7]

4. Such appointments were not originally included in the Government's list of posts to be subject to pre-appointment hearings. They were proposed by our Chairman during the Liaison Committee consultation,[8] and the Government's response included Research Council Chairs in a revised list of suitable posts.[9] We held our first pre-appointment hearing with the Chair-elect of the Economic and Social Research Council (Dr Alan Gillespie CBE) on 5 May 2009 and our second with the Chair-elect of the Biotechnology and Biological Sciences Research Council (Professor Sir Tom Blundell) on 13 May 2009. This is the third pre-appointment hearing that we have held.

5. The Secretary of State for Business, Innovation and Skills, the Rt Hon the Lord Mandelson, wrote to the Chairman on 1 July 2009 indicating that Professor Michael Sterling FREng had been identified as the preferred candidate for the post of Chair of the Science and Technology Facilities Council (STFC).[10] We were pleased to have the opportunity to question Professor Sterling prior to his appointment.

7 House of Commons Science and Technology Committee, Eighth Report of Session 2006-07, *Chairman of the Medical Research Council: Introductory Hearing*, HC 746, July 2007, para 15

8 House of Commons Liaison Committee, First Report of Session 2007-08, *Pre-appointment hearings by select committees*, HC 384, March 2008, p 20

9 House of Commons Liaison Committee, *Pre-appointment hearings by select committees: Government response to the Committee's First Report of Session 2007-2008*, HC 594, May 2008, p 8

10 Appendix 1

2 Background to the post

The Science and Technology Facilities Council

6. Compared to the other Research Councils, STFC is relatively new. It was formed on 1 April 2007 as a result of the merger between the Council for the Central Laboratory of the Research Councils (CCLRC), which managed national facilities, and the Particle Physics and Astronomy Research Council (PPARC), which funded particle physics and astronomy research. It also took on responsibility for nuclear physics from the Engineering and Physical Sciences Research Council (EPSRC). It was established by Royal Charter in 2007 and, along with the six other Research Councils, is a non-departmental public body sponsored by the Department for Business, Innovation and Skills (BIS).

7. The Mission of STFC (set out in full in its Royal Charter)[11] is to promote and to support:

- high-quality scientific and engineering research by developing and providing facilities and technical expertise in support of basic strategic and applied research programmes;
- high-quality basic, strategic and applied research and related post-graduate training in astronomy, particle physics, space science and nuclear physics and research in any other field which makes use of STFC-managed facilities; and
- advancement of knowledge and technology (including the promotion and support of the exploitation of research outcomes) and to provide trained scientists and engineers.

8. STFC's principal activities are:

- funding researchers in universities directly through grants, particularly in astronomy, particle physics, space science and nuclear physics;
- providing in the UK access to world-class facilities, including ISIS,[12] the Central Laser Facility,[13] and High Performance Computing (HPCx).[14] It is also a major stakeholder in the Diamond Light Source,[15] which started operations in 2008.
- providing in the UK a broad range of scientific and technical expertise in space and ground-based astronomy technologies, microelectronics, wafer scale manufacturing, particle and nuclear physics, alternative energy production, radio communications and radar; and
- providing access to world-class facilities overseas, including through CERN,[16] the European Space Agency (ESA), the European Southern Observatory (ESO), the

11 Appendix 2

12 ISIS is the world's leading neutron and muon source, based at the Rutherford Appleton Laboratory, Harwell Campus at Didcot, Oxfordshire.

13 At the Rutherford Appleton Laboratory, Harwell Campus at Didcot, Oxfordshire.

14 At the Daresbury Laboratory, Cheshire

15 At the Harwell Campus at Didcot, Oxfordshire

16 Particle physics laboratory situated on the French-Swiss border

European Synchrotron Radiation Facility (ESRF), the Institut Laue-Langevin (ILL) and telescope facilities in Chile, Hawaii, La Palma, Australia and the MERLIN/VLBI National Facility, which includes the Lovell Telescope at Jodrell Bank Observatory.[17]

9. The STFC annual budget for 2009-10 is £630 million. It has over 2,000 staff and the STFC Head Office is at Swindon, Wiltshire. As well as funding researchers in universities particularly in astronomy, particle physics, space science and nuclear physics, it operates research facilities in the UK including the Rutherford Appleton Laboratory at Didcot, Daresbury Laboratory in Cheshire and the Astronomy Technology Centre at Edinburgh.[18]

10. STFC is drawing up, and has consulted on, its future strategy. The vision set out in the strategy document is that the STFC, working with the other Research Councils and the broader research base, "will deliver maximum scientific, economic and societal benefits to the UK by:

a) providing world-leading science facilities and associated technologies, and leveraging the UK position in the choice and location of international facilities as appropriate;

b) taking the UK lead in supporting world-class research in astronomy, nuclear and particle physics, and space science; and

c) maximising the impact of our science and technology, including through the Science and Innovation Campuses and Gateway Centres, to generate skills and public engagement and to transfer knowledge and create economic impact."[19]

The role of the Chair

11. STFC is governed by a Council made up of the Chairman, the Chief Executive, and six to ten (currently eight) other members appointed by the Secretary of State for Business, Innovation and Skills for their expertise, or as industry or Government users of research. The Council has "ultimate accountability for all aspects of the STFC's affairs"[20] and in addition the Chairman acts "as custodian of the Council's objects and Chartered objectives and has overall responsibility for the governance, direction and management of the Council" and he works with the full-time Chief Executive and the Council, "leading the STFC in pursuit of its objects".[21] The current Chief Executive of STFC is Professor Keith Mason, who took up the post on 1 April 2007.[22]

12. The job specification states that the appointment to the role of Chair is for four years in the first instance. The post is part-time and non-executive, the Chair is expected to dedicate "in the order of 36 days a year" to the role. An honorarium is paid per year (£24,270 at appointment).[23]

17 www.scitech.ac.uk/About/wwd/wwdContents.aspx

18 Appendix 1, Annex A

19 www.scitech.ac.uk/STFCConsultation/cnStrategy.aspx?id=5

20 www.scitech.ac.uk/About/Strat/Council/role.aspx

21 Appendix 1, Annex A

22 www.scitech.ac.uk/About/Strat/Council/mason.aspx

23 Appendix 1, Annex B: Job description

13. A full description of the responsibilities of the Chair is attached as Annex C to Appendix 1.

3 The recruitment process

14. The Chair of STFC is appointed by the Secretary of State for Business, Innovation and Skills, in a process that must be in accordance with the recommendations of the Code of Practice of the Commissioner for Public Appointments.[24] BIS informed us that the job information pack (attached to this report as Annex C to Appendix 1) was approved by the Office of the Commissioner for Public Appointments' (OCPA) independent public appointments assessor before the post was advertised in the Sunday Times on 8 March 2009. The recruitment exercise was carried out by recruitment consultants Saxton Bampfylde which also conducted a search. All applications were put before a panel consisting of:

- Professor Adrian Smith, Director General Science and Research at the former Department for Innovation, Universities and Skills, now part of BIS (Chair);
- John Neilson, Director Research Base Group;
- Lord Broers; and
- Ray Mingay, who acted as the OCPA independent public appointments assessor.[25]

The panel shortlisted suitable candidates and held interviews on 11 and 18 May 2009. In accordance with the terms of the STFC Royal Charter the current Chair (Mr Peter Warry) was consulted, and recommendations were then made to the Secretary of State who "considered their advice and decided whom he wished to appoint".[26] BIS also informed us that the Prime Minister was consulted (in accordance with Cabinet Office guidelines)[27] and had given his approval.[28]

24 Office of the Commissioner for Public Appointments , *The Commissioner for Public Appointments Code of Practice for Ministerial Appointments to Public Bodies*, August 2005

25 Appendix 1, Annex B: The recruitment process

26 Appendix 1, Annex B: The recruitment process

27 Cabinet Office, *Making and Managing Public Appointments: a Guide for Departments,* February 2006, p 85

28 Appendix 1, Annex B: The recruitment process

4 The candidate

15. Professor Michael Sterling is an engineer by background. His professional qualifications are listed at Annex D of Appendix 1. He has recently retired as Vice-Chancellor of Birmingham University and was previously Vice Chancellor of Brunel University (1990-2001). His earlier career was at the University of Durham and the University of Sheffield. He has been a member of the Council for Science and Technology since 2004 and is Chair of its energy and water subgroups. He is a Board member of Advantage West Midlands Regional Development Agency. He was Chair of the Russell Group of the leading research-intensive universities in the UK from 2003 to 2006. He was a member of the Council of the Royal Academy of Engineering from 2005-08 and was President of the Institute of Electrical Engineers from 2002–03.[29]

16. Professor Sterling's full CV is attached as Annex D to Appendix 1.

5 Our questioning

17. Taking responsibility for the overall direction and strategy of STFC involves the effective delivery of a budget that will rise to £652 million in 2010–11[30] and the provision of both fundamental and strategic science in fields that impact greatly on quality of life. We questioned Professor Sterling about his independence, priorities and the recruitment process. We felt it was important to discuss key policy issues that will affect his ability to deliver STFC's mission and to raise issues which had given us concern about the operation of the STFC in the past 18 months.[31] Areas of questioning included:

- Professor Sterling's suitability for the role, including his approach to a non-executive role taking into account his experience in higher education and membership of the Council for Science and Technology and the concerns that the Committee expressed last year in the management and operation of STFC;
- his views on the future strategic direction of STFC, including the current and future priorities for STFC and the management of STFC's budget; and.
- the relationship between STFC and Government.

18. A transcript of the hearing is printed with this report.

30 DIUS, *The Allocations of the Science Budget 2008/09 to 2010/11*, December 2007, p 29

31 House of Commons Innovation, Universities, Science and Skills Committee, Fourth Report of Session 2007-08, *Science Budget Allocations*, HC 215-I

6 Conclusion

19. **We are satisfied that Professor Michael Sterling has the professional competence and personal independence required to Chair the STFC. We recommend that the Secretary of State proceed with the appointment and we wish Professor Sterling every success in his new post.**

Appendix 1

Letter from the Rt Hon the Lord Mandelson, Secretary of State for Business, Innovation and Skills, to Mr Phil Willis MP, Chairman of the Innovation, Universities, Science and Skills Committee

I am writing to inform you that I have identified Professor Michael Sterling as the Government's candidate to be the new Chair of the Science and Technology Facilities Council (STFC) and invite the Innovation, Universities, Science and Skills (IUSS) Select Committee, if it wishes, to hold a pre-appointment hearing in line with the new procedure agreed in the Government's Response to the Liaison Committee's First Report of Session 2007–08, HC 594.

Professor Sterling is an engineer by background. His professional qualifications are listed below. He has just retired as Vice-Chancellor at Birmingham University and was previously Vice-Chancellor at Brunel University (1990–2001). His earlier career was at the University of Durham and the University of Sheffield. He has been a member of the Council for Science and Technology since 2004 and is Chair of its energy and water subgroups. He is a Board member of Advantage West Midlands Regional Development Agency. He was Chair of the Russell Group of the 20 leading UK Universities from 2003 to 2006. He was a member of the Council of the Royal Academy of Engineering from 2005–08 and was President of the Institute of Electrical Engineers from 200203.

CEng	Chartered Engineer	1975
FInstMC	Fellow of the Institute of Measurement and Control	1983
FRSA	Fellow of the Royal Society of Arts	1984
FIEE	Fellow of the Institution of Electrical Engineers	1985
FREng	Fellow of the Royal Academy of Engineering	1991
CCMI	Companion of the Chartered Management Institute	2002

To inform the Committee's decision on whether or not to hold a hearing, and in anticipation of the Committee wishing to do so, I annex details of the legal basis of the appointment and the recruitment process, and attach the information pack for candidates (which includes a job description and person specification and terms and conditions) and Michael Sterling's CV.

July 2009

Annex A

Legal basis

STFC was formed under the provisions of section 1(1)(c) of the Science and Technology Act 1965. Appointments to the Council are made by the Secretary of State for Business Innovation and Skills under the terms of section 4 of its Royal Charter.

4. (1) The membership of the Council shall consist of:

(a) the Chair,

(b) the Chief Executive, and

(c) from six to ten other members,

of whom at any time no more than one third shall be employed members of the Council.

(2) In this Charter, unless the contrary intention appears:

(a) "an employed member of the Council" means a person who is both employed by the Council and appointed as a member to the Council;

(b) "an ordinary member of the Council" means a member who is not an employed member of the Council and includes the Chair;

(c) words in the singular include the plural and words in the plural include the singular;

(d) references to Our Secretary of State are to Our Secretary of State for Trade and Industry; and

(e) references to research councils are to research councils within the meaning of the Science and Technology Act 1965 or the Arts and Humanities Research Council as defined by section 1 of the Higher Education Act 2004.

(3) Subject to paragraphs (4) and (5) of this Article, the members of the Council shall be appointed by Our Secretary of State and the terms of their appointment or the revocation of any appointment shall be determined by Our Secretary of State.

(4) Except in relation to the appointment of the first Chief Executive, before appointing any member to the Council, Our Secretary of State shall consult the Chair for the time being of the Council who may consult other members of the Council as he or she shall see fit.

(5) An employee of the Council other than the Chief Executive may be appointed to the Council if nominated by the Chief Executive after consultation with the Chair and shall be appointed by Our Secretary of State.

(6) An ordinary member of the Council who becomes employed by the Council shall cease to be a member unless re-appointed under paragraph (5) of this Article.

(7) Subject to paragraph (8) of this Article, the Chief Executive and the other employed members of the Council and any ordinary member who is also employed as a civil servant or by a Research Council shall remain a member of the Council only for as long as he or she is so employed.

(8) (a) Every member of the Council shall hold and vacate his or her office as a member of the Council solely in accordance with the terms of his or her appointment.

(b) The Chair shall be appointed for a term of up to four years and shall, on the expiry of his or her term of appointment, be eligible for re-appointment thereafter.

(c) The Chief Executive shall be appointed for a term of up to five years and shall, on expiry of his or her term of appointment, be eligible for re-appointment thereafter.

(d) An ordinary member of the Council (other than the Chair) shall not be appointed for a term of more than four years and may be re-appointed for one further term of not more than four years.

(e) A member of the Council may at any time by notice in writing to Our Secretary of State resign his or her office.

(9) Subject to paragraph (11) of this Article, the Council shall in the case of any such member as Our Secretary of State may determine:

(a) pay to him or her such remuneration and allowances as may be so determined in his or her case; and

(b) pay to or in respect of him or her such pension, allowance or gratuity on his or her retirement or death, or make such payments towards provision for such a pension, allowance or gratuity, as may be so determined in his or her case.

(10) If a person ceases to be a member of the Council otherwise than on the expiration of his or her term of office, and it appears to Our Secretary of State that there are special circumstances which make it right that that person should receive compensation, the Council shall make to that person a payment of such amount as Our Secretary of State may determine.

(11) The Council shall not in any circumstances or at any time make to or in respect of any person in his or her capacity as a member of the Council any payment of any kind whatsoever for or in respect of any period when he or she is

also a member of the House of Commons, the Scottish Parliament, the National Assembly for Wales or the Northern Ireland Assembly (when so constituted and not suspended), other than a payment by way of reimbursement to him or her of actual out of pocket expenses previously and necessarily incurred by him or her in the performance of his or her duties as a member of the Council.

(12) The provisions of paragraphs (9) and (10) of this Article shall not apply to a member of the Council who is a civil servant.

Annex B

The recruitment process

The process followed the recommendations of the Code of practice of the Commissioner for Public Appointments as it applies to upper tier bodies. The appointment process was overseen by a panel:

- Professor Adrian Smith, Director General Science and Research at DIUS (Chair)
- John Neilson, Director Research Base Group
- Lord Broers
- Ray Mingay acted as the OCPA independent public appointments assessor.

After preparation of information packs for each appointment, which include details of the role and person specifications and terms and conditions and which were approved by the OCPA independent public appointments assessor, the appointment was advertised in the Sunday Times on 8 March 2009 and recruitment consultants Saxton Bampfylde conducted a search. Following consideration of all the applications, the panel compiled its shortlist and interviews were held for the position on 11 and 18 May. Recommendations were then made by each panel to the Secretary of State who considered their advice and decided whom he wished to appoint. The Secretary of State has consulted the Prime Minister who has indicated that he is content.

Annex C

The Responsibilities of the Chair

1. STFC

Over the last decade the Government has made a significant commitment to the science and research base in the UK. Its policy for the long term sustainability of the research base in the UK is set out in its "Science & Innovation Investment Framework 2004-2014". The Research Councils will continue to be the main route through which the public funds for the research base are allocated. They will not only be responsible for ensuring the prudent management of public funds and for ensuring excellence in research, but for also taking a strategic view of long term research needs and their impact on society and the economy.

The Science and Technology Facilities Council (STFC) was formed on 1 April 2007 through a merger of the Council for the Central Laboratory of the Research Councils (CCLRC) and the Particle Physics and Astronomy Research Council (PPARC) and the transfer of responsibility for nuclear physics from the Engineering and Physical Sciences Research Council (EPSRC). The STFC is a Non-Departmental Public Body established under the Science and Technology Act 1965 and incorporated by Royal Charter and is funded mainly by grant in aid allocated by its sponsoring body, the Department for Innovation, Universities and Skills.

The STFC annual budget for 2009-2010 is £630m. It has over 2000 staff. The STFC Head Office is at Swindon, Wiltshire. It funds researchers in universities particularly in astronomy, particle physics, space science and nuclear physics. It operates research facilities in the UK including the Rutherford Appleton Laboratory at Didcot, Daresbury Laboratory in Cheshire and the Astronomy Technology Centre at Edinburgh. It provides access to research facilities overseas including through CERN, the European Space Agency (ESA) and the European Southern Observatory.

STFC Objectives

The objectives of the Council are:

(a) to promote and support high-quality scientific and engineering research by developing and providing, by any means, facilities and technical expertise in support of basic, strategic and applied research programmes funded by persons established in the United Kingdom and elsewhere.

(b) to promote and support, by any means, high-quality basic, strategic and applied research and related post-graduate training in astronomy, particle physics, space science and nuclear physics and research in any other field which makes use of scientific facilities where access is provided, arranged or otherwise made available by the Council, having regard to the objects of the other research councils.

(c) to promote and support the advancement of knowledge and technology (including the promotion and support of the exploitation of research outcomes) and to provide trained

scientists and engineers, and thereby to contribute to the economic competitiveness of the UK and the quality of life of its people, meeting the needs of users and beneficiaries.

d) in relation to the activities as engaged in by Council under a), b) and c) above and in such manner as the Council may see fit:

- to generate public awareness
- to communicate research outcomes
- to encourage public engagement and dialogue
- to disseminate knowledge; and
- to provide advice.

2. The Role of Chair

A successor to the founding STFC Chair, Peter Warry is being sought.

The Chair will act as custodian of the Council's objects and Chartered objectives and has overall responsibility for the governance, direction and management of the Council. The Chair will work with the full-time Chief Executive, who is the Council's Accounting Officer, and a Council of 12 members, leading the STFC in pursuit of its objects.

Job Description

The key responsibilities of the role are:

- The Chair of the Council is formally responsible to the Secretary of State, but works closely with the Director General Science and Research (DGSR) and the STFC Chief Executive. Responsibilities include providing effective strategic leadership, with the assistance of the Chief Executive, on matters such as:
- formulating the Council's strategy for discharging its objects as set out in the Royal Charter;
- effective execution of Council's decisions through the Chief Executive;
- encouraging high standards of propriety, and promoting the efficient and effective use of staff and other resources throughout STFC;
- ensuring that the Council, in reaching decisions, liaises effectively with the Department for Innovation, Universities and Skills (DIUS); and
- representing the views of the Council to the general public and representing STFC Council at various events, fora etc.

The Chair will also be required to:

- ensure that Council meets at regular intervals throughout the year and that minutes of meetings accurately record decisions taken, record any conflicts of interests and, where appropriate, the views of individual Council members;
- provide DIUS with an assessment of performance of individual Council members, when they are being considered for reappointment to the Council or for appointment to the board of some other public body;
- work with the Director General Science and Research, the Chief Executive and the Council in the development of the Council's strategic direction and policies to deliver STFC's objects, within the overall framework of Government policy;
- work with the Director General Science and Research and the other Research Council Chairs and Chief Executives on cross council research and other wider science policy issues;
- work to improve the links between STFC, the research community it supports, industry, national and international science funding and policy agencies, including learned and professional institutions, and with Government;
- through membership of the DIUS Remuneration Committee consider the performance bonus of the Chief Executive and provide advice to DIUS;
- chair the Appointments Committee, which recommends to the Secretary of State, shortlists of members for possible appointment to STFC Council.

Person Specification

Experience and qualifications

The appointee must have the following experience:

i. senior leadership in a substantial and complex organisation;

ii. non-executive or Chairing experience in a private or public sector body;

iii. financial planning and management;

iv. operating in contexts where the ability to exercise judgement across a broad spectrum of policy and high-level management issues has been proved;

v. dealing with complex, difficult discussions with energy and diplomacy; and

vi. dealing effectively with governance and other governing body management issues.

It would be desirable, but not essential, for candidates to have experience either in a research led organisation or in one that has a strong interface with such organisations.

Skills and personal qualities

Candidates will also demonstrate excellent intellectual skills and good judgement; and first class communication, relationship building and persuasion skills.

Candidates should have sufficient stature to lead the Council effectively as Chair, and have an interest in STFC's research areas. Detailed knowledge of these areas is not necessary.

Conflicts of Interest

Potential candidates should be aware that the Council must avoid conflicts of interest in its work, and therefore individuals with significant responsibilities in other bodies that fund in areas in which STFC is active are not eligible to apply. Applicants are asked to declare any potential conflicts on the application form and to note that all members of Council are required to declare any private, professional or commercial interests that might conflict with the interests of the Council, or which might be perceived by others as creating a conflict of interest.

3. Terms and Conditions

Remuneration/benefits

This is a part time non-executive appointment for which an honorarium is paid. The rate is currently £24,270 a year. Travel and other reasonable expenses will be paid.

Length of the appointment

The appointment is for four years in the first instance with the possibility of re-appointment.

There is a degree of flexibility in the role, but typically in the order of 36 days a year are expected. At present the Council meets nine times a year in a variety of locations. There are four main business meetings that take place quarterly with "Forum" discussion meetings taking place between those meetings.

Annex D

Curriculum Vitae: Professor Michael John Howard STERLING

Qualifications

BEng, PhD, DEng, CEng, Hon DEng(Sheffield), Hon DEng(Brunel), Hon Doc(CZ), Hon Doc(UZ), FREng, FIEE, Hon FIET, FInstMC, Hon FInstMC, CCMI, FRSA

Nationality British

Date of Birth 9 February 1946

Married with two sons

Most Recent Appointment

University of Birmingham Vice-Chancellor & Principal, (2001-2009)

Previous Appointments

Brunel University: Vice-Chancellor & Principal, (1990-2001)

University of Durham:

- Professor of Engineering, School of Engineering and Applied Science & Head of Electrical, Electronic and Control Section (1980-90)
- Chairman of the Board of Studies in Engineering (1985-88)
- Director, University Microprocessor Centre (1980-85)

University of Sheffield:

- Senior Lecturer, Department of Control Engineering, (1978-80)
- Industrial Liaison Officer, Department of Control Engineering, (1976-80)
- Lecturer, Department of Control Engineering, (1971-78)

Research Engineer, GEC-Elliot Process Automation (1968-71)

Student Apprentice, AEI/GEC (1964-68)

General Education

Hampton Grammar School (1957-64), 8 O-level and 3 A-level passes

Undergraduate Education

University of Sheffield, BEng in Electronic and Electrical Engineering, 1st Class Honours, (1965-68)

Awarded the Douglas Harrison prize for the best second year student (1967) and the Institution of Electrical Engineers prize for final degree performance (1968)

Postgraduate Research, PhD

Research student in the Department of Control Engineering, University of Sheffield (1968-71). Supported by SRC and GEC-Elliot Process Automation under an industrial studentship. PhD awarded for a thesis entitled 'Optimum Scheduling in a Multi-machine Power System' (1971)

Higher Doctorate, DEng

Degree of Doctor of Engineering from the University of Sheffield awarded for published research (1988)

Professional Qualifications

CEng (Chartered Engineer) 1975

FInstMC (Fellow of The Institute of Measurement and Control) 1983

FRSA (Fellow of The Royal Society of Arts) 1984

FIEE (Fellow of The Institution of Electrical Engineers) 1985

FREng (Fellow of The Royal Academy of Engineering) 1991

CCMI (Companion of the Chartered Management Institute) 2002

Awards

- Honorary Degree of Doctor of Engineering, University of Sheffield, 1995 (Hon DEng)
- Freeman, City of London 1996
- Liveryman, The Worshipful Company of Engineers 1998
- Honorary Doctor of the University of Tashkent, Uzbekistan 1999 (Hon Doc)
- Medal of Honour, University of West Bohemia, Czech Republic 2000
- Honorary Doctor of the University of West Bohemia, Czech Republic 2001 (Hon Doc)
- Emeritus Professor, Brunel University 2001
- Honorary Fellow of the Institute of Measurement and Control 2003

- Honorary Fellow of the Institution of Engineering and Technology 2006
- Honorary Degree of Doctor of Engineering, Brunel University 2008 (Hon DEng)
- Fellow of the Engineering Academy of the Czech Republic 2008

Prizes

- University of Sheffield Douglas Harrison Prize for best second year student in Electronic & Electrical Engineering (1967)
- Institution of Electrical Engineers Prize for final degree performance in Electronic & Electrical Engineering (1968)
- Institute of Measurement & Control ICI Prize (1980) for the Transactions paper entitled 'Modelling Techniques in Dynamic Control of Water Distribution Systems', Trans Inst MC, Vol 11, Oct 1978, pp 385-389
- Institution of Electrical Engineers Hartree Premium (1985) for the Proceedings paper entitled 'Minimum Norm State Estimation for Computer Control of Water Distribution Systems', Proc IEE, Vol 131, Pt D, No 2, 1984, pp 57-63

Responsibilities as Vice-Chancellor & Principal of University of Birmingham (2001-2009)

The University of Birmingham was granted a Royal Charter in 1900 and is the definitive 'red brick' university. It is a leading civic university with over 31,000 registered students, about 6,000 staff and a turnover of over £440M p.a. It has one of the broadest curricula in the country and is a research led, research intensive university that is a member of the Russell Group, the top 20 universities in the UK. It has one of the largest Medical Schools in the country, a huge asset base and the largest number of living university alumni.

Under my leadership, the University developed a comprehensive strategic planning framework building on targeted plans for elements of the University, a process that involved widespread consultation. With the full support of my Senior Management Team, we successfully addressed a tight financial situation, increasing the surplus from £0.5M in 2001-01 to £8M in 2001-02 and £14M in 2002/3. The University continued to have substantial surpluses well in excess of the funding council target throughout my tenure, despite investing heavily in its estate. Difficult academic decisions were taken and implemented in line with the strategic plan supported by the vast majority of staff. Restructuring was successfully implemented and the membership of Senate reduced to encourage proper academic debate and decision. The academic profile of the institution became more market focussed, overcoming the tendency to be provider driven. The University is now ranked 65th in the world league tables and now has the largest income from exploitation of intellectual property in the UK. My 3 year chairmanship of the Russell Group (2003-06) provided considerable profile to the University and my membership of the Prime Minister's Council for Science and Technology, together with Board membership of Advantage West Midlands, the regional development agency, gave me considerable opportunity to influence higher education policy debate.

Formally, the Vice-Chancellor is the Chief Executive and accounting officer of the University. Organisationally, the Vice-Chancellor is:

- Member of Court, Council, Estate Strategy Committee, Nominations Committee, Remuneration Committee, and Investment Committee
- Chairman of Senate and Member ex-officio of all Senate Committees
- Chairman of Strategic Planning and Resources Committee (SPRC)
- Chairman of Professorial Appointments Panels
- Chairman of Executive Board
- Chairman of Titles and Promotions Committee

Responsibilities as Vice-Chancellor & Principal Brunel University (1990-2001)

Brunel University was granted its Royal Charter in 1966 and had more than 12,000 students and an annual turnover of about £80m when I left. It employed over 2,000 staff based on four campuses extended to 280 acres. The University offered 3 year conventional pattern degrees as well as a substantial proportion of thin/thick sandwich degrees in each of its five Faculties. During my appointment as Vice-Chancellor, the University nearly quadrupled in size.

A new semester based teaching pattern was introduced to facilitate continuation of the thin sandwich scheme alongside traditional 3 year full-time degrees and a 4 year thick-sandwich option. The University subsequently saw nationally the largest percentage increase in undergraduate applications over the 90's and had healthy increases in engineering applications despite a rapidly downward national trend.

Research activity improved throughout the decade from a very bad position in 1989 with better HEFCE research assessment exercise scores in each round. In 2001 as I left, the University saw a very successful further improvement in the assessment results with a big increase in University income. The schemes built on the fully devolved financial structure introduced in 1991 and provided full accountability for research resource in terms of research outputs. Committee structures were streamlined and individual responsibility increased. Quality assurance mechanisms were refined and good quality audit reports were received throughout the decade. Good links with overseas institutions were established and EU student recruitment was buoyant. In order to cope with the student number growth, a major building programme was put in place and prudent financial control ensured continuation of a budget surplus each year. The University developed well in a relatively short period and morale remained good despite funding adversity.

Formally, the Vice-Chancellor was the Chief Executive and accounting officer of the University.

Organisationally the Vice-Chancellor was:

- Member of Court, Council, Finance Committee, Estate Strategy Committee, Nominations Committee, and Remuneration Committee
- Chairman of Senate and Member ex-officio of all Senate Committees
- Chairman of Strategic Planning and Resources Committee (SPARC)
- Chairman of Academic Staff Appointments and Promotions Committee
- Chairman of Deans' Committee
- Chairman of Honorary Degrees Committee
- Chairman of all Interview Boards for Senior Appointments
- Chairman of Senior Management Team

Professional Responsibilities

Prime Minister's Council for Science and Technology

Council Member (2004-present)
Chairman, Energy Subgroup (2004-present)
Chairman, Water Subgroup (2008-present)

Russell Group of UK Universities

Chairman – The Russell Group represents the top 20 universities in the UK (2003-2006), Member (2001-2009)

Royal Academy of Engineering

Chairman, Membership Committee (2005- 2008)

Chairman, Membership Committee, Panel 3 (2002-2005)

Member, Council (2005-2008)

Member, Nominations Committee (2008-present)

Member, Membership Committee, Panel 3 (2000-02)

Member, Review Group of Mechanisms for Providing Advice to External Bodies (1997-98)

Member, Standing Committee for Education, Training and Competence to Practise (1993-97)

Elmhurst School of Dance

President (2002-2009)

Barber Institute of Fine Arts

Trustee (2001-2009)

West Midlands Higher Education Association

Member (2001-2009)

Universities & Colleges Admission Service

Board Member (2001-2005)

Lunar Society

Member (2001-present)

Committee of Vice-Chancellors & Principals (CVCP)

Member, Main Committee, (1990-2009)

Member, Finance, Resources and Management Sector Group (1998-2009)

Member, Shadow Group on Performance Indicators in Higher Education (1998-2003)

Member, Steering Group to Monitor Impact of New Funding Arrangements on Access to Higher Education 1998/99 (1998-99)

Member, Information Systems Sector Group, (1995-2003)

Member, Working Group on the Funding Method for Teaching (1997)

Member, Research & Knowledge Transfer Steering Group (1996-97)

Member, Student Numbers Steering Group (1995-96)

Member, Council (1994-95)

Member, European Committee (1991-95)

Member, Performance Indicators Committee, (1991-93)

Chairman, Sub-Committee on Research Performance Indicators, (1992-93)

Institution of Electrical Engineers

President (2002-03)

Deputy President (2000-2002)

Vice President (1997-00)

Member, Council, (1991-93 and 1997-2003)

Member, Executive Board (1997-2003)

Chairman, Qualifications Board (1997-2002)

Member, Computing and Control Divisional Board (1983-87)

Member, Power Divisional Board (1984-87)

Chairman, Professional Group C9 (1983-84), Vice-Chairman (1982-83), and Member (1980-82)

Higher Education Statistics Agency (HESA)

Chairman, (1992-2004)

Chairman, Management Committee (1992-93)

Engineering Council

Member, (1994-96)

Member, Standing Committee for the Engineering Profession, (1994-96)

Member, Standing Committee for the Regions & Assembly (1994-96)

Member, Board for Engineers' Regulation Review Working Group (1995)

UK Higher Education Funding Councils (HEFCE/SHEFC/HEFCW)

Chairman, Joint Performance Indicators Working Group, (1992-95)

Higher Education Funding Council for England (HEFCE)

Member, Additional Student Numbers and Funds Advisory Group (1998-2001)

Member, Mechanical, Aeronautical and Production Engineering Assessment Panel, Research Assessment Exercise 1992, 1996

Member, Quality Assessment Committee, (1992-95)

Universities Statistical Record

Chairman, (1992-95)

Institute of Measurement and Control

President (1988), Vice-President (1985-88)

Member, Council (1983-91)

Chairman, Education, Training & Qualifications Committee (1985-88)

Member, Education Committee (1980-88)

Chairman, Educational Activities Panel (1980-83)

Member, National Technical Committee (1980-83)

Chairman, South Yorkshire Section, (1979-80), Vice Chairman (1978-79), and Committee Member (1975-80)

Science and Engineering Research Council (SERC)

Member, Engineering Board (1989-92)

Chairman, Electro Mechanical Eng. Committee (1989-91) and member (1987-89)

Chairman, Electrical and Power Industries Sub-Committee (1987-89)

Chairman, SERC/Central Electricity Generating Board Co-funded Research Committee (1987-89)

Member, Electrical Engineering Sub-Committee (1982-85)

Member, Interactive Computing Facility Users Committee and Director, University of Sheffield ICF computing facility (1977-80)

EPSRC, Member of National Joint Infrastructure Fund Bids Assessment Panel (1999-01)

ECCTIS 2000 Ltd - Member of Advisory Group of Vice-Chancellors (1999-2003)

Advisory Panel on Research, Nene College (1998-2001)

Trustee, Hillingdon Partnership Trust (1993-98)

Member, Committee on International Co-Operation in Higher Education (CICHE) China Panel, British Council (1994-96) and member, CICHE 2 (Advisory committee on link and exchange programmes between UK and overseas universities) (1991-94)

Member of European Universities Association (formerly CRE) (1990-2009)

Cigré British National Committee. – International Conference on Large High Voltage Electric Systems (1990-2001)

Member, Electricity Supply Research Council (1987-89)

Member, British Standards Institution PEL/89 Technical Committee (1981-84)

Member, International Electrotechnical Commission (1981-84)

Member, UMIST Control Systems Centre Academic Board (1975-83)

Member, National Reliability Technology Research Forum (1975-80)

School Governorships

Chairman of Governors, Hampton School, Middlesex (1997-01) and Governor (1991-2001)

Governor, Burnham Grammar School, Burnham, South Buckinghamshire (1991-2001)

Directorships

Advantage West Midlands, Regional Development Agency

— Board Member (2003-present)

— Chairman, Regional Information & Communication Technologies Group (2004-present)

— Member, West Midlands Innovation & Technology Council (2004-present)

STEMNET (Science, Engineering, Technology and Mathematics Network

— Chairman (2007-present)

TPIC - Barber Institute of Fine Arts (2001-2009)

U21 Ltd (2001-2009)

U21 Equity Ltd (2001-2009)

U21 Pedagogica Ltd (2006-2009)

Chairman, OCEPS Ltd (1990-present) - a company in which I am the major shareholder that specialises in the supply of software and consultancy for the electricity industry with an international reach. The company has more than 40 large customers in 10 countries.

Chairman, HESA Ltd (1992-2004) – a company limited by guarantee and owned by the Committee of Vice-Chancellors and Principals, the Standing Conference of Principals and the Committee for Scottish Centrally Funded Colleges. The company acts as an agency for the collection and analysis of statistical data for the whole of UK higher education. It operates through service level agreements with HEFCE, HEFCW, SHEFC, DfEE and the higher education institutions.

Midman (2001-03)

Advantage West Midlands Broadband Steering Group (2001-03)

Cobuild (2001-03)

Chairman, WASMACS Ltd (1994-2001) – a company in which I had a 50% shareholding that specialised in the supply of software and consultancy for the water industry.

Director, West London Training & Enterprise Council (1999-2001)

Director, West London Training & Enterprise Council Charitable Trust (1999-2001)

Director, West London Centre Limited (1999-2001

Refereeing

Referee for many academic/professional journals both nationally and internationally, UK research council grant applications, trusts and charities.

Visiting Appointments

- Visiting Professor at the IIT Delhi, India during British Council sponsored visit and lecture tour, l98l.
- Visiting adviser to Faculte des Economique et de Gestion at Sfax, Tunisia arranged through the British Council, l984.

External Examining

- MEng postgraduate degree course, Electrical Engineering, University of Liverpool (1981-85)
- BSc degree in Electronic & Electrical Engineering, University of Loughborough (1984-87)
- BEng degree course in Electronic & Electrical Engineering, University of Sheffield (1984-87)
- BEng degree in Electronic and Electrical Engineering, Brighton Polytechnic (1984-88)
- MSc degree in Information Technology, Queen Mary College, London (1988-91)
- BEng, MEng degree in Electrical/Electronic Engineering, Queen's University, (1989-91)
- External examiner for numerous PhD and MSc theses, nationally and internationally, in many universities

Major Public Lectures

- Institution of Electrical Engineers, Presidential Address. 'Engineering - the Future or Engineering the Future' , October 2002
- Institute of Measurement and Control: Presidential Address, 'Powerful Control', May 1988
- Institution of Electrical Engineers: Hunter Memorial Lecture, 'Watts in Control of Electricity Supply', November 1988
- Royal Academy of Engineering R& D For Industry Seminar, 'The Academic Maelstrom', February 1998

Consultancies

Numerous consultancy appointments concerned with electrical and water distribution systems modelling, analysis and control, industrial automation, utility regulation and robotics, a selection of which is listed below.

- ICL plc, for online monitoring and control of electrical power systems (1982-01)

- Chemical Industries Association for advice on 'use of system' aspects of electricity privatisation (1988-95)
- SEEBOARD plc for advice on the application of information technology in electrical distribution (1988-95)
- Northern Electric for advice on the application of information technology in electrical distribution (1986-01)
- Yorkshire Electricity for advice on power system planning (1986-01)
- NORWEB plc for advice on power system planning (1986-01)
- Midland Electricity for advice on geographical information systems in power system planning (1989-01)
- MANWEB plc for advice on geographically based network planning and analysis (1989-01)
- Ferranti International plc for computer control of electrical power systems (1983-85, 1989-01)
- Central Electricity Generating Board, adviser on national network monitoring and control (1980-90)
- Electricity Council for research strategy advice (1987-90)
- GEC Measurements Ltd., for computer control of electrical power systems (1983-90)
- South Wales Electricity Board for advice on interactive distribution network analysis (1984-90)
- London Electricity Board for advice on interactive distribution network analysis (1987-90)
- ICI plc for advice on use of system aspects of European electricity supply (1989-91)
- Holset Engineering Ltd., Huddersfield, for computer optimisation of engine test bed utilisation (1979-87)
- Barclays Bank plc, for technical assessment of high technology ventures (1981-86)
- Severn Trent Water Authority for computer monitoring of water distribution systems (1984-85)
- Merz and McLellan (Newcastle) for specification of electrical power systems (1982-90)
- Philwin Ltd. (Advanced Computer Services) for design of software for power system analysis and control (1980-85)
- Registered Department of Industry Microprocessor Application Project Consultant (MAPCON) (1978-84)

- Fisher Controls (formerly GEC-Elliot Process Automation Ltd), for computer control of electrical power systems (1975-83)
- Tinsley Wire Industries Ltd. for microprocessor control of wire annealing plant (1978-80)
- Davy-Loewy Ltd., Hydraulics division, for simulation and design of hydraulic press control systems (1976-80)
- Data Controls (Middlesbrough) Ltd., for advice on hardware aspects of online process control computers (1973-80)
- Ove Arup for design simulation and control of large scale air conditioning plant (1977-78)
- British Gas Corporation, Research and Development Division, London Research Station, for prediction of gas demand by time series modelling techniques (1975-77)
- ITT Business Systems, Standard Telephones and Cables Ltd., Data Equipment and Systems Division, for computer based power system load-frequency control (1974-76)
- RCA Ltd., RAF Fylingdales, for implementation of control software for petro-chemical installations (1975)

Recreational Interests

Interests include DIY, gardening, model engineering.

Responsibilities as Professor of Engineering, University of Durham (1980-90)

At age 33, the appointment as Professor of Engineering at Durham provided the opportunity to build the department's research profile from a fairly low base as well as to develop a large, well funded research group in my own field. Departmental research income rose dramatically and most staff became research active. Student numbers were expanded without loss of quality and two other departments incorporated into the department to form the School of Engineering and Applied Science. Following the appointment of Gordon Higginson to the Vice-Chancellorship at Southampton, I played the lead role in the department and organised a major refurbishment and new building for Engineering. Throughout the period I was heavily involved in the administration of the University at all levels and also active on the national/regional scene. In the latter half of the decade commercial exploitation of my research also brought substantial income to the University.

- Head of Electrical, Electronic and Control Engineering Section of the Engineering Department (1980-90).
- Head of the Engineering Department in rotation (1985-88)
- Director of the University of Durham Microprocessor Centre (1980-85)

- Member of the Council of the University of Durham (1980-83), (1985-90).
- Member of the Finance and Audit Committee (1985-88)
- Member of Policy Committee (1986-89)
- Member of the Resources Committee (1985-88)
- Member of the Development Planning Committee (1981-85)
- Member of the Research and Initiatives Committee (1985-87)
- Member of the Estates Committee (1980-84)
- Member of Council Nominating Committee (1982-83)
- Chairman of the Microprocessor Management Committee (1980-85)
- Council member of the Governing Body of St. Aidan's College (1984-90)
- Council member of the Governing Body of Trevelyan College (1987-90)
- Member of Senate (1985-88)
- Member of the Northumbrian Universities Multi-Access Computer Committee (1983-86)
- Member of the Computer Unit Committee (1980-87)
- Member of the Administrative Computer Steering Group (1981-90)
- Chairman of Policy Review Committee into provision of computing resources (1981).
- Chairman of Review Committee into the future of the Durham Colleges (1980).
- Member of the Select Committee on Research (1982-83)
- Member of the Board of the Faculty of Science (1980-90)
- Member of Planning Committee for the Faculties formerly the Quinquennial Review Committee (1980-88)
- Chairman of the Ad Hoc Committee for College Catering (1980-81)
- Member of Dunelm House Committee (1980-84)
- Member of the Senior Common Room of six Durham Colleges.

Research

Appointments at the University of Sheffield and the University of Durham provided opportunities for academic research over a 19 year period which led to an internationally known research group. The transfer of my research group from Durham to Brunel, following my appointment as Vice-Chancellor & Principal, enabled me to participate in an ongoing research programme but at a substantially reduced level. The group has continued to prosper under the direction of Prof M R Irving and I am pleased that I have been able to stay involved although latterly only in a consultancy role.

Research activity during my career has been primarily concerned with computer based monitoring and control techniques for a range of applications including electrical power systems, water distribution systems, advanced manufacturing systems and various other industrial processes. Most of the research has necessitated consultation or collaboration with appropriate industrial organisations and has attempted to address realistic problems.

The challenging problems implicit in the real time information processing, decision support and subsequent control in electrical power systems have been studied in depth and techniques for online monitoring and control of generation, transmission and distribution systems have been proposed. Aspects covered have included techniques for improved online data capture, validation and subsequent system state estimation followed by optimised control action on a wide range of timescales. Specific new algorithms have been proposed for substation data validation, network topology determination, bad data detection, state estimation, network security assessment, economic dispatch, unit commitment, load frequency control, load shedding and load prediction. Telemetry implications for centralised system control have been investigated in collaboration with several manufacturers and strategies for comprehensive online information and control systems have been devised. A research programme undertaken for the CEGB resulted in new techniques for economic dispatch of generation and the associated software was validated at National Control.

Decomposition techniques, in which the overall information processing system is divided into a co-ordinated set of subproblems, were devised and their application in distributed computer monitoring and control schemes investigated. A substantial computer installation was assembled from research funds to facilitate this work. This equipment together with a GEC scada computer and various high resolution colour displays constituted a real time simulation and control facility for the research which was moved to Brunel in 1990. Research funding in this area has totalled £2,348,063 together with two large research and development projects which established a clear international lead in the field at the time.

In addition, commercialisation contracts with GEC Measurements Ltd., and ICL Plc, for major research and development programmes in advanced online energy management decision support systems were completed, the total funding of these programmes being in excess of £2.2M. Although the detailed objectives of each research programme were different the common theme was the integration of remote measurement systems, which are subject to both noise and data corruption, with real time optimised control, the basis for which is a knowledge base comprising past system performance together with best estimate or expert system analysis of future perturbations. Both projects led to

international licensed software sales. The ICL and GEC projects were initiated in 1984 and involved long term collaborative research beyond the immediate exploitation of the research results which survived my move to Brunel. Research exploitation continues through OCEPS Ltd.

The similarities of water distribution systems and electrical power systems has led to the investigation of water network modelling and optimising computer control. Algorithms for network parameter validation, demand prediction, state estimation, observability determination, and leakage detection were devised and an integrated software suite has developed.

The work has been supported by SERC and the water industry and the total funding in this area totalled £248,261. Commercialisation of the software was achieved through WASMACS Ltd in collaboration with several industrial organisations stimulated by interest expressed in implemented the monitoring and control techniques by water undertakings.

An interest in the application of microprocessor systems to a range of industrial problems led to a substantial research programme in the general field of robotics. One such project was the automation of garment assembly using robotic handling of the material segments including the development of a suitable computer vision system. A reliable pick and place mechanism was devised and combined with a novel transport and machining system to produce a manufacturing unit capable of handling and binding component pieces of simple garments. The project received strong industrial support and following the appointment of my collaborator, Prof. Mansoor Sarhadi to a Chair at Brunel continued to attract major EU funding.

A further research project in the robotics field was concerned with techniques for automation of the assembly of airline meal trays and their subsequent inspection using computer vision. Although the associated pick and place operations are largely routine, the overall system's design and its integration into an otherwise heavily labour intensive environment was interesting. A computer vision system for low contrast utilisation was devised and further research continued under the guidance of Dr C Preece at Durham.

The development of a low cost flexible manufacturing system comprising six robots and several CNC machine tools was funded by Barclays Bank with the dual purpose of providing a vehicle for use in the teaching of undergraduates in the field of advanced manufacture together with the provision of equipment suitable for research. The equipment facilitated the investigation of techniques for the integration of computer networking, component databases and CAD for both mechanical and electronic subsystems. An SERC Teaching Company Programme with Mullard (Durham) in the field of computer control and instrumentation for television tube manufacture was also undertaken. The total funding generated in the automation and robotics field was £846,227.

As a result of experience gained in numerical optimisation techniques for power systems a further industrially financed research interest has been the computer based scheduling of a diesel engine test bed facility. The work, which was funded at £42,000 by Holset Engineering, necessitated consideration of heavily constrained time dependant

optimisation formulations and resulted in a successful implementation within the company.

The overall total of research grants and contracts awarded has been £3,485,851 together with £3,425,000 of research and development projects. Licensing of the associated software has generated in excess of £800,000 income to Durham University.

Publications

In my research career spanning the period from 1968 when I became a research student to 1990 when I was appointed as Vice-Chancellor at Brunel University, I published over 120 papers, an annual rate of almost 6 per year, together with 6 books and book chapters.

Appendix 2

The Objects of STFC, as set out in its Royal Charter, are:

- To promote and support high-quality scientific and engineering research by developing and providing, by any means, facilities and technical expertise in support of basic, strategic and applied research programmes funded by persons established in Our United Kingdom and elsewhere.
- To promote and support, by any means, high-quality basic, strategic and applied research and related post-graduate training in astronomy, particle physics, space science and nuclear physics and research in any other field which makes use of scientific facilities where access is provided, arranged or otherwise made available by the Council, having regard to the objects of the other research councils.
- To promote and support the advancement of knowledge and technology (including the promotion and support of the exploitation of research outcomes) and to provide trained scientists and engineers, and thereby to contribute to the economic competitiveness of Our United Kingdom and the quality of life of its people, meeting the needs of users and beneficiaries.
- In relation to the activities as engaged in by the Council above and in such manner as the Council may see fit:-
    - to generate public awareness;
    - to communicate research outcomes;
    - to encourage public engagement and dialogue;
    - to disseminate knowledge; and
    - to provide advice.[32]

32 www.stfc.ac.uk/About/Strat/Council/EssInfo/Charter.aspx

Formal Minutes

Monday 13 July 2009

Members present:

Mr Phil Willis, in the Chair

Dr Evan Harris
Dr Brian Iddon
Graham Stringer

Draft Report (Pre-appointment hearing with the Chair-elect of the Science and Technology Facilities Council, Professor Michael Sterling, FREng), proposed by the Chairman, brought up and read.

Ordered, That the Chairman's draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 19 read and agreed to.

Papers were appended to the Report as Appendices 1 and 2.

Resolved, That the Report be the Ninth Report of the Committee to the House.

Ordered, That the Chairman make the Report to the House.

Oral and written evidence were ordered to be reported to the House for publication with the Report.

[Adjourned till Wednesday 15 July at 9.00am.

Witnesses

Monday 13 July 2009

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Professor Michael Sterling FREng Ev 1

List of Reports from the Committee during the current Parliament

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2008–09

First Report	Re-skilling for recovery: After Leitch, implementing skills and training policies	HC 48–I (HC 365)
Second Report	The Work of the Committee 2007-08	HC 49
Third Report	DIUS's Departmental Report 2008	HC 51–I (HC 383)
Fourth Report	Engineering: turning ideas into reality	HC 50–I (HC 759)
Fifth Report	Pre-appointment hearing with the Chair-elect of the Economic and Social Research Council, Dr Alan Gillespie CBE	HC 505
Sixth Report	Pre-appointment hearing with the chair-elect of the Biotechnology and Biological Sciences Research Council, Professor Sir Tom Blundell	HC 506
Seventh Report	Spend, spend, spend?—the mismanagement of the Learning and Skills Council's capital programme in further education colleges	HC 530
Eighth Report	Putting Science and Engineering at the Heart of Government Policy	HC 168

Session 2007-08

First Report	UK Centre for Medical Research and Innovation	HC 185 (HC 459)
Second Report	The work and operation of the Copyright Tribunal	HC 245 (HC 637)
Third Report	Withdrawal of funding for equivalent or lower level qualifications (ELQs)	HC 187–I (HC 638)
Fourth Report	Science Budget Allocations	HC 215 (HC 639)
Fifth Report	Renewable electricity-generation technologies	HC 216–I (HC 1063)
Sixth Report	Biosecurity in UK research laboratories	HC 360–I (HC 1111)
Seventh Report	Pre-legislative Scrutiny of the Draft Apprenticeships Bill	HC 1062–I (HC (2008–09)262)
First Special Report	The Funding of Science and Discovery Centres: Government Response to the Eleventh Report from the Science and Technology Committee, Session 2006–07	HC 214
Second Special Report	The Last Report: Government Response to the Thirteenth Report from the Science and Technology Committee, Session 2006–07	HC 244
Fourth Special Report	Investigating the Oceans: Government Response to the Science and Technology Committee's Tenth Report of Session 2006–07	HC 506 [incorporating HC 469–i]

Oral evidence

Taken before the Innovation, Universities, Science and Skills Committee

on Monday 13 July 2009

Members present

Mr Phil Willis, in the Chair

Dr Evan Harris
Dr Brian Iddon
Graham Stringer

Witness: **Professor Michael Sterling FREng,** gave evidence.

Q1 Chairman: Could I welcome very much Professor Michael Sterling FREng, the Chair-elect of the STFC, to this pre-appointment hearing. Thank you very much indeed for coming. I am going to officially apologise to you for starting this session slightly late. Could you start really, Professor Sterling, by saying why you as the next Chairman? What have you done to deserve this honour other than a very distinguished academic record in engineering?
Professor Sterling: That is a very good question, Chairman, and it is one that I have asked myself in the run-up to this hearing today. I was approached by headhunters some months ago and, as is usual with these arrangements, the first conversation is about who one might suggest to be appointed to this post, and vice chancellors get these calls two or three times a week so that is not unusual, but the second call is the one to beware of where they tell you that others have suggested your name as being the appropriate person to be appointed, and that requires a lot more thought. My initial reaction, to be perfectly honest, was that the Committee would be looking for a physicist and I was very quickly told that that was not the case and that actually because it was a big organisation, employing a lot of people and spending a lot of money, that the physics dimension to it would be handled by the chief executive, as indeed of course when one thought about it would be true, and that they would be looking for someone who is used to running a large organisation. After 19 years as a vice chancellor I thought I could just about qualify to do that part, so they had my interest from that point on, Chairman.

Q2 Chairman: Basically the headhunters came and approached you, made you an offer that you could not refuse, so you applied and here you are?
Professor Sterling: I certainly went through the Nolan process, Chairman, but they were very persuasive about the need to come out of retirement, because I was planning to retire and my retirement within the sector had been known for a long time. I think that only encourages headhunters to think that you might want to do something else and this turned out to be irresistible. It is a quality organisation doing internationally acclaimed research with international partners and that part is particularly interesting. I have enjoyed in my time as vice chancellor collaborations with other universities across the world and it is particularly rewarding to see how others do it and I am looking forward to that aspect of this job as well as running a large organisation.

Q3 Chairman: You have an incredibly distinguished record and I suppose I should put on record that I am a graduate of Birmingham University so perhaps I should have declared an interest. However, if you do not mind me saying, you are very, very close to the Russell Group. You are an ex-chair of the Russell Group and you are steeped in their philosophy of getting as much research money into their institutions as possible. Could you not be accused as being less than independent in terms of your role as Chairman?
Professor Sterling: I think I could honestly claim to be even-handed in relation to the physics agenda because I have not received funding from any of the physics committees in my career, I am an engineer, and so my detailed knowledge of the physics agenda is limited. I do not have a particular bias in relation to what STFC funds at all and I have a completely open mind as to what is good science. When it comes to the university aspect, I think the large physics departments do tend to be in the large Russell Group universities, although not exclusively of course, and I believe that there is a good balance of funding across all types of universities that have significant physics departments, so I would not see any conflict of interest at all in regard to that. Birmingham has a large physics department and I know it receives STFC support so that would have been justified on its merits at the time.

Q4 Chairman: So you do not feel—and let us take Birmingham, which has a very large and very good physics department—that somehow there would be any bias at all perceived by the community when Birmingham gets huge STFC grants next year?
Professor Sterling: I am sure they would like that to be the case. Of course the advantage of knowing and being vice chancellor at Birmingham for eight years is that you know your physics department very well, so I think they would see it as a two-edged sword as to whether I would be biased in favour or against because I know the people involved and I know the good work that they do. I also know a lot of professors elsewhere in the country as well so, no, I would be completely impartial. Remember, of course the role of the Chairman is not to actually

make those scientific decisions. That is coming up through the Science Board that advises the STFC Council, as I understand it, and so it would only be major strategic issues I suspect that the board would be taking decisions on.

Q5 Chairman: One of my colleagues will come on to that issue about your role as Chairman because I think we are quite interested as a Committee in that and the role of the Board given some of the problems in other quangos recently, but you said that you were not in receipt obviously currently or in the past of an STFC grant?
Professor Sterling: Correct.

Q6 Chairman: So that is out of the way but you are a member of the Council for Science and Technology.
Professor Sterling: I am.

Q7 Chairman: A distinguished member of the Council for Science and Technology. Will you give that up?
Professor Sterling: I was not planning to but I think our membership of that is due to come to an end at the end of this calendar year just on the normal appointment process. I think there is some discussion as to when an election might be called as to whether membership would be extended or not but that is not for me to decide.

Q8 Chairman: Would you see that as a potential conflict of interest between your role there advising the Prime Minister on science and also being Chairman of one of the largest research councils?
Professor Sterling: I do not think we get into that level of detail, Chairman, on the CST.

Q9 Chairman: Perhaps you should.
Professor Sterling: Indeed but the Chair and the officers would actually determine which things we look at. We have been looking in the recent past at water systems and energy systems, we have been looking at infrastructure in the latest report we have just published, which are fairly general areas of interest, and they do not get down to specifics of whether a particular experiment should be running and funded or not.

Q10 Chairman: But you have got major facilities within the STFC's remit, little things like the Diamond Light Source which is quite an important part of your portfolio. Is it not conceivable that on the Prime Minister's advisory body for Science and Technology that some discussion of the use of major facilities might crop up and therefore you will be perceived as being perhaps not entirely objective?
Professor Sterling: It is quite conceivable, Chairman, in which case I would declare an interest because it happens to many members of the CST that they are closer to some areas than might be desirable, and we always declare interests.

Q11 Chairman: But that is an issue that you are mindful of and which might need to be resolved?
Professor Sterling: Absolutely.

Q12 Chairman: What will the challenges be for you in holding a non-executive role in the STFC because in the past you have been the king?
Professor Sterling: Thank you for that but, yes, I am very well aware of the relationship between the chairman and the chief executive. In fact even while I have been vice chancellor I have chaired external bodies, starting with the Higher Education Statistics Agency and various professional bodies and other organisations that are associated with the university but distinct from it. The relationship between the chairman and chief executive, in my view, is critical to the successful operation of the organisation, and I have seen in a number of cases, mostly in universities, where that relationship does not work and the organisation does not prosper as a result. One of the difficulties that has occurred where I have observed it elsewhere is that the chairman sometimes feels that he is still the chief executive, and I am very mindful of that so I will avoid that, or indeed the chief executive feels that he is above scrutiny by the governing body, and that too is a danger, so I will ensure that that does not happen either. I have been involved as a vice chancellor for a long time with six chairmen of my governing body councils and they have all operated in different ways but all successfully, so I am fully aware of the tensions that could occur and how to manage that interface.

Q13 Chairman: You mentioned a couple of times to me earlier that in terms of the physics community this is not an area that is your specialism?
Professor Sterling: That is correct.

Q14 Chairman: And that therefore you would leave that to others to be able to advise. Some people might say that your specialisms are in computer-based monitoring and control systems, that is where your academic expertise is, and that is a relatively narrow field compared with what the STFC's portfolio is, so are they not going to be pulling the wool over your eyes?
Professor Sterling: I am sure some might try to do that but I will have a chief executive who is an expert in that area.

Q15 Chairman: He might be.
Professor Sterling: He might be but then a good governing body, a good Council, will be able to make the right challenges on that because when it comes down to running an organisation of that scale the detail of the physics has been looked at, as I understand it, by the Science Board that reports to the Council, so that has been through rigorous peer group assessment at the highest level and so there is not then an argument at the Council level as to whether the science is good or not. It would not have got that far if it was not good science. It becomes one of strategy and the strategy needs to be understandable by the Council, and of course by Members of Parliament and the general public, because otherwise one cannot convince them that the project is worth funding. It has at that level to

turn more into laymen's language rather than the details of the physics that are involved. That will have been looked at by the Science Board.

Chairman: The problem that I was suggesting, Professor Sterling, for most research councils is not the lack of excellence and excellent proposals, it is that there are too many and the difficulty is choosing between them. I know this is an area that my colleague Graham Stringer is going to pick up with you now so I will pass over to him.

Q16 Graham Stringer: Professor Sterling, you have had a very distinguished career and it makes for very impressive reading but it is much more interesting to know about your mistakes and failures. Could you tell us what has been your largest failure or mistake in your career?

Professor Sterling: I cannot think readily of something which is of such magnitude as to stick in my mind. There are lots of things that I think I could have done better. It is often said that I might be, shall we say, not sufficiently aggressive in responses to particular situations. I try to find a negotiated solution. In my view, that is actually a strength but some see it as a weakness, so I do not order people to do things, I ask them to do them, and there are different interpretations on whether that is the right or the wrong strategy.

Q17 Graham Stringer: So there are no major decisions, organisational mistakes, no procedural skeletons in your cupboard that it would be helpful for us to know about?

Professor Sterling: Not that I can think of, I am sorry, I cannot think of any.

Q18 Graham Stringer: The Chairman was asking you about your knowledge of physics and how strategic decisions would be made. Did you read our report on science budget allocations published last year?

Professor Sterling: I did, yes.

Q19 Graham Stringer: Can you tell us what you thought about it?

Professor Sterling: I think they are coping as far as I can see, and remember this is from some distance from actually taking on the job, and they made the best they can of a difficult budget situation. The funding in that area has been reduced and the cost base has gone up. International subscriptions, as I understand it, have been rising, principally because of the exchange rate difficulties, and of course the Council will have been keen to make sure that the science that was using those facilities was maintained as well and that of itself will have led to cost pressures. In consultation with the science community and through the Science Board they have arrived at what, at least to me at this range, appears to be a perfectly sensible way of proceeding.

Q20 Graham Stringer: I will come back to this point, if I may. One of the major conclusions of the report was to be critical of the Chief Executive and the communications both within the organisation and by the organisation with the outside world. How would you deal with those problems of communication?

Professor Sterling: As I understand it, the Council has reappraised its communications strategy and I think that is necessary because, just as an observer as a vice chancellor on the difficulties that the STFC was having some six, nine or 12 months ago, it seemed that the communications could have been better, both to those who were proposing to fund STFC and to the user community. Having said that of course, one is aware of the characteristics of each of the different subject groups, the way in which they operate, and the physics community is very vociferous about the need to fund the scientific activity adequately.

Q21 Graham Stringer: They had a lot to be vociferous about, did they not, 18 months or so ago?

Professor Sterling: I think had they understood more the way in which the Council was trying to deal with the financial situation they would have been less vociferous. There is a danger of course that special interest groups have a strong lobby and are able to effectively communicate that to the general public which then brings pressure back on to the Council, so I think one has to guard against that, and the way one does that is by better communication to the science community itself such that they are party to the inevitable hard decisions that have to be taken. There I think STFC have put in place mechanisms that will improve that for next time round, so it was not handled in an optimal way last time and I think the Council knows that it could do better.

Q22 Graham Stringer: You have talked about structural changes. Have you any sense about whether those structural changes, either internally or externally, are working, or are you just relying on the fact that there have been changes?

Professor Sterling: As I was reading through the briefing for today's meeting I realised that I did not even know the abbreviations for the various physics experiments that were going on, let alone exactly what they were doing in scientific terms, so I would be on dangerous ground if I were to try to answer that question directly. It is really up to those parts of the community to be communicating to their colleagues in the physics area what the advantages of research in that area are and for that to be an open dialogue such that the Science Board is able to give the Council good recommendations about what to fund because otherwise one is in a position that the Council cannot judge, I suspect, adequately the scientific merit of detailed proposals. That is why you have the physics community doing it.

Q23 Graham Stringer: You have been very open about not knowing what all the initials stand for and all the acronyms are and the fact that you are an engineer and not a physicist. Are there any areas, apart from those areas, you feel you should be better acquainted with or will you make any efforts to get better acquainted with them?

Professor Sterling: The part that I think I will not have a difficulty dealing with is the people management side. Birmingham has 6,000 staff and I think STFC has around 2,000, so I am not intimidated by that in the least. I enjoy the financial management side of large organisations and I think my colleagues would say that that is where I have made a contribution. So I am quite comfortable with those aspects of running the STFC. Where I would need to learn is to get from what was essentially A level physics to university research level physics, and that is going to be a challenge but one I am greatly looking forward to. Some of the terms I do understand and I have listened to and read the press reports about what is going on, so I am enthusiastic about learning but I am absolutely an amateur at this point.

Q24 Graham Stringer: Can I return finally to the point that the Chairman was making that the problem that the research councils have is over-subscription with lots of very good science and projects across the board. My sense having listened to the Chief Executive and listened to the Government as well is that there is a move away from ground-based solar terrestrial physics and particle physics. Do you agree with that and if there was a sense of the process moving either way really, how would you deal with those strategic decisions, because you have said that it is really your role to chair and master the strategic debate, knowing whether the money should be put into a particular atom smasher in Birmingham or Newcastle?
Professor Sterling: How would I chair that discussion, is that what you are asking?

Q25 Graham Stringer: Not how you would chair it; how you would deal with the strategic issues. What would be your response if there was a big drive either towards more money into fundamental physics research or away from it?
Professor Sterling: There one is advised by the community itself and they can be quite cutthroat. All the academic disciplines that I have had the privilege of working with in universities have had a very clear idea of what is important in their discipline and, as long as they have enough of the academics involved in that discussion then usually what comes out of that is a clear idea of the priorities which the community is willing to sign on to. That will inevitably mean there are a small number of people who are disadvantaged by that and they will be, as indicated, very, very vociferous about that cut-back that they are having. I do not think I could encourage the STFC Council to be digging down to try and second-guess what the physics community has decided is good science. When it comes to the strategy I think that is something where the Council is legitimately involved in the discussion with those who fund it, principally the Government, about the national priorities, and there one enters straightaway into the Haldane Principle as to who is actually making the final decisions. There perhaps with my engineering background I am much more comfortable with the fact than some, as I understand, in the physics community that it is up to government to decide the major strategic directions that it wants to fund at the broad level of research councils but it is up to the research councils to look within that budget at what areas they think are good science and the relative merits of each.

Q26 Graham Stringer: That is a very interesting answer. There has been a debate over the last six months or so instigated by different government ministers about that. If the Government said, "Right, we want to put a lot more money into particle physics," you would see it as your job to ensure that happened rather than make the case for those engineering or scientific groups who were going to lose out?
Professor Sterling: No, it would not be as passive as that. By the time it got to the decision that government ministers were taking about budget we would have argued our corner as well as we could. We would have suggested the different advantages of putting more funding into STFC relative to other activities and making as strong a case as we could. If at the end of the day the Government decides other than what we have recommended then it is the job of the STFC Council to implement that. We would have had our day in court and we would have tried to persuade but thereafter we would be charged with living within our budget.

Q27 Dr Harris: I was going to ask you about this in a moment but if I may while we are on the subject. That is a strategic decision. Do you think that is a decision for government or would you argue that that should be a decision for Parliament? The two are different.
Professor Sterling: Yes, indeed, and appearing here today I think makes that clear. Ministers are as accountable as the STFC is for the decisions that they take, so a minister eventually, as I understand it, makes the decision and signs the letter that tells us what to do.

Q28 Dr Harris: Yes, but you see Parliament may have a view but it could never express the view, nor could the public, if they do not know what is going on. To what extent do you think directions from ministers to you in the negotiations about how you spend your budget strategically (because I think there is no debate about who chooses in the responsive mode at least the best projects) to what extent do you think that conversation, if it is a conversation, or that instruction or direction, should be public so that accountability can exist at the time?
Professor Sterling: I think that could cause difficulties because that sort of conversation is normally highly sensitive and could cause unnecessary waves within the funded community. I think where it does come into the public domain is when the strategic plan is produced. That is a public document. I would be uneasy about the detail of discussions with ministers about the budget being directly in the public domain without going through a separate process.

Q29 Dr Harris: I can understand what you mean about contemporaneous publication because that does interfere with how you do things. You would rather not create waves and keep things a secret. I am not sure I subscribe to that but I can understand that you do not want to have negotiations in public. Is your view that Parliament is entitled to know after the fact, if you like, to establish accountability, what led you to take the position of proposing the final business plan given that we know there was some interaction between you. Do you instinctively feel that should remain secret for 30 years?
Professor Sterling: No, I am quite comfortable with that and I would be surprised if that were not already the case because the research councils produce a strategic plan that is justifying. It is not just we are going to do this without any justification. As I understand it, it is fully justified and the explanation as to why is produced.
Dr Harris: I think in our report we did make a recommendation that something should be made public that the Government felt should not be.

Q30 Chairman: I think the issue which Dr Harris is referring to is the secretaries of state letters of instruction to the research councils which the Chief Executive was happy for us to have but the Secretary of State was not happy for us to have. You have also indicated that you would be happy for Parliament—because we represent Parliament, that is all we are at the end of the day—should have those.
Professor Sterling: I think I am indicating that I am surprised that through the strategic planning process and the published document that is produced by the Council that is not actually there. In other words, that the reasoning, as Dr Harris was pointing out, why we have taken a particular course of action or supported a particular activity, it strikes me that should be in the public documentation. That is different from publishing the letter of guidance from the minister. It is downstream, as you rightly point out, it is a downstream justification of why the Council has taken a particular decision.

Q31 Chairman: Both of these issues were not published, the bilaterials between the Council and the Government and indeed the Council and various parts within the organisation were not published, and that meant that analysing why the STFC made a particular decision was not transparent. You have indicated that you would be open to looking at that in a more transparent way.
Professor Sterling: I think that is a fair summary, Chairman. I do understand the sensitivities of ministerial letters. It was sensitive in the university world and I imagine it is sensitive in the research council world as well. Any organisation that is in receipt of large amounts of public funding needs to be able to justify its decisions and I would expect the STFC to be doing that.
Chairman: Okay, I will move on. Dr Iddon?

Q32 Dr Iddon: If we can carry on with the discussion on your vision for the STFC and particularly on the strategy of that organisation, Professor Sterling. Can I ask you first of all how much consultation have you had on the STFC's strategic plan or its strategy up to date either with the Chief Executive or others?
Professor Sterling: I think the short answer to that is very little, I am afraid, Dr Iddon, because I have only known that I was appearing before you for a little over a week and that I was the preferred candidate for a little over two weeks, so I have not have had time to go through in any detail with the chief executive the strategic plan. I have clearly spoken to him and I have had a teleconference with him and I have also met officials but more than that I am afraid I have not had time to do. It is an early priority.

Q33 Dr Iddon: I will not press you on questions on that because clearly you have not had time to study it in depth yet. Obviously the STFC was a marriage between the former CCLRC and PPARC and some of us were a little sceptical about that merger because it was bringing together large facilities. In fact the rationale behind the merger was "to create a more integrated approach to large scientific research facilities". Will you attempt to measure this or indeed have you given any thought to whether that marriage has been a happy one or not?
Professor Sterling: I think that is very much what the Council needs to do because we are now some two years downstream from that decision. I sense, and it is only from a superficial knowledge, that things are settling down. Bringing two organisations together is always difficult, even in the university world it is difficult, and here you have large facilities coming together with funded programmes. There are bound to be tensions and I have read in the press some of those tensions about which areas seem to be getting priority. The organisational aspects are actually quite interesting as to whether there have been economies of scale. There may have been diseconomies for all I know, I would be interested to find that out, because one reorganises in the hope of doing something better, producing better science or a more efficient organisation, and I think that is something which the Council does need to ask itself. I do not know the answer to it at the moment, but it is something I would be keen to find out.

Q34 Dr Iddon: If you saw there were difficulties, would you as Chairman be brave enough to flag these up, first of all obviously with the Chief Executive and your Council and, if they agreed with you, with Government ministers?
Professor Sterling: I certainly would. I think my track record would show that I will not duck those sort of issues, because I do not like waste—engineers set out to do things economically and there are lots of jokes, Chairman, which I will not bore you with about the difference between engineers and physicists, but they do point to an underlying difference of approach, and engineers look for value for money. That is something which I would find hard to leave behind so I shall be on the case essentially looking to see if it has gone smoothly and is a more efficient operation.

Q35 Dr Iddon: I think rather than call it "waste" I would prefer to call it "efficiency".
Professor Sterling: Efficiency, of course.

Q36 Dr Iddon: Obviously the STFC is running some of the biggest facilities in the world, with its involvement with the Swiss project, the large Hadron Collider and they have recently announced cuts to the Diamond Project and the ISIS project at RAL. It just seems to me that the cost of running these very large facilities is very unpredictable in some ways, particularly when you are paying out large sums of money in foreign currencies on the astronomy projects as well, and that the research community and the grants going to the research community are suffering as a result.
Professor Sterling: Yes.

Q37 Dr Iddon: If, when you have looked at this huge enterprise that you have kindly agreed to chair, you thought the same way as some of the community thinks, again would you be prepared to flag this up very strongly with those who matter?
Professor Sterling: Most certainly and in fact I have already begun to ask the question about who takes the risk in relation to foreign currencies. In the university world we might hedge the foreign currency situation, but I understand that hedging is not allowed because effectively there is an element of speculation against one's own currency which the Treasury would not be happy with. But we are allowed, I understand, to buy forward currency, so to an extent, I am sure, the Council have already done that to try and mitigate the effects of the exchange rate changes. In the end it is a question of who carries the risk for that exchange rate. Is it the Treasury, is it the department or is it the research council? Provided everybody knows who is taking that risk, they are all workable. The difficulty is that the lower the level the risk is borne, it has a bigger implication on those areas which are outside the currency risk, in other words the funded programmes. So in the extreme one could get into a difficult situation where all one could afford to fund were the subscriptions, because of the exchange rate variation, and no science to go with them, which would be a ludicrous situation. So there has to be an element of risk management and I will need to understand where that risk management is actually taken on now and I do not fully understand it. I understand that the response I am giving is based on the question I have already answered but I think I need to dig deeper because, you are quite right, the community might reasonably say, "If all we are paying for is the subscription, what about the science to go with it?" and that is a perfectly reasonable thing for the community to be upset about.

Q38 Dr Iddon: There is no secret that in some of the leading research countries, that risk is carried by the governments of those countries.
Professor Sterling: Indeed.

Q39 Dr Iddon: So that it does not damage the basic research within the enterprise you will be running. If that becomes high up in your agenda, again would you argue that strongly with the Government?
Professor Sterling: Once I was convinced that that was the right solution, I would argue it. At the moment, I do not know. My initial reaction when I was approached about this job was to ask that very question, why is the Treasury not carrying the risk of currency variations, because there are commensurate gains for governments when currencies fall, but I do not understand the politics yet of how the Treasury operates in relation to exchange rates. I am looking forward to learning more.

Q40 Graham Stringer: In a number of inquiries we have asked Science Ministers and the Government whether there should be a regional strand to investment in scientific facilities, and we are not clear yet where the Government stands. When it comes to Daresbury they say they support Daresbury, but they also say they support the Excellence Principle and they will send money to where the most excellent science is going to be done and not take into account the regional criterion. That seems to us to be a contradiction. Where do you stand on that? Do you think there is a contradiction between running Daresbury and the Excellence Principle?
Professor Sterling: No, I am not aware that non-excellent research is being supported at Daresbury, quite the reverse in fact, my briefing tells me that there is excellent work being done there. I would see that in the context of national decisions judged excellent not on a regional basis but on a national basis, and therefore where it is is secondary to the excellence of the research which is going on. I could not but fail to understand the regional dimension and the importance of Daresbury to the North West, and if that were to close the effect it would have, so I do understand there is another political dimension to how it operates, but I think it would be risky for the STFC to be starting to take into account regional politics as overriding scientific merit. I think that would be difficult. Of course there will be grey areas, where there are activities for example which are not purely scientific, which might be technology transfer which are going on near to the laboratory, and that strikes me as entirely appropriate and where the Regional Development Agency is no doubt already putting funds into that activity. So it becomes one of partnership. I sit on an RDA board, as you have seen, the West Midlands RDA called Advantage West Midlands, and there we are always looking for activities which are nationally recognised, or preferably internationally recognised, where the region can join in the backing of those for the benefit of the region. What we do not argue for on AWM is for special treatment for the region when there is already another national activity alongside it, so we try to partner with the organisation which is already adjudged to be nationally important.

Q41 Graham Stringer: Do you not feel there is a role sometimes with a facility or university which needs extra support to get them up to standard, to increase the quality of the work they are doing, and that that should be a criterion? It is slightly different from a regional criterion but it is in the same category.
Professor Sterling: Yes, I can see that in relation to the development of researchers and graduates where a lot has been written about the need to produce more science graduates and science engineering graduates, and I can fully see there is a regional dimension to that because the statistics clearly show that graduates tend to stay in the region from which they graduate more so than to move elsewhere. So there is an advantage to a region to have graduate production in that area. So thinking particularly in relation to STFC, it would be postgraduate education where the graduates who come out of universities with masters degrees will be very useful to a regional economy. Something we have been looking at in the West Midlands is how to retain more graduates and postgraduates in our areas for the benefit of the economy. So it is perfectly reasonable for research councils to be asked as part of their training remit which they have to consider the effects of graduates and postgraduates and how their funding policies can aid that.

Q42 Chairman: Can I add a quick rider to that? The point Graham Stringer was making was not really about undergraduates and even masters, what we are talking about is the placing of large facilities which by definition then create a critical mass. We do not, and I think perhaps I might contradict my colleagues, as a Committee understand how you can create critical mass without a facility, because it is the facility that then attracts the scientific excellence in order to be able to generate it. You are going to be the chairman of a research council which has at its heart large facilities, and I think the question we would like to ask is do you see in the placing of future large facilities the need to take a regional dimension? Because otherwise everything is going to be in the golden triangle, is it not?
Professor Sterling: Yes, and coming from an area outside the golden triangle, I am interested in the question you ask. But the heart of it still has to be the scientific merit of the proposal. Where, shall we say, there were Regional Development Agency funds which were being put towards a project which the Council was also interested in, inevitably that would influence the decision, that if the science was equal between two proposals and an RDA in one area was proposing to come into partnership in that area and an RDA in a competing area was not, then I think that would be a legitimate influence on where the facility was located.

Q43 Chairman: But that facility is at a very low level, is it not? When you are talking about facilities the size of the Diamond Light Source or ISIS, you really are not talking about the marginal funds which RDAs would put in making any difference, are you? Really?
Professor Sterling: Well, the RDA budget that I am involved in is £340 million a year, and AWM has put in £80 million over four years into partnership between the Universities of Birmingham and Warwick. That is significant to the two universities concerned, I can assure you, and I think significant within the country. I suppose I am not used yet to the number of noughts on the end of the budgets we are talking about here, but I would have thought £80 million was a significant sum.
Chairman: Thank you for that. It is an area which we are concerned about. I know Dr Iddon in particular is very concerned about the RDA science budgets. I will have to suspend the sitting for ten minutes now. We have one more group of questions.
The Committee suspended from 5.08 pm to 5.20 pm for a division in the House
Chairman: Over to you, Evan.

Q44 Dr Harris: Do you work for the Government in your new role?
Professor Sterling: No, I work for the Council. I am Chairman of the Council, appointed by the Government. I guess the money comes from the Government originally but I would see myself as independent.

Q45 Dr Harris: So if a Minister outside of the normal rules comes up with a suggestion which you, and indeed your Council for that matter, do not think is a sensible use of STFC resources, and this is outside the CSR discussions or the Budget allocation discussions, would you feel in any way constrained given that you were appointed independently? You do not owe anything to a minister, do you, for your job?
Professor Sterling: I am effectively appointed by the Minister and this is approved by the Prime Minister, as I understand it.

Q46 Dr Harris: The Code of Practice of the Commission for Public Appointments?
Professor Sterling: That is the Nolan process?

Q47 Dr Harris: That is right. Forget my previous question, let us just clarify this: could the Minister have vetoed your appointment?
Professor Sterling: I believe that to be the case, although I do not know for certain.

Q48 Dr Harris: Does the fact he did not veto that appointment mean you are in some way less independent than you would have been if you had been appointed by the same process but without a ministerial veto?
Professor Sterling: I would not feel it to be inhibiting in the way you suggest.

Q49 Dr Harris: Coming back to my question before, if the Minister came up with an idea which you and your Council felt was not the best use of your resources, would you feel in any way constrained about pointing that out?

Professor Sterling: No. I would not just point it out, I would try to explain the rationale for the difference of opinion to be able to justify the difference. STFC must be able to justify all the decisions it takes, it cannot just do things on a whim.

Q50 Dr Harris: Looking at this issue of strategic priorities which came up, which some people might say was a suggestion which came from somewhere, what was your view on that? Let me phrase it more particularly. Lord Drayson and others said it is time we concentrated in research terms on those areas where we are good—I am paraphrasing—and areas where there is a likely return. Were you attracted by that?
Professor Sterling: Separate from this process, as an engineer, I would always be prejudiced to look for the return on investment, but in the context of STFC that return is going to be long-term, it is scientific knowledge which may not necessarily, even in the short to medium term, lead to a direct financial return, but nevertheless can be very worthwhile doing.

Q51 Dr Harris: Do you think we should be doing something different? I think everyone agrees with what you have just said.
Professor Sterling: I think what he was signalling was actually looking at the way in which Government spends its money and to make sure that that benefit is there in one way or another, rather than doing something because it has always been funded in the past. I am not suggesting the STFC has done that, but a critical appraisal of where research funding is going seems to me to be an entirely appropriate process, and to ask oneself what are the benefits of that research is a necessary question which should be asked.

Q52 Dr Harris: To ask yourself the question and answer it, "Who are the winners here?"
Professor Sterling: The winners are going to be the best science. If the process is working the best proposals will have come to the top, and they will have been adjudged by the community itself as well as, if it is major strategic things, by the STFC.

Q53 Dr Harris: I am still confused because there are two options, are there not? You are saying the normal process, which you hope is good, could always be improved by peer review and identifying the best science, but the Government do not say, "Carry on as you are" in this debate. The question was, "Do what you are doing but try and identify those areas which are likely to bring a return and/or where we are strong?"
Professor Sterling: I do not see a particular threat to STFC in that approach because, from what I have already read, I can see justification and returns on what STFC has actually been doing. Direct examples of where research which was funded through STFC and its predecessor is leading through to commercial exploitation in a reasonably short timescale. I would not want to see that set as a direct requirement for every piece of funded research, but analysing what has happened in the past seems to me to be perfectly reasonable.
Chairman: I am going to have to call a halt again because we have a second division.
The Committee suspended from 5.25 pm to 5.32 pm for a division in the House
Chairman: Dr Harris, you were in mid-flow.

Q54 Dr Harris: We were having an exchange about the question of strategic priorities and let us deal with an example in your own area. Let us say within STFC the Government said, "Rather than simply go on the basis of the best science, which of course you try to do already, we would like you to give additional priority in terms of your funding, and possibly in terms of other funding modalities, to that technology which—and I am paraphrasing the Minister now—has more easily identifiable economic returns and/or is one of the areas where we are likely to be in the top two in the world. That might not coincide with simply the best science because it might be an isolated best science where we could never be among the top two in the world. So if you accept the premise of my question, what would your response to that be if that request persists or emerges?
Professor Sterling: Inevitably the Government funds the activities of all the research councils, so one way or another it has a way of ensuring its wishes are carried out. It is up to STFC to make sure the consequences of any such action are fully understood by the Minister or the Government. If, once one has explained the impact that that decision will have, the consequences of it, the Government still wishes to direct the research councils to do that, then the Government is the paymaster.

Q55 Dr Harris: I happen to agree with you, as it happens, but I am trying to establish what sort of argument you would use or be prepared to see used by your Council against such an approach. Do you see drawbacks in it despite being an engineer?
Professor Sterling: I think I would listen to the argument because the Minister would not have proposed it unless they had good grounds for doing so. So if the Council did not agree with it, then we would have to marshal strong reasons why not, and if they were not accepted then eventually one has to accept the Government can actually cut off the money supply if you do not agree.

Q56 Dr Harris: I admire your faith in politicians because the Minister might have a particular predilection for Martian exploration, just because they are a human-being—not the Martians, the Minister—and they might be interested in that, or manned space flight, because they are interested in it. That is not a good reason.
Professor Sterling: I have no doubt that this House will actually be party to that decision if it was something of that magnitude. I cannot imagine politicians whose constituents might be affected being silent on such an issue. If the whole political community, as represented by the Government and

all of the Opposition MPs, are minded to do that, it would be very difficult for the STFC to stand in the way of doing that and just to say, "The science is not good enough." The Government eventually would find a route for funding it. I am conscious of who the paymaster is in this process and if we cannot win the argument, then we should not actually be doing the—

Q57 Dr Harris: What I was trying to get at was what sort of argument you would put, and I was concerned to hear that because it was put it must have good reasons behind it. There are plenty of things which happen in this House, and occasionally in laboratories, which are bad ideas, put forward for no good reason.
Professor Sterling: If they were such bad ideas, we would have exposed the flaws in the argument, because I do not believe that, with the media scrutiny which goes on these days, it is possible for a really bad idea which is not supported other than by the Minister, in the scenario which you suggest, to actually hold sway. I do not think he would be able to do that.

Q58 Dr Harris: What if the stakes were higher and the Minister had, let us say, a good argument this time, backed up by good reasons, which had some political support—although I do not think you are ever in a position when these things come out to a vote in the House or a referendum in the country—and that was that we are going to cut STFC's budget because it is not immediate enough in terms of economic return, we are going to give 50 per cent to another research country, or other research councils? Do you think you would put up an even stronger fight than the one you have just talked about?
Professor Sterling: I jolly well hope we would. With dramatic cuts in funding, we would have failed to justify the research we were already supporting, and that would be a consequence not just for the STFC Council but the whole research community. Then effectively major politics comes into play, does it not, because it is then an argument which is being put to the country as to the importance of a particular piece of research, and influencing MPs in that process is a critical part. There I would expect we would be targeting Members of Parliament to explain to them why what was being proposed was not the right way forward.

Q59 Dr Harris: Let us take manned space flight. Do you have a view on whether that is a sensible use of your resources, given I understand Lord Drayson has indicated he would like to see the UK support that again?
Professor Sterling: It strikes me, and this is an uninformed view, I hasten to add, that a lot has been achieved without using manned space flight. The remote probes have done an awful lot but I am off territory that I feel comfortable with, so I do not think I can go any further than telling you my personal prejudices.

Q60 Dr Harris: You want to keep your feet on *terra firma* in this case. I have to ask you a slightly leading question because of the time: if the Government says, "We think these are winners", would you think it was satisfactory for them to leave you in a position of telling the losers they were going to lose funding? Or would you expect politicians, whoever the Government is when you are Chairman, if they are going to put an existing budget more into certain areas, to be prepared to say which areas lose out? Would you feel it is okay for them to say, "STFC, you are going to have to find out where this money comes from"?
Professor Sterling: I think that depends on the granularity of the decision which is being taken. If it is a very high level one, it is up to the politicians to justify why they are moving large chunks of money at a high level between research councils. If it is about whether one facility or not is being supported, I think there is dual responsibility there, because the STFC will have had a part in the advice which has gone to Government and if Government has therefore backed it then both parties are committed to that route and must defend their decision.

Q61 Dr Harris: Do you accept there may be scenarios where you will be the scapegoat?
Professor Sterling: Unquestionably.

Q62 Dr Harris: And whether you are prepared to back that?
Professor Sterling: After 19 years as Vice-Chancellor I know that if there is one person who gets blamed if things go wrong or if difficult decisions have to be taken, it is the Vice-Chancellor. Although in this situation I am not the chief executive but I am the Chairman, I too would be exposed to comment from the community, which is presumably where most of it would come from, that we have not adequately defended that particular area. I am perfectly well aware that there would be a lot of flak-flying if there are difficult decisions to be taken.

Q63 Dr Harris: What is your view of the likelihood, and how do you think you will cope, with the flat-cash allocation in the next Comprehensive Spending Review? Which you know means effective cuts.
Professor Sterling: In real terms, yes. I am not in a position to understand the detailed disposition of the Budget and where the strategic plan lines up with that Budget, that is something I need to understand at fairly early stage; the alignment of what the Council has said it wants to do with the expectations of the money likely to be available. I would imagine that all research councils have been through a process of scenario planning to analyse what happens if the grant goes down by X per cent, how does that match with the priorities we have already identified within the strategic plan. What I would be uncomfortable with is if there was no such contingency planning because grants go up and grants go down, and I would expect there to be scenario planning.

Q64 Dr Harris: In terms of the workforce that STFC funds—and you will have seen it within universities, think of the workforce in your science departments in Birmingham—do you have any priorities for developing that workforce which you can identify you would like to see possibly dealt with during your tenure as Chairman of the STFC?
Professor Sterling: That is an interesting thought. I am sure it is true that the skills base which is within the STFC is highly sought after in the commercial world. I have come across, even as an engineer, technicians who operate within the physics world who are absolutely first class and have a market value, whether they be in universities, in a lab or in the commercial world. So I think there is surely an element of preparing people were there to be difficult times ahead for alternative careers. But I do not think STFC employees would have any difficulty at all. It is a world-class operation and they would be able to survive in the commercial world.

Q65 Dr Harris: I am grateful for that but I am interested in not so much that but whether you have any insight to bring to the gender balance issues which exist in the physics and engineering workforce, which cannot have escaped your knowledge.
Professor Sterling: It has not and despite lots of efforts, particularly in the engineering world which I am very familiar with, has not shifted very much over time. There is still a large male dominance in engineering and it is still true in physics.

Q66 Dr Harris: Do you think that is a problem which STFC could do something about, such as having grants directed towards promising female scientists to recognise—as the Marie Curie grants do at EU level—the particular challenges they face? Publication grants, and that sort of thing?
Professor Sterling: Promoting interest in physics amongst women strikes me as perfectly reasonable. The WISE programme—Women Into Science and Engineering—started some 20 years ago and did have noticeable effects, but it remains stubbornly a male-dominated area particularly. I do not know why women do not see science and engineering as attractive but the facts of it are they do not.

Q67 Dr Harris: I am asking whether you would have a feminist agenda as Chairman.
Professor Sterling: I would always want to be even-handed when it came to funding arrangements. I do not think one can go into selective funding particularly for one gender or the other. Actually encouraging activities, it strikes me, is perfectly reasonable but not to actually be judging one particular proposal less harshly or favouring it more because it happens to come from a woman rather than a man is a dangerous path.

Q68 Chairman: On that note I am going to bring to an end this interrupted session. Thank you very much indeed, Professor Michael Sterling, for being with us and being so patient with us this afternoon. I do not think we know a great deal more about how you are going to lead this organisation at the end of this session but hopefully the next time we meet you we will have a clearer idea of that, but we do thank you very much indeed.
Professor Sterling: Thank you, Chairman.

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