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HOUSE OF LORDS

SESSION 1995—96
1st REPORT

SELECT COMMITTEE ON
SCIENCE AND TECHNOLOGY

OFFICE OF SCIENCE AND TECHNOLOGY

REPORT WITH EVIDENCE

Ordered to be printed 6 December 1995

LONDON: HMSO

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(Q) refers to a question in oral evidence.

FIRST REPORT

6 December 1995

By the Select Committee appointed to consider Science and Technology.

ORDERED TO REPORT

OFFICE OF SCIENCE AND TECHNOLOGY

1. In 1992 the Committee welcomed the establishment of the Office of Science and Technology (OST) under the ministerial responsibility of the Chancellor of the Duchy of Lancaster. The Committee had become increasingly uneasy about the treatment of the Science Budget within the former Department of Education and Science, and hoped that the machinery of government changes made in 1992 might help to develop a coherent policy.[1] The OST was widely acknowledged to be working "extremely well" (QQ 5-6), and it therefore caused considerable surprise when it was moved to the Department of Trade and Industry (DTI) in July 1995.

2. The Committee heard evidence from the Rt. Hon. Ian Lang MP, President of the Board of Trade, Mr Ian Taylor MP, Minister for Science and Technology, Sir John Cadogan, Director-General of Research Councils and Professor Robert May, Chief Scientific Adviser on this transfer and on other subjects of interest to the Select Committee, including the treatment by universities of contract research workers. This evidence is published with this Report.

3. The DTI's spending on support for R&D has recently been cut back dramatically, and it was therefore unsurprising that the transfer of the OST to the DTI exacerbated fears about that Department's commitment to R&D. Mr Lang assured the Committee that the OST is now treated as a separate organisation within the DTI. Its budget is a separate budget head and the position of the Chief Scientific Adviser and that of the Director-General of Research Councils is "entirely unchanged by these arrangements" (Q 4).

4. Part of the rationale for the previous separate position of the OST was that it enabled the Chief Scientific Adviser to influence disparate departments more easily. Its move to the DTI therefore created concern about its ability to sustain its influence over all relevant Government departments. Mr Lang also confirmed that whilst he had "a transdepartmental role in terms of being the Cabinet Minister responsible for science, the consideration of science in the Cabinet comes under the competition committee chaired by the Deputy Prime Minister" (Q 10). The Cabinet Committee on Science has been abolished (Q 17).

5. In the United Kingdom the medical research charities, including the Wellcome Trust, make a major contribution to public research, and there was concern when the move of the OST to the DTI was announced that the DTI had little experience of dealing with medical research. Mr Lang hoped that the initial suspicions of the medical research charities would be "more allayed as time goes by" (Q 13).

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[1] *Office of Science and Technology*, 1st Report 1992-93, HL Paper 25.

6. The Committee has recently produced a Report on Academic Research Careers for Graduate Scientists, which quantified the rapid growth during the last two decades in the numbers of contract research staff in scientific and technological disciplines employed in British universities, and drew attention to the disadvantages which many staff have experienced as a result of short term contracts.[1] The Committee's Report was agreed the day before the Committee of Vice-Chancellors and Principals of the Universities of the United Kingdom circulated a draft Concordat to vice-chancellors and principals on the career management of contract research staff in universities and colleges. The DTI is a major funder of work in universities, and the Committee asked Mr Lang whether he would be prepared, when inviting tenders for research work, to specify that the terms of the draft Concordat must be adhered to in all respects. Mr Lang declined to commit himself, either for his own Department or, as the lead minister for science matters, in influencing Cabinet colleagues in other funding departments, but accepted he had "an obligation to seek to govern by example" (QQ 50-51).

[1] 4th Report 1994-95, HL Paper 60.

APPENDIX 1

Membership of the Select Committee (1995–96 Session)

Lord Craig of Radley
Lord Dainton
Lord Dixon-Smith
Lord Flowers
Lord Gregson
Lord Haskel
Baroness Hogg
Lord Nathan
Lord Perry of Walton
Lord Phillips of Ellesmere
Lord Porter of Luddenham
Lord Redesdale
Earl of Selborne (Chairman)
Lord Soulsby of Swaffham Prior
Lord Walton of Detchant

APPENDIX 2

Correspondence between the Chairman and the President of the Board of Trade on the transfer of the Office of Science and Technology to the Department of Trade and Industry.

I was interested to see the press release announcing the transfer of the Office of Science and Technology to the Department of Trade and Industry. The Select Committee on Science and Technology will consider this transfer at their meeting next week. I am writing now, as I am sure the Committee would wish me to, to congratulate you on your appointment as Minister for Science.

The information in the press release is naturally brief and I should be grateful for further information about the future operation of the Office of Science and Technology, whose establishment was warmly welcomed by the Committee in a number of its reports. The Committee will no doubt wish to comment on the transfer at greater length in due course.

I note in particular that the press release refers to the contribution of science, engineering and technology to long term wealth creation. No mention is made of its contribution to the quality of life, although the Government's response (Cm 2636) to the Committee's report on *Priorities for the Science Base* (2nd Report 1993–94) agreed with the Committee's emphasis on the potential of the science and engineering base to contribute both to wealth creation and the quality of life. I should welcome your assurance that the omission of any reference to the quality of life in the press release was due to oversight rather than to a change in Government policy.

Before the creation of the Office of Science and Technology the Committee had become increasingly uneasy about the treatment of the Science Budget within the former Department of Education and Science (3rd Report 1990–91, *Science Budget 1991–92,* HL Paper 37). The Committee have recently become concerned that the Department of Trade and Industry's spending on support for R&D has been cut back dramatically, as I pointed out in my letter of 15 June to David Hunt, to which I await a reply. The transfer of the OST to the DTI is bound to exacerbate fears about that Department's commitment to R&D.

The Committee had hoped that the Office of Science and Technology could strengthen its role in coordinating science and technology policy across all Government Departments. I should be interested to know what importance you attach, as Minister for Science, to your role in co-ordinating science policy, both within the Cabinet and throughout Whitehall.

7 July 1995 SELBORNE

Thank you for your letter of 7 July. I look forward to meeting your Committee.

You should not read anything into the omission of a mention of "quality of life" in the press release. The latter was, as you have noted, necessarily brief and the omission does not imply any change in Government policy. We shall continue to take forward policy for Science and Technology within the framework set out in the 1993 White Paper "Realising our potential".

I have now seen your letter to David Hunt of 15 June commenting on the Government's response to your Committee's report on International Investment in UK Science. Your Committee should not have any fears about my Department's commitment to Research and Development (R&D). There are a number of mitigating factors which underline the decline in DTI's expenditure figures. One is the Department's withdrawal from nuclear fast breeder research—spending in this area was some £50m in 1992–93 with subsequent scaling down leading to complete cessation of the programme in 1994–95.

At the same time, there has been an increase in the receipts from past investment to support aeronautical research and development under the Launch Aid scheme. In reporting the R&D figures, these receipts are offset against the Department's research and development expenditure. Launch Aid receipts totalled £47m in 1994–95 and are expected to increase to over £100m by 1997–98, as recorded in the Statistical Supplement to the Forward Look.

Alongside these developments, and in line with our central policy aim of encouraging an innovative enterprise culture, we have shifted the balance of our existing industrial R&D budgets away from generating new technology to directly promoting innovation, spreading best practice and transferring technology more effectively. Some of these activities fall outside the strict definition of research and development. However, you will no doubt have seen the announcement in the Competitiveness White Paper of an additional allocation of £70m to DTI's industrial science and technology activities over the next four years (starting in 1995–96).

The Science Budget, which has also benefited from an additional allocation of £40m, is largely concerned with the maintenance of our long term science capability. As Sir John Cadogan has

already explained in a letter that was copied to your Clerk, the Science Budget will be handled as a separate head within the Department's expenditure programme.

Finally, I should like to confirm that I attach great importance to my responsibility as Cabinet Minister for Science and Technology, and hence to my role in coordinating policy for Science and Technology across Government.

19 July 1995

The Rt Hon Ian Lang MP
President of the Board of Trade

Thank you for your letter of 19 July, which the Select Committee discussed at their meeting yesterday. Chief amongst their concerns at that meeting were the role of the Chief Scientific Adviser, his access to the Prime Minister and the Policy Group, and his role in briefing the President of the Board of Trade when he is to speak in his capacity as Minister for Science. Concern was also expressed over the identity of the accounting officer for the OST budget. Whilst the Committee found some reassurance in your letter about the transfer of the Office of Science and Technology to the Department of Trade and Industry, they hope that you will be able to allay their remaining concerns when you come to give evidence on this subject. I am sure that other subjects of interest to the Select Committee will be raised at that meeting. Details of these will be sent to your office nearer the time.

21 July 1995

SELBORNE

APPENDIX 3

Government Response to the Committee's Report on "Academic Research Careers for Graduate Scientists"

I am writing with the Government's preliminary response to the report. I would be pleased to discuss this and to hear any further comments from the Committee when I appear before it with Ian Lang on 1 November. I understand that the House is likely to debate the report later in the year, and we shall naturally want to consider carefully any additional points at that time.

The Government welcomes the Committee's report. Apart from its considered recommendations, it provides a wealth of background information in a policy area which is of much interest to universities, the funders of university research, and Government.

Recommendations 6.1 to 6.7 (and 6.10, which is specifically mentioned later)

The Government's policies for improving the career management of contract research staff in universities were outlined in the 1993 White Paper "Realising our Potential: A Strategy for Science, Engineering and Technology" and in evidence submitted to the Committee, and I shall not repeat them here. Many of the Committee's recommendations are addressed to the university employers. The Government would agree with that emphasis. However, we recognise, as I am sure does the Committee, that research funders also have a role to play.

The Committee was unable to consider a draft Concordat, agreed between the Research Councils, Royal Society and CVCP, which was issued for consultation the day before the report was published. The draft agreement, product of a working group chaired by the Office of Science and Technology, builds on the policies in the 1993 White Paper, and sets down clear expectations relating to the terms and conditions of employment of contract research staff; monitoring and appraisal; career guidance and development; the provision, where possible, of longer-term career opportunities; the respective responsibilities of the university employers and research funders; and arrangements for monitoring and evaluating progress.

The parties to the draft are currently considering responses to the consultation. They hope to be able to finalise the agreement around the end of the year. The Government will watch developments with close interest. It believes that the agreement should help to create conditions in which the university employers are better able to address the recommendations made by the Committee. For example, it provides for additional funding to cover a period of maternity leave, thus removing a perceived disincentive to the employment of female contract research staff (ref. recommendation 6.10).

The Committee encourages universities to create longer-term fellowships for the most able scientists. The Government agrees that there is a need to create such opportunities. It has increased funding to the Royal Society to enable it to increase the number of University Research Fellows to some 250, and to launch new Dorothy Hodgkin Fellowships targeted at the immediate postdoctoral stage when women tend to drop out of research.

The Research Councils have also put a greater emphasis on fellowships. For example, the NERC is introducing a new scheme offering five-year Junior, Senior, and Advanced Fellowships and Research Professorships, with the possibility of extension and renewal and, in the case of the more senior fellowships, up to two years with an industrial partner in the UK or overseas. The BBSRC has created a comprehensive three-tier structure, and the fellowships may be held in a wide range of employing institutions. The MRC's evidence to the Committee described the range of longer-term opportunities which the MRC has developed for academic scientists throughout their research careers. Again, these provide, in many cases, for a period spent in an industrial laboratory.

I would also like to comment on the Committee's recommendations which, rightly, drew attention to some of the broader factors affecting the career development of research staff in universities.

Funding Councils should increase their emphasis on industry/academia links when allocating grants to universities (recommendation 6.8)

The Government accepts the importance of stimulating a greater understanding of each other's needs between academia and industry and encouraging more collaboration. Quality assessment panels for the 1996 Research Assessment Exercise will be asked to give full recognition to work of direct relevance to the needs of commerce and industry.

The Higher Education Funding Council for England has introduced Generic Research (GR) as a category of research funding to provide incentives for universities and colleges to work with industry on long-term, more speculative projects. It has increased GR funding from £10 million in 1994–95 to £20 million in 1995–96.

The Higher Education Funding Council for Wales has allocated £1.2 million of recurrent grant annually on the basis of the level of cost-recovery research carried out by institutions, and anticipates that about £3 million will be available in this academic year to support research programmes with clearly identified wealth creation potential.

The Scottish Higher Education Funding Council's consultation on Technology Foresight is evidence that they are aware of the need to encourage HEIs to work more closely and effectively with industry, particularly SMEs. The SHEFC allocates a proportion of research funding according to the amount of external research income generated by an HEI. The figure is £5 million for the current academic year.

In Northern Ireland, the local developmental aspect of research funding is tailored to take account of the industrial relevance of the universities' work and to bring about an improvement in links with industry. Over recent years, the universities and the Industrial Research and Technology Unit (IRTU) have done much to build up industrially relevant R&D and technology transfer.

We recommend the continuation of the Teaching Company Scheme and the Senior Academics into Industry Scheme. We encourage the Government to improve the LINK scheme by devoting further funds and to develop the ROPA scheme by securing further resources (recommendation 6.9)

The Government is committed to the continuation of the Teaching Company Scheme (TCS). It wishes to see the continued growth of TCS activity, both in amount and in scope. In September, the location of seven more university-based TCS Centres for Small Firms was announced, bringing the total to 18. In Northern Ireland, the TCS has been particularly successful in the universities in conjunction with IRTU.

The Senior Academics in Industry Scheme has already come to the end of its pilot phase and there are, at present, no firm plans for it to continue into a full phase. The take-up by academics was disappointingly low. Nevertheless, the Government hopes that individual universities will recognise the benefits that can be achieved by allowing senior academics to spend a short time working on projects within industry.

The Government reaffirmed its commitment to LINK by relaunching the scheme earlier this year, and making available additional resources, which will be matched by industry, to support new collaborative programmes. So far, this has helped bring forward five new LINK programmes which target Technology Foresight priority areas, with more in the pipeline, and boosted research on a further two programmes.

We have recently published a review of the ROPA scheme. This has been made available to the Committee. I am enclosing a further copy for your information.

It is the universities' responsibility to remove, wherever possible, structural barriers to the employment of women in science . . . Age barriers in the employment of scientists should be interpreted flexibly with regard to those women, or men, who have taken time out of careers for family-related purposes (recommendations 6.10 and 6.11)

The Government welcomes the attention which the Committee gave to women's careers, and the conclusions which it reached. The Government will continue to encourage universities and other employers of researchers to remove the structural barriers to the employment of women.

Some funding bodies such as the Research Councils, the Royal Society and the Wellcome Trust are already well advanced. The OST Development Unit will encourage others to follow their example.

The MRes should not become a compulsory step in all disciplines until the benefits of the degree have been ascertained. If these prove to have elements which could usefully be introduced into certain undergraduate courses, we hope that careful consideration will be given to their introduction (recommendation 6.12)

Along with the participating universities and Research Councils, the Government will be monitoring and evaluating the "MRes" pilot which is testing the degree's effectiveness as a preparation for a PhD and directly for employment. The Government has no plans to make the "MRes" a compulsory step in research training supported by the Research Councils.

I shall ensure that the Committee is kept informed of progress with the "MRes" and the draft Concordat.

27 October 1995

Ian Taylor MBE MP
Parliamentary Under Secretary of State
for Science and Technology

APPENDIX 4

Letter from the President of the Board of Trade to the Chairman concerning the Committee's report on Efficiency Unit Scrutiny of public sector research establishments

The Government will today publish its response to the scrutiny of public sector research establishments carried out last year. I would like to take this opportunity to introduce that response to you, and to enclose a copy for your information.

Around a fifth of the public funds for science are spent in the public sector research establishments covered by the scrutiny. We obviously need to make sure that this money is well spent. We are also aware of their links to the wider science, engineering and technology community. That was why we decided to hold a public consultation on the Efficiency Unit's report.

I am extremely grateful for the comments that we received, and, in particular, the reports of the two Parliamentary Select Committees.

The Government accepts the majority of the Scrutiny's recommendations. In particular, the Government accepts measures to extend competition for Government-funded science, engineering and technology, and to improve co-ordination between customer departments and Research Councils, and between research establishments, industry and the universities. This is consistent with the policies set out in the 1993 White Paper "Realising our Potential".

The Scrutiny proposed that establishments in the life sciences area be rationalised by grouping them on the basis of market sector or geography. Consultation revealed concern about these options, in terms of the disruption that would be caused and the complex lines of accountability which could result. The Government has considered these views carefully, and has decided not to proceed with these particular proposals, or to appoint new Directors of Rationalisation.

Nevertheless, the Government accepts the Scrutiny's finding that there is scope for improved co-ordination and co-operation in managing research establishments across Departments and the Research Councils. We want as much funding as possible to go to front-line research, rather than administration. The Government is therefore extending "*prior options*" reviews to all public sector research establishments, including Research Council establishments. Each prior options review will address the relationship of establishments to others in similar or related fields, with an eye to potential privatisation or rationalisation. The results of these reviews will be considered by Ministers collectively, with the aim of completing the major part of the work by the end of 1996.

The Scrutiny also recommends that Research Councils should declare themselves open to applications from all competent suppliers. The Government accepts that Research Council funding should be opened up to the fullest extent compatible with the maintenance of the health of the UK science and engineering base. The response to the scrutiny announces that eligibility for funds is to be extended in certain areas.

We are seeking to strike a balance that will enable the Research Councils to fulfil their dual role of supporting high-quality research to meet their specific aims and maintaining the long-term health and vitality of the science and engineering base. The Research Councils will be opening up their research grants when they are seeking to achieve specific research aims. Universities are not excluded from this competition, in which I expect they will be strong players. The new arrangements will be monitored to check whether a satisfactory balance is being achieved. The new funding framework is set out in more detail in the response to the scrutiny.

The Government recognises that the public sector research establishments play a vital part in contributing to the quality of life and wealth creation. They help to ensure that Government has the best scientific and technological advice, and provide a strong underpinning of strategic science for industrial users. Our response builds on their strengths to ensure that they are able to respond to the changing needs of their customers and to maintain the reputation for excellence for which they are renowned.

29 September 1995

The Rt Hon Ian Lang MP
President of the Board of Trade

APPENDIX 5

Letter from the Parliamentary Under Secretary of State for Science and Technology to the Chairman about the Budget for science, engineering and technology

The President of the Board of Trade, as Cabinet Minister for Science, and I thought you should know as soon as possible what today's Budget means for science, engineering and technology. The enclosed press release summarises DTI's settlement and shows Science under a separate heading.

You will be aware that all Government programmes (including those of DTI) have been subject to intense scrutiny and restraint. But the settlement for OST confirms basic science as one of the Government's top priority programmes and as an investment in our nation's future.

The Science Budget (the cash available for distribution to the science Research Councils, the Royal Society, the Royal Academy of Engineering and special OST initiatives) has been increased by £12 million over the settlement planned for 1996–97 at the time of last year's Budget. The planning figures provided for the following two years keep the Science Budget rising in cash terms and, in real terms, above the level in 1993–94 (the year of the White Paper).

Science Budget (cash)—£ million	*1995–96*	*1996–97*	*1997–98*	*1998–99*
November 94 announcement	1,282	1,300	1,329	
November 95 announcement		1,312	1,330	1,346
Real terms index (1993–94 = 100)	*103.2*	*102.4*	*101.3*	*100.3*

The Science Budget allocations announced on 2 February by the then Chancellor of the Duchy of Lancaster included a package of priority initiatives designed to advance the Government's policy for science, engineering and technology as set out in *Realising Our Potential*. This year's settlement provides us with a firm foundation to consolidate and develop these initiatives.

The President expects to announce the allocations of the 1996–97 Science Budget to the funded bodies early in the New Year. In the meantime, Sir John Cadogan will continue to work with the Research Councils to ensure that maximum funds are directed to top-quality programmes and to justify the priority accorded to science in this Budget.

28 November 1995

Ian Taylor MBE MP
Parliamentary Under Secretary of State
for Science and Technology

MINUTES OF EVIDENCE

TAKEN BEFORE THE SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY

WEDNESDAY 1 NOVEMBER 1995

Present:

Craig of Radley, L.
Dixon-Smith, L.
Gregson, L.
Haskel, L.
Phillips of Ellesmere, L.
Selborne, L. (Chairman)

Examination of witnesses

THE RT HON IAN LANG, a Member of the House of Commons, President of the Board of Trade, MR IAN TAYLOR MBE, a Member of the House of Commons, Minister for Science and Technology, SIR JOHN CADOGAN, CBE, FRS, Director-General of Research Councils, and PROFESSOR ROBERT M MAY, FRS, Chief Scientific Adviser, called in and examined.

Chairman

1. Good morning, Secretary of State and Minister. We are grateful to you for joining us today. I should start with an apology. We are a little thinner on the ground than we would have wished to be. Unfortunately, the change of date proved impossible for one or two of our Members who send their apologies. Mr Lang, I do not know whether you would like to start by saying perhaps a word or two by way of introduction?

(*Mr Lang*) Thank you very much, my Lord Chairman. I would like, first of all, to become a co-signatory to that apology since it was me who asked for the date to be changed and I am grateful to you and the Committee for agreeing to that, although it was difficult, of course, for us to agree a mutual date. However, I am glad to have my full team with me: Ian Taylor, the Minister for Science and Technology; Professor Robert May, who I think is familiar to your Lordships as the Chief Scientific Adviser; and Sir John Cadogan, the Director-General of Research Councils. Can I just say by way of preliminaries, my Lord Chairman, that when I became President of the Board of Trade it came as a surprise to me that I was also taking on responsibility for science and technology. My own instinctive feeling was that this was a step in the right direction and I know that puts me on one side of a discussion that has developed since then. However, I would like to start by assuring the Committee that it is my firm intention that science and technology will cohabit well within the DTI, that we will get the synergy that is to be had from bringing science closer to industry but, at the same time, that we will recognise the crucial importance of maintaining the basic science research base and ensuring that our "blue skies" research is not jeopardised or compromised by this development. I hope that in the course of our discussion this morning and in subsequent discussions our commitment to that general stance will become more apparent. Can I also say how much I and my colleagues value the work that this Select Committee does and has done in recent times. The comments of your Committee on the efficiency scrutiny of PSREs were valuable and you will have had our response to the scrutiny since then. We also welcome your report on academic research careers for graduate scientists and Ian Taylor has sent a reply on that to Lord Dainton recently. I hope that we can work together very usefully to the mutual benefit of ourselves and, more importantly, to the benefit of science in this country.

2. Thank you very much, President. I do not know whether Mr Taylor at this stage would also like to say anything?

(*Mr Taylor*) I do not think I have got anything specific to add. I was delighted to add science to my existing technology portfolio because there had been considerable need for me to relate across to the OPSS, David Hunt and the Junior Minister there, John Horam. I find it much easier to handle the interface between the various activities for which I am responsible now—from the point of view of delivering the objectives of the OST through the mechanisms within the DTI.

3. Thank you very much. Perhaps I might start by referring to a subject that the President referred to just now and that is organisational structure. I think we would accept immediately from this Committee that we are very much more concerned with long-term science policy and the effectiveness of delivering that than we are with the nuts and bolts of organisational structure, but, nevertheless, there has been, as you reminded us, some concern about the move of the OST to the DTI after a relatively short period within the OPSS. Perceptions are clearly important in this matter and it is important, I suppose, that the strengths are identified. Incidently, I think we were very encouraged to read the retired Chief Scientific Adviser's Bernal lecture to the Royal Society which was very positive about this move. Nevertheless, I would ask whether on reflection it was sensible to have changed the structure after, what, three years?

(*Mr Lang*) My Lord Chairman, it is a good idea and I think it is going to work well. It is important, of course, that we at the Department of Trade and Industry have the commitment to make it succeed and that indeed we do have. I made the important point of appointing Ian Taylor as Minister for Science and Technology as one of the immediate reactions that I took to the decision and, as you said, Sir William Stewart described the decision as, "... a shrewd move which set out to ensure that the United

Chairman *contd.*]

Kingdom will have an even stronger infrastructure for science, engineering and technology than the current OST could provide". I believe that is the case and I believe that against the background of the various schemes that we have in the Department, to encourage the development of science, both through the ROPA scheme *(Realising our Potential Awards)* and through Technology Foresight, we are not only integrating the benefits of science into our economic performance but we are also thereby stimulating and committing ourselves further to the success and long-term growth of basic research and "blue skies" scientific work.

4. It has to be said, does it not, that the DTI's record is not necessarily very reassuring? Over the last ten years it has cut its R&D spend and it does not appear, on the face of it, to have a record of having promoted research very effectively. Would you accept that?

(*Mr Lang*) I think, my Lord Chairman, those figures might be misleading. The ending of the fast-breeder research work obviously affected our figures very substantially. So indeed did the Launch Aid receipts which, of course, flowed back into the Department and thus reduced the net research expenditure. I think the work that we do in the Department is still extremely important. It tends to be more technology and innovation orientated now to avoid overlap with OST, but that should not in any way jeopardise the work of OST which is treated as a separate organisation within the Department. Its budget is a separate budget head and, of course, the position of the Chief Scientific Adviser and, indeed, of the Director-General of Research Councils is entirely unchanged by these arrangements.

Lord Craig of Radley

5. You have told us the OST is now better placed and you explained why. It was not so long ago, of course, that it was placed in the Cabinet Office and there had been some difficulties with that arrangement. I wondered if you could explain to us what those difficulties were which led to this decision to move it into the DTI?

(*Mr Lang*) My Lord Chairman, the decision was not taken in isolation. It was part of a reconsideration of the machinery of Government and geared to the plans of the Prime Minister at the time of the reshuffle in July to re-construct the Government in a way that abolished the Department of Employment and split its responsibility between Education and the DTI and it adapted the OPSS to suit the requirements that the Prime Minister then had for the appointment of my predecessor, Michael Heseltine, as First Secretary of State and Deputy Prime Minister. In that context the role of OST and the position of OST fell to be reconsidered, but I think one should contemplate mainly that it was a decision taken on positive merits in its own right because of the advantage that was perceived to be derived from putting it with the DTI. I do not believe it performed badly in its previous arrangements; I think it did extremely well. The White Paper was a very important watershed in our approach to science, but the present arrangements are the right ones for now.

6. It was because it was going so well that I think it surprised a very large number of people, particularly in the scientific community, in that it was necessary to make yet another change and change is always disruptive.

(*Mr Lang*) Yes, it can be, but it is our purpose to ensure that the commitment to science and the good work that OST has been pursuing will continue, not jeopardised, but reinforced. Perhaps I could ask Ian Taylor to say a few words.

(*Mr Taylor*) There is a philosophical point and that is the way that the science base needs to interact with industry, and in many cases the read-across into industry and the understanding of industry has been rather patchy in the United Kingdom. There are some obvious examples of success, but there is rather a large number of examples of inadequate understanding of the importance of science, so the DTI has a very important role to play here. There is also a practical bit of progress in that when the OST was founded within the OPSS in a sense it was beginning to pull through what became the White Paper *Realising our Potential*. The first stage of the Technology Foresight programme has pretty well been delivered and we were moving into the second stage where the DTI becomes a much more important part of the way that we can ingrain Technology Foresight into this country and into industry. The delivery mechanisms are in the DTI as are many of the demonstrator projects. Before the bringing together of the two parts of the portfolio I was already responsible for the LINK programme, the Teaching Company Scheme and the SMART and SPUR awards. We were seeing increasingly the research councils beginning to open out some of their thinking into co-operation, not only with the DTI but with industry—such as the Innovative Manufacturing Initiative which involves three research councils, the DTI and the Department of the Environment. All this very much depends on the way that the DTI itself had reorganised itself. I think you have got to see it in this context. When the former Chief Scientific Adviser within the DTI left, he left on very positive ground, having deliberately almost done himself out of a job. I have a letter here from him which I am very happy to let the Committee see, which came a few days ago, explaining how he had reorganised the DTI in order to become a much more effective delivery mechanism for the ambitions of the OST and to embed the science and technology activities into the sector divisions within the DTI so they would be more effectively delivering what was required. Therefore, I think that the whole process should be seen in a much broader context than just a snap decision as it appeared to be in July.

Lord Phillips of Ellesmere

7. If we were being philosophical, I wonder if we might for a moment consider a classic statement on the role of the research councils in the United Kingdom, the former relationship. One of your

Lord Phillips of Ellesmere *contd.*]

colleagues[1] says, "Between government and science in Britain is embodied an institution which we owe in part to the genius and foresight of the first Lord Haldane and which has on the whole won the confidence of the scientific world and created the means of providing government finance without sacrificing either academic independence or scientific integrity. This is the institution of research councils. The thinking behind the creation of these councils is to separate the activity of research from the executive business of government and from economic activity." There are many people who would say that in those terms the supply side of the system—the supply of basic science development, the supply of scientists and engineers—has worked very well and that the problem with the system (and I shall come back to this later on in respect to Technology Foresight) has been on the demand side in that we provide the necessities for high-tech industry but we do not have the high-tech industry to take them up. What has the DTI done about that and what is it going to do?

(*Mr Taylor*) It is a fundamental part of what we are attempting to do which has many manifestations. The two *Competitiveness* White Papers have indicated the importance of making sure that British industry takes advantage of the scientific excellence in the United Kingdom across a much wider spectrum than it currently does. That can be in applied research. It also is essential that industry, if it wishes to progress, understands that "blue skies" research and basic research are essential. You will not see successful industry in this country unless you have a successful science base in the same sector. Therefore, the delivery mechanisms in the DTI are very much there to reinforce the strength of the science base but also to find out those parts of the United Kingdom economy which are not responding at all. The DTI's R&D score board shows a very patchy performance and we have got to admit that. Therefore, in most aspects what the DTI has attempted to do is to try to fill in the gaps or at least encourage innovation and technology transfer. That is where a very considerable amount of our effort and finances in the DTI are concentrated. David Evans, who is responsible for that, used to be the Chief Scientific Adviser to the Department of Energy and he has got a very good understanding of how important it is to deliver. I take one point at issue with you, if I may. I understand the circumstances in the context in which you quoted Haldane, but I do think that economic factors do come into the thinking of the research councils and, indeed, should. It does not mean, therefore, that one is downgrading the quality of science or the science base in so doing. We need the scientist to look outwards as much as we need the industrialists to open up their horizons as well.

8. I think it would be generally agreed that the leaders of the high-tech industries that we do have are unanimous in the view that what they want is a science base that is focused on the development of basic science and the production of highly intelligent trained people.

[1] Lord Hailsham in "Science and Politics".

(*Mr Taylor*) That point is very important.

9. The sort of thing that alarms me in the reports I hear is that the non-scientifically disposed part of industry increasingly influences what is going on and, in particular, I am alarmed by the report from the research councils that some members have been told that their job is implementing Government policy.

(*Mr Taylor*) In the sense that the research councils themselves should be aware of the needs of British industry in the broadest sense, then that is Government policy, but it is not the job of the research council to take any detailed instructions because the whole structure of the research councils in their responsive mode is to respond to demands by researchers for projects which then the research councils should back. I think you need to be very careful about how you determine what Government policy is in that context.

Chairman

10. If I could come back to the rationale behind the merger of OST with the DTI. There is clearly a strong wealth-creating mission behind this move which I think we understand and accept. Equally, of course, the Ministry of Defence and the Ministry of Health both have their own strong research bases which probably could not properly be described as contributing normally to that area. The rationale for having the OST separate from the Department was, of course, that it enabled the Chief Scientific Adviser more easily perhaps to influence disparate departments. Would you comment on whether the Chief Scientific Adviser or, indeed, the OST are going to be, therefore, less effective under the new arrangements insofar as health, defence and these other sectors might be concerned?

(*Mr Lang*) I do not believe they will be less effective, my Lord Chairman. Perhaps I could invite Professor May to say a word to supplement this. As I see it, whilst I do have a transdepartmental role in terms of being the Cabinet Minister responsible for science, the consideration of science in the Cabinet comes under the competition committee chaired by the Deputy Prime Minister. Professor May himself has access to all Cabinet Ministers at his discretion and, indeed, to the Prime Minister and holds that transgovernmental role which I think is so important. Although the OST is now lodged with my department rather than with the OPSS, the building bricks are still there and the overall synergy or dynamics are still in place. Perhaps I could invite Professor May to elaborate a bit.

(*Professor May*) My feeling is that, from the creation of OST, there was an element of schizophrenia in having one person as Chief Scientific Adviser to the Government, reporting to the Prime Minister ultimately, and as the head of OST, reporting then to the Chancellor of the Duchy of Lancaster and now to the President. Indeed, it was in recognition of that that the role of the Director-General of Research Councils was created. It is Sir John Cadogan's role to be responsible for the primary management and the financial budgetary management of the research councils, so that the schizophrenia did not go so far as for me to have

Chairman *contd.*]

responsibility right across departments and also have direct line responsibility for the largest single such component. As long as both the people to whom I ultimately reported were in the Cabinet Office, it may have been less apparent that there was a slight duality of roles there. Now that one of the people I report to is in a separate department, rather than in the Cabinet Office, I think it has been made a little clearer that there is a complex duality of roles there. The question is, do I believe that by virtue of OST being in DTI my ability to implement views across the entire spectrum of spending from defence through other departments and so on is impaired; all I can say is I do not think so. The chairing or participation in relevant central Cabinet Office committees that my predecessor had simply persists, and the mechanisms for discussing with other departments my opinions about what they ought to be doing, as it were, and then carrying that forward if there is disagreement, are all still in place; I think people have been sensitive to that.

Lord Phillips of Ellesmere

11. There is a particular element in that, President and Professor May, which perhaps deserves a little teasing out. That is the relationship with the now Department of Education and Employment which still, through the Higher Education and Funding Councils for England and Wales, at least fund a considerable part of the universities' spend on scientific research and, of course, is about to engage yet again in a research assessment exercise to judge the quality of the research being done in universities. I remember when I was Chairman of the ABRC—I was a member of the Higher Education Funding Council for England and an observer on the Higher Education and Funding Council for Wales—I played some part in determining the nature of the research assessment exercise. I shall be interested to know what part OST plays in that now and whether, for example, you are concerned about the way in which the research assessment exercise deals with inter-disciplinary research which I do not think in the past it did very well?

(*Mr Lang*) There is obviously a plurality in our approach to research funding and there are certain common factors in that across the spectrum. Professor May has a role; I have a transdepartmental role as Science Minister in the Cabinet and Sir John is Director-General of Research Councils. Perhaps I could ask Sir John Cadogan to answer.

(*Sir John Cadogan*) The position is exactly the same. The past chairman of the ABRC, Lord Phillips, was a member of HEFCE and an observer in HEFCW and, therefore, was able to do those things. I took his place on both of those, so OST has the same ability to influence the funding councils for England and Wales as it had previously when Lord Phillips was Chairman of ABRC.

12. Could I ask the Director-General an impertinent question, namely, how many meetings of HEFCE has he attended in the last six months?

(*Sir John Cadogan*) Two, I think, out of four.

(*Professor May*) May I supplement the answer I gave in ways that address the question? As part of my participation in the public expenditure settlement rounds I have had one-on-one, bilateral meetings with the chief scientists and permanent secretaries of all of the major S&T spending departments. In the case of the Higher Education Funding Councils, I met both with the outgoing and incoming Chairman of HEFC for England and, also, I met with the senior officials in the Department for Education and Employment. On the basis of all those conversations I put a paper to the Cabinet Committee on expenditure, EDX, and, indeed, appeared before them and followed it up with yet a subsequent paper to express my views as an input to that, not on behalf of OST but looking across the board: the Higher Education Funding Council's position is one of particular concern to me.

Chairman

13. Going back perhaps to links outside Whitehall for the OST. I think in this Committee we have all been impressed by the contribution to public research of the medical research charities, not least the Wellcome Trust, and I suspect when the announcement of the merger was made their reaction tended to be distrustful of the DTI which, of course, has had very little, if any, exposure to medical research in the past and the Medical Research Council would remain within the research council structure. Do you feel that in the intervening months you have been able to allay the concerns of the medical charities?

(*Mr Lang*) I hope to some extent we have, my Lord Chairman, but this is a matter that will progress and I hope the suspicions will be more allayed as time goes by. Clearly the Department of Health has an interest in medical research. Each Secretary of State takes a close interest in matters in his or her Department and I certainly, for my part, am keen to encourage them to do so wearing my OST hat. I imagine there might have been some concern in some research councils and in some areas of research that the DTI would be pocketing OST funds and using it all for industrial research and business-related work. That is not the case, as I hope I have already made clear. However, there is in the industrial sector a very strong commitment to medical research amongst some of our leading medical and pharmaceutical companies and clearly there is a benefit to be had there.

Lord Phillips of Ellesmere

14. There has been some confusion in public comment about the role of the Council for Science and Technology. Could you tell us, President, who actually chairs that now and, secondly, since it has been a remarkably quiet organisation, whether it is likely ever to make a public statement of any kind?

(*Mr Lang*) I chair the Council and, in fact, one of the first acts I performed as President of the Board of Trade was to chair a meeting of that Council. It has a strong and distinguished membership straddling both science and industry. If it is quiet, that in no way detracts from the quality of its input and the strength of its abilities. However, perhaps it means that I did

Lord Phillips of Ellesmere *contd.*]

manage to reassure them at our first meeting that all would be well!

(*Mr Taylor*) Individually the members are not quiet, of course.

15. But collectively they will remain quiet?

(*Mr Lang*) Not necessarily.

Chairman

16. We must not devote too much time to organisational matters because I think ultimately we are much more interested in the delivery of science rather than the structure of science.

(*Mr Taylor*) We were talking about the MRC. The MRC is one of the sponsors of two of the new LINK programmes which we have announced recently. I think the MRC's work is very important and I was delighted that the new Secretary of State for Health has himself highlighted how important he sees medical research.

17. A last organisational matter perhaps. The Ministerial Committee on Science and Technology, EDS, was one of the committees which was abolished as part of the reorganisation. Perhaps you could just remind us what has taken its place and how it works?

(*Mr Lang*) The Deputy Prime Minister presides over the competition committee and the role of the former science committee has been absorbed into that. The Chief Scientific Adviser has the opportunity to attend these committees and I do not believe that the role of science will be in any way downgraded by this restructuring.

(*Professor May*) The committee of officers that, as it were, underpinned EDS, continues in being as a committee of chief scientists of departments, as a committee which I continue to chair. As the President said, I have a seat at the table on the EDC, the larger competitiveness committee, which gives me an opportunity to air my views and express my opinions on a wider range of issues and to inject science and technology considerations into places where I think they belong, in ways that may not previously have been possible in the sets of committees that have now been aggregated.

Chairman] Let us move on from organisational matters and perhaps address Technology Foresight.

Lord Phillips of Ellesmere

18. I think Technology Foresight, as you have already said, President, grew out of the *Realising our Potential* White Paper and I think I and probably many other people have been surprised at how dynamic a process it turned out to be with multiple reports and a great deal of discussion. However, when I think about it a little more deeply I have the following worry about it; it was, in a sense, a dialogue for people who talked already. I think the networking element did expand, but scientists in university, in my experience, and scientists in industry do generally form part of a community and meet quite often within learned societies and engineering institutions and so on and there is not really a great gulf between them. Scientists in high-tech industry—and you have mentioned the pharmaceutical industry, that is an outstanding example—also have rather good contact with the chief executives, the captains of those industries, if you like, and you can see that very much from the rather prominent role, for example, that the Deputy Chairman of Glaxo plays in Government discussions of the sort that you are now much concerned with. Where I think the problem lies is in the gap between scientists in general, but particularly those in industry, and the captains of industry that are not really science based as I can see it, where their concerns are much more to do with shareholders' interests, markets and all the rest of it without much regard for science, and it is even worse again with the rather large number of companies that have no scientific involvement whatsoever, nobody within the company who can even identify areas of science that would be of value to that company. In the development of Technology Foresight it seems to me most important that the captains of industry not already involved should be brought on board in some way. I understand that the Chief Scientific Adviser met the CBI the other day and it came as no surprise to me to learn that his audience consisted mainly of research directors and higher directors of technology-based companies: directors of other companies were hardly represented at all.

(*Professor May*) The CBI?

19. Yes. That is where I see the problem. What are you doing about that?

(*Mr Lang*) Perhaps that underlines the need for the Technology Foresight exercise. I think it is inevitable with a new initiative of this kind that you start off with the aware, the enthusiastic, the informed and the committed talking to each other and from that starting point you move out. That is what the exercise is about. There were 15 panels and 10,000 people involved in the consultation process. That in itself creates quite an impact. I think the problem before was a lack of focus and I hope that the Technology Foresight initiative has helped to focus on areas of particular relevance for future work and for the better dissemination of the scientific applications to industry. I do not think it matters at all that the captains of industry who are particularly strongly committed themselves already to research should be in the driving seat initially. I mentioned in passing that the Deputy Chairman of Glaxo Wellcome sits on the Council for Science and Technology, as indeed does the President-Elect of the Royal Society. There is a good mixture there of science and industry. But it is at that starting point that the initiative is critical and I think it has enormous potential. It is important that we maintain the momentum and that is why we have now given the Technology Foresight sector panels the new channels of disseminating their findings and finding ways of facilitating the implementation of priorities and we have given them an increased budget to do that. The steering group has been revitalised with new members to push forward those objectives. We are also setting up a Foresight Challenge programme with funding to encourage the application of the various findings in different sectors of industry, as well as through seminars, through workshops, through conferences and in other ways. So I believe that we have started

Lord Phillips of Ellesmere *contd.*]

off on the right road, that we have cited the right areas and that we are now moving into the pro-active phase of dissemination.

20. But to be specific, President, could you give us some indication of how you are involving the chief executives and finance directors of companies that are weak in R&D, such as the construction industry, in this activity?

(*Professor May*) Let me first begin a little more generally by saying that I regard the most important single thing that I inherited in this job as carrying forward the beginnings of Foresight, and I reiterate all the things said earlier. We have a wonderful science base which in some areas is creating wealth and improving the quality of life in this country and in other areas it certainly creates wealth but not in this country. The aim of the Foresight exercise is to have people talking together across the spectrum from basic research to industrial application. The areas we have to worry about are those areas where people have not talked well in the past, particularly in small and medium sized companies. One of the advantages, as Ian Taylor touched on earlier, of being in the DTI is that one can take advantage of the regional networks and so on to be getting the message of the Foresight exercise out. For example, the Institute of Physics and the Royal Chemical Society, among others, have a series of workshops and deliberative programmes to carry that message out. In the Government departments we now have a Whitehall group where each department has a Foresight Action Manager. Specifically to talk about the construction industry, the Department of the Environment has drawn upon the messages of Foresight and put together a programme which is to try to draw together leaders in the construction industry, with the visions of that panel as to what tentatively might be interesting areas, and they have a funding programme that will carry that forward in the coming year. There are other examples I could give you of people working hard to make it happen.

21. But the countervailing pressures in these industries are such modish concepts as out-sourcing. The notion is if you need science and technology you can ask for tenders, for people to do it for you without necessarily having the expertise to judge the value of those tenders.

(*Mr Taylor*) But a company which persisted in doing that would find its position and future competitiveness rather undermined.

22. Especially in the construction industry where there are all too many such companies.

(*Mr Taylor*) The construction industry is going through a very difficult period and it has all sorts of pressures, but the Department of the Environment has now set up, as a continuation from the original panel, a panel looking at construction to discuss with industry right across the spectrum and how to embed the ideas of the Technology Foresight programme for the benefit of those companies. I think that is one of the crucial points that we should not lose sight of. The best companies, my Lord Chairman, and the best universities were already discussing. Lord Phillips is absolutely right. The problem is that they were keeping rather to themselves the conclusions they were drawing. The Foresight panels were deliberately designed across the 15 sectors—it is now 16 with the marine panel that was set up—to look at what might be the future areas for concentration and then to disseminate those ideas on an industry-wide basis or actually across industries because some of the panels' conclusions also affect many different industries and will require new ways for those industries co-operating with each other. I think the exercise has several add-on effects. Lord Phillips is quite right, we have got to push it through. Government departments are doing that. The DTI is very much in the lead, but, of course, industry itself is being challenged to do it. The other day at the same CBI meeting I challenged the CBI to come up with 1,000 firms newly engaged in the Foresight exercise by April of next year.

Lord Haskel

23. I was interested to hear how you are involving more companies, more people in the Technology Foresight exercise. Are you trying to identify how effective the work is? Presumably the purpose of the Technology Foresight exercise is to identify the technologies which industry should be involved in. Are you doing any work to identify whether that has in fact been effective? I know it is rather a long-term thing, but do we know of some technologies which have been identified which industry ought to be adapting now?

(*Mr Lang*) We have to be careful not to get ourselves into a position where we are accused of picking winners. Part of the exercise has been to engage industry in the scientific work and let them reach decisions and let them create conclusions with us putting in the impetus for them to do so. They have begun to identify areas of priority that they think are important. We are disseminating and encouraging it, as we have described. I think I would just add to that the fact that each department of Government is driving forward Technology Foresight in its own area with its own aspects of industry for which it is responsible and we are also driving it through associations and different organisations, be they engineers or physicists or electrical engineers or whatever. It is for them as they proceed to decide themselves which are the successful initiatives for them and which are the less successful initiatives. It is not for us to decide and reach a conclusion. It is part of an on-going, continuing process. Our purpose is to embed in the mind of all those involved the importance that they themselves should attach to science and to scientific research and development, so it is not such a clear and crisp audit process as Lord Haskel perhaps suggests.

Lord Craig of Radley

24. I think everybody has been delighted with the way Technology Foresight has got going and I am very glad to hear that the Chief Scientific Adviser is putting it very high on his list of priorities. I do wonder about some of the rocks which may lie ahead. For example, as these contacts develop we will find ourselves, I am sure, sooner or later running into IPR

Lord Craig of Radley *contd.*]

problems and commercial in confidence and all those things. I just wondered how much you feared that. Maybe I am too pessimistic, but if you do have worries about that then what suggestions or ways of getting round them do you have which can give confidence to everybody and can keep Technology Foresight going as strongly as it has already started?

(*Mr Taylor*) My Lord Chairman, it may be of help to the Committee if an extended version of the speech I made to that CBI conference was made available because it covers a lot of the areas where we are moving forward in Technology Foresight which would take a long time to go through now. The key obstacles are the ones that we are concerned about. Lord Craig with his background in defence will know only too well that there are what I may call "infrastructure" problems: how do we get the knowledge that is available to defence-related companies into the civilian sector? I think we are making progress there. DERA is a transformed organisation in more senses than one and the dual-use technology centres (I think there are now six) are targeted at trying to read across the divide. That is one area of blockage where knowledge simply could not get out and we are beginning to deal with it. The second area is where people do not have the confidence to bring forward their knowledge because of the intellectual property. We constantly say that, in any collaborative programme, the IPR factors have to be taken up front: it has to be agreed how you are going to share out the intellectual property and, therefore, the ultimate benefits from taking an idea forward into successful production. The third area that is important has a slightly different emphasis; someone has got to have responsibility in each section for seeing that Foresight is carried through, whether it be in Government departments with the appointment of action managers, whether it be in any given company or whether it be in industrial groups, and that process is one that we are pushing very hard. Those action managers are also responsible for evaluating where progress is being made.

(*Professor May*) First, in saying, as I do, that I think the implementation of Foresight is the most important thing upon my desk, I am aware of the folly of that statement because it will be an exceedingly difficult accomplishment. It is no less than changing the culture in large sectors of industry, and it is something over which I do not have as nearly as direct control as over other things. Wiser counsel may well have been to define as more important things, things I could have more control over; however, that is as it is. The measurement of success in Foresight is not easy. Second, as the President says, one can and should construct stages of performance measure which are always, however, surrogates for whether we do bring about cultural change. Thirdly, I would say that we do have those sort of notional measures of performance and we will be able to judge, in part, by the response to Foresight Challenge. We have put together a panel for bringing civil and defence people together to talk about mutual interests and so on. If I may be a little more specific about the way we have re-tooled the steering group, we have kept about half of it, but we have replaced about half the members to reflect the fact that we are now moving into a phase that has more outreach and dissemination. The new members include Mr Pen Kent, who is an Executive Director of the Bank of England, representing the City; Mr Richard Jones, who is the Director of Engineering for Sony in South Wales, a major inward investor; Brian Blunden, who is the President Elect of a thing called AIRTO, the Association of Independent Research and Technology Organisations, who are going to be important again in reaching out in a designated way; John Sizer, Chief Executive of the Higher Education Funding Council for Scotland; Ronald Amann, Chief Executive of the Economic and Social Research Council, which is going to be crucial in matching physical/biological constraints with the performance in human institutions which is at the root of everything; and Miss Barbara Beckett, who is the General Manager for Business Development, W H Smith, which is reaching out to the business community but in a sense at the media end. We are also talking with the BBC about an appointee from them.

Chairman

25. I wonder if I could share with you a concern that the Royal Society has expressed arising from the implementation of the Technology Foresight exercise. They say: "The Society's greatest concern is that the funding agencies under OST control will feel pressurised into implementing the largest possible number of recommendations while other Government departments and industry do proportionately much less to respond to Technology Foresight, thereby leading to a distortion of research council programmes." Would you comment on that?

(*Mr Lang*) Yes, my Lord Chairman. I had a meeting with the President and the President-Elect of the Royal Society just recently and their comment was publicised. I think it should be seen in the context of a broad welcome for the initiative and very strong support for it. They are quite right to identify potential hazards ahead simply to ensure that we were alert to them and that we were aware of the potential and, therefore, determined that that kind of distortion should not happen. I do not believe it will, but I think they are right to mention it as a possible threat and one that we should be alert to.

26. On the subject of distortion of research programmes but not concerned with Technology Foresight, could I draw attention to the concern on the ROPA awards. Again this was seen in an article in the *New Scientist* as, "distorting research council priorities by effectively top-slicing their own funds" and putting in something which was seen to be the flavour of the month. Would you like to comment on that?

(*Mr Lang*) I hope it is very much more than just the flavour of the month, my Lord Chairman. It is concerned with sustaining basic research, "blue skies" research and, indeed, the quality of the awards has been high. There has been a comprehensive report on the ROPA scheme's first two years which was published just ten days or so ago. I hope the Committee has received copies of that. The scheme has been very widely welcomed by both sides, by academics and by industry. Research councils

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received over 1,500 applications to the ROPA scheme, from top universities and research institutions. I think that was a very strong response and the indicators so far are that ROPAs are in fact funding high quality research. Of those that went to university departments, a full two-thirds went to departments rated five or four, the top two categories for research. So I do not think the quality of the awards should be called into question and it certainly is not a brief or transient initiative as the "flavour of the month" tag would suggest.

Lord Phillips of Ellesmere

27. I think I ought to begin by welcoming a very imaginative approach to funding and thanking the Department for the report which indeed I have read with a great deal of interest. That does not mean that I am short of concerns about the programme. I have looked with interest at the distribution of awards between the five research councils that have taken part in the full scheme and I noticed that the annual value of the awards ranges from £52,000 from NERC down to £37,000-odd from the EPSRC, and given the relative costs of programmes in these councils perhaps that is a reasonable distinction. I notice with a little more surprise that the BBSRC has given awards on average for 2.68 years, whereas the EPSRC has given awards for two years and the EPSRC for slightly less than two years. Given the size of the awards and their duration, what I find missing in the report is any account of the sort of heads of expenditure under which these awards are being made. Let me focus my concern by saying that the sums of money per annum look terribly like the cost of a postdoctoral research assistant and associated expenses for one year. Is what you are doing, adding to the number of contract research workers? Are they enormously popular because they are contributing to the research assessment exercise weighting factors in six months time and so on?

(*Mr Lang*) I hope that the achievement of ROPAs goes further and deeper than that, my Lord Chairman, but I would ask Sir John to elaborate on the answer.

(*Sir John Cadogan*) This report was brought out very early, of course. We do not know what the outcomes of the scientific research will be and the purpose was to see whether there were improvements that could be made or things that we ought to drop. The decision as to what should be awarded and to whom in terms of whether it is a post-doctoral research assistant or a piece of equipment is entirely up to the councils in each instance. The researchers themselves, of course, are invited to ask for money to further their research in the areas that they alone determine, and it is up to them to say what they want. The research councils have to assess whether what they want makes sense in terms of the research they want to carry out. In that sense it is difficult to impose any rules, "You may not have a post-doctoral research assistant" or "You may only have a post-doctoral research assistant"; it is truly responsive. That is of course the object of ROPA, that it should be completely responsive in areas entirely chosen by the researchers, and it is interesting that that is how they have come out. It does beg the question of what their motives are, and we do not have enough information on that. We are contemplating carrying out an attitude survey of all 1,500 people who have taken part in this, that is the 719 who were successful and the almost 800 who were not successful. The sort of questions Lord Phillips has posed, and others, have already crossed our minds, and we think a properly constructed attitude survey could bring this very useful information to light.

28. I am interested, for example, in your remark that some of our leading research workers have participated in this scheme. That is certainly true but these in general are research workers who have not been particularly starved of resources and in general have quite large research teams working with them. It is hard to see quite what hands-on involvement they have in the ROPA scheme themselves, and it is much more likely, surely, they are employing yet another pair of hands to do something which, although I agree it is difficult to judge from the short accounts given in the paper, does not sound terribly novel to me.

(*Sir John Cadogan*) It is not for me to pass a judgment on whether the great names of British science are hands-on in their research or not.

(*Mr Lang*) I think one judges this by the quality of the outcome, which can only be discovered some way down the road. The quality of the applications is certainly high.

29. People are very good at that!

(*Mr Lang*) There may be some who are professionally playing the system, but I think the objective of the scheme is still as I see it being met.

(*Mr Taylor*) And more of the research councils are welcoming the scheme in the context of what they do. The EPSRC are being very encouraging, in the documents I have seen this week certainly. I think we are getting it into the system. The idea that ROPA is taking away from a series of research projects which are being neglected, I hope has been put in a proper context by the report which has been brought out.

30. Nevertheless, going back to the Lord Chairman's point, I am a little concerned that this rather large number of grants, ranging up to about £150,000 or thereabouts over up to three years, is diminishing the research councils' ability to fund rather more ambitious schemes. I am aware, for example, of a proposal coming from Cambridge to embark on a major programme on brain injury which has been strongly supported by the research charities in the expectation that the research council would be able to complement the funding which the MRC have not been able to complement. Is it having that sort of effect on major research programmes?

(*Sir John Cadogan*) I wonder if I could come back to that point because we must not avoid it at all, but the word "distortion" has been used. I frankly do not see that distortion can be applied to this because the numbers just do not correspond to it. The total sum over a five year period is £71 million, which is 1 per cent of the budget. The ROPA pilot was funded in full with extra cash; funded in full. For example, on the EPSRC research, the EPSRC itself decided that it would prefer to put additional money into the ROPA

Lord Phillips of Ellesmere *contd.*]

scheme. They decided that, and that additional money was matched by more money from the Government through the Chancellor of the Duchy. In the second round, which was slightly larger (and every council was invited to participate or not as they saw fit) they were all asked how much money they thought they would spend and we gave them that amount of money. You will recall, my Lords, that at the February 2nd 1995 allocation there was £41 million extra available for the science budget and the then Chancellor chose to ask the research councils to give priority to £67 million-worth of initiatives. In so doing he stressed he was anxious that responsive mode funding should not suffer in any way, and indeed a considerable amount of the £67 million was given to extra responsive mode funding in particular areas chosen by the councils—chemistry, immunology, physics, mathematics. The ROPA scheme itself is entirely responsive, entirely blue skies, so if you examine the numbers the word "distortion" is totally inappropriate.

Chairman] I think we should move on now to the science budget.

Lord Gregson

31. I might say as an engineer that I have considerable sympathy with the move to the DTI, but I think it does raise a number of questions or rather doubts in people's minds, some of which, Secretary of State, you have referred to in some of your comments, but can I state them. There is considerable concern about the balance of funding between basic and applied research. There is also the question whether the science budget will be subsumed into the general DTI activity, which is obviously exercising people's minds. There is another problem which applies with this question of funding and that is the devaluation of sterling and its effect on our major programmes in Europe, which I noticed this morning has been estimated at a negative £70 million, which rather makes the £150,000 for ROPA a bit dicey. We have had this problem continuously, of course, it is now becoming very serious and there is an enormous debit to be made up. I know you are very near the Budget and there are problems from that point of view, but I think some words of assurance from you might help my sympathy along a bit!

(*Mr Lang*) So far as the distribution as between basic science and applied science is concerned, it is certainly not my intention, and I hope I made that clear by my initial remarks this morning, that the basic research side should be in any way jeopardised as a result of this. That is fundamentally important and I intend to ensure that that is sustained. So far as the question of absorption of the budget into the DTI is concerned, that will not happen. There will be a separate budget, there will be a separate vote, and it will be easily identifiable. The science budget overall has risen by 30 per cent in real terms since 1979, and now stands at £1.3 billion. Of course I cannot anticipate the outcome of the current public expenditure round, no area of government can be immune from the scrutiny of colleagues, but there is recognition that science is not something you can turn on and off like a tap, and I quote the Prime Minister. Certainly it is my intention that science will fare at least as well as the rest of my budget at the DTI.

32. And my third point? The £70 million which is hanging like a sword of Damocles? The farmers gain, the scientists lose on a devaluation. It is a terribly important issue.

(*Mr Lang*) Yes, I am not quite certain which figures Lord Gregson is referring to. He mentioned a figure of £150 million a little while ago and now he has mentioned £70 million, and I suspect this is to do with the green pound.

33. It is the green pound, yes.

(*Mr Lang*) I think that goes considerably further than the science budget.

34. Yes, but it is the science budget which is the one which always suffers. All the years I have been associated with it, it has suffered from the devaluation of sterling. All our programmes in Europe are not in sterling.

(*Mr Lang*) Part of our problem is that much of the science budget is pre-committed with the discretion in any one year for it to be limited because of the long-term nature of our commitment, and we are constantly concerned to ensure the money going to, for example, CERN and the Space Agency and other programmes of that kind, is something which achieves value for money and is directed to priorities which we regard as important. Perhaps I could ask Ian Taylor to develop this because he recently attended a meeting in Europe in which he had some success.

(*Mr Taylor*) It is a very difficult problem for us because Lord Gregson is absolutely right, devaluation of sterling is a negative in terms of the way we have one budget heading for science expenditure. Other countries, such as Germany, have a different pot from which all their international subscriptions are paid. They are also helped by the fact the Deutschmark has been strong. It is a difficulty and David Hunt did try to deal with it in terms of easing the burden on PPARC particularly with its contributions to ESA and CERN. ESA Council met two weeks ago. We did have a success. I was earlier painted in very black tones by one or two of the journalists—I am not averse to them doing that and I do not find it unexpected—but the reality was that I was not attacking the science programme and research. I regard that as being a very important part of ESA's activities which we could not do ourselves, so collaboration is justified, but what I was saying was that it could be delivered by a much more efficient programme and for less cash. I am delighted to say I convinced my fellow ministers and we have effectively agreed a flat budget in cash terms between now and the year 2000 which will lead to savings which PPARC estimate as about £15 million over that period. That saving of £15 million could have been against a dramatically worse figure if we had allowed the budget to escalate, so the real saving is much greater. The reason is to give PPARC more opportunity for national programmes to take advantage of the subscriptions to the ESA missions. I am attempting to deal with ESA in the way we dealt

Lord Gregson *contd.*]

with CERN and the large hadron collider budget where the Germans and ourselves were very tough on negotiations. We recognise this to be a big problem.

Lord Phillips of Ellesmere

35. There is also the question of the European Framework programmes, programmes from which notoriously the DTI has suffered in the past. How do you see that suffering now being shared with the OST?

(*Mr Taylor*) The suffering to which you are referring is the Euro-PES. I would not want, my Lord Chairman, the Committee's minutes to indicate we suffered in terms of our benefit from the Framework programme where we did rather well, both under the Fourth Framework and the Third Framework before that. We have already started to come up with some interesting ideas which I discussed with Madame Cresson on Monday about what might be the shape of the Fifth Framework programme which we start looking at in detail next year.

36. I was referring, of course, to the diminution in the budget at the DTI's own disposal.

(*Mr Taylor*) I entirely appreciate the point but I did want to get on the record that we are dealing with two different aspects of the problem, the success we have in the Framework programmes and the consequential problem with the Euro-PES treatment within the departmental budgets. I think it is fair to say—and perhaps, President, I could ask Sir John to comment—that you will find that OST always had a Euro-PES calculation and it is not just the DTI, so I do not think the situation is any worse (perhaps I might indiscreetly say "or any better") with the bringing together of the OST and the DTI.

37. I would be interested in Sir John's comments. In my recollection during its days in the DES and the OST, Euro-PES did not impinge in the end very strongly on the science budget.

(*Sir John Cadogan*) I will bow to Lord Phillips' better knowledge. I am afraid I do not know what happened.

(*Mr Lang*) The amounts are more substantial now but it is a matter which will be much in my mind when I negotiate the next round.

(*Professor May*) Perhaps I can say that I think it is unfortunate that there is asymmetry around the table in Europe. For many programmes which everyone would come to with enthusiasm, other players come unfettered by any trade-off in costs, and our approach has to be different. That is not to say that it is unreasonable for the Treasury to do these notional calculations. But it seems to me it would be desirable at least to have all the different European players round the table making the same trade-offs, and that is something for us to talk about in a larger theatre.

Chairman

38. Moving on to funding research councils, Sir John was at pains to explain that ROPA awards were not going to cause distortion, I wonder if he would comment on the plans for an open market in research? Is this going to deprive research councils of funding which they might otherwise make good use of?

(*Sir John Cadogan*) It appears to us that something of the order of £100 million research funding will now be open to other organisations, not industry but other organisations, who will seek to continue to contribute to the strength of the science base, and of course the universities themselves will be strong competitors in that. It remains to be seen what the outcome will be. Our judgment, a collective judgment which has been integrated from research councils' views and from the views inside the OST, suggests that maybe 10, 15 per cent of that might in fact go into these other organisations. So it is not expected to be very large.

39. But 10 per cent, nevertheless, would be of some concern, I would imagine?

(*Sir John Cadogan*) It is essentially 1 per cent, of course, of the total budget.

(*Mr Lang*) It is 10 per cent of 10 per cent.

(*Sir John Cadogan*) 10 per cent of 10 per cent, give or take. We do not think it will be any more than that, but we do not know. There are very important organisations out there, as explained in the document, which contribute greatly to science, and it is perhaps not generally known that research councils already include some of these organisations in their definition of the science base. So it is really recognising the reality of what happens. There is not a major shift from where we are now and I certainly would not wish to see any distortion. It was ruled out very early on, for example, that one would rely on the industrial sector to have a major part in protecting our science base. This was completely ruled out because, of course, industries have a different agenda, they are on a different mission.

Lord Dixon-Smith

40. I can understand that this move, so to speak, changes the route by which the funds are dispersed but presumably it does nothing to enlarge the pool of ultimate recipients? Presumably that remains more or less the same, it is just the route the money takes which is different. It might change the destination of a particular block of funds but the actual total pool is the same.

(*Sir John Cadogan*) The total pool of funding will be the same.

41. It is the recipients I am talking about. Do you expect this to bring new players into the field?

(*Sir John Cadogan*) I do not expect a large number of new players to come in. If I may say so, it had never been previously defined. It was known if you were inside, if you were in the knowledge net, that certain institutions were applying and getting support, and what we have done here is to make it open so that people know who exactly can get a grant. The assumption is that all the people who are now in were not in before, but most of them were.

Lord Phillips of Ellesmere

42. Will what were the old research associations, now embraced within AIRTO, who have long been under the umbrella of the DTI, be part of the organisations now eligible for grants?

(*Sir John Cadogan*) The people who will be able to compete for support of the science base are the universities and academic analogues. Research council establishments, no; government research establishments, no; United Kingdom charity laboratories, no; ex-GREs, no; RTOs, no. The only people who can apply for funding to support the underlying capacity of the science and engineering base will continue to be the universities. To support strategic research, where you have a directed programme (for example you may have a directed programme on how to combat AIDS, shall we say) the research councils would not want to be inhibited by only putting funds into the universities. In those circumstances research council establishments will qualify, government research establishments will qualify, United Kingdom charity laboratories will qualify, AIRTO members will qualify, ex-GREs will qualify, but industry would not qualify.

Chairman] Can we move on to the efficiency scrutiny.

Lord Craig of Radley

43. The efficiency scrutiny of the public sector research establishments caused quite a lot of concern in some sections of the scientific community, and we certainly in taking evidence were made very clearly aware of those concerns. The various concerns were against the background that a good deal of progressive and evolutionary changes have been taking place. There was this 90-day review which many felt was superficial and snap, but nevertheless I think all of us understood the need for a look at the spending to ensure one was getting good value for money. What I find interesting now is that perhaps it was superficial and snap because it is becoming necessary to do further reviews which are going to run for a 15 month schedule. As the Royal Society says, are we resisting the temptation to pull up the plant to examine its roots too frequently? I would like to hear how you react to those types of comment.

(*Mr Lang*) One should not see the review which has taken place and the reviews which are about to follow as being a repeat of the same. The first was a broad, general review; what is to follow now is a specific research establishment orientated review in each case. Can I start, my Lord Chairman, by thanking the Committee for its very useful report on the scrutiny. We were anxious to consult as widely as possible before deciding how to proceed and we had a great many contributions, but I think the key message of our response was the importance of co-ordination and co-operation between Government departments and research councils and between research establishments and academia and industry. Something like one-fifth of public funding for science is spent in the establishments covered, so it is important to make sure the money is spent effectively. There were a few nuts and bolts recommendations of some considerable value to improve co-operation and co-ordination, but the importance of taking strategic long-term decisions about the individual establishments was of course a central outcome. We now move on to this more detailed review on an establishment by establishment basis. I see that as a degree of progress from the initial report rather than a repetition of it.

(*Mr Taylor*) There are quite a lot of new ideas we might come up with in this review. How co-operation between various establishments can be improved or rationalised. I think the sensational headline in the *New Scientist*, "Death by Reviews" is exactly that, sensationalist; I do not think reviews should be regarded as other than being a prudent way of looking at what Ian Lang has said is a way of spending quite a lot of the Government's money.

Lord Phillips of Ellesmere

44. Contract research staff is an issue, as you know, this Committee has paid some considerable attention to and it is perhaps a little unfortunate we reported at roughly the same time as the draft Concordat appeared. I want to emphasise that it is still in fact, as I am sure you are aware, a draft Concordat between the research councils, the Royal Society and the CVCP, and we are a little concerned to what extent the standards set out in the Concordat will be implemented by universities, the universities being free agents, autonomous bodies. How do you see the universities complying with the Concordat, is the first question? The second is, to what extent will your Department and others across Whitehall facilitate the implementation of the Concordat by providing the necessary additional funds which will be needed to implement some of its recommendations?

(*Mr Lang*) I acknowledge this is an area of concern and in recent years there has been a rapid increase in the number of research workers employed on short-term contracts. It has not been, however, a switch from long-term to short-term so much as an addition to the overall total of short-term researchers. So far as the Concordat is concerned, it was issued after consultation the day before your Sub-Committee agreed its report and therefore you were not able to take account of it, but it is still under development. I will ask Sir John to say a bit more about it.

(*Sir John Cadogan*) On how far we have got, Lord Phillips is quite correct it is a draft and many individual bodies with their own royal charters are involved. The stop press is that in the last day or two the key individuals in the CVCP have accepted the draft with one or two small alterations, so a major step has been taken. Now it has to go to the full council of the CVCP who will want to consult their constituents, so it is moving forward really quite well. The CVCP are key players in this, as Lord Phillips has said, because at the end of the day they are in most cases the employers of these short-term contract workers, and since they are the employers they call the shots. What we are trying to do is to make sure we have complete uniformity across the whole area so the rights and indeed the parentage of short-term contract workers are looked after. It is obvious that we cannot have a situation where every short-term contract worker becomes converted overnight to a full-time research worker with 50 years' tenure because that would stop research. But we have to make sure we do not have any unfortunate situations where people are moved from

Lord Phillips of Ellesmere *contd.*]

one short-term contract to another and always start at the beginning and where there is no parentage, no concern at all. I am bound to say that there is little evidence that there is widespread abuse, there is concern that there might be but there is very little evidence there has been abuse; but undoubtedly in certain cases better practice could be more uniformly achieved. So I think the progress is good and we expect to perhaps finish it off in the next couple of months.

45. When you say, Sir John, that the CVCP are in the end the employers—

(*Sir John Cadogan*) Most of them.

46.—it is really the members of the CVCP who are the employers and a collective decision by the council of the CVCP has seldom in the past been regarded as binding on the individual members, and that is I think a considerable concern.

(*Sir John Cadogan*) Lord Phillips, as always, is absolutely correct. It is the Committee of the Vice Chancellors and their constituent members who have still to be consulted.

47. The other point I would wish to make is that the House of Lords report, and I was a member of the Sub-Committee that was engaged in that and Lord Dainton deeply regrets he cannot be here today to speak to it, did in some respects go further than the Concordat yet goes. For example, we recommended that contract research workers as they are called should not have lower status and privileges than the established staff, as they usually do in universities. Again we get back to the point how one constrains these autonomous universities to behave differently.

(*Mr Taylor*) If I may respond to Lord Phillips, my Lord Chairman, it would be awful if I said we should try and direct universities to do certain things, that would cause all sorts of other investigations by other Select Committees, I am certain, and we have no intention of doing that. The problem, however, does remain that any Concordat ultimately has to be interpreted by the individual universities and some of them are doing extremely well. Warwick, University College London and Leeds as well have taken quite responsibly the idea of attempting to move beyond the contract research stage to a longer contractual period, and maybe they will be bench-marks so that other universities will try and follow suit. The best universities are concerned about the problem. It is important, however, to make it clear that there is nothing wrong with contracts or short-term contracts as such, and some of our best researchers will start there. It is some of the unnecessary uncertainties which we are attempting to deal with. I noted in the report your Sub-Committee came forward with (and I replied to Lord Dainton) two-thirds of its recommendations did apply to the universities and the way they would manage this problem themselves.

(*Sir John Cadogan*) Lord Phillips mentioned that your report went further in many respects to make sure we do not disadvantage staff. I would have to go back and look at the words very carefully, but I think the Concordat does go a considerable way to meeting that point. Paragraph 3 of the draft of June 23rd, which I have before me, says: "Rewards and other terms and conditions of service for contract research staff, for example rates of pay, provisions for leave, sick leave, pensions, access to facilities, should be in line with those for established staff, thus avoiding the tendency for contract researchers to feel isolated from and disadvantaged in relation to those groups of employees. A key element is the assurance of equal opportunities and the elimination of practices linked to the short-term nature of contracts which indirectly discriminate against women in science: maternity leave and pay provisions for contract staff should be in line with the provisions of established staff subject to the fixed term contract." So I do not think there is any difference in intent between the reports.

(*Professor May*) Can I offer two thoughts by way of an over-view on this, drawing upon experience in another country? For eleven years I was responsible for the management of the research and technical staff, two different kinds of people who make a career on short-term contracts, at Princeton University. I would say first that one should recognise that much of the North American scientific enterprise is managed in a way that we are feeling our way towards, and it is none the less successful for that. Having said that, I think the Concordat and your report make a good beginning but there is yet more that in my personal view—which I possibly should not be airing—we could be doing. I fully agree one needs structures which recognise that the research staff should not be seen as second-class citizens even though they themselves—in the nature of human institutions—see themselves as that. The way in which you create the fiscal incentives of managing properly can have an influence on how well the university, how conscientiously the university, does it, without interfering in their internal affairs other than by the machinery by which you put money in. Finally I would say that the problem with short-term contract research staff is in my opinion a much more richly textured problem than is often discussed. At one end of the spectrum there is a small number of people, though vastly disproportionately important people, who are the wonderful young men and women who have the Royal Society University Research Fellowships, the Research Council Research Fellowships, Wellcome Fellowships, which provide support for up to ten years. These Fellowships provide an excellent foundation for a career. It is like the North American assistant professors, but freed from being low on the totem pole and disopportunately burdened with all the teaching and administration: most of these people do, of course, take on a degree of teaching and administration, but they do it of their own volition. So that is a small but disproportionately important number of people for whom I think there is no problem to be solved, but rather something to be proud of. Then we elide into the larger mass of people, and even there I see a structure between the research staff career and the technical and other support staff career. In summary, I think we are making a very good beginning on moving more to a structure that has served the United States extraordinarily well for 30 or 40 years.

Lord Haskel

48. Continuing along this matter of short-term contracts, presumably it is also a matter for the funders because the funders presumably are concerned about getting value for their money, and I wonder if you have any suggestions as to what they should be doing to improve on the quality and the amount of work which is being done?

(*Professor May*) I see the way to manage these careers as recognising that, in a large institution, there will be at any one time a large number of people each on a specific research contract; that is in the nature of the thing. People have to keep applying for grants and contracts, and doing good work, as one person leaves or moves on. Again I speak personally, there needs to be some sort of shadowy tenure bar, probably some time in the mid-30s, at which you incur an enduring obligation to people, so if their particular sponsor or even their sponsoring department no longer has support for them, the university is obliged to seek support elsewhere. By splitting down the costs of this—the cost of supporting someone between grants sometimes—between departments and central administration, with central administration paying these costs if departments manage well, but with costs devolved upon departments otherwise, one can provide incentives to departmental heads and vice chancellors to manage the system well.

49. Are you suggesting this should be a condition that funders should impose when paying for contract research?

(*Professor May*) I am suggesting it should be part of our thinking at the level of university departments, university central administration, individual research and funding councils and OST: Everybody should be engaged in this just as in the Foresight exercise.

Chairman

50. Can we follow that up specifically now with the Department of Trade and Industry which is of course a funder of work in universities? Would you be prepared, when asking for tenders for work, to specify that the terms of the draft Concordat must be adhered to in all respects?

(*Mr Lang*) I think it is probably premature, my Lord Chairman, to answer that question since we are still consulting on the draft Concordat. Certainly on the one hand we have pressures on us from all sides on the use of resources and an obligation to get the maximum benefit, and on the other we have an obligation to seek to govern by example.

51. But this, if I may say so, is a rather disappointing example. I take it further and say that now you are the lead minister for science matters you will also be wishing to influence your colleagues in other funding departments. What example are you going to set them?

(*Mr Lang*) I was about to continue by saying that I hope the pressure to govern by example would be the one which would prevail. I anticipate that is the most likely.

52. I would have to say, just to put it on the record, that had the Committee had an opportunity to look at the draft Concordat, which of course we were not able to by the timing, we would alas have been critical of it. We would have said that its aspirations were not high enough and did not deal adequately with the issue of privileges and esteem in which some of these short-term workers are held, which is why on Professor May's observations, about which he knows very well from his experience in America, I wonder if we are comparing like with like. I suspect, although Professor May can correct me if I am wrong, that with some of the excellent short-term contract work he was speaking about the contracts which apply there are very different from some of those which apply in our own universities.

(*Professor May*) They are not so very different. The management is there.

53. Then we would be critical of America as well as us.

(*Mr Lang*) We would certainly wish to take account of your comments, my Lord Chairman.

54. The time is past 12 noon and we said we would try and complete by then. Unless there is any other burning issue any of my colleagues wish to put to you, can I thank you, President and Mr Taylor, Professor May and Sir John for the patience with which you have answered our far-ranging discussion. We have found it very helpful and I might come back to you in writing on one or two further points, but thank you very much for the way you have helped us today.

(*Mr Lang*) Thank you very much.

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