The Save British Science Society

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A Higher Education Policy that ensures the health of the UK's science and engineering research base

SBS response to the Department for Education and Skills' consultation on Higher Education Policy

1. SBS is pleased to submit this response to the Department for Education & Skills' consultation Higher Education policy. SBS is a voluntary organisation campaigning for the health of science and technology throughout UK society, and is supported by 1,500 individual members, and some 70 institutional members, including universities, learned societies, venture capitalists, financiers, industrial companies and publishers.

2. This response follows a memorandum to the Secretary of State for Education, setting out some initial thoughts[i], and meetings with the Chief Secretary to the Treasury and the Prime Minister's Policy Directorate in December 2002.

3. We start by challenging some of the key facts in the consultation document, and then answer some of the more important of the document's 57 different questions.

4. While SBS appreciates the importance of this consultation, and while we are therefore prepared to do our best to submit a full response, we note that there is no official deadline for responses, so we are forced to assume that responses must be submitted before the Christmas period if they are to have any realistic chance of feeding in to the policy process that will produce a final document in January. For a consultation of this magnitude, this timescale is far too short, and breaks Cabinet Office Guidelines on consultation procedures.

Challenges to the "key facts"

5. SBS thoroughly approves of moves in recent years to base policy more firmly on a factual and analytical footing. Evidence-based policy-making led not only to the success of the Roberts Review of scientific personnel[ii] but also to the uncovering of a funding gap by the Cross-cutting review of science and research.[iii]

6. But we are concerned that some of the "key facts" in the consultation document represent a poor basis on which to build policy. We doubt whether some of them might properly be called facts, while some are unquestionably too simplistic to be useful.

PURPORTED KEY FACT: Part 1 of the consultation says "Britain has produced 44 Nobel Prize winners in the last 50 years".

7. While it is true that Britain has a good record of producing Nobel Prize winners (and achieving other indicators of scientific success), that record of achievement has declined in recent decades. Between 1940 and 1980, scientists working in the UK won, on average, one Nobel Prize for science (or share of a Prize) every year. Since 1980, UK-based researchers have won one only Prize (or share of a Prize) every 2.2 years.[iv]

8. Moreover, in the context of the current review, which is about universities, it is worth noting that ***none*** the last five UK-based scientific Nobel Laureates has been based in a university – they have all worked either in Research Council laboratories or in the charity sector.

9. Given the relative size of these sectors[v], this is a depressing fact for the universities. It appears that, while some indicators (such as citation rates[vi]) may suggest that the ***average*** quality of UK research is rising, the ***peak*** has been squeezed out of the university sector.

10. In addition, it is worth noting the Nobel Prizes are awarded a good many years after the work was done, and research carried out with infrastructure that received investment a decade or more ago.

PURPORTED KEY FACT: Part 1 of the consultation repeats the often-quoted statistic that "with 1% of the world's population, British research has over 9% of citations in the world's scientific publications".

11. These figures are interesting, but they are out of date. They were calculated and published in 1997, and cover papers published up to and including 1994.[vii]

12. Since there is a time-lag between submission of work to a journal and its publication, and since this follows another period during which experiments are being analysed and written up, the bulk of the most recent scientific research included in the analysis was probably conducted more than a decade ago. Furthermore, since most research projects take several years, and do not start until some months after the decision to award a grant, and since grant applications take months to prepare and assess, it is probably true this citation analysis is examining work that was based on ideas the overwhelming majority of which were generated no later than about 1987.

13. Given that the earliest papers included the sample were published in 1981, they describe work that was conceived in the mid 1970s.

14. Unless these figures are updated, and the temporal trends described, they no longer represent a sound basis for discussion.

PURPORTED KEY FACT: Part 7 of the consultation states, as Ministers have done frequently in recent weeks, that a graduate has a lifetime expectancy of an additional £400,000 in earnings over a non-graduate.

15. There are at least five reasons to cast doubt on this "fact" as the basis for policy development.

16. First, scrutiny of the Department's calculations reveals substantial flaws in the methodology, including no statistical weighting, and the exclusion of part-time workers.[viii]

17. Second, insofar as it has any meaning, the figure refers to existing graduates, including those who graduated many years ago when participation rates were low (and expected benefits consequently high), not to those who will graduate in the future.

18. Third, as a basis for policy-making, it assumes that any extra income is due to the fact of having a degree, disregarding the possibility that some of it may be due to the characteristics that earned an individual a place at university in the first place.

19. Fourth, it assumes that an average (presumably a mean) is a meaningful statistic for the distribution of different salaries included in the sample. It seems likely that this distribution will be far removed from what is statistically known as "normal," or any other vaguely symmetrical curve. Many people, including graduates, earn low salaries, most have middling earnings, and a very small number are paid vast amounts. The latter will drag up the average.

20. Fifth, even if the distribution of salaries can be meaningfully described by a mean or other form of average, "average" people do not exist. Unless the variance in salaries is extremely small, there will ***by definition*** be many graduates whose lifetime earnings are nothing like as great as the simplistic calculation of a "graduate premium" would suggest, just as there will be many whose earnings are even greater. Those graduates whose salaries fall in the bottom half of the distribution are likely to include public servants, including the university lecturers whose poor remuneration is lamented in the current consultation document.

21. In other words, the "key fact" of a £400,000 graduate premium is nothing of the sort, and, in its current form, is no foundation on which to build evidence-based policy. SBS does not deny that graduates probably earn more than non-graduates, but in deciding the proper

balance of funding, it is essential to have credible facts, not sloppy half-truths.

PART 1) Research

Do good research and good teaching go together?

Should we enable more of the best researchers to focus on research, and develop a teaching force for universities, specialising in teaching? Will pressure for such distinctions grow if universities spend more on hiring top researchers?

22. We could enable more of the best researchers to focus on research by reducing their administrative load, by decreasing time wasted on preparing grant applications that have a relatively poor chance of success even if they are extremely good, or by paying the researchers more so that they did not feel the need to attract consultancy and other private work to supplement their personal incomes.

23. Teaching excellence should be rewarded in universities as an important part of a career structure, and as part of a university's and department's portfolio of activities. It may even be appropriate to build up a cadre of people whose job is almost exclusively teaching, for whom research is not a realistic option.

What about institutions with different focuses? Should some specialise in teaching and others in research. Should institutions group together to play to their strengths?

24. There should be no further specialisation on teaching and research than already exists.

25. The approach outlined in answer to the previous question should not be used to create "teaching only" and "research only" institutions. Good teaching is informed by good research and ***vice versa***. The best teachers at university level, even those who do no research themselves, perform best in an atmosphere of discovery, i.e. in departments where the frontiers of knowledge are being pushed back.

26. For the students, it is not possible to gain a full insight into the research process, and hence to gain a proper scientific understanding, without being exposed to first-hand experience of real research.

27. It is the function of a university both to research and to teach, as well as to generate, disseminate and apply knowledge. Even the most exalted of world-class universities in the USA would find it incomprehensible that their best researchers should not also teach.

Do we need better measures for helping students understand the quality of teaching in different institutions?

28. It is unquestionably true that current mechanisms do not provide genuinely useful information. Unlike the Research Assessment Exercise, which (for all its faults) is conducted by outstanding researchers with reputations that command the respect of the community, teaching assessments are perceived as being little more

than a game, with often little confidence in the reputations of the assessors.

Government funding of Research

Is our current level of investment sufficient to enable the UK to remain globally competitive?

29. Not in the long term. Recent increases have been very welcome, and SBS sincerely hopes and believed that the enhanced research budgets of the Office of Science & Technology and Higher Education Funding Councils will pay significant dividends.

30. But the problems, particularly that of capital infrastructure, turned out to be larger than anyone thought, while salaries have slipped further behind the competition. The Joint Infrastructure Fund (JIF) and Science Research Investment Fund (SRIF), although valuable, have not addressed the entire underlying backlog.

31. Moreover, other countries are not standing still. Competitor nations, such as Japan and the USA, and indeed the EU, have cross-party consensuses that public research investment needs to increase. To remain competitive, the UK must stay ahead of the game, not stand still or lag behind. Sustained improvement in the science base will be needed for sustained global competitiveness, and for increases in national productivity.

Are we doing enough to support emerging departments and areas of study, so that innovation and new talent can flourish?

32. Unequivocally no. The only significant public research investment that is sufficiently flexible and free for such purposes is that part of the Funding Council block grants (currently QR funding) that is not taken up in providing basic infrastructure, including human capital.

33. As the cross-cutting review states, and as SBS has shown in detail[ix], there has never been a clear understanding of the balance within block grants between the element for underpinning infrastructure, and the element for discretionary spending on the innovation, new talent, untested ideas that are so crucial to the success of the science base.

34. But the magnitude of demand for funds from the larger, infrastructural, element is determined by factors ***outside the control of the Funding Councils,*** principally by the size of the budget of the OST. This demand has grown faster than the Funding Councils' ability to provide.

35. In 1986, for every £1.00 of investment in directed projects via the Research Councils, the universities received £1.27 from the Funding Councils to cover the various costs encompassed by this part of the dual support system, including the fostering of new ideas. Now they receive 79p.[x]

36. A small part of this shift was a deliberate change in the 1990s, when responsibility for some of the relevant costs was explicitly transferred from the Funding Councils to the Research Councils.

37. The majority of the difference, however, is attributable to an ill-considered policy, on the part of successive Governments, of channeling an increasing amount of the nation's research investment through what is no doubt perceived (incorrectly) in as a more accountable route. The knock-on effects have never properly been considered, but in essence, exceptionable "value for money" has been achieved in the short-term by jeopardizing the longer-term health of the university research base.

38. For all practical purposes, all of the Funding Council investment in research is now used for the role of providing a basic underpinning, and the resources are not really adequate even to this single task. The role of "discretionary funds," in fostering entirely new ideas directed from within individual institutions, has been lost almost entirely.

39. Rebalancing the dual support system – by channelling a greater proportion of total investment by Funding Council block grants - is an ***essential*** part of allowing innovation and new talent to flourish.

Should every university be funded to do research – or should be emulate America where only a minority of universities offer postgraduate research studies?

40. SBS believes that a university, in the true sense of the word, should conduct research, and as we set out in paragraphs 24 to 27, we believe that good teaching is informed by the research process within Departments.

41. However, in the real world of limited resources, we can see the arguments in favour of being selective with research funds, as the current RAE process already is.

42. A significant number of post-1992 universities now have a substantial presence in scientific research, and have been improving steadily through successive RAE cycles. To remove their right to do research now would not only be unfair, it would be foolish.

43. In the 2001 RAE, some 61 institutions had at least one Department (or equivalent unit) that was judged worthy of the highest research rating (called 5-Star). This is symptomatic of the dynamism that is required in a research base, in which institutions can be relegated or promoted according to achievements and potential. It would be disastrous to restrict the number of universities able to conduct research to a small premier league, just as it would be disastrous for football to disband the Football League and lower leagues, leaving the Premier League to cope without its feeder clubs, and to ossify without the pressure of competition.

Is the balance right between research with an obvious benefit to society and the economy, and research aimed at discovering new ideas?

44. All science could potentially feed into useful applications in society and the economy, not just that which has "obvious" benefits. We expand on this point in paragraphs 66 to 69 below.

45. The principal purpose of university research is to generate new knowledge, and the role of funding bodies such as the Research Councils, should be to fund excellent science, whatever subject or area it is classified as, and whatever benefits are foreseen.

46. It was distressing to read, in the press release announcing the allocation of the Science Budget, that the Secretary of State for Trade & Industry perceived the allocations in terms of "the rural economy" and "sustainable energy".[xi] These purposes are entirely worthy, but we agree with some members of the House of Commons Science & Technology Committee that science in these fields is properly the concern of Government departments.[xii] It is a shame that recent years have seen a substantial fall in research investment at the various Government departments.

47. Departments with responsibility for agriculture and the environment, which might properly be expected to conduct research on the rural economy, have seen massive reductions in their research expenditure. Because of alterations to Departmental responsibilities over the years, it is difficult to make a precise determination, but at least £80 million has been cut from the appropriate research budget in real terms since 1986.[xiii]

48. We note that the Government's new science strategy appreciates the need for "enhancing" and strengthening of science in Government Departments[xiv], and await with interest the publication of Department's plans in these areas. If this major problem were sorted out, there would be no need for the Research Councils to pre-empt the scientific opportunities of the coming years, by allocating money in advance to areas that are of direct relevance to policy making.

49. Although SBS believes strongly that the Research Councils and Funding Councils should be funding science without reference to foreseeable economic benefits, we nevertheless strongly support the concept of university research feeding in to a vibrant knowledge based economy. We note that, in his Pre-Budget Report, the Chancellor of the Exchequer set up a review of interactions between universities and industry, and that in doing so, he recognised the main area of concern to be a lack of "demand and capabilities from within business," not a problem with the research base.[xv]

Do business and students contribute enough to research costs? If they contributed more, how would this affect nature of research?

50. The suggestion that students might contribute more to the costs of research seems to us to be absurd, and not worthy of further comment.

51. Business already funds a greater proportion of university research in the UK than it does in any other country. As a percentage of the amount of Government funding, business funding of research in higher education is approximately 10%, compared with 9% in Germany, 8% in USA, 5% in Italy and less than 4% France.[xvi]

52. Moreover, the funding requirements of the latest rounds of Government investment have included the necessity of raising very substantial sums of money in matching funds (something like £325 million over two years in the case of SRIF). Such sums can only legitimately be found from industry, and the proportion of university research funded by business is rising.[xvii]

53. Expecting business to pay for an even bigger proportion of university research is not going to solve the underlying problem that the sector has seen massive underinvestment for at least a decade an a half.

54. However, SBS does support moves towards expecting research funders to pay the full costs of the work they pay for. Government must show a lead, and in particular Government departments must start to pay full overheads. The worst offender in this regard is the European Union Framework Programme, which pays a premium of only 20% of direct costs to cover all the indirect costs (such as lighting heating, and basic infrastructure) associated with a research project.

55. Many institutions, notably universities, believe that accepting EU research grants, rather than increasing their financial resources, actually costs them money. One estimate is that there would be a shortfall of £31,000 for a grant of £120,000, of which approximately half is accounted for by salary costs, and in which £24,000 is the element allocated to indirect costs, with the balance made up of specified, direct costs.[xviii] EU officials continue to state in public that EU funds are designed only to pay for the direct costs of the research in universities, and it is up to the national government to ensure that other costs are covered. A legal officer from the EC was recently quoted as urging would-be participants to remember that EU research funding "is a grant, and supports net costs, but it will not cover all the costs involved in the research."[xix] We fully support the recommendation of the Cross-Cutting Review of Science that the Government should press the European Commission to use a proper system for calculating and paying the indirect costs of grants.[xx]

56. Once Governmental agencies are paying the full costs of the research they commission and support, universities will be in a strong position to demand the full costs of research from industry. It is extremely disappointing that, in the allocation of the Science Budget, no new money at all has been allocated for paying the overheads on Research Council grants until 2005[xxi], despite the Treasury identifying an existing problem of the order of £120 million per year. This will

considerably weaken the position of universities negotiating with industrial sponsors.

57. Businesses exist to make money. If they fund substantial tranches of research, they will expect to fund the kinds of research that, for whatever reason, interests them. Too great a reliance of industrial funding would, inevitably, lead to a distortion of research priorities.

PART 2) Capital infrastructure

What are the pressures?

As equipment becomes increasingly complex, does this strengthen the case for the greater concentration of research infrastructure?

58. In some instances, this is unavoidable. Large pieces of complex equipment, used by huge multidisciplinary teams, are likely to be permanent features of the research community.

59. However, such tendencies must not begin to engulf the entire budget for research. Individuality is important in scientific progress, and there must always be opportunities for lone researchers with maverick ideas that do not fit into the strategy and plans of some larger, complex group.

60. We agree with the Medical Research Council that it is important to "encourage emerging groups and centres...through offering development grants that help new groups establish Co-operative Group or Centre status, strategic grants in priority areas for development, and career establishment research grants for newly appointed academics."[xxii] However, not all good ideas come from newly appointed academics, not all breakthroughs come in what were previously perceived as priority areas, and not all innovative science is done by co-operative groups.

Could there be greater pooling between universities to share support services?

61. There ***could*** be, and SBS would support the idea that students and researchers in less well-funded institutions might be given access to underutilised equipment in better funded ones. But almost all of the Government funding mechanisms at the moment encourage competitiveness among institutions rather than collaboration.

62. SBS wholeheartedly supported the idea that collaborative applications for SRIF funding did not require matching funds, partly because it encouraged universities to work together.

63. Unless funding mechanisms start to build in more incentives for collaboration, it is difficult to see how the sharing and pooling of equipment can become a reality.

Who should pay?

Do universities give enough priority to funding infrastructure? Is it right to give universities the choice about how much funding to devote to infrastructure?

64. In general, it is always right to give universities the choice about how to run their affairs. As the former Education Secretary Kenneth Baker said in the House of Lords recently: "We [the members of the former Conservative administration] interfered too much in the universities – mea culpa, mea culpa – but what we started, the [current Labour] Government have perfected. Please let the universities run their own affairs. My old department [now the DfES] cannot run the universities better than they can run themselves".[xxiii]

65. Many of the problems of recent years have come about because Governments have, either explicitly or implicitly, told the universities to invest too small a proportion of their money into infrastructure. The figures quoted in paragraph 35 show that an increasingly large proportion of the universities' research funding has come in the form of research grants, which do not pay the full indirect costs of the work, and make no contribution to the basic infrastructure.

In reducing the funding backlog, should the priority be on improving the worst estates or funding ones that will bring the most benefit to the economy and society?

66. The fallacy that we can predict which research will bring the most benefit to society is at the root of many of the problems that have been suffered by UK science in recent years.

67. When, in the 1970s, Köhler and Milstein solved the problem of how to make specific, known antibodies, they were "attracted to the puzzle" with a "fundamental emphasis". Their work is now worth billions of dollars a year worldwide. When Einstein studied how gravity affects time, he was apparently performing some of the most "useless" research of all time, but it became the foundation on which atomic clocks were based, and they are also worth billions of dollars a year.[xxiv]

68. The Government should stop trying to predict what will be useful, and concentrate on work of the highest scientific quality, and work that shows the potential for future excellence. This should be the ONLY criterion for determining where to put scarce resources into research in the science base.

69. Other funds, for knowledge transfer and other entrepreneurial activities, are welcome and necessary, but these activities should not be determining which research is at the front of the queue for investment. Knowledge transfer follows good research.

Do we need incentives for private gifts and endowments to help fund infrastruture, or does that distort too greatly the purposes for which universities can use their funding?

70. Private gifts are of relevance only once the basics are in place, and at present, it seems unreasonable to expect such gifts to bail out a sector that has been underfunded for decades. In the longer term, such incentives would be welcome, provided the gifts were considered as extras, not as the basic core, which Government should fund.

PART 3) Access and expansion

Expansion

Will the demand for graduates (and the graduate premium) hold up through further expansion? How can we make sure that standards are maintained as the sector expands?

71. Predicting the demand for graduates is impossible, but it is a reasonable bet that the future economy will retain a high demand for highly skilled, highly trained workers.

72. Nobody knows the magnitude of the current graduate premium. As paragraphs 15 to 21 explain, the figure of £400,000 over a working lifetime cannot be treated as a serious contribution to the debate. Nevertheless, few people doubt that graduates do indeed earn more than non graduates at the moment. While nobody can be sure, it seems astonishingly unlikely that, in thirty years' time, when half of all sixty year olds have a degree, these sexagenarian graduates will enjoy the same salary differential as the current cohort.

To what extent should any future expansion focus on applied and sub-degree programmes like foundation degrees, rather than traditional 3-year honours degrees? Will this draw from the same skills pool as other programmes?

73. In any market, a variety of products is a virtue, but it is up to the customer to determine which products are worthwhile. All previous attempts artificially to stimulate demand for sub-degree programmes has failed to meet the demands of either student nor employer. Students want a "proper" degree because that is what employers have increasingly demanded. Despite its many faults, the HND was seen by students as being a second chance route to a degree. Rather than invent more, meaningless sub-degree qualifications, Government might consider encouraging the development of genuine and meaningful national credit accumulation schemes. Part of such provision might be to provide more practical, skill-based learning, but should also include work-based commercial or industrial experience.

Fair access

How much does the access problem lie in students' prior attainment at school or college or their own aspirations?

74. A great deal depends on the preparation students make at school. Schools that achieve high exam results and coach their students in interview techniques are bound to get more of their alumni into the best universities than schools that struggle in more difficult conditions.

75. Universities do not actively discriminate against particular social groups; they simply choose the candidates most likely to do well from among the pool of applicants. Unfortunately, unfairness lower down in the system, means that the distribution of such candidates within that pool is skewed towards the middle classes.

76. This does not mean that the universities are perfect, merely that the educational system must be seen as a continuous process, not a series of discrete stages that are not linked to one another.

How significant is student maintenance funding in helping to solve access problems, given that universities were still middle-class when grants existed?

77. The reasons why universities were largely populated by students from middle-class backgrounds even in the days when grants were available may have had nothing to do with the financial arrangements. If a lack of aspiration and poor prior educational achievement are currently major parts of the "access problem," as the previous question proposes, then it is likely that they were just as significant in the past.

78. However, research conducted more recently shows that attitudes to personal financial circumstances do appear to be barriers to young people in some groups from taking advantage of a university education.

79. More than two third of black students, and an equal proportion of students from less well-off backgrounds say that their friends have been deterred from applying to study at university because of changes in student funding.[xxv] We believe that in this, the up-front payment of fees and the prospect of the accumulation of a substantial debt are likely to be key factors.

PART 4) Independence at 18 and investment in the future

Adulthood

Does the focus of our current student finance system on a student's parental income rather than his or her own later earnings discourage students from thinking about a degree as a long-term investment?

80. This is the kind of question on which SBS's opinion, or anybody else's opinion (including the Government's), is irrelevant in the absence of any actual evidence. But it must be recognised that students already, if unwittingly, make a large investment in their education in both time and loss of potential earnings.

Independent choices to invest in the future

If it is a question of risk, how can we make the benefits clearer and help then to make well-informed, independent choices? Are poorer students more reluctant to take out loans?

81. How can the choices be "independent" if the question presupposes one particular outcome is the best – i.e. that more young people take the risks of getting into debt. Students may "independently" choose to disagree.

Is this made more or less difficult by the fact that at present the price tag for every HE course is the same, but the benefits can be very different?

82. It should be born in mind that there is no close correlation between price tag and financial benefits. Some courses which are cheap to teach (e.g. law) can produce the greatest rewards. Others

that are expensive to deliver may give their graduates the lowest earning expectation (e.g. biology).

Should paid work experience be accepted as a fact of life – and be better structured – or does it mean students can't focus on their studies?
83. It obviously means that conscientious students cannot focus as fully on their studies as they might like, but we doubt whether, with very high participation rates in higher education, it can be avoided for many students. There is of course the danger that students will choose to study those subjects that apparently give them more time for money-earning activities – this will militate against science and engineering subjects which have traditionally required far greater direct study contact time from students than other subjects do.

PART 5) Human resources and human capital

Pay and professionalism

Can UK universities pay enough to attract the best staff?
84. No. There is a plethora of evidence that salaries in UK Higher Education are far too low, some of it summarised in SBS's ***Agenda for the Next Five Years,*** a copy of which is attached.

85. A national survey two years ago showed that more than half of universities have left scientific posts unfilled because they could not attract anyone of the right calibre, while more than one third had actually employed someone who, in the past, they would not have considered good enough.[xxvi]

86. This question has already been answered by the DfES, Treasury and DTI, in the Cross-Cutting Review of Science, which recommended a policy of introducing an additional "ring fenced sum for academic pay," because "academic pay needs to be related more closely to market forces if the UK is to maintain its leading position".[xxvii]

87. SBS assumes that this issue has now been settled, having read in the press that "[a]cademics are set for a three-year catch-up pay deal as a result of a £1.5bn funding boost for universities to be unveiled next month," after the Prime Minister said that university lecturers were "probably the worst-paid workers in the public sector".[xxviii]

88. If this happens, and universities become attractive employers for scientists and engineers, industry will have to compete by offering better remuneration than at present. This will create extra demand, and generate a virtuous circle to replace the current spiral of decline.

Do universities have the right career structures to promote the brightest academics quickly?
89. Yes, but they do not have the money.

Different roles

How much do staff:students ratios matter at universities, given that most subjects mix large lectures with smaller tutorials? Does the change in

staff:student ratio represent better value for money or a decline in standards?

90. This question seems bizarre. In assuming that most subjects offer smaller tutorials, it assumes that there ***must*** be a high ratio of staff to students (small group tutorials are simply not possible unless staff numbers are high enough). We agree that this is the ideal to which the Higher Education should aspire, and believe it means that the ratio must, in the word used in the question, "matter". Twenty years ago, a group of three would have been considered a small tutorial group. Today, because of resource constraints, a tutorial group of 25 might be considered normal and one of 15, small.

PART 6) Freedom and accountability

Accountability to students and the wider community

Should universities build better and closer links with schools – perhaps through students volunteering, or through academics working in a certain subject supporting teachers in that subject?

91. SBS advocates better links between schools and universities, and has called specifically for school teachers to be afforded opportunities to spend sabbatical periods in universities, and that university scientists should be allowed and encouraged to spend time in schools. We have also advocated closer links between postgraduate teacher training and postgraduate research programmes, to allow for easier crossover for doctoral graduates wishing to become teachers.

92. However, extra demand on universities must be properly costed and funded. It would be totally unacceptable to expect hard-working university staff to take on extra responsibilities without the universities receiving the resources to compensate.

93. If students are to be expected to accept paid work as a fact of life, as a previous question implied, then it is unreasonable to expect them to take on a substantial amount of unpaid volunteering as well. Going in to schools would have to be remunerated at a similar rate to the kind of part-time work that students might otherwise take.

Management and Governance

Do they have too little – or too much – freedom over audit issues? Can we be sure that the taxpayer's £5bn is being well-spent?

94. It is difficult to imagine that there is any other public expenditure that is as heavily accounted as university research expenditure. Not only are individual projects scrutinised in advance, the results are scrutinised again and placed in the public domain when they are published, after which the entire corpus of work of each department is again reviewed in great detail in the RAE in a process that takes hundreds of people a whole year every five years.

95. But the real key fact is that the Organisation of Economic Co-operation and Development estimated earlier this year that, in the UK, the annual return on taxpayers' money invested in higher education is 13.6% for women and 15.2% for men.[xxix] These figures are higher than

for ***any*** other industrialised nation, including all six of the other members of the Group of Seven.

96. Put simply, there can be no question about it - the taxpayer is getting ***exceptional*** value for money from the investment made in the universities.

PART 7) Funding and Finance

Who should pay for HE teaching?

Who derives most benefit? The nation as a whole benefits from having well-educated graduates, but graduates and employers get a disproportionate personal benefit – where does the right balance lie?

97. This question has answered itself – wrongly. The assumption that graduates get a "disproportionate" benefit is not true. The OECD estimates that the UK taxpayers' return on investment in higher education is very similar to the private return for individual students. The private return is 16.25% (averaged over men and women) and the taxpayers' return 14.4%.[xxx]

Paying for what you get

When should fees be paid – up front as in England and Wales or after graduation as in Scotland?

98. We understand that this matter has already been decided. The Prime Minister told the House of Commons at the beginning of December that the results of the current review "will not mean that parents will have to pay thousands of pounds in up front fees"[xxxi] and the Education Secretary confirmed this in a radio interview the following week.[xxxii]

Would differential fees produce more discerning customers – and create a vibrant market in HE – or would many students settle for cheaper courses of a lower standard?

99. There seems little doubt that students with an aversion to debt would avoid expensive courses. Evidence from the DfES suggests that young people from some groups are deterred from pursuing the opportunities of higher education because of the current student finance arrangements[xxxiii], while a recent survey has shown significant aversion to debt on the part of students from those backgrounds traditionally under-represented in higher education, such as ethnic minorities and those from "the lowest social classes".[xxxiv]

100. Differential fees would make these students even less likely to study the sciences or engineering than to study cheaper subjects. When a plumber can earn £70,000 a year, how is it that a potential science student, who might end up earning only half this amount, will be persuaded that he or she will have a lifetime earning advantage sufficient to justify the significant financial investment in studying at university?

PART 8) Higher Education in the economy and the regions

What should we want HE to contribute to the economy?

Who should drive links between business and the HE sector? Or can it be a wholly equal relationship?

101. Across the board, if it is not (on average) an equal relationship, either the business is improperly taking advantage of the university, or the business is allowing itself to be taken advantage of, in which case it is sufficiently badly run that it is probably not a worthwhile partner anyway.

How do we make sure that HE services employers' needs better while safeguarding research which might lead to new discoveries or real long-term social benefits?

102. Safeguarding the research which might lead to new discoveries is easy, and can be achieved if three things are true, namely

(i) the Funding Councils and Research Councils should be well funded

(ii) the Haldane Principle should be rigorously applied (i.e. there should be no political interference in which science is funded by the Councils) and

(iii) the balance between the two parts of the dual support system should allow a proportion of the Funding Council's investment to be available for work variously described in recent Government documents as "at the institutions' discretion," "flexible," "purely curiosity-driven" or in "rapid reaction to advances in a given field".[xxxv]

103. SBS has welcomed recent increases in overall science investment, which take a major step towards achieving the first of these, but as paragraphs 45 to 47 show, we have concerns over the degree to which the second is being eroded, and as paragraphs 33 to 39 show, the third is no longer true and must be reinstated.

104. Employers' needs are nothing to do with this part of the higher education sector, and must never impinge on it.

How do we protect the independence and integrity of universities if they have to rely on business increasingly for sponsorship?

105. It is ***essential*** that we have a strong, broad base of ***public*** support for the universities. Money from business, charities and private gifts should additional to the core of public funding. It is only if universities have to rely on business for the funding of their basic requirements that they risk needing to lose their independence.

December, 2002

Notes and References

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[ii] ***SET for Success: The supply of people with science, technology, engineering and mathematics skills,*** HM Treasury, 2002.

[iii] ***Cross Cutting Review of Science & Research: Final Report March 2002,*** HM Treasury, DfES, DTI and OST, 2002.

[iv] Nobel Organisation website <www.nobel.se>

[v] According the Organization of Economic Co-operation & Development's ***Basic Science & Technology Statistics,*** the UK has approximately three times as many full-time equivalent university researchers as it has charity and Government researchers combined (including not just those in Research Council laboratories, but also those in public sector research laboratories).
[vi] ***RAE 2001: The Outcome,*** HEFCE, 2001 [RAE 4/01].
[vii] ***The Quality of the UK Science Base,*** Office of Science & Technology/Department of Trade & Industry, 1997.
[viii] ***The Guardian,*** 26 November 2002, Education Section, page 14.
[ix] ***Clarity of purpose in assessing research,*** SBS 2002 [SBS 02/20].
[x] ***The Forward Look 2001: Government-funded science, engineering & technology,*** Office of Science & Technology/Department of Trade & Industry, 2001 [Cm 5338].
[xi] DTI Press Release: P/2002/782, 9 December 2002.
[xii] Oral evidence taken before the Committee, 11 December 2002.
[xiii] ***The Forward Look 2001: Government-funded science, engineering & technology,*** Office of Science & Technology/Department of Trade & Industry, 2001 [Cm 5338].
[xiv] ***Investing in Innovation: A strategy for science, engineering and technology,*** DTI/HM Treasury/DfES, 2002**.**
[xv] ***Steering a Steady Course: Delivering stability, enterprise and fairness in an uncertain world.***
[xvi] ***Main Science & Technology Indicators and Basic Science & Technology Statistics,*** Organisation of Economic Co-operation & Development**.**
[xvii] ***Higher Education-Business Interaction Survey,*** HEFCE, 2001 [HEFCE 01/68].
[xviii] Calculation by a senior academic with administrative functions in a UK university.
[xix] ***Malta Independent on Sunday,*** 8 December 2002.
[xx] ***Cross Cutting Review of Science & Research: Final Report March 2002,*** HM Treasury, DfES, DTI and OST, 2002.
[xxi] ***The Science Budget 2003-4 – 2005-6,*** DTI/OST, 2002.
[xxii] Quoted from a letter from the Chief Executive of the MRC to the Director of SBS, dated 20 November 2002.
[xxiii] ***Hansard*** [House of Lords], 27 November 2002, column 856.
[xxiv] For some of the details of these stories, see ***Science Policies for the Next Parliament: Agenda for the Next Five Years,*** SBS, 2001 [SBS 01/03].
[xxv] ***Changing student finances: Income expenditure and the take-up of student loans among full-time and part-time higher education students in 1998/1999,*** DfEE, 2000 [DfEE Research Brief No. 213].
[xxvi] ***Recruitment of researchers in university science departments,*** SBS, 2000 [SBS 00/20]
[xxvii] ***Cross Cutting Review of Science & Research: Final Report March 2002,*** HM Treasury, DfES, DTI and OST, 2002.
[xxviii] ***The Independent,*** 11 December 2002.
[xxix] ***Education at a Glance: OECD Indicators 2002,*** Table A13.4, OECD, 2002.
[xxx] ***Education at a Glance: OECD Indicators 2002,*** Tables A13.3 and A13.4, OECD, 2002.
[xxxi] ***Hansard*** (House of Commons)***,*** 4 December 2002, column 900.
[xxxii] ***Today,*** BBC Radio 4, 12 December 2002.
[xxxiii] ***Changing student finances: Income expenditure and the take-up of student loans among full-time and part-time higher education students in 1998/1999,*** DfEE, 2000 [DfEE Research Brief No. 213].
[xxxiv] ***Universities UK Student Debt Project: Survey of School and FE students' attitudes to debt and their impact on participation in higher education,*** UUK, 2002.
[xxxv] For a round-up of various official definitions, see ***Clarity of Purpose in Assessing Research,*** SBS 2002 [SBS 02/20].