



HOUSE OF LORDS

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Witnesses: Professor David Delpy and John Armitt

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Members present

Lord Krebs (Chairman)
Lord Broers
Lord Crickhowell
Lord Cunningham of Felling
Baroness Hilton of Eggardon
Baroness Neuberger
Baroness Perry of Southwark
Lord Rees of Ludlow
Earl of Selborne
Lord Wade of Chorlton
Lord Willis of Knaresborough
Lord Winston

Examination of Witnesses

Professor David Delpy, Chief Executive, EPSRC, and **John Armitt**, Chairman, EPSRC

Q1 The Chairman: Thank you very much indeed to Professor David Delpy and John Armitt for coming to join us for this session and for agreeing to give us oral evidence. You will be aware of the issues that we wish to discuss with you and I would like to invite you, in a moment, to introduce yourselves for the record. The session is being webcast and you can see the broadcasting sign on. You are both familiar with this process—sotto voce comments and asides will be picked up by the microphone, so be warned. For the members of the audience, normally we would have a sheet with the declared interests of the Members of the Select Committee in relation to this session. Because it was arranged at short notice we do not have that and, therefore, as members of the Committee speak for the first time, they will individually mention any relevant interests that they may have in relation to this particular session. Without further ado, perhaps I could invite John Armitt and Professor David Delpy to introduce themselves. If you wish to make any opening statement please do so, otherwise we will move straight into the questions.

John Armitt: Thank you, Chairman. I am John Armitt, chairman of the EPSRC. I have been now for nearly five years; in fact, I am coming to the end of my term. I have done a year over the original four years. Beyond that, I currently also chair the Olympic Delivery Authority and am a member of various other boards of different companies.

Professor Delpy: I am David Delpy. I have been chief executive of EPSRC since 2007 and I think you all know me. I know all of you.

Q2 The Chairman: Thank you very much. I will kick off and, in doing so, declare a number of interests as a fellow of the Royal Society and the Academy of Medical Sciences and as a member of Oxford University. I am not an EPSRC grant holder but have been a holder of grants from other research councils. You will be aware that, because of all the noise in the press and from the scientific community, there are concerns about various policy developments within EPSRC and we wish to explore some of those.

I am going to kick off with your new proposal to assess grants on the basis of national importance as well as excellence. Perhaps you could give us some insight into why you have decided to introduce this dual scoring system, whether it will be used for all research grants, including, for example, post-doctoral fellowships, and how the criteria will be weighted against one another. In your criteria for excellence you have “outstanding”, “excellent” and “sufficiently excellent”. Perhaps you can also give us an indication of what those mean. Professor Delpy, perhaps you could start off by describing some of those issues.

Professor Delpy: Thank you. I must admit I do not recognise the “sufficiently excellent” comment. We have—

The Chairman: Outstanding and excellent.

Professor Delpy: Outstanding and excellent.

The Chairman: If you can tell us about that.

Professor Delpy: Right. The reason why we have introduced this question of national importance is that, as we set out very clearly in our strategic plan and then subsequently in the delivery plan, council had decided, quite rightly, that, given the current level of funding, it was not possible for EPSRC to fund all the research that it currently did—and this is back in 2007—at a level that would maintain the UK at an internationally excellent level across the board. We were going to have to do some prioritisation. We were going to have to focus in areas where we felt the UK had a real lead, where there were potential real benefits for the UK, where the UK was, in fact, setting the agenda in the research portfolio.

We then decided that, although excellence is the primary criterion—and John and I reiterated that for the community in the letter that we recently sent to *Nature*—in addition to excellence where there have always been a series of secondary criteria that panels use, we would introduce the criterion of national importance. We always had a criterion, of course, of importance. We have always asked referees to comment on the importance of the research that is being asked and, in fact, the applicants, in their initial application, identify the importance of the work. A large part of those descriptions are based around what is effectively national importance. I would argue that this is not a significant change. It is making more explicit something that was largely implicit in a large part of the grant applications that we both invited and processed.

Q3 The Chairman: Can I just come back to you on that? Referees are asked to identify the national importance of a piece of work. It seems slightly odd to me in that science is inherently international. It does not make sense to be the best chemist in Yorkshire or the best physicist in Berkshire. So why national importance rather than international importance? What does it actually mean when you talk about national importance?

Professor Delpy: I think people get a little hung up on the word “national” because the initial criterion is international excellence for the work. If it does not achieve that then we are not going to fund work that is not of international excellence purely because it meets a national priority. But there are specific priorities that the UK has identified as being of importance to itself. The Government, for instance, has set CO₂ targets. Yourself, in that excellent report you produced a week and a half ago on nuclear energy research, said that we need an R&D plan for the period right through to 2025 and 2050.

There are areas where the UK has said it has a specific priority objective. There are certain industries that we believe the UK is internationally leading in and that the research base should be supporting. The pharmaceutical area, which you know a lot about, is often touted as being one of the jewels in the UK’s crown. So there are already a series of national priorities that are, in fact, not incompatible with your question of international excellence. The two are not mutually incompatible.

The Chairman: John Armitt, did you wish to add anything at this point?

John Armitt: I think all I would add is that, in a sense, I do not think we are doing anything particular new in this. Pathways to Impact, which was adopted by the broader research council community, in a sense, lays emphasis on the same points that we are making with national importance. There was no comment about national importance and its impact when we put our strategy out in 2010.

The only thing that has caused the recent comment is because inevitably in a process such as this there are going to be the pleasantly surprised and the somewhat disappointed and, frankly, the somewhat disappointed have made somewhat a large noise. That is life, I am afraid. Not everybody can have the same slice of cake. As soon as you start to apply any criteria then you are going to finish up with some differences. We have not said to anybody, “We are taking all your funding away.”

We have said to a couple of communities that the glide path going forward over the next three or four years will be one that does not inexorably go upwards and in fact it may level off or, in some instances, it will go down. We try and balance the resources we have against these wider criteria, but we have equally made it very clear that research excellence is the fundamental criterion that we wish to see. So this is only one of a series of secondary criteria.

Q4 The Chairman: Let me just come back on that because I am now looking at the FAQ of EPSRC changes to peer review and it says, paragraph 5, “Research quality and national importance will be primary criteria of equal weighting.” That does not seem to fit with what you have just said, which is that research excellence is the criterion and in the margins you might apply national importance as a tie-breaker. Which is it? Is it a tie-breaker, all other things being equal, or is it of equal significance to excellence?

Professor Delpy: I think what you have downloaded there is an old web statement.

The Chairman: Yes, I am trying to look at the date on it. It is from 3 November 2011. So it is old in that it is three weeks old. Sorry, it is out of date—I apologise.

Professor Delpy: I mean what you have quoted is incorrect and I am surprised that it is still on the web, but there may be somewhere on the web still the statement you have made.

Q5 The Chairman: Just to be absolutely crystal clear—as the lawyers say, for the avoidance of doubt—it is not the intention of EPSRC to weight research excellence and national importance equally. Research excellence comes first and national importance is a secondary criterion, which could be described as a tie-breaker. That would be possibly that, if two grants or applications were of equal excellence—if that can be the case—you might look at the relevance to national industrial objectives.

John Armitt: That is absolutely the case and it is exactly what we said when we met with the Royal Society and learned societies several weeks ago.

Q6 Lord Willis of Knaresborough: Are we not really dancing on the head of a pin now? My understanding is that you now have less than the 20% success rate in terms of response. Well, will you tell me what the success rate is?

Professor Delpy: The success rate now is 30% to 35%. If you remember, at the start of the previous spending round, we put in place demand control measures that were aimed to get us up from that 15% to 20%, which we were down to, and we have succeeded in doing that. We currently have a success rate of 30% to 35%.

Q7 Lord Willis of Knaresborough: So two out of three applications do not get accepted—that is fair comment. Can you confirm that the two that do not are also internationally excellent proposals?

Professor Delpy: They have gone through peer review and been rated above the quality threshold. We asked the peer review panel to do two things: one is to rank but also to define a quality threshold below which, even if we had the funding, we would not wish to support things.

Q8 Lord Willis of Knaresborough: My understanding is that the proposals that now get through to you could all be classed as internationally excellent.

Professor Delpy: No, that is not quite true because when they get through to us they have not yet been through peer review. Once they have been through peer review, the ones that have exceeded that quality threshold—

Q9 Lord Willis of Knaresborough: I am not being pedantic here, Chairman, but this is important. When proposals come through to you, have they gone through peer review before you decide which one of every three proposals you are going to grant fund?

Professor Delpy: All grants that are funded have been through peer review. So there will be some that will have come in that have been rejected before they even get to the panel.

Q10 Lord Willis of Knaresborough: I understand that. I am talking about the two out of three you reject. My understanding is that they have been through peer review, they are classed as internationally excellent and you then have to make a decision as to which of the three go forward with grant funding. My question is: if that is the case, is it not the reality that all proposals, therefore, that get grant-aided have in fact gone to the second test—that is, of national importance? Can you tell us whether any that might have been funded are not of national importance?

Professor Delpy: Let me answer the second question quickly, which is no. Unless they are of international excellence, not national, then we will not be funding them anyhow. On the statistic that you are quoting, one-third—or 30% to 35%—of the applications that get to a peer review panel are currently being funded. For all of those that get to a panel, the panel may decide that they do not exceed the quality threshold. The 30% to 35% is of those that get through to the peer review panel stage. Nothing that gets through the peer review panel has not been rated as being of international excellence.

Lord Willis of Knaresborough: But you have confirmed, therefore, my premise that nothing gets through at all that is not of national importance.

Professor Delpy: Absolutely.

Lord Willis of Knaresborough: So I do not know what we are arguing.

Q11 Lord Rees of Ludlow: I declare an interest as an FRS and a member of Cambridge University. Clearly there has been a lot of flak about this. I would like to articulate why I think there has been misunderstanding and flak. Clearly, all scientists want their work to have impact. They will want it to have national importance. They want EPSRC to have the maximum national importance. But I think we all realise that most of the impact is delayed, often by decades, and it is very diffuse and you cannot predict at the level of a single research project what the impact is going to be. Even expert venture capitalists have a hard job deciding on the impact of a piece of research when it has been done.

I think what perplexes people is the requirement that an applicant or referee or committee of academics should be able to identify national importance of a piece of work before it has even been done and, as it says in the first line here, “to clearly identify national importance of the proposed research project over a 10- to 50-year timeframe.” It is an entirely unrealistic requirement and it could be laughed off, but I think the concern is that young people putting in their first grant application would be perplexed and baffled and rather terrified by what they have to do to meet this requirement. I just wonder whether the gains of putting in this requirement are outweighed by the loss and the general bewilderment and discouragement that it is going to instil in young applicants for what has been imposed to pursue excellent work. So it is not realistic to make any projection, 10 or 50 years ahead, of research which you have not yet even done.

John Armitt: I do not think anybody is looking for a precise forecast. We are not. We do not expect it. It would be unrealistic, you are quite right. On the other hand, we have very clear themes. We have clear areas of research. It is a vicious circle this because, in terms of what is of national importance, the same people who are putting in the bids have contributed to the debate about what is of national importance. I mean, we are all asking ourselves the same questions, contributing to it and coming back to the same starting or finishing point.

As far as young researchers are concerned, I have to say this is an area where I feel that the universities do not help. When you say to senior academics, “What are you doing to manage your research community”, by and large the answer is, “Oh, that is a bit difficult,” and almost, “We do not do that.” Frankly, I think that is unacceptable. Therefore, I do not see at all any young researcher should find himself at a bit of a loss as to what this might mean. The responsibility of those who are in the university and responsible for his activities and so on should be sitting down with him and saying, “Now, let’s look at this proposal you are going to put in,” not hearing on the grapevine that somebody has put in a proposal and it has not worked very well.

I do honestly feel, from everything I have heard in the last few years, that there is a certain sort of, “Let’s pass the ball across to the research council to make the difficult decisions because we, as senior people in universities, do not really want to go there.” I just do not accept that a young researcher should be at a bit of a loss as to how he is going to deal with the opportunity to put in a bid for research.

Q12 Lord Rees of Ludlow: If a young mathematician wants to put in a grant, what is he expected to say in pure mathematics about the national importance of his work 10 to 50 years ahead?

John Armitt: Presumably he is looking at particular areas of mathematical research. He will have some idea, hopefully, as to what that might be in the longer term—adding to the stock, if you like, of knowledge in his discipline, whether internationally or nationally, because if it is not going to add to the stock then the peer review will say, “This is actually of doubtful value because the young man has not been able to explain to us where he thinks this is heading, what the long-term consequences might be.”

What we are asking for here is nothing very different to what people have been putting into their applications for some time now. All we are doing is bringing a little bit more focus to it. I would say “focus” is the critical word because, faced with reduced resources, we cannot afford to spread them too broadly. All we are seeking to do here is to say, “Look, we have limited resource. We need to maximise the consequences of that resource. We want to give it to the very best areas of research. If, at the end of the day, we have this tie-break situation”—as the Chairman has suggested—“then in fact let us look at where the balance is and whether this has been thought through in terms of what might be the economic and social potential of this in the longer term.” It is not up to us. It is not up to the council. These are issues for peer colleagues in a discipline to listen to and think about and just weigh in the balance at the end of the day.

Q13 Lord Rees of Ludlow: Academic peers will have a hard job, but would you not agree that the best work historically has been done by young people following their own enthusiasms in doing what they want to do? I am concerned that this constraint is going to deter them from following what would in fact be the most likely research project to lead to a positive result in the long run because you have to have commitment and enthusiasm and this may just damp that down.

John Armitt: If that was to start to happen I am sure there would be no shortage of people telling us that that was happening. Clearly, we could take that into account in whatever further advice we were giving, but there is no evidence that that is happening so far. In fact, we have not even introduced this yet. It is spring 2012 before the peer review panels will start to think about this. In the mean time, we are talking to them about how best they reflect on this and the sort of factors that they will need to take into account. No doubt they will ask the very questions that you are putting yourselves and that will lead to a

discussion between David and his colleagues with the members of the panel so that we can try and get the right balance in this going forward.

Q14 The Chairman: Are you saying that the introduction of this has not been finalised?

John Armitt: No. We have said that from 15 November, I think it is, we would expect future applications to seek to take account of this and to write up their bid taking account of this—not very different, as I said earlier on, to Pathways to Impact.

In terms of the peer review panels taking this on board and saying, “Right, we have these various bids, so how does national importance rate in this?”, that will not start until next spring. In the mean time, we have three dates in December where David and his team will be sitting down with members of the panels and debating this, discussing this and saying, “How best are we going to adopt this and what sort of guidance would you like as reviewers and so on?” That will lead to the same sort of discussion, I am sure, that in a sense we are having today.

Q15 The Chairman: Is it not all a bit of a charade if somebody is doing research in pure mathematics and, because they have a hoop to jump through that you have created, they invent some story about how this might possibly be relevant in 50 years’ time? They have no idea and the chances are 99.9% that the relevance will come out of something you never even thought of. Are you not just creating hoops that people then have to do a dance and jump through and is it, as I say, just a charade? It is not identifying which research will help to boost the economy and make our lives better in 50 years’ time. It is a piece of sophistry.

John Armitt: I do not think it is a piece of sophistry. It is difficult to differentiate the real differences between this and what research councils generally adopted in the past, which was the Pathways to Impact. What we are talking about is impact. We are talking about impact in

relation to national priorities, which are not in any great debate. People are generally agreed as to what those national priorities are. All we are saying is, would you give this some thought and would you express it? It is up to the peer reviewers to see through, in fact, something that, frankly, if you like, is a piece of marketing in the way it has been written up, and something that has been seriously thought through and the applicant is able to talk about how he sees this might well benefit us industrially or socially.

Q16 Lord Broers: There are two issues I wanted to bring up. The first one is not among our list of questions. I declare my interest as a fellow of the Royal Society and the Royal Academy of Engineering. I am also a member of a Cambridge College still. I was also on the original council of EPSRC where we did some very important work, I thought, to get the acceptance ratio up by a pre-consultation process, which was very important and helped improve the morale of those people, because if people did not have a hope then there was no point in them spending days writing a proposal and then having it turned down.

However, those pre-consultations are quite important. I find this discussion we are having, I am afraid—I know other members on the Committee do not agree with me—sort of ridiculous. I mean when we have peer review committees which in the end, when they judge research contracts, intelligently take all these things into account. If somebody is working on some aspect in engineering, of course, there is never any problem. You can immediately tell where it is likely to have impact, and so on. With other subjects that is clearly not the case.

Surely one can leave that up to intelligent peer review committees, and I think maybe you are punishing yourself by trying to make these things specific. You should just rely on intelligent peer review committees. Having put that aside—or you might want to comment on that—I would also like to ask you what is happening today in terms of pre-consultation to help people submit successful proposals and not waste their time.

Professor Delpy: Let me deal with the second question, on pre-consultation. We do that very much in terms of specific programmes that are themed or where there has historically been a desire to have a core in a particular area, and obviously we then do an awful lot of consultation. What we do in terms of general consultation with the community now, of course, is that we have an extensive series of visits and interactions with, in particular, the 23 universities that undertake 85% of the research that we do, together with a similarly extensive range of meetings, both with the learned and professional societies and obviously with our peer review committees and with SATs. So we tend to have a specific two-stage filtering process and this pre-consultation in areas where there is a particular call. We do not generally have the same in the broad areas of, say, physical sciences or engineering per se.

One of the things I would say specifically here is to echo what John has said in that some of this is a responsibility of both the researcher and their employer. It is not just the responsibility of the research councils to say not only, "These are areas we believe are important and we are putting resource into," but then, "We are also going to try and put a terrific amount of effort into trying to support you. We will put as much effort in as we can." The reality is that the research councils have had a 30% cut in their admin budget. I have a staff of 200 people who manage £800 million-worth of grant spend per year.

So we try, in every way that we can, to interact and support the academic community. We have restructured so that over half of our staff are at the delivery end. There is very little in terms of back office. Most of that has moved to a shared service centre. But it has to be a joint responsibility. It is not just the research councils. We need to be explicit, spell out what we believe are the important areas we wish to grow, what areas we do not wish to grow, and that, of course, comes to your point of, "Are we creating a rod for our own back by

being open and honest about it?” But I think, in the end, it also comes down to the researchers and the universities.

I have had a tremendous number of very learned fellows, to be honest, who have come to me saying, “I don’t disagree with what you are doing, David, but why be explicit about it? Why not just identify the areas you want to grow and those are your priorities and keep quiet about the rest,” because, by definition, if I am going to grow this and my budget is down by 15%, the rest is, therefore, shrinking. It has been suggested that that is what I ought to do, but I do not think that is the research council playing the role that it should do in advising the academic base as to areas that we believe are important both nationally and internationally.

Q17 Lord Cunningham of Felling: What are the proposed or anticipated benefits of these changes? Who is going to be the beneficiary? Are we going to have better targeted projects? What are your objectives in making these changes, or is it just a way of making it easier to manage and reduce budget?

John Armitt: I think the objective is no different to what the general objective has always been, which is to ensure that public money that is spent in supporting this aspect of research—and clearly it is not all the money that goes into research in this country—optimises Britain’s place in the world in terms of its research excellence, optimises our place in the world in terms of our competitiveness in the world and optimises the social impact that we are able to have.

I do not think the priorities have changed. All we are seeking to do is make sure that people do understand those and understand that, at the end of the day, we want to ensure that the key priorities that this country faces over the next 20 years, which, as I say, have been identified not by us but in a sense by us together with the community that we are now

feeding back this to. This is not a process that is taking place in isolation. This has had an input from all those who have an interest in research output in this country to say, “What are our key objectives? What are our priorities? What are the ways in which we are going to ensure that Britain continues to flourish, in the widest sense of the word?” This is simply an extra lump, which is, as is being said, “Do we put it in or”—as Lord Broers has said—“are we making a rod for our own back?” What we are trying to do is help to, again, clearly try and maximise the success rate of those who are making applications.

Q18 The Chairman: In a moment I would like to turn to Lord Rees, but could I just ask for a clarification on one point? Have you published the criteria or the methodology by which national importance will be assessed? So does the academic community know these are the particular points that you have to make when you are trying to make a case for national importance?

Professor Delpy: We have published the general criteria together with a whole range of ancillary documentation. The one thing that we have not yet published, because we are still trying to find or determine the optimal way to do it, is how the actual peer review panel process will operate because there are several ways in which it could operate. There are many different forms of peer review. There has never just been the one form of peer review anyhow and so, working with a team from our advisory panels with experts and leading researchers in all of the major areas that we fund as well as some council members, we are looking at that range of options. A decision on how the peer review panel process will operate within the panel will be finally made towards the early part of January or the end of this year.

Q19 The Chairman: Once it has been made, will that be transparent?

Professor Delpy: Yes, absolutely.

Q20 Lord Rees of Ludlow: I wanted to ask about the shaping capabilities initiative. I think everyone agrees that we should be prioritising the broad-brush areas of science. There is no debate about that, but I think, as you know, there have been two concerns. One is about the relative balance between internal and external consultation that has led to the rather fine-grained grading that you have published already. That is one point.

The second point is whether, even if you had done this, it is appropriate to apply these criteria at the level of competitive post-doctoral fellowships. The counterargument there is: is it in our national interest to encourage into academia and into science generally as many bright people as possible and to disqualify a substantial fraction of them from post-doctoral fellowships, which seems an own goal?

So there are two questions: one is on the consultation procedure for setting up the shaping capability agenda; secondly, when you have done that, is it appropriate to apply it not just at the level of big grants but at the level of competitive post-doctoral fellowships?

Professor Delpy: In terms of the level of consultation, we provided, in response to some earlier queries, a list of the numbers of interactions that we have had. I could read out from my briefing, but it is an extensive number of interactions. What we specifically said when we were discussing this with council was that we would not deliberately go to a formal open consultation. That is because we could not see how that could lead to the decisions that we have to make, which is about a balance across the portfolio. An open consultation with the members of the physics community usually will give us an idea about priorities in physics—it will not give us much idea about the areas we should deprioritise—but it cannot specifically comment on the relative benefit of support that we should give to physics as opposed to

ICT or engineering. We very clearly went for a targeted, but very extensive, discussion and that is the process that we have gone through.

As you say, 111 is the number of areas that we identified. We have a total of nine themes and the budgets are held at theme level. So we are not setting budget at this micro level at all, but we felt in order to engage with the community we should identify areas that we felt, from a national point of view and on the basis of international inputs, were important. We could have said, "We are just going to grow physics and chemistry or physical sciences by X% and engineering will shrink by Y%". But that would not help the academic base, the universities, in identifying how their strategic priorities fitted in with ours. So we used a series of 111 areas but, as I say, we are deliberately not holding the budget at that level because in fact we need to have the flexibility to fund excellence and outstanding applications when they come in.

On the question of fellowships, we were very explicit in our strategic plan when we published it that, in moving to the role of a sponsor, we have to shape the whole of our portfolio and that, therefore, this shaping would apply not just to the research but to the training that we fund and to public engagement and so on. In the specific subject of mathematics, which is the one I suspect that you are particularly interested in, you talked about excluding a substantial fraction, but EPSRC funds 10 post-doctoral fellowships for mathematics per year. We have provided an analysis, which we sent to the Council for Mathematical Sciences, that shows that there are, on the basis of the data that we have analysed, which are incomplete, at least 370 fellowships available to the mathematics community. We are not a major player in that space anyhow, so I would not say that we are excluding a substantial fraction.

In maths, as you know, this time round for one round of the call, we said we would limit the fellowships to statistics, applied probability and operational research. The basis for that was

that the International Review of Maths of both 2004 and 2009, in addition to many other comments, identified a weakness in statistics in the UK. In 2004 we tried to do something about it with HEFCE through the S&I initiatives and we introduced some additional people. But we did not do any shaping, any limitation, apart from sort of flagging up that we would be interested in fellowships in statistics. The consequence of leaving this to the community to decide was that, in the last five years, not one fellowship in mathematics was awarded in the statistics area. So we felt we had to do something to try to create a community, in addition to the S&I awards, and that is part of what I think shaping the whole of the academic base is about. Yes, it has to apply to all areas of the research base; not just to large grants, as you say, but all grants.

Q21 The Chairman: Did you say that this initiative focusing on post-docs in statistics was just for one round?

Professor Delpy: Yes.

The Chairman: Then you reconsider the areas of mathematics at a later stage?

Professor Delpy: We said that once the strategic advisory team had looked at the rest of the maths portfolio we would broaden that out and I believe next week we will be announcing that fellowships for the next round will be available in three areas, including one of which will still be statistics and applied probability because we do need to build our research base, but those fellowships will go through full normal peer review. So we are not going to be funding fellowships that are substandard.

Q22 Baroness Neuberger: I also must declare some interests—somewhat elderly interests I think. I am a former chief executive of the King's Fund, a former council member

We are very curious—and we do not know whether it is the point that Lord Willis made about dancing on the head of a pin or not—about this fit to EPSRC portfolio and what it really means. I know that this is not going to come in until next spring but I think what we would like to know is what weighting is going to be given to fit with the portfolio when a decision has been made on grants. You may say this is irrelevant because you will only fund things that are of national importance, that fit with the shape and capabilities and fit with your portfolio, but I think we would like to hear that spelt out.

Professor Delpy: In preparing the background for all of this, as you know, we have done an extensive analysis of the portfolio that we currently fund and have identified, going forward, areas that we believe are a national priority. This is not yet finalised, but the intention is that this is the one time where EPSRC will indicate to the panel how applications fit to our whole portfolio, the degree to which we have a large volume of research in a particular area or whether there is a relatively small amount. We have already published on our website, in each of those areas, who we believe are the leading groups who, through peer review, have major funding or are leading large programmes. So we will feed that information into the peer review panel in terms of how we see this fitting into the existing portfolio. The panel will then decide whether it feels, on the basis of that, that it wishes to adjust its weighting. It may decide that something is excellent, but we will in fact have already a large amount of excellent research in a particular area.

Q23 Baroness Neuberger: Is it the panels that are going to adjust the weighting?

Professor Delpy: There is not a fixed weighting; so it is not 20% this, 30% that. These are judgments that, as Alec said, intelligent peer reviewers have always made. In determining

importance in trying to rank they have, most of the time I would argue, in fact used that judgment of what they believe is important for the discipline or for national priorities. So it is the peer review panel that will be taking that information in and using it to make that judgment.

Q24 Baroness Neuberger: What about absolutely new stuff, new research? How will you grow new areas? How will you deal with the responsive type of funding, which is certainly the kind of funding I have been involved with? It has been a mixture of setting out some criteria and being quite responsive to new ideas. How are you going to deal with it, with all of this? Are you not being too explicit?

Professor Delpy: I would argue that peer review knows good stuff when it comes in. I mean, on any peer review panel that I have either dealt with or chaired, I have never had any problem in doing that. We make sure that any application that comes in does in fact find a home. So if something comes in that you may feel does not have an obvious home, we will make very sure that it does have a home.

There are some specific initiatives that we have underway to try to encourage some of those more speculative pieces of work. We do that through Sandpits in new areas where, through the process, we also provide some funding. We have tried new initiatives in peer review—things like “Dragon’s Den” where people come in with a two-page outline for what they wish to do. We have gone through a pre-filter and then the individuals have come in and done a pitch. They have sold their idea on the basis of its academic quality, its challenge and themselves as having the ability to do something with it. The advantage of the “Dragon’s Den” mechanism is that, if you get through it, you get your funding that day.

We are trying a whole range of mechanisms and if we get any indication from the peer review committee and from our panels that what we are doing is, in fact, inhibiting creativity,

that it is preventing those sorts of ideas from coming in, then we will clearly do something about it. So we are watching for it, but I think the mechanisms we have in place are not going to inhibit those creative ideas.

Q25 Baroness Perry of Southwark: I am declaring an interest as well: I am on the board of two Cambridge colleges and am a former member of the ESRC. I am just a little puzzled as to how the range of topics in your portfolio relates to national importance. Are they one and the same thing? Have your portfolio priorities also been determined by what you think are things of national importance, or are there some of them that come genuinely from where the scientific community says, “We do not have a clue yet whether this is going to have any national importance, but it is a very exciting new area of science and we think we should go down that rabbit hole”?

John Armitt: Can I just pick up on one point you made there about the national priorities. They are not things that we believe to be national priorities; they are national priorities that have come from a very wide dialogue with industry, with academia, through our strategic review panels.

I must say, one of the things that struck me about EPSRC over the last four or five years is it is never short on contemplating its own navel. In a sense, that is a criticism but it is also a compliment. It is a compliment because of the flexibility and the willingness of EPSRC to constantly be looking at what it is doing and challenging itself in terms of, “Is this particular initiative that we have adopted successful?” and then coming back. Sometimes I am sitting there—as, in a sense, an industrial outsider—and I think, “Oh crikey, we only put this in place a year ago and here we are reviewing it already, and is that too short a period of time?” But it is a reflection of the way that EPSRC constantly challenges itself in terms of how it is funding, where the funds are going and whether they are being sensibly and

properly applied. Therefore, these priorities have been set out very clearly in terms of we have our four key things, which are maths, engineering, ICT and physical sciences. Then below that we have a wider sphere in terms of energy, healthcare, the digital economy and so on, which we have identified as being particular areas where the UK is recognised as being among the best in the world.

Of course, against all of this, I almost sometimes wait for people to say, “Well, why are you twiddling with the mechanism at all, John, because we are up there regularly as second or third or first in the rankings worldwide and, therefore, what is wrong with the motor over the last period?” I would argue that the reason we are up there is because research councils have constantly been prepared to challenge what they are doing and how they are doing it and constantly say, “How do we ensure that we stay at the leading edge in everything that we do and at the same time maintain the UK’s position in the widest sense, not just in terms of the maturity of its research but to make sure that we are supporting those things that industry says it needs but which industry itself is not willing to fund?”

That, of course, is one of the key things here, that what we are doing is funding the things that, by and large, industry itself will say to us, “Yes, we want advance in these areas but we in industry are not willing, for whatever reason, to put the money in. So we are looking to the research community and the universities to help us and support us.” All we are doing is listening to that and trying to interpret as best we can how to allocate the resources that we have.

As I say, at times I feel we sort of overdo the contemplation of this and I do appreciate that, if I was an academic, in some ways just having four very simple instructions as to what you have to do in order to try to get your grant and not be told anything differently for the next five years would be very convenient and make life easy. But life is not easy and, with the challenges that we constantly face and as we see all the time, any strategy in any area at the

moment constantly has to be adjusted because of the speed at which the wider environment is changing all the time.

Q26 The Chairman: Can I just be clear? You said you have £800 million that you invest. Is any of that set aside for pure blue-skies responsive mode, or does everything enter into this process of impact and priorities and shaping and all of that?

Professor Delpy: The whole of our portfolio is shaped but, in terms of the distinction you have made between pure and applied research—terms I do not like—60% of our funding goes into what you would call the pure responsive mode activities, 40% goes into the thematic programmes like energy, digital economy, global uncertainties and environmental change.

Q27 The Chairman: Although it is responsive mode, is it responsive within the structures of fit to portfolio, demonstrating importance and within the capabilities that you are trying to shape?

Professor Delpy: It always has been, of course. Since the early 1990s the applications have always been asked to report on the importance—both for the applicants to identify the importance of their work and for referees to identify its importance. We just have not used the word “national”. We have asked for relevance to beneficiaries. So, as John says, this is not significantly different from what we have been doing for a long time and I would argue that, if you look at the evidence that is collected on the competitiveness of the UK research base, we have not, in fact, led to a diminution in the competitiveness of the UK base as a result of that. In fact, one could argue we are as competitive as we are with as little funding as we get perhaps as a result of that.

Q28 The Chairman: It is difficult to assign cause and effect.

Professor Delpy: It is indeed.

The Chairman: In spite of rather than as a result of. We will have a very brief point from Lord Broers and then I would like to invite Lord Selborne to ask the last question.

Q29 Lord Broers: I will try to be brief. I declare my interest as a trustee of the American University of Shajjah. American universities are divided into the faculty for arts and sciences and then the professional schools of engineering and law. Do we have the subject mix wrong in EPSRC?

Professor Delpy: I am not sure I can give you a straightforward answer to that. I think there is a question as to whether the UK academic base, the university base in the UK, has the appropriate mix. I think, in terms of the mix within the research councils, I am not at the moment convinced there is any evidence that it should be significantly different.

Q30 Earl of Selborne: I should say first that I chair the Living with Environmental Change Partners Board, on which the EPSRC is represented. Likewise, I chair the Foundation for Science and Technology, and I am a fellow of the Royal Society. Have you any feedback from your peer review panels on whether the research councils' Pathways to Impact initiative has influenced in any way the nature of research submissions to you or the research you have funded?

Professor Delpy: The quick answer to that is there is no evidence that there has been any detrimental effect. Certainly, submission rates across the research councils—of course, this is an RCUK-wide initiative—have not dropped significantly as a result of that. We have, through RCUK, done an analysis of the applications that have come in and whether they have changed the nature of the research that has been applied for. We, at EPSRC, have

looked at it rigorously. We have not seen any evidence that is in fact the case and every application comes in with, I think, quite a significantly improved Pathways to Impact commentary now, which the peer review panel comments on.

The peer review panels are specifically asked that question at the end of each panel and we have recorded that, as to whether in fact we are currently getting applications that are less creative. It is a difficult, subjective judgment, but we are trying to collect data from peers as to whether there is any evidence, and there is not any.

Q31 Earl of Selborne: Are there, therefore, any lessons to be learned from the Pathways to Impact initiative in respect of your new criteria?

Professor Delpy: I would argue that, again, Pathways to Impact was largely something that we were already doing. I think what is significant about Pathways to Impact is that it is just that: pathways to impact. What we are asking the academics to do at the outset is to think about their research. If it succeeds, if it does what they would like it to do, what could they do to maximise the benefit either to their discipline or to UK plc and, in order to do that, what additional resource would they like from us? The advantage of Pathways to Impact is they can say to us, "If this works, I would like to have this bit of extra funding, this extra resource, in order to maximise the impact as quickly as possible," rather than at the end of the grant, when something has worked, think, "I better write a grant application to see if I can do something with this," and there is another 18 months' delay.

The Chairman: I would like to invite Baroness Neuberger to ask one small question and then I will draw the session to a close.

Q32 Baroness Neuberger: I have a very small question following up what Mr Armitt said about both the compliment and, if you like, criticism of EPSRC about looking and reviewing

constantly. Given the point Lord Willis made about whether we are actually looking at something that is about dancing on the head of a pin, did the whole council, when presumably it debated these changes, worry that some of this might be unnecessary and might lead to the sort of debate—one may even describe it as a row—that has ensued? Could actually the argument have been, “Just leave it”?

John Armitt: I cannot recall that there was a significant discussion about, “Is this something that would be unwise to do and are we going to cause a row?” I think it flowed, in a sense, in part from the very clear belief within council, which has again developed over the last few years, that we should—and this runs the risk of starting another hare—essentially be a sponsor of research and not simply a funder of research. I, rather uncharitably, said after my first few months or year at EPSRC that I sensed that at times we were regarded slightly as a fruit machine where somebody pulled the handle and the money fell out the bottom and we were not, in a sense, as in control of that as we might be.

I think, in trying to become a sponsor of research, we are trying to help the community by setting out clearly the agenda as we see it. I then come back to my other point in saying “as we see it”. “We” I would argue strongly is the community and not just EPSRC. Our objective is to try and be clear about the agenda and be clear to people about what—after discussion, debate, feedback and going round the loop—we are broadly agreed on as a community about where we should be heading as a country and which areas we stand the most chance of getting, to put it bluntly or crudely, maximum bang for our buck.

The Chairman: I would like to thank you both very much for answering our questions and for coming along, at relatively short notice, to this session. In due course, you will receive a transcript for correction and amendment. That should happen in the next couple of weeks and we will consider, after this session, how we want to develop this, if we do. Thank you both very much indeed.