



Science and Technology Committee

Corrected oral evidence: Delivering a UK science and technology strategy

Tuesday 29 March 2022

11.14 am

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Members present: Baroness Brown of Cambridge (The Chair); Viscount Hanworth; Lord Holmes of Richmond; Lord Krebs; Baroness Manningham-Buller; Lord Mitchell; Lord Patel; Lord Rees of Ludlow; Baroness Rock; Baroness Sheehan; Baroness Walmsley; Lord Winston.

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Questions 90 - 98

Witnesses

Professor Alison Park, Interim Executive Chair, Economic and Social Research Council; Professor Fiona Watt, Former Executive Chair, Medical Research Council; Professor Sir Duncan Wingham, Executive Chair, Natural Environment Research Council.

USE OF THE TRANSCRIPT

This is a corrected transcript of evidence taken in public and webcast on www.parliamentlive.tv.

Examination of witnesses

Professor Alison Park; Professor Fiona Watt and Professor Sir Duncan Wingham.

Q90 The Chair: Good morning to our witnesses and thank you very much indeed for joining us today. Before we start with the questions, I would like to remind you that the session is being broadcast on the internet and a transcript of today's session will be made available in a few days' time for you to check and send in minor corrections if you wish to do so. If there is anything you do not say that you want to, or something you would like to clarify, we would be delighted to receive supplementary evidence from you in writing after this session. If that is all clear for everybody, we will start the session.

I will start with the first question. The Government want to increase funding for research and development to what seems an ambitious 2.4% of GDP by 2027, and for the UK to become what they call a science superpower. If the UK is not already a science superpower, as some witnesses have suggested to us, what do you think needs to happen for it to become one? In your view, what is the greatest threat to that status?

Professor Fiona Watt: I think we are a global science superpower, but I do not think we will be for much longer. China is probably the global science superpower, with the US in second position. In the UK, we have the advantages of strong, historic universities and great research institutions, and I would not underestimate the importance of being an English-speaking country. That makes us a magnet for talented people from all over the world, but we do not invest enough in science. It is a simple economic argument that we should invest more. For me, the biggest threat is that our research community has lost confidence. I speak for medical research, which is what I know about, but partnerships and funding opportunities that have been around for a long time have just taken a big dent. That is my take on the situation.

The Chair: Thank you. There are some interesting thoughts there.

Professor Alison Park: I would not disagree with Fiona's starting statements about the power and importance of the work that we already do. The key issue for me is about making sure that the research we are funding can translate into outcomes that benefit society and the economy. That can be across an incredibly wide range, from the medical breakthroughs that might be in Fiona's space, through to improved productivity, better public service delivery, new products and services, and so on.

In order to do that, we need to continue being able to use a wide range of funding mechanisms, which I know you will come back to later, but there is a critical point about the complexity of the research and innovation landscape in the UK. UKRI, and the councils in it, have a key part to play in bringing together the different parts of a very complicated jigsaw puzzle—academia and higher education, policymakers,

practitioners, charities, businesses and so on. That connectivity is a key part of UKRI's new strategy.

Finally, and you might expect me to say this as the chair of the Economic and Social Research Council, when we talk about science superpower we often tend to get quite fixated on STEM and on technology, but I would argue that the social sciences and the arts and humanities have a key role to play, because nearly every challenge that we face as a nation, and indeed as a world, has people at its heart, so engaging, at the right time and at the right scale, disciplines that really focus on people and society is a crucial part of that puzzle.

The Chair: Is that complexity inherent, or is it something we have created?

Professor Alison Park: That is a really good question. To some extent it is inherent, in the sense that we have a multiplicity of different funders funding research and development. Different government departments have a particular focus on their own areas, but there are also a range of issues that increasingly cut across different government departments, which is where some of the later questions about the new Council and Office might come in as relevant.

The Chair: Thank you, we will leave those to later.

Professor Sir Duncan Wingham: I would start by making the observation that, in normal English, "superpower" implies world domination. If one looks at UK science. I do not think you can make that claim, or, to put it another way, if that is your ambition, we have a lot to do.

On the other hand, if we understand this phrase as somehow relative, or that somehow our impact is ratioed with our capacity or size, it is much more understandable, and the question then is how we ensure that we continue. Today, we are clearly punching well above our weight in terms of unit numbers or unit costs. Therefore, if I understand the question to be how we sustain that position or even build on it, that, for me, is a more realistic question.

In the round, of course, there are a lot of long answers to the question. If I focus in a little more on the here and now, there are two risks, or at least two things, that we need to keep in mind in the near term. The most important of these is Horizon, particularly if we move to a domestic alternative.

The strengths and weaknesses of building the international component of UK science via Europe is another discussion, but, whatever your view of that, it has to be said that those funds have provided the UK scientist with the ability to involve themselves internationally at scale in a way that is not possible through our own councils on grounds of cost and so on.

In thinking about domestic alternatives, which we understand are increasingly probable—I will not put a number on it, but I think we all know that the probability appears to be increasing with time—we really

must make sure that we retain in the funding envelope, which has now passed into BEIS, these crucial elements and the importance of ensuring that those funds deliver to make sure that we continue to have the ability to act at scale in the international arena. Losing this capability is something that we should worry about.

The second thing to realise is that, however you put this and whatever you think about getting to 2.4%—it is clearly good if we can get to 2.4%—we are still falling behind with respect to the competition, so even in a relative sense we will continue to fall behind unless we keep in step with their volume.

Where does that risk crystallise? That is difficult, but let me illustrate one risk that might crystallise, especially if we are no longer engaging in the EU: exascale computing. Are we in that game or not? If we are in that game, we are talking about £1 billion or so for the UK to be a player, or we will not be competitive in supercomputing in three, four or five years' time, or we will have to beg and borrow.

There are some quite clear issues that we need to attend to if we are worried about our relative position.

Lord Krebs: Thank you very much for that answer. On the question of exascale computing, the UK, as far as I can tell, has shown no ambition to join Digital Europe, which is the €27 billion programme that will include supercomputing. Is that a mistake? Should the Government be paying attention to Digital Europe?

Professor Sir Duncan Wingham: I do not know that it is for me to comment on whether the Government are making a mistake or not in their decision about engaging in Europe. What I will say straightforwardly, though, is that we do not at the moment have a clear plan B. What I am observing is that, whatever you do, the cost of a plan B is high. So, for me, this is a question of understanding and recognising these large, stepped changes, and if we do not achieve them we will drift away from this and reduce our relative impact.

Q91 **Baroness Manningham-Buller:** UKRI was partly set up to promote interdisciplinarity. Could you comment on whether you think that has worked? More generally, could you comment on what has gone well with UKRI and its establishment, and what has gone less well—what we have lost, if anything?

Professor Sir Duncan Wingham: I should start by pointing out that I am an employee of UKRI these days, so I need to make that declaration of interest.

First, as the longest-standing chief executive or executive chair, I have not seen any diminishing of the authority of councils over their own budgets. That has not changed. In many respects, NERC, for example, operates in the same way as it did in the past, for better or worse; it certainly still funds the things that it funded in the past. In no sense has the UKRI been a threat to the independence or autonomy of the councils.

Secondly, in the last five years since UKRI was formed, the only opportunity for growth in council budgets has been in the cross-council space. There has been a lot of activity in the cross-council space since the formation of UKRI, and I point particularly to the strategic priorities fund as a real exemplar of what can be achieved at scale in a way that we were not doing before.

There are a number of large programmes, but the clean air one is a good example. Five research councils, three departments and two PSREs have come together to try to do something about the state of our urban atmospheres in particular. The choice of the word “clean” in clean air is important, because it is focusing on trying to arrive at a solution to the problem, rather than merely recording the fact that there is dirty air. So the strategic priorities fund has been really important.

On the other hand, it is also important to recognise that our ability to work more in the cross-council spaces has been budget-limited in a quite straightforward way. We entered UKRI after a very long period of real-terms decline. Depending on your favourite number for inflation, my view would be that the decline was around 23% over my term, starting in 2012. That places one in a position where one’s willingness to suddenly engage in a lot of new activity has to be balanced with the understanding that we have been constrained inside our own domains for quite a long period of time.

It is not right for me to comment on the nature of the detail of the UKRI settlement; it is not entirely settled, and it is not for me to announce it. I would say, however, that we are moving to a space where there is greater flexibility inside the UKRI budget. There are far fewer strings. Indeed, the old ring-fences are disappearing. What we should be looking at right now is how UKRI responds to the increased freedom that it will get as part of the settlement around this time.

I will give you a very quick view on the plusses and minuses. In some way I have already indicated the plusses. Another plus point is the considerably increased degree of co-working between the councils and Innovate UK, which I would say has been quite successful. That may not be immediately obvious, but there is a lot more going on than used to be the case. I regard that as a very positive development. Just recently, for example, we have funded a joint programme on putting climate risk on private sector books. I do not think we would have been able to get that balance of research evidence and business interests without the plethora of mechanisms available to us.

On the minus signs, UKRI is not a mature organisation. I do not think it has yet quite realised what the role of the organisation at the UKRI level is and what the role at the council level is. That introduces confusion, which leads to what I might describe as duplication or diffusive effort.

If I compare my experience before and after, I would say that some things have got more difficult to do because of the structure that we are in.

Baroness Manningham-Buller: Equally, I think you said some things

have got easier to do, such as on clean air.

Professor Sir Duncan Wingham: Yes, you asked me both sides, so I am offering you both sides. That is my quick summary.

Baroness Manningham-Buller: Professor Watt, do you have anything to add, or a different perspective?

Professor Fiona Watt: I agree with what Duncan has said. I am not worried about it now, but the lack of real growth in the MRC's budget was a huge anxiety to me when I was Executive Chair. In the last year, three flagship programmes—UK Biobank, the MRC LMB, and the Francis Crick Institute—all underwent their five yearly reviews. I am not talking about dancing on ice, but they all got near-perfect scores. However, there is no money to give them an uplift that is anywhere near what they need.

On top of that, the partnerships that we relied on previously are not so reliable anymore. Disease-focused charities such as Cancer Research UK and the British Heart Foundation took a big hit through COVID-19. They are bouncing back, but it is a concern, because previously we could try to spread the funding load. I do not need to tell you that Wellcome has undergone an important and major strategic change, and it is not for us to tell Wellcome what it should be doing.

I have been left feeling really worried about that. There are some great new things that we have done, but, going back to the global science superpower point, if we cannot buy new freezers for UK Biobank, that makes us look pretty silly internationally.

Baroness Manningham-Buller: But extra funds are coming. Do you have views on how they should be spent?

Professor Fiona Watt: It is not really for me to say now. About 40% of the MRC budget goes on our institutes and units, and about 45% on fellowships, which could be a PhD student or a professorial fellow, and people applying for grants.¹ Everywhere is just stretched to breaking point. Of course, it is easy to raid the fellowship budget or the grant budget to give one of our long-term investments the uplift it needs, but I do not think that is a very wise way to proceed.

We have been involved in some fantastic things within UKRI. One of my personal favourites was an initiative on adolescent mental health, which we created with ESRC and the Arts and Humanities Research Council, and with teenagers with mental health challenges. These are great things, but how can they be sustained? If you start something that is very successful, you then have to put it into the core budget, or else you say, "Adolescent mental health was a priority for three years, but now we're going to do something different". I do not think that is how medical research works.

Baroness Manningham-Buller: Professor Park, what would be your comments on this area of UKRI and how it has performed?

¹ Professor Watt clarified that these figures are for 2019/20.

Professor Alison Park: I will say a few words about interdisciplinarity, and then I will come back to the plusses and minuses. I think everybody recognises the importance of interdisciplinary research in addressing most of our key and pressing questions.

My response to the question would be that we have always done and continue to do a variety of types of interdisciplinary work. Every council, in its own budget, funds interdisciplinary work in its disciplines. There are the bilateral and trilateral arrangements between councils that Duncan referred to earlier, and then, of course, there are the fantastic cross-council funds like the Strategic Priorities Fund, which have been crucial.

All of those tend to be funding research that is focused on a specific strategic area. Even in our responsive-mode schemes—these are the schemes that each council operates, and people can write into and apply to them with any idea—there is an ability to manage work that sits between different council boundaries. However, there are definitely gaps in what we can offer researchers in that bottom-up, blue-skies responsive-mode space, and we are very much working on a solution to that.

On the plusses of UKRI, and reflecting on Duncan's and Fiona's comments, I would say that, from a social science perspective, the growth in mission-orientated funding and the creation of UKRI has had huge benefits to the social sciences. Put simply, it has meant that we have been able to fund more research and on a larger scale, so we now have really ground-breaking activity in relation to productivity research and administrative data—to give two examples—that we would never have been able to fund from our core budget previously.

On the more negative side of the equation, we are not a mature organisation yet, but we recognise that. We have a new strategy, which was published a couple of weeks ago, and I feel confident that we are finding new ways to work together and think about how we can get the best value across all of UKRI for every pound that we spend.

Lord Krebs: I have a very quick factual question that will only require one sentence from each of you. What percentage of your budget goes on responsive mode blue-skies funding?

Professor Fiona Watt: My figure 2019/20 was roughly 45%. That includes fellowships and grants.

Professor Sir Duncan Wingham: One-fifth, bearing in mind that one half of our budget already goes to institutes of various kinds, as you are very familiar with. Of course, if you then take the part of the budget that is competitive, that fraction doubles.

Professor Alison Park: For ESRC it is about 17%.

Q92 **Lord Rees of Ludlow:** I imagine that the research councils all have a lot of interaction with their customers, who are mainly academics in universities. How do you feel their reaction is to the present system and to the impact of UKRI, taking into account that UKRI also includes Research England and overseeing the REF and all that? I do not disguise

my own view that the morale of academics is rather low now, and I wonder if that is a fair perception and what you think can be done about it.

Professor Fiona Watt: I completely agree with you that morale is low. It is about confidence. If you are just starting your independent career, it is about being able to rely on getting funding. When I compare the sorts of offers people get in British universities compared to Switzerland, Germany, Austria, ours are just not competitive. We are an international market, so that is a problem.

Lord Rees of Ludlow: That is your foreboding about us losing our superpower status.

Professor Sir Duncan Wingham: There is no question that there has been a succession of events that have affected morale. I put Brexit easily at the top of that list. Covid has also affected people in many ways that we would prefer it had not.

Perhaps the question focuses more on whether the appearance or existence of UKRI is relevant to that and/or what it can do about it. Is it relevant? Oddly, it is easier to criticise the NHS than your local hospital, and, in the same way, creating a single structure has been really effective at providing a single voice into government. That has unquestionably been effective as a mechanism.

Essentially, it produces a single point of criticism. For Joe or Josephine in the laboratory, UKRI is a pretty abstract thing. It is pretty close to government, although it is not seen as being as far away from government as the old research councils used to be. So inevitably, almost unavoidably, it starts to attract criticism for things for which it is not, in the first instance, responsible. A good example of that has been the termination of the GCRF funding, which was extremely successful and very welcome but was then stopped in an extraordinarily abrupt way. Of course, that has just added to the general feeling of gloom. I must say that not all of this is earned, and to some extent we have just become a focus for a set of wider issues which the sector has had to absorb in recent times.

Do we have a magic wand? I am not sure that we do, but there are certainly things that one might immediately want to do. The new budgets that went through UKRI were rather obscure in how they were allocated. To some degree, that was true even if you were in a council. The community did not feel that they were consulted about a lot of the new expenditure coming through the UKRI system in the way they felt consulted about in the old system.

There is more to that perhaps than meets the eye, because all those funds were being approved in BEIS and not necessarily at the UKRI level. The question of advisory structures was not altogether in the UKRI remit. It is now, though, so it is important that we respond to that by opening up our advisory structures to these new cross-council funds in a way that has not happened in the last few years. It would be very disappointing if we were to embark again on a broad-themed research programme such

as GCRF and then have it abruptly finish. The importance of sustaining continuity around new initiatives cannot be overemphasised. We do ourselves no favours, not just as UKRI but as the Government as a whole, if we do not recognise the importance of these.

Without wishing to point fingers as to where exactly the failure lay, there are some ordinary things that we could go back to doing rather better than has been the case in the recent past.

Professor Alison Park: I would agree with that. I would add to Duncan's point that part of the challenge is that many of the things that we fund have a very long tail, so being able to change things quickly can be very challenging unless you are literally going to cut funding from something, as was the case with GCRF.

I would also like to flag something that certainly comes up to me, and I am sure to other councils, which is the complaint about bureaucracy and an overly bureaucratic process. That is top of the agenda in UKRI at the moment, and there is a quite extensive programme of work under the heading "Simpler and Better Funding" that is looking across all our different funding schemes and trying to strip out duplication and come up with a system that will work better for us internally and, crucially, for the outside community.

Lord Rees of Ludlow: Could I ask about Research England and the REF and all that? Do you as a council, directly or through UKRI, have any say in how things like the REF are organised? They are seen as vexatious by many academics, as you know.

Professor Alison Park: I will dodge that one as I have only been in my current post for a year, so I missed the last series of discussions about REF, but maybe Duncan or Fiona can comment on that.

Professor Sir Duncan Wingham: The straightforward answer to that is not really, because it is not in the council remit. That is the role of Research England. You would probably be better directing that question at the owners of Research England.

Lord Rees of Ludlow: But it is in the UKRI now.

Professor Sir Duncan Wingham: Yes, but not at my pay grade.

Lord Rees of Ludlow: Right. Thank you very much.

Q93 **Lord Patel:** Your answers to the three questions before mine have so far painted a picture of relative gloom. Maybe I have misinterpreted, but now we will have two new kids on the block: the Office for Science and Technology Strategy and the National Science and Technology Council. Will that make things better overall for research and innovation, or is that a threat to how UKRI and research councils work?

Professor Sir Duncan Wingham: First, just as a matter of fact, those offices and organisations have not yet got up to speed, so our response has to be theoretical. On gloom, a body like this could be very helpful to us all in trying to establish right across government the three, four, five highest-priority areas to which the Government would welcome us

concentrating, not just UKRI but all the departments at the same time. I could point to the Net Zero Innovation Board, which is a creation of BEIS and other parts of government chaired by Sir Patrick Vallance. I sit on that board, among a number of others, but it has representation right across government and has been rather effective in bringing together a single agenda for research innovation—it has published its priorities recently—so it is a mechanism for bringing focus right across the government spectrum on the priorities. That is an extraordinarily useful thing to do and not something we have seen in the past.

If a body at that level can use its position to make the national priorities clearer across government, that in itself would be an extraordinarily useful thing to do. To illustrate that, I have investigated that research councils currently spend, across the piece, in the order of £600 million a year on net zero: that is to say, on things whose purpose is to reduce the amount of carbon dioxide we are emitting, details aside. Currently, that spend is largely determined by at least nine separate, and to some extent asynchronous, decision-making systems. We could get into an extraordinarily different and, to come back to your gloom point, much more positive space if we thought about how we used cross-council funding at the UKRI level in concert with nationally understood priorities. We could also engage with government departments right across that piece.

Let me give you another example. If we wanted to think about how we really go about levelling up and how we really get concentration from all of the various parts of government on that topic, then, again, something setting priorities right at the top of government could be very helpful. I do not see it as a threat or how it could be a threat. It is too high up, too far away and, frankly, has more important things to worry about. It could have a really positive impact on us.

Lord Patel: What about a national council?

Professor Sir Duncan Wingham: I will pass over to Fiona, but, from my perspective, I would not particularly distinguish at this point.

Professor Fiona Watt: This has really got going this year since I have been out of MRC, but I was interested in what Duncan was saying because I found working across different organisations on the Government's Life Sciences Strategy—and the 2021 Vision—hugely positive, where you see very different parts of the sector agreeing on what could be done.

Of course, the counterbalance is that the medical or health portfolio is spread across different government departments, and in UKRI it is spread across all the councils. As Duncan says, if there were simply a decision at a high level that it would be a good idea to spend this amount of money on research to improve human health that might help to mitigate the fragmentation and the complexity that I see at the moment.

Professor Alison Park: I would go back to the comment I made earlier about the complexity of the research and innovation landscape in the UK, and the challenge that Fiona's just alluded to in connecting across

different elements. My take on the new Council and the new Office, and with that huge caveat that Duncan mentioned at the beginning about it being very early days, I am incredibly welcoming of it as a way of focusing attention on longer-term activity and needs, particularly when it is in areas that cut across different government department boundaries. From what I have heard from Patrick Vallance, my understanding is that the focus will be very much on areas that cut across department boundaries; they will not be getting involved in areas that sit in a particular government department's remit. In that sense, I am really welcoming of them. It is a really useful way of trying to simplify some of the complexity that is already in the system.

I do not know whether you wanted us to go on to mention the priority areas, but they seem eminently sensible ones to me that connect well with some of the key priority areas in UKRI. My one plea in relation to the priority areas is that the digital and data-driven economy theme is considered sufficiently broadly so that it includes the huge economic benefits of data-driven research when applied to public service delivery and that it does not simply think about the economic benefits to the private sector and so on. That would be my only comment about the key things that they have identified already.

Q94 **Baroness Walmsley:** This question follows nicely from what Sir Duncan has just been saying, and I hope lifts the curtain of gloom slightly. Part of the new spending settlement involves bigger research budgets for government departments specifically. How do research councils collaborate with relevant government departments to support their strategic priorities, and are there plans to expand this collaboration? Will more money make any change to the relationship?

Professor Alison Park: I agree, it does follow on well. I will speak only for ESRC now. We work closely with government departments on a range of particular projects, and we really welcome the opportunity to continue that. What might that working together mean in practice? It might be something like sharing our thinking about strategic areas that we think require additional research with the relevant government department to get their input at that very early stage, before we then decide to put out a call for research proposals. We might involve representatives from government departments on some of our governance structures where their interests intersect clearly with the research that we are funding. We might co-fund something with the government department or, indeed, we might work with government departments who have a budget and who are particularly keen to think about reaching out to academic groups that they might struggle to engage with, if they are just commissioning something as a department. That might be something that we are able to work on with them and help with the commissioning.

It is very much dependent on the type of research that is required and the research questions that we have, but we are doing it already and we really welcome the opportunity to do that more. The increase in the R&D budgets that are going to government departments gives an excellent opportunity to try to expand that collaboration.

As a final comment, this is an opportunity to try and increase the permeability of what can be quite a divide between government and academia. We are working in other areas in relation to fellowships and secondments, so that somebody from an academic department can go and work for a year or 18 months in a government department and get a really good sense of what that actually means in practice, then take it back to their university and be able to capitalise on that valuable experience.

Baroness Walmsley: That is interesting. How does it work though? Do they come to you, do you go to them, or is it a mixture of both? Do you think that balance is going to change at all?

Professor Alison Park: It is a mixture of both. We have a series of fairly regular meetings that we have with the government departments of most relevance to our council and, through that, opportunities will emerge—or we might be approached with a particular idea, or we might approach them. I am sure every research council does this, but it is very much dependent on the particular research area.

Professor Fiona Watt: Our closest ties are with DHSC and, in particular, with NIHR. In my time at MRC, we worked with NIHR to co-fund a scheme which would allow consultant doctors to spend time in research. When the strategic priorities fund competition was opened, we worked with Chris Whitty to agree the top priority, which at the time was multi-morbidity—so we did that together. At the start of the Covid pandemic, we very quickly set up funding together, whereby the decisions were made by the CMO about how it would be allocated. We have relationships across other government departments; in particular, the MoD has a big interest in repairing tissues in people who have been injured in war. As Alison says, there are good regular conversations, but the most close and constructive relationship for us at MRC was always with NIHR.

Baroness Walmsley: Given the wide range of social determinants of health, would more money mean that your research council, or previously your research council, would be more likely to engage across a wider range of government departments?

Professor Fiona Watt: We did an analysis of our portfolio of long-term investments about two years ago, and we identified areas where we thought we were a bit over-invested or else weak. If we have money, we will continue to close down the things that are not working so well, but any new investments would definitely be made in close consultation with those departments.

Professor Sir Duncan Wingham: I wear two hats in answering. I put the NERC cap first, and now I am going to put on the UKRI hat, for a reason I will explain. First, we have noticed that departmental budgets have gone up. If I cast my mind back eight or nine years, we had a whole suite of programmes in NERC, which were shared with Defra and petered away because of the reductions in Defra science budgets. What we are now seeing, to some extent, is a restocking of those budgets. Essentially, we are going back to a welcome situation of working together more with them now. Do we speak to them or them to us? I cannot unravel that.

We are in a pretty continuous conversation. The position is much more positive now, in this spending review, than it was in the past. I am confident that we will see significantly increased co-working with other departments, in my case, particularly with Defra.

The issues are not altogether just about money. They are also about the extent to which the delivery systems we use are appropriate for the departmental purposes and whether university-based research really is what Defra needs to deal with badgers or whatever—sorry, John, I do apologise, but that example just came to mind. What I mean is that it is not only about money; it is also about the nature of the task and the research that one wants doing.

I hope things will change because, in the frame of discussions around this spending review, this discussion is being lifted to the UKRI level. I come back to net zero as an example. I am engaged in discussions across, at the least, Defra, BEIS, and the Department for Transport and Department of Health and Social Care, to discuss how we might work together right across that spectrum to try and push forwards research under the heading of net zero, broadly understood. That is a possibility that one can do because of the existence of UKRI and because we knock on the door and say, "I am Mr UKRI" as opposed to "I am Mr NERC", so it pulls people together. Yes, there is likely to be a positive increase at that level as well.

Q95 Baroness Walmsley: We have heard there are efforts to embed more scientists and researchers into government departments. Do you think this would be a good thing and make them more informed commissioners of research? Is there anything that your research councils are doing about that?

Professor Alison Park: Having more people working within government from that background can only be a good thing, to be applauded. It is very much connected to the point I made earlier about trying to break down some of those artificial boundaries between academia and government and policymaking. Having staff working on either side who have that experience would be really helpful.

There is an issue about trying to do more to bring key insights from academic research into that policymaking and government space; that is another area where UKRI can do a great deal. For example, through the UKRI Covid call a couple of years ago, ESRC funded a large number of social science projects, very much focused on understanding the impact of the pandemic and what that would mean. Over the last nine to 12 months, we have really focused on bringing some of that back into government. We have set up these "Actionable Insights" seminars that would routinely get audiences of 200 plus, so we can allow a small number of researchers to play back some of the key insights from their work in a way that we hope is useful to people within those government departments. In a nutshell, anything that can try and break down and improve permeability has got to be a good thing.

Baroness Walmsley: Do either of the other two witnesses have any examples of initiatives to try to embed more scientists in government

departments?

Professor Fiona Watt: My example may be a little early in careers, but we have seen effective efforts to give PhD students exposure to other sectors as part of their training. That has to be good, and I do believe that it is paying off. It means that we would increase the number of people who are scientifically literate but are pursuing careers outside of academia, and it would be good to do more.

Professor Sir Duncan Wingham: For many years, NERC has run a knowledge exchange fellowship scheme which is focused on funding people to do exactly this. They are popular with the people who apply and with the departments in which they are located. Generally speaking, we find it is under demand from both the department side and the application side. I have always thought it was a rather good scheme. We have not changed it very much over the last few years, but it has been in operation for quite a period of time.

Baroness Walmsley: Would you grow it if you had some more money?

Professor Sir Duncan Wingham: Yes. I do not know that I would put it at the top of my list—but to be honest there is no way of saying no to a question like that. These balances are always this or that.

The Chair: We need to move on to Lord Mitchell, if we may.

Q96 **Lord Mitchell:** I am not sure this is a new question but let us hope there are some new answers. What are the research councils and the Government doing to encourage movement back and forth and collaboration between academia and industry, and is this easy to do?

Professor Fiona Watt: With my UKRI hat on, we set up a scheme to fund academics to spend time in industry and we could have spent a lot more money on doing that. It was quite a small, focused, pot of money. That sort of thing is good to foster exchange of ideas. It is interesting that, when you speak to people in big pharmaceutical companies, they will often complain that, when they interview young academics for posts and ask them “Why do you want a job in GSK or AstraZeneca?”, they say, “Well, it is very difficult to be a professor in academia.” That, of course, is the wrong answer. This is where we have to explain the many benefits to moving to and fro. In my experience, even quite senior academics may transition out of academia into companies, but some of them will go back. They will take a massive pay cut, but they bring what they have learned from their time in industry to enrich the academic sector.

Lord Mitchell: That is contrary to what you sometimes read about people in academia perhaps resist going into industry, and the ones who do go into industry have a bad time coming back. They are regarded as treacherous in some way.

Professor Fiona Watt: If I was going to be cruel, which, of course I am not—

Lord Mitchell: Please do.

Professor Fiona Watt: —I would say that at some point in an academic career, the shine of your brilliant research may have dimmed a bit. It is much easier to move into university administration than to say, “Right, I am going to see if I can switch sectors.” In my view, it will always be the people at the top of their game who are alive to the opportunities who will make the switch. I think there are whole sectors of university structure where the people just would not have anything to give to research any longer.

Lord Mitchell: Professor Park, is that your experience?

Professor Alison Park: What I would want to flag, in this porosity between academia and business and industry, is that within the social science context there are a number of areas that we fund where it is critical to connect with what business and industry needs. To take one example, we have a major investment called the Productivity Institute, which works specifically with businesses through regional fora that have been set up across the UK. Those fora are very much involved in the design of practical and business and policy interventions, and it really helps them in terms of implementing the insights that have come out of the Productivity Institute’s work. That is one example of where we are trying to make that connection.

To some extent, the social sciences have been slightly behind some of the other disciplines in this area, but we are making ground. We have benefited hugely from the advent of the Industrial Strategy Challenge Fund and being able to work with some of the challenge directors there to illustrate the value of social science and how it might help with addressing a particular challenge. One example that I know best is the healthy ageing challenge, whose vision is very much about enabling businesses, including social enterprises, to develop and deliver services and products for people as they age. With that, we have been able to use social science insight effectively. The other area that is live for us as a council is trying to think about how we can encourage and support social scientists to think more about commercialisation opportunities or maybe, framed more broadly, innovation opportunities in their work. Currently, we are funding a pilot study called transforming business through social science which is trying to tease out what might be the most effective mechanism for working with researchers in universities in this space.

Lord Mitchell: Sir Duncan, is that your view and do you think it is getting better?

Professor Sir Duncan Wingham: First, I think the question is—is it easy? If you are talking about the direction from industry to academia, the answer to that question is no. One way is not a problem and the other one does not happen very often. This discussion was going on 30 years ago when I first came into academia. There are some questions around research funding, which I regard as hardy perennials, and this one is probably the hardest perennial of all. The reason I say that is not to say we cannot do anything, but just to observe that that is the measure of the difficulty.

The question that we really need to focus on is, what is the motive for people to go back from industry into academia? The plain data tells us that there is insufficient motive. NERC is interesting in the sense that the interest in NERC of business has been transformed in the past five years, primarily as a result of companies responding to the realisation that their customers may cease to buy their products because of the impact they are having on the environment. This has created whole sectors of businesses coming to NERC, because they are desperate to understand more about their impact on the environment, broadly, or even narrowly, specified. That is the real, bottom line interest. That hurts them if they get it wrong as businesses. The question will be, would someone, for whom that is really important, benefit from simply transferring back into the university? I suspect the answer to that question is no, because what they do not need is research—what they need is information and understanding. In other words, they need training, in some sense.

I have not put a lot of time into thinking about this question but, if I personally had the problem, the question I would be asking myself is, "Do we have the right structures sitting somewhere on the periphery of our higher education institutes which is attractive and serves the purpose of the person wanting to come back?" If you look at the environment around MIT, for example, it is very different from what you see around most UK universities. That would be my five pennies' worth on the question although, I emphasise, I am not somebody who has put a huge amount of thought into this.

The Chair: Could we move on to Lord Winston's specific question about medicine and movement?

Q97 **Lord Winston:** This question is mainly directed to you, Fiona, if I may. You have touched on this already, but I would like to expand on it. The biggest industry of all is the NHS, yet the partnership between academic medicine and the NHS is not ideal at the moment, simply because we are losing some of the brightest and the best PhD students, postdocs, and so on, upwards, as they find that they cannot carry out a research and do a clinical job at the same time, half and half. I wonder whether we could think of a better structure—and what do you think about trying to promote those sorts of careers, which are, of course, the most important aspects of the health service, which is probably still a superpower partly due to the academic medicine?

Professor Fiona Watt: I completely agree. The NHS has its flaws, but it is widely appreciated around the world. I would ask the question whether Britain has something on a par with the NIH, which is very powerful, very large and all encompassing. Of course, the US has completely different health care, but strengthening UK medical research is important. When I was at the MRC, we launched a scheme, Clinical Academic Research Partnerships, with NIHR. The UK spends a lot of money on training doctors with PhDs, and they do very well to start with—but then the uncertainty of research funding and the security of an NHS job will tend to take them out of research. That is not just in Britain but all over the world. My idea in establishing CARP was that they should still be able to

perform research and do it on their own terms. On receipt of a job plan, the scheme ensures that someone can spend two or three days a week in whatever research sector they want. Of course, that is a huge problem for their hospital, because they do not just have a spare consultant ophthalmologist, for example, who can pop in two or three days a week to cover.

The statements are good at the moment—that research is important to the NHS. But it is about tapping into that resource, not just from doctors but from nurses, social workers and midwives; they all have so much to give, and so much talent, which would enrich all research. I would like to see that happen, and not just hear warm words about it. Operationally, it is difficult, but it would transform discovery science as much as medical practice.

Q98 Baroness Rock: We have heard a lot from you about fragmentation and complexity, and we have heard from previous witnesses that a frequently changing science and technology policy has both negative and disruptive consequences for research. I have two questions to the witnesses. What can research councils do to embed continuity in policy, and what would you like to see from government?

Professor Fiona Watt: At its core, it is about the appreciation of a career in research. Careers are no longer linear, which is a good thing. You can create your own adventure, but you need to know is that, at each point in that journey, you have a reasonable chance of getting funded to do what you want. Funding rates, of course, are artificial. If there are no decent applications, you do not want to fund them. But it is about having the confidence that, if your application for a fellowship to one organisation is unsuccessful, the chances are you will get it somewhere else. We like to talk a lot about supporting young researchers, but there is a real cliff at the end of that first period of funding, after five years or so, and we lose people at that point.

In the MRC we piloted offering transition funding for people at the end of that five years to give them another landing pad—but it is really as simple as saying that this is a map of different career routes. I think that we even have one on the MRC website of different ways in which a career in medical research can go. We need to help people to know that they have multiple options—not that their career is going to be over because they will not get funding for their ideas. The example that a lot of people use at the moment is that of the scientist behind the Pfizer vaccine that has been so successful for Covid. I have forgotten the name of the lady scientist, but she was deemed completely unfundable for many years—and boy, did she prove her funders wrong.² We have to be able to cut people some slack and give them multiple opportunities to fund their research.

Baroness Rock: Professor Wingham, there is a lot of ongoing reviews into various aspects of science policy, such as the Grant review, the second Paul Nurse review, et cetera. Are you concerned that there is

² Professor Watt clarified that the name of the scientist was Katalin Kariko.

policy churn?

Professor Sir Duncan Wingham: Would you mind if I just added something to the first question before I answer that question?

Baroness Rock: Please do.

Professor Sir Duncan Wingham: I referred to the chopping of GCRF—I think that is not an unreasonable description—but there are other difficulties. I point to the Higher Education and Research Act 2017 itself, which requires the councils to produce some weird thing called a strategic delivery plan. For those who do not know, a delivery plan used to be a document that was given to departments that said, “We’ll spend this on this, this on this and this on this in this year”. A strategic document was something that gave the community a sense of direction, and was usually quite long-standing—let us say, five years. Those strategies had purpose and, in my own experience, they could have effect.

In my first three years, I introduced a strategy called the business of the environment, which was to draw attention to the need at that time for environmental science to recognise that it needed to contribute on the business side. I know from direct experience that that strategy had that effect, but it was in force for at least five years. We are now about to issue the second one in two, in a different format. It is extraordinarily difficult to retain a continuity of a sense of direction in these circumstances. I trace this back to confusion about the meaning of these terms in the Act—incidentally, by the writers, not the readers.

Therefore, we are in a poorer position to do two things. One is to make sure that our commitments can be sustained—and, just to open a bracket, on the additional funding, outside the councils, the HMT has not been so relaxed about allowing that to go into other spending review cycles as it always was about research council funding. Some of this new funding has got a much shorter timeline on it, and that makes it difficult, as has been referred to earlier. We are also struggling to be able to communicate a longer term—and I do not mean the end of the spending review, I mean a period of time which is commenced at research cycles, into which people feel they could put effort or investment, without fearing that in three years’ time the fashion will have swung somewhere else. If you move too fast with fashion, that is very problematic.

On the second question, I am tempted to speak slightly informally, but perhaps I should not. The coincidence in time of these three reviews may generate problems of itself, because the organisations are going to have to prioritise how to respond to them. One could end up in a rather ironic position where a review of bureaucracy is generating bureaucracy to respond to it. Equally, they all have their force. The Grant review could have a positive impact. I was referring to what I was loosely describing as diffusive processes. There is work to do here, and the Grant review could push us into doing it. I am sure that we could benefit as an organisation from the Grant review.

The bureaucracy review itself is going to do a lot of good things. Over many years we have accumulated the habit of continuing to ask for

information. Some of this is challenging, notably around assurance; the degree of multiple assurance processes in the research landscape as a whole is large—but bear in mind it is traceable to roughly 150 separate governance organisations around funders. Saying that this is all awful is easy, but doing something about it is a much bigger challenge. None the less, I am sure there are things we can usefully do.

Alison referred to our new funding system, which I am sure is going to make life a lot simpler. There is a bit of a risk that the coincidence and timing of these things will force us to prioritise, but perhaps that is not a bad thing. I have a slight concern that them all appearing at the same time could produce an impression outside of UKRI that is unnecessarily negative. There are a lot of positives about UKRI, and we have touched on a number of them in this session. The nature of reviews is that they do not tend to emphasise positives—that is not quite what they do. Therefore, we must make sure that this coincidence in time does not produce an overreaction in a way that would not occur if they were separated out.

Baroness Rock: Thank you. That is very helpful. Professor Park, do you have anything to add to that?

Professor Alison Park: No, I think Duncan summed it up really well.

The Chair: Thank you very much. Does anybody have a burning final question for our witnesses that they would like to raise? No. In that case, we will say thank you very much indeed.

Professor Alison Park: I am sorry to interrupt. Could I just make one point before we conclude?

The Chair: Please do.

Professor Alison Park: I realised that the figure I quoted for ESRC's response rate funding was a figure that is not comparable with the NERC and the MRC figures that Fiona and Duncan provided. I would like to amend the proportion that I gave you from 13% to 17%. Therefore, in fact, we are quite close to NERC in the proportion that we spend on responsive mode funding.

The Chair: If there are any other figures any of you would like to send us afterwards, we would be very pleased to receive them. If there is anything in the transcript you need to clarify, we are very happy for you to do so. Thank you very much to all three of you for talking to us today. As I have said, we would love to have additional evidence if there is anything that you think would be useful to us. Thank you very much and goodbye.