



Select Committee on Science and Technology

Corrected oral evidence: Forensic Science

Tuesday 22 January 2019

3.20 pm

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Members present: Lord Patel (The Chairman); Lord Borwick; Lord Fox; Lord Griffiths of Fforestfach; Lord Hunt of Chesterton; Lord Kakkar; Lord Mair; Baroness Morgan of Huyton; Baroness Neville-Jones; Lord Oxburgh; Lord Renfrew of Kaimsthorn; Lord Thomas of Cwmgiedd; Lord Vallance of Tummel; Baroness Young of Old Scone.

Evidence Session No. 18

Heard in Public

Questions 198 - 213

Witness

Dr Gillian Tully, Forensic Science Regulator.

USE OF THE TRANSCRIPT

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Examination of witness

Dr Gillian Tully.

Q198 **The Chairman:** Good afternoon, Dr Tully, and thank you for coming today to help us with our evidence session. I see that you have attracted the whole of Kazakhstan, so welcome to all of you from Kazakhstan. Please do not take any photographs and do not interrupt the session, but otherwise you are most welcome.

Dr Tully, thank you for coming. Your evidence today is extremely important to us. I have no doubt you have been following our deliberations over the weeks, so you are probably well aware of what we have heard and what our questions are. We have some searching questions for you and I have no doubt that you will be equally robust in your answers. First, please introduce yourself for the record and, if you want to make an opening statement, please feel free to do so. After that, I will ask Baroness Morgan to start.

Dr Gillian Tully: I am the Forensic Science Regulator, which means I am an independent public appointee with the role to set quality standards for forensic science in the criminal justice system. I am supported by a small team of Home Office civil servants who help me with that, and by a large group of experts who help me through the independent advisory groups that work with me. I have worked in the field of forensic science for about 28 years, and in the few years leading up to its closure I was head of research and development at the Forensic Science Service.

Q199 **Baroness Morgan of Huyton:** Thank you very much for your evidence, which I think is really helpful. May I ask you about the sustainability of the forensic science market and, specifically, to cut to the chase: is it working? Is it serving the needs of the criminal justice system as you see it, and what needs to change? By way of background, we have had a lot of evidence and I think it fair to say that a lot of concern has been expressed about how the market is currently operating—in particular, about the sustainability of the market, the very low margins, private providers going out of business and allegations of malpractice. We have had criticism from, among others, the National Police Chiefs' Council and the Scottish Police Authority and criticism of the Home Office strategies on biometrics and forensic science. Those were the ones that particularly struck me. This has given us the general impression that the system is pretty precarious. Is that a fair assessment? How do you think it could change for the better and are there any recommendations that you would like to make to us?

Dr Gillian Tully: You have heard from others in evidence, as you said, about the shortfall in funding. I would say that has reached a critical status. If nothing is done, we are likely to lose a significant proportion of our capacity to deliver forensic science in England and Wales. There is substantial work going on within policing to try to address that problem, but it is not possible, in my view, to effectively manage the risk across the whole criminal justice system on a national basis. We cannot manage

that risk nationally because the final decision-makers on where the money is spent are the 43 chief constables and 43 police and crime commissioners. Whatever work is done nationally to try to support the market, it is very difficult to ensure that all the local decision-makers are in line on that. That is one of our biggest risks. There is a substantial risk to quality in that, because if we lose our qualified, well-trained and experienced forensic scientists, they cannot be replaced easily. Much of the forensic science in the criminal justice system is being carried out to an acceptable level of quality, but I am not in a position to say that it is all being delivered to that level, partly because some people are not compliant with the standards I have set, and partly because we are still on a road towards having standards in all areas, so there are some targets still to be reached in 2020.

There are some areas of particular concern as well. Some of the referrals to my office that give me most concern involve CCTV analysis and interpretation, facial comparison and parts of forensic collision investigation, although that community is working very hard to address its issues.

I would say from a criminal justice point of view that there has been little impact so far on admissibility because there has not been much of a challenge in relation to admissibility. But I think credibility can easily be undermined, particularly when the commissioning of forensic science in a particular case does not necessarily meet the needs of the whole criminal justice system. It may have been commissioned to meet a narrow investigative question early on and perhaps when it comes to evaluation later on, the question is not sufficiently broad.

The other side of the funding question that also contributes to the precariousness of the situation is the Legal Aid Agency's funding. As I noted in my written evidence, there does not appear to be any connection between the legal aid rates available and the actual cost of running a quality-assured service. They appear to be largely historical rates with cuts applied to them, rather than rates based on what it costs to deliver the service, and I think that is an issue.

One way I would recommend to improve things is to have much better oversight of commissioning of forensic science. We could look at that in two ways. We could look at commissioning at the top level, whereby contracts are issued to external providers; or work could be allocated to internal police providers and we could ensure proper oversight of that process, so that not only are timeliness and cost considered but sustainability, scientific culture, innovation, quality standards, training and development are all factored into that commissioning process, so that we get a better and more sustainable overall future.

Baroness Morgan of Huyton: Who would do that oversight? Is that not one of the problems with the 43 different forces?

Dr Gillian Tully: I believe that we could do with a statement of policy jointly owned between the Home Office and the Ministry of Justice. If there was a stated policy to have forensic science of the appropriate quality available to the prosecution, the defence, the Criminal Cases

Review Commission and the family courts, those organisations—the Home Office and the Ministry of Justice—would have a responsibility to deliver on that policy. One way you could do it, to take it out of the vagaries of the different local decision-makers, is to topslice the money out of the policing and legal aid budgets and put it separately. I am sure that would not be particularly popular, but it would be one approach, and I am sure there are others. First, there has to be a statement of policy that the right level of forensic science is to be available.

Lord Fox: I was interested to hear your idea of having a stated policy jointly shared between the MoJ and the Home Office. I am a bit surprised that there is not something there already. What is the existing policy environment that you are operating in, or is there none at all?

Dr Gillian Tully: The Home Office published a forensic science strategy in 2016, but that document delegated a great deal of responsibility to policing. National policing leaders have done a great deal to try to help in this area, but I do not think the NPCC is in a position to impose anything centrally and to ensure that those things happen, although it is doing its best.

Lord Fox: If you had this policy in place, surely this same problem of devolved policing would exist. The Home Office may then have a policy, but you would still have 43 different commissioning entities out there.

Dr Gillian Tully: That is why I suggested taking the funding out of the 43 different places and putting it in one place.

Lord Fox: Without the topslicing, the policy is toothless.

Dr Gillian Tully: It would certainly be very difficult for anyone overseeing commissioning to make anything happen nationally without something such as topslicing.

Q200 **Baroness Young of Old Scone:** The whole business of compliance with the current ISO standards and your codes of practice seems not to be working terrifically well; lots of deadlines have come and gone and services are still not compliant. What is the answer to that? Is giving statutory powers to the regulator the answer or are there downsides to that as well?

Dr Gillian Tully: Without statutory powers there are three routes that I can take towards trying to encourage compliance. One is persuading people of the benefits of adopting standards. In any case, that is an important thing to do, because you can adopt standards well or adopt them poorly, and an understanding of the need for them can have a big impact on how well you implement those standards.

The second lever towards adoption of quality standards without statutory powers is via the use of contractual vehicles. For most of the core forensic sciences, all the contracts between the police and their providers require compliance with the standards, and that is a very compliant part of the sector. I think we are on the road towards getting that same level of contractual control into digital forensics, but there have been a number of setbacks along the way. Recently, the largest contract between the

police and a digital forensics service provider has been extended. That provider is not compliant with the standards, yet there are compliant providers in the market; that sends entirely the wrong message to the market. We have further to go on that particular route. We also need to go further in using contractual procedures when forensic medical services are contracted, so that forensic medical examinations of the right quality are carried out.

The third route that we can use without statutory powers is increased scrutiny in the courts. The Criminal Practice Directions require, of course, a declaration of compliance to a code of practice or conduct relevant to discipline. For forensic science, it should be my codes of practice and conduct. We have now issued guidance that anyone who is not compliant with my codes must make a declaration of that non-compliance in their statement, and must set out in an annexe what they have done to mitigate the risk of non-compliance so the court has the information before it to enable greater scrutiny of the evidence.

In combination, those three approaches will take us so far but unfortunately, partly because of the economic situation, they will not take us all the way towards compliance. Internal police units have suffered many cuts, as well as the external environment issue; so, because they were not compliant before they started suffering these cuts, compliance has been delayed. That is certainly a reason why they have not met the standards. A number of small companies have clearly stated that until there are statutory enforcement powers, they are not going to move towards compliance

Baroness Young of Old Scone: May I explore that a little further? I was a regulator in two separate industries that had large numbers of non-compliant small operators. What will statutory powers do? Are they just going to frighten people into complying? If they are not competent or they do not have enough resource to comply, is not the risk that you will wipe out part of the market because you have declared them to be non-compliant and therefore they cannot practise?

Dr Gillian Tully: The Bill that is before Parliament does not directly relate non-compliance with the standards to the issuing of a compliance notice, but it would enable me to issue a prohibition notice if I believed that an organisation represented a significant risk to the criminal justice system by its practices, and I think it is important to be able to do that. The threat of having legal compliance powers is part of the process that will force people over the line to start adopting these standards. But that has to be alongside addressing other issues such as funding, because if you address only one of the problems, you are right, it could cause other problems in the system.

It has been really interesting to see what has happened recently with compliance in fingerprint comparison. Last year, when I wrote my annual report, I warned that there was a danger that policing would not meet the date for the standard, which was October last year. The NPCC lead did her level best to try to get everyone towards that date and wrote to her fellow chief officers and so on, but got a fairly limited response.

Everyone was working towards it but not at the pace that they needed to go. At that time, they estimated they would all be compliant, but I was somewhat sceptical.

In about May of last year, it became clear to policing that secondary legislation was going to be introduced to bring some European legislation into UK law: the Accreditation of Forensic Service Providers Regulations, which require all providers of fingerprint and DNA evidence to hold 17025 accreditation. The international directorate of the Home Office had arranged to have that come into force at the same time as my deadline, but it became apparent at that point that a large proportion of policing would not be compliant by the deadline. Once they realised that it was going to be a legal requirement to be compliant, the increase in pace towards gaining compliance was enormous. One of the good things that has come about is that about 80% of fingerprint bureaux will be compliant by March of this year, and the date of that legislation will coincide with that. It illustrates that, with the best will in the world, until it becomes a burning platform and a priority to spend money on, it is very difficult to gain that level of compliance. I have a lot of sympathy for chief officers who have to make extremely difficult funding decisions between many things that are very high priority. You can imagine that forensic science quality standards do not get to the top of that pile unless there is a legislative vehicle behind them.

Baroness Young of Old Scone: May I ask three brief questions? The first is: why do you think the Government are dragging their feet?

Dr Gillian Tully: I do not believe the Government are actively dragging their feet. I believe there is the will to do this, but potentially not the parliamentary time.

Baroness Young of Old Scone: Let us not use the word.

Dr Gillian Tully: If it had been done five years ago, when it was promised, we would not be here now.

Baroness Young of Old Scone: It seems like they are dragging their feet to me, but never mind. The second question is: one of your routes for getting compliance is persuasion and education, so do you have the resource to do that?

Dr Gillian Tully: I spend a lot of my time in my role going out and talking to practitioners, leaders and so on. I spend a lot of personal time on that.

Baroness Young of Old Scone: What is the scale of your resource, apart from you?

Dr Gillian Tully: Apart from me, I have five members of Home Office staff who support me in my role, plus a little bit of shared resource from the science secretariat in the Home Office, so it is not a big resource.

Baroness Young of Old Scone: The third question is: how much confidence do you have in the Transforming Forensics process that the police are running?

Dr Gillian Tully: There are certain positive things that Transforming Forensics can do. Certainly, in that route towards getting fingerprint bureaux to accreditation, it stepped in at the point it was asked to by the NPCC and made quite a big difference to the pace, which stepped up when there was a legislative demand. What I struggle with is knowing how, on some of its broader aspirations, Transforming Forensics will be able to get over the fact that it is not mandated. If there are not clear savings to be made through some parts of the programme, it could find it difficult, as do I, to get 43 chiefs and 43 PCCs to agree. There are some good aims, but it is only funded until 2020 and it is still establishing itself, so it is difficult to know.

Baroness Young of Old Scone: Thank you very much.

Lord Fox: Coming back to Baroness Young's long tail of smaller practitioners, it is easy to see how the ISO system would work for the large bulk providers of forensic evidence and for the big subjects such as fingerprints and DNA, but there is also a long tail of highly specialised, quite long-standing practitioners, many of whom are almost single people who are only doing some of their work in forensic science and doing other science elsewhere. I am interested in the appropriateness of that ISO certification and whether, frankly, you are going to lose that tail of expertise completely if you are asking those people to do the same as the big bulk suppliers. How are you playing that particular game?

Dr Gillian Tully: There is not a single requirement that sets out, "You will have ISO 17025 for all forensic science". In my codes of practice and conduct there are stated requirements for each of the disciplines. When it comes to an organisation that is doing forensic science as its business, or a person who is doing forensic science as their day job, if they are doing the same job—if they are doing, say, CCTV image comparison—whether they are in a small company or a large company, it is my view they should be doing it to the same standard and quality. This is not a broader piece of regulation; it is a quality standard and it is about whether that organisation or that person has the controls, the scientific validity, the competence, the equipment and the appropriate environment to do that work well.

Somewhere in the criminal justice system there is the cost of assuring quality. In my view, we can think about it as the first stage being that everyone reaches a basic level of competence as determined by those standards, and the case-specific elements are scrutinised through the court system. If we do not do it that way, the logical conclusion is that you are going to have to test every aspect of every piece of forensic evidence when it comes to court, and so the cost will fall there. We need to do a lot more to work out how we can make it more affordable for small companies to reach the standard. This is where the work that the Chartered Society of Forensic Sciences is doing comes in. It is trying to set up a central resource and, essentially, share resources between these small providers. That carries a cost as well. One idea would be if government funded that scheme—it would make it much more accessible and thus possible for the small providers to reach that standard. You also asked about people who may do forensic science as an occasional thing.

Lord Fox: Yes—who are highly specialised but on the outer edges of specialisation.

Dr Gillian Tully: My codes do not require accreditation for people who are offering their expertise occasionally to the criminal justice system. There is a specific section in the codes that sets out that whoever is commissioning those experts must make them aware of certain key points in the codes, but there is no requirement for them to be accredited, and it would not work.

Lord Fox: Is there anything in your codes about how that evidence will be treated? It is not necessarily peer-reviewed science; it is kind of a one-off and it has not gone through any process. Are you giving the courts any advice regarding that evidence?

Dr Gillian Tully: That comes down to the rules of expert evidence under the Criminal Procedure Rules and the Practice Directions, which set out very clearly the level of transparency required. What my Codes point those occasional experts to are the documents that we publish on the legal obligations on expert witnesses, so they are aware of all those requirements for transparency and so on. In those situations, there needs to be more individual case scrutiny if they really are at the edges of expertise.

Q201 **Lord Vallance of Tummel:** May we come back from the occasional experts to the small operators? They and others in this area complain about the lack of resources, but it is perhaps more critical for them than for some of the larger ones. Can you give us an idea of the costs we are talking about?

Dr Gillian Tully: That would be a question better directed to UKAS, which is the organisation that carries out the accreditation. What I can say is that the costs strongly depend on how prepared the organisation is before UKAS comes in. We have seen huge differences between the costs charged by UKAS to organisations that are ready, compared to organisations that are not. The costs charged by UKAS will be smaller for small providers because the scope is smaller. It charges based on time and if they are ready, the time spent will be less. I cannot give you a specific figure because it depends on the scope and the readiness.

Lord Vallance of Tummel: In orders of magnitude, is this really significant for them or is it just an excuse not to do something that is a bit of an irritant because ISO standards do not necessarily fit nicely with a small organisation?

Dr Gillian Tully: If we look at the cost of quality, there are two elements. The first is the cost of implementing systematic quality assurance, and that includes things such as taking part in proficiency trials with other organisations so that you know how you are performing, putting in place peer-review mechanisms—even if you are a sole provider—putting in place the checks and balances that you need to assure quality and to ensure the science is validated. Those have to be done whether you are accredited or not. Those are internal costs. The other part of the costs is what you pay UKAS to come and assess you. As

a total proportion of your turnover, in a small business the UKAS costs will be much greater as a proportion than they will in a larger business, but the costs of systematic quality management will be as low or lower than in a large organisation because it is a much simpler set-up and system.

We have been thinking hard about this in my advisory council as well. We have considered all the evidence that has come to this Committee and we still come to the conclusion that it is very difficult to see how you could set a completely different standard if you are doing the same work. One area where I have not yet set a standard is for the review of cases, for example by the defence. A scientist might not do any new analytical work but, instead, take someone else's work and review it to see if it was done well, or assess it and perhaps provide an additional opinion on that work. We are trialling that through the ISO 17020 standard at the minute. I am paying for that as a trial to see if it works and is proportionate, and if it adds the level of assurance that is needed. We will have to wait for the outcome of that trial to see if that is the right way to go. If it is not, we will have to look for a different standard for that type of defence review work, and that may be certification of individuals. I think it is fair to say that I have a fairly large number of referrals of quality issues to me about small providers, as well as about large providers.

Lord Vallance of Tummel: May I turn that into a rather broader question? You make it quite clear in your written evidence that although you are responsible for quality processes, you are not the regulator of the market.

Dr Gillian Tully: No.

Lord Vallance of Tummel: In the case of at least the small providers, the market and quality are intimately linked. There are other regulators who regulate a particular sector of the market and the quality of that market. Do you think that is something you should be doing and, if so, should it be statutory?

Dr Gillian Tully: The market—or what I would call commissioning—needs to be regulated. Whether it is best to do that under one regulator or whether that sits better elsewhere could be argued either way, but at the minute there is a complete lack of regulation of how services are commissioned and what the market looks like or what rates are paid. That lack of regulation on the one side, versus trying to implement quality standards on the other, causes a problem.

Lord Vallance of Tummel: This is a very specialist market dominated by the public sector, and you have different sizes of organisations elsewhere, some of which are falling off the end because they cannot take the economics. It is also to do with the nature of the contracts that are placed; how long and how secure they are. Should this not be regulated as a specialist market?

Dr Gillian Tully: Absolutely—the whole area of commissioning, how it is gone about and how the sustainability is ensured.

Lord Vallance of Tummel: Who would do that, Dr Tully, if not you?

Dr Gillian Tully: I can only come back to the point that it could be a single regulator who does it all, otherwise I think it would need to be under the oversight of the Home Office and the Ministry of Justice because that is where the work sits ultimately in policy terms. I do not have strong feelings as to exactly where the regulation sits. It cannot sit in policing or in the Legal Aid Agency.

Going back to the issue of Transforming Forensics, that is the problem. The Home Office perhaps sees that as the solution to a lot of these things but it is still a policing organisation within policing, and we need something over that to try to sort out the whole situation.

Lord Vallance of Tummel: A policing organisation obviously has a strong interest and it cannot be doing it.

Dr Gillian Tully: Absolutely.

Lord Vallance of Tummel: Thank you very much.

Lord Hunt of Chesterton: I wanted to ask a slightly odd question. In a court case I was involved in as an expert witness to the defence using my science, nobody gave me any documents about whether this was regulated, and the only person who looked at it in the end was the judge. What was not clear to me at all was the role of the presiding judge or magistrate. Do they use the information on this having been a regulated system or will they just, as it were, use good questioning and experience? It sounds to me as if you expect all these cases to be done in a very systematic way, with regulated procedures, but there will presumably be other cases which are somewhat ad hoc. How do those two approaches work out in actual court cases?

Dr Gillian Tully: That is very much in line with what we talked about a few moments ago, in that there is no requirement for an ad hoc occasional expert to try to fit into a systematic accreditation system, because it simply would not work. To get accreditation you have to do something on a regular basis and you have to demonstrate you can do it well. I guess the responsibility for looking at the detail of the science comes down more to the court in the scenario of the ad hoc expert witness. The rules we have around expert evidence in the Criminal Procedure Rules and the Practice Directions allow for that level of scrutiny. What I have observed is that those rules are not necessarily applied rigorously in all regional and smaller courts, and, while there is a lot of awareness of them in the centre and among the senior judiciary, I am not certain that we are seeing as many considerations of admissibility as we might expect.

Lord Hunt of Chesterton: They see justice as a well-organised methodology, which seems to be how you describe it, and yet there are a lot of cases which come from left side or right side and are completely unexpected. You are saying that these situations that cannot fit into a standard frame are more likely to have that consideration applied in the central courts but not in local courts.

Dr Gillian Tully: It would seem to me that we are not seeing that level of reference to the Criminal Practice Directions, for example, and we are

not seeing many of the considerations on admissibility in the Practice Directions come through in Appeal Court judgments on forensic science evidence. There is no systematic way that I know of that we can check what is going on in all the courts. I am talking to the Lord Chief Justice and the President of the Queen's Bench Division about how we might manage to centrally co-ordinate some other information—for example, if there has been judicial criticism of an expert concerning inappropriate or poor science, or anything of that nature—but having that real overview of what is happening in the lower courts is difficult. We can see what is happening in the Court of Appeal because the judgments are published and we search those on a regular basis for anything about expert evidence.

Ultimately, if you are doing forensic science day in, day out, without a doubt you need to put proper quality management around it. However, for ad hoc evidence we just have to have a different system. We point people towards the legal obligations guidance. We point people to the need to validate their methods and ensure they have tested them and know their limitations. We point people towards the obligation to be very transparent as to their level of knowledge about the limitations of their method and how it relates to what is already published in the literature. You have to have that flexibility still, and it will always be the role of the court to make a judgment call on admissibility. It is not for me to say whether or not a method is admissible; that is the role of the court.

The Chairman: Lord Hunt, if you could move on to your question.

Q202 Lord Hunt of Chesterton: Given that the human factor is so important in the interpretation of forensic evidence and that every case is different, how do you assess individual competency? We have sort of been discussing that. How do you detect and deal with situations where a single individual may be operating with malign intentions in, for example, an accredited organisation? You have just commented on the system of accreditation for expert witnesses, and the question is whether you should always have a system and what happens if you are having to make decisions outside the system.

Dr Gillian Tully: If we think about the first part of that question and assessing individual competency, there are generic competence requirements that you can describe for any role. Thinking about this in relation to an expert reporting scientist, who interprets evidence and gives evidence to the court, the specifics would differ depending on the particular specialism, but there are some things every expert would need. Those would include things such as an understanding of scientific methodology; an understanding of the principles and practice of scientific inference and probability; up-to-date knowledge of the scientific literature in the field, coupled with an ability to critically evaluate that literature; an understanding of the potential for cognitive bias to impact on their work and how they might manage that; up-to-date knowledge of the legal obligations on expert witnesses, where relevant—for example, in relation to classification of firearms or illegal drugs; up-to-date awareness of the legislation and case law; a clear understanding of the bounds of their

expertise; and an ability to think on their feet, weigh arguments dispassionately and communicate complex concepts clearly.

Those sorts of competencies can be within the competence framework of a good organisation. Any good organisation that has a broad scope of accreditation will have that competence set out for every role, it will have worked out how it will assess against those competencies for each role, and it will be able to demonstrate that.

Lord Hunt of Chesterton: In a court case, the solicitors for the prosecution or defence will hire a company doing forensic science, so would the solicitor have this relationship with the forensic scientists and go through all these procedures to ensure that the forensic scientist is doing the correct work?

Dr Gillian Tully: No. If you have an organisation that has gained accreditation to the standard and to my codes of practice, there should be an assumption that people are operating at that level because the standard requires that the organisation has such things in place. One of the difficulties is that in some cases you might have multiple experts involved. You might have a crime scene investigator from the police. You might have a trace evidence expert from a forensic science provider and a body fluids expert. You might have a digital forensics expert from a different provider and multiple DNA technicians involved in different parts of the process. You could have an academic interpretation specialist, for example. One of the difficulties we have is that in the current situation, it is possible for everything to be very siloed and, although each part of that might be done to an appropriate quality, the overall quality of the service the court gets is not ideal.

Lord Hunt of Chesterton: Is it not the job of the solicitor to present the case for one or other side?

Dr Gillian Tully: It is to an extent but someone with a scientific background needs to be looking at how those pieces of evidence fit together and how they fit within the context and the strategy of the case. That, again, comes back to how the work was commissioned in the first place and whether it meets the final requirements of the whole CJS, as opposed to my requirement at this point in time to know what is on that phone. It is about the broader commissioning of forensic science and whether we can commission it in a way that leads to more complete and better evidence in the case.

You asked about the situation where a single individual may be operating with malign intent. The simple answer is that under any system of quality standards or inspection, it is not possible to say that you could always detect that. There are ways in which we are strengthening the system since the situation that I talked about in relation to Radox Testing Services. For example, at that point in time accreditation to my codes of conduct and practice was not a requirement, and now it is. My codes contain additional provisions around, for example, data integrity and separation of functions between those who are developing methods and those who are checking that they are suitable for use before they go into live operations.

There are further changes being introduced to the next version of the codes. One of the most important of those is a clarification of the requirement to ensure that the annual cycle of internal audits that a company does includes data integrity audits. We would expect that those would cycle around different disciplines without the people in that discipline knowing in advance it was their turn this year for the data integrity audit. We are also doing further training on integrity and the accreditation service UKAS is updating its guidance to its assessors.

When it comes down to it, the risks are greater of someone operating like that if there are a very small number of people working in that particular field in that organisation. The risks could also be greater if there is an individual working on their own.

Lord Vallance of Tummel: Dr Tully, you have pretty well answered my question, which was whether accreditation means that you have to have some form of audit that goes beyond a financial audit, and you have talked about data accreditation. Does the audit system go beyond that into auditing the conclusions drawn from the data?

Dr Gillian Tully: Yes. Accreditation works by the accreditation body going in and checking whether an organisation is all over its own quality and whether it has internal systems and processes to check everything. What UKAS will look at will depend on the scope of the accreditation and whether that organisation, for example, has listed interpretation as part of its scope. I am developing an interpretation appendix to my codes of practice and conduct, which should assist in that greatly, and assist in the transparency, but, ultimately, an organisation that has a broad scope of accreditation will have all these things in its general quality management system, whether or not they are within the scope.

Lord Vallance of Tummel: Including interpretation. That is what I really wanted to know.

Lord Mair: In this context, in your written evidence you made a statement that there must be means to prevent unsuitable individuals acting as expert witnesses. You said these should be coupled with sanctions for not meeting the required standards. Can you elaborate on that?

Dr Gillian Tully: I believe that was largely in relation to individuals who are acting on behalf of the defence. I think that was the context in which I was speaking. I wrote that because we have a very small amount of legal aid funding going into this, and yet I sometimes see people being instructed again and again when they have been subject to judicial criticism on more than one occasion. It seems wrong to me that we should be continuing to instruct experts on behalf of the defence when they are perhaps not giving the best evidence that would be available to give. That is one of the reasons why I am keen that we find a central way to discover when experts have been criticised by the judiciary, because the judiciary does not do it lightly. It only does that if it is really concerned about that particular expert.

Lord Fox: At the moment there is no way to strike people off, so to

speak.

Dr Gillian Tully: No.

Lord Mair: When you say “unsuitable” individuals, do you mean that in the sense that the expert in question has been criticised by a judge?

Dr Gillian Tully: Not necessarily just that. It would be whether they are someone who has the necessary competence, scientific knowledge and understanding. One indicator that they may not be such is they may have been criticised frequently, or there may be other indicators that they are unsuitable. Primarily, it would be around that sort of activity. There is also a requirement to have people vetted to an appropriate level. Under my codes of practice and conduct, we set a level to which people ought to be vetted. Of course, those who are not compliant with the codes might not necessarily be compliant with that vetting requirement either.

Lord Thomas of Cwmgiedd: I want to pick up on the same question. In your evidence you rule out the comprehensive system of registration that was tried by the Council for the Registration of Forensic Practitioners because it was too expensive and impracticable. That is your strongly held view, I understand.

Dr Gillian Tully: I do not see that it will be effective to put it on top of what we already have. I was an assessor for the Netherlands Board of Court Experts and have been involved in assessing the competence of court experts. One of the things I found during that experience is that when you are dealing with accredited organisations, it is quite difficult to separate organisational competence and individual competence, because in the organisation you have systems and processes, standard statement formats and all sorts, and you start to get into a real muddle over what is an individual’s level of competence and what is an organisation’s level of competence. To layer it on top of a requirement for accreditation is an extra level of expense and complexity. If you said, “Let’s get rid of organisational accreditation and just do accreditation of experts”, we would have nothing around scientific robustness, validity, calibration of equipment, suitability of environment and so on. I do not think it works in that context. The one area I come back to is, if we find that ISO 17020 is not a suitable standard for defence experts in that review of evidence, I will look at it again in that context.

Lord Thomas of Cwmgiedd: The second question I want to ask you picks up on Lord Mair’s point. If you were to obtain criticism of an individual—because in any field of expert evidence, you always get the incompetent and the dishonest or client serving—would you not need some sort of judicial or statutory power to stop the defence or prosecution calling that evidence? It can have catastrophic effects on an individual if a judge has come to the wrong view; on the other hand, it can have a catastrophic effect on justice, as one saw with low template DNA, where you have people who are incompetent or worse.

Dr Gillian Tully: Yes, and I think statutory power would be extremely helpful there. In one or two instances where a number of concerns have been raised with me about someone’s practice—not necessarily judicial

criticism—I have had a series of meetings with the person and put the concerns to them. They were quite taken aback by the criticism. They went away, changed their processes and sent me some example statements. We worked together and it brought about a level of improvement, which was a very positive outcome. I have also written to one company asking them to stop reporting cases for at least a period because I had concerns. In that situation, I guess the best I can do is to write a letter that says very clearly, “You must disclose this letter to anyone who is instructing you in any future cases”, and I would hope that whoever is instructing the expert would take note.

Q203 Lord Renfrew of Kaimsthorn: I would like to turn the focus to other countries and their ways of undertaking the most-needed research in forensic science. What structures are in place in other countries that offer examples of the most-needed research in forensic science?

Dr Gillian Tully: When it comes to research, I really like what the Netherlands are doing, because they tend to have very close relationships between the Netherlands Forensic Institute, which is the government institute, and Dutch universities. In fact, their senior casework scientists have professorships in those universities and I think that enhances the teaching in the university, it enhances the individual’s scientific culture and expertise and it enhances collaboration on research between the operational people and the research side. I think that is a really nice example.

Lord Renfrew of Kaimsthorn: You do not find similar practices in a number of other countries, and that link that you were just indicating?

Dr Gillian Tully: To a greater or lesser extent. I know that there have been some attempts to have similar professorships between universities and forensic science providers. There was an attempt made some years ago in the Forensic Science Service to do that, but it did not come about before the closure. There are examples of good collaboration between the researchers and practitioners. In fact, I am going to the opening of a new centre in Lancashire next month, where the university and the police forensic department have collaborated to put together an institute for working together. It is not quite as formal, in that they do not have that professorship side of things, but I think it will be positive.

There are other good examples in countries such as Australia and New Zealand, where the practitioners and others get together and try to come up with a prioritised list of good research topics, and that is done with the commissioners of the work, so at least there is a road map of what research would be good to do. Again, some of the European countries have institutes of forensic medicine or institutes of legal medicine, where they are doing casework and research in the same institute. Again, I am a strong believer in trying to get the research and the casework as close as possible together. I think it works well.

Lord Thomas of Cwmgiedd: I want to ask you about strategic leadership, which you raise in your evidence and are quite critical about the lack of. Imagine a blank piece of paper. You have all the experience.

We have seen what the Permanent Secretary of the Home Office, Sir Mark Sedwill, did when he set up Julie Maxton's committee. What do we really need as proper strategic leadership?

Dr Gillian Tully: I would start with that clear policy position that I talked about earlier, and to underpin that I would put in place effective regulation of a number of areas. I would put my role on the quality standards for forensic provision in the CJS on a statutory basis. You also need quality standards for at least DNA and toxicology in the family courts to be on a statutory basis. The lack of regulation in the family courts is one contributing factor to how we ended up in the malpractice situation that we talked about earlier.

Lord Thomas of Cwmgiedd: What is the leadership? Part of it is having a leadership structure that is accountable. What should that be?

Dr Gillian Tully: I would have a joint Home Office and Ministry of Justice body.

Lord Thomas of Cwmgiedd: Chaired by whom? Someone independent? Accountable to whom? Or would you like to give some more thought to this?

Dr Gillian Tully: I will give some more thought and I would be happy to write to the Committee on that.

Lord Thomas of Cwmgiedd: It is critical. Just to put the view to you, one of the things that seems strikingly clear is that there are an awful lot of problems that no one has a strategic overview on. No one can set a long-term policy that is not over-influenced by short-term political considerations. You have the bird's eye view of this. Would you be able to put something in writing?

Dr Gillian Tully: I will, yes. The other part of that comes back to the regulation of commissioning, but you are right that there needs to be some sort of oversight.

Baroness Morgan of Huyton: Not to put words into your mouth, but in your reply would you think about what have we have lost by losing the national Forensic Science Service? Did that work? Should we be reconsidering that? We have had evidence from Scotland and Northern Ireland about leadership. It would be helpful if you made some comments in your reply on that, too.

Dr Gillian Tully: One immediate response I would make is that if we do not tackle the other problems, just reconstituting a national service would not work out. Its demise was a symptom of the existing problems rather than the cause of them.

Lord Fox: You mentioned the family courts and the current situation. In your view, is the current situation regarding forensic evidence in the family courts untenable, and does it have to change straightaway?

Dr Gillian Tully: In my view, there should be regulation at least of DNA and toxicology in the family courts as soon as possible, because at the

minute there is not even a central list of who provides toxicology services to the family courts.

I have been trying to help the Ministry of Justice by writing to whatever providers we can find who we think might provide toxicology services to the family courts, to try to ensure that they learn from the issues we found in the situation in the CJS, because it arose originally, it would appear, in a company that worked in the family courts system.

Lord Thomas of Cwmgiedd: I would like to give you time to think through how we can put right for the long term this whole system, which has so many problems with it.

Dr Gillian Tully: Asking "Where would you start from if you were starting from a blank sheet of paper?" is such a different question compared to "Where you would start given where we are?" We certainly would not start from here if we had the choice.

My prime aim would be to lose as few experienced people as possible in the process. We cannot do anything very quick and very radical that involves moving everybody around again, because we will lose people. The prime aim is try to maintain that skills base.

Lord Thomas of Cwmgiedd: What I am interested in is a body that can look after it for the long term and not leave it to the tender mercies of two different ministries.

Lord Vallance of Tummel: Including the regulation of the commissioning markets.

Dr Gillian Tully: Yes.

Lord Hunt of Chesterton: In a way, we are discussing what we have seen in many other areas. We used to have the Royal Aircraft Establishment and the Royal Radar Establishment, but all these government laboratories have ceased, and the universities are doing things. I have been to the Netherlands and they still have government laboratories that help to do this.

The question is whether we in the UK have a methodology absent these government laboratories. You need, as you say, to have standards, and this is the way the Brits are doing it. No other country is relying so much on standards methods as we do. I do not know whether you would agree with that perhaps overly dark interpretation.

Dr Gillian Tully: I am not sure that we are relying on standards to take over from national bodies, because national bodies in the UK probably had those standards in the first place. Where we link with academia is really interesting. Academia has a huge amount to bring. We also have to ensure that we do not rely purely on academia to sort these issues out, because it has to be related to the casework side. Also, we have to be realistic. There is a very small number of academic institutions that have the physical infrastructure to do trace evidence research, because you cannot do research on trace evidence particles in a laboratory where students are coming and going; it needs special clean rooms.

Lord Vallance of Tummel: I think almost all of my question has been answered, except for one bit on digital forensics, which I will pick up in a later question.

- Q204 **Lord Fox:** We move on to the level of understanding of forensic science within the criminal justice system itself. We have heard evidence that it is very patchy and mixed. It would be useful to get your sense of the level of understanding of forensic science within the criminal justice system among lawyers, judges and through them the juries.

What are the current channels of communication between the scientists and the practitioners and those groups? Is the current training available for lawyers adequate? Who should be handling and delivering that training? Is the communication of forensic science by lawyers in particular properly trained into that body? In other words, are they putting too much or too little weight on evidence? It is a big question, but does the criminal justice system really understand what it has with modern forensic evidence?

Dr Gillian Tully: I would agree with the word "patchy". My word was "variable". There is a variable level of understanding.

Regarding channels of communication, there is probably more at a personal level than a system level currently. I certainly find that I can talk to the judiciary, the CPS, lawyers and whoever else I need to. There are fewer systematic channels for practitioners on the ground. Certainly, my advisory council performs a very valuable role in bringing together people from all those constituencies and have them all consider issues of standards and quality.

Regarding training for lawyers and the judiciary, I would be very much in favour of having training on general scientific methodology and quality assurance rather than specific methods, because those change over time; how to look at the method and see whether some basic things are done right or whether it is fundamentally flawed would be good to have. Regarding wider training and communication, we need to keep on the battle to get greater and greater proactive transparency from forensic scientists.

Lord Fox: It is all very well having transparency, but that transparency is perhaps unintelligible to the people on the other side of the window when it comes to probability, degrees of uncertainty and things like that. If you had that level of transparency, would people be able to understand and grasp those things properly? Are they grasping those things?

Dr Gillian Tully: It is reasonably straightforward to make them understandable, with the possible exception of some of the more detailed probabilistic areas.

Lord Fox: That is the bit that worries me the most.

Dr Gillian Tully: What I am aiming for with the interpretation standard that I am developing, when that comes to fruition and is implemented across the environment is that people, whatever discipline they are

working in, will take the same generic approach to interpretation, so that it is much easier to see where two experts differ, for example, because they will have to state what propositions they are comparing, what data they have used in comparing them and what assumptions they have made. You will be able to see more easily why the disagreements between the experts are happening. Even if there is still very little data on which they are basing that interpretation, at least there will be clarity on why they are disagreeing. I think we can improve in that sort of area.

You are right that we really need to improve clarity on how we explain probabilistic concepts. The Royal Statistical Society is inputting significantly into the development of that standard. It has done some fairly small experiments with judges to look at understanding probability, and it was not great.

Lord Fox: That does not surprise me.

Dr Gillian Tully: There is work to do there, but the research interest of the current president of the Royal Statistical Society is in the public understanding of science and of probability in particular, so I think that continuing to work with him will be very positive.

I am aware that the University of Dundee is just bringing in a post-doctoral researcher to work on that very topic. I think that will be very useful as well.

Lord Vallance of Tummel: What about juries?

Dr Gillian Tully: The understanding of juries is going to be critically dependent on how well the evidence is handled by the forensic scientist, the relevant lawyers and the judge in the court. If we deal with that side, public understanding will improve.

Having said that, I am sure there are ways in which we can make presentation of the evidence better, and that relates partly to being very much more engaged in the modernisation process with the courts, and to understand what technology we can use to make things easier and more visual presentations.

Scotland has done some very interesting work with 3D reconstructions that are presented in court and video presentations of explanations of things such as DNA evidence, to introduce a topic to the court. I think we could do more to improve clarity.

Q205 **The Chairman:** In a way, my question is subsidiary to that. It is about the ongoing communication of all aspects of developing science, forensics and technology to the judiciary as to the veracity of science. Who does that? Is there a gap there? How could it best be done?

Dr Gillian Tully: Again, I would say that there is good personal communication between various leading academics, me, senior judges and so on. I have a judicial representative on my advisory council. We have some of that covered, but to an extent it is based on individual people saying, "We need to ensure that we communicate with the judiciary on this".

The Chairman: Does that need to be more formalised?

Dr Gillian Tully: It would probably be helpful.

The Chairman: How would you do that?

Dr Gillian Tully: I think it would be a relatively straightforward regular session of meetings where we would just sit down and flag any forthcoming issues on either side so that we can take them away to do something about. It is not going to be a long meeting where people try to sit down and sort everything out there and then. It is a case of flagging the forthcoming issues and people taking them away to work on. I do not think it has to be anything terribly complicated.

The Chairman: You do not think it needs some leadership and some professional organisation taking a lead to develop a programme of ongoing communication to the judiciary and a wider approach.

Dr Gillian Tully: There are probably two different things. The first is making representatives of each community aware of the issues arising in each, which is what I have been talking about.

Regarding broader communication with wider numbers of the judiciary and so on, it would be great if we could get more involved on a more regular basis. The Chartered Society of Forensic Sciences is a good organisation to take that sort of thing forward. It holds regular conferences largely for practitioners. If we could manage to get at least an annual conference that included practitioners and legal practitioners in the room, I think that would be a good thing.

Q206 **Lord Mair:** In your written evidence you talk about two key research gaps, the “scientific basis of methods such as facial comparison” and the “provision of data and robust interpretation methods”. In your view, are they still research gaps, who should address them, and how?

Dr Gillian Tully: The requirement for the provision of data to support the interpretation of evidence will be ongoing. We need to keep our data on which we interpret evidence up to date. By way of example, background levels of gunshot residue on public transport will change over time, as will background residues on suspects in custody who are in custody for non-firearms-related offences, and it requires quite a substantial ongoing research effort to ensure that we understand that.

The University of Dundee has started to get to grips with some more up-to-date DNA transfer and persistence experiments, but, again, as the methods get more sensitive we need to keep redoing these sets of experiments. To me, that is an ongoing requirement and that is a big gap, because it is rare that it is sufficiently exciting for the research councils to get excited about.

As I mentioned, not all universities would have the facilities to do it or, in the case of drugs or firearms, have licences and so on. There are some practical considerations about how we get it done. There is no commercial return on investment for doing that sort of research. It falls

into the gap in the middle between the academically exciting and the commercially rewarding.

That is the sort of thing that the Forensic Science Service research and development department did quite a lot of in its time. We need some sort of commitment to that perhaps not very exciting but extremely important ongoing work of keeping databases up to date and ensuring they are not fragmented over all the different organisations doing work in this area.

Lord Mair: Who should ensure that this happens?

Dr Gillian Tully: That is an interesting one. I was trying to think this one through. When I was reporting cases as an expert witness, I felt that it was my responsibility to go into the witness box knowing the background data that I needed to know, but I was backed by a large research department, which assisted me in getting to that point. Similarly, when I had a research role, I felt it was my role to support all the experts who were going into court.

I do not think that experts have that direct access to be able to influence the research agenda. That comes back to Lord Thomas's question about how we are going to have oversight of the whole thing and ensure that it always works together. Some of these research pieces, like I say, do not fit terribly well in any other part of the environment. With others, such as the scientific basis of facial comparison, I would have thought that universities would have been dying to get their hands on that kind of work and that it is more about trying to get the necessary funding.

Lord Fox: In that answer I do not think you mentioned UKRI or the research councils at all. Given that is largely where the money comes from for a lot of this, is there not a role for those organisations, and is there not a role for someone to explain to those organisations the sorts of things we need for the public good to maintain the quality of justice?

Dr Gillian Tully: I was really interested to hear the evidence that UKRI gave as well, partly because I am not seeing a lot of that research coming through into practice.

Lord Fox: We were a bit surprised.

Dr Gillian Tully: The critical thing is: are we doing the right research that makes an impact where it needs to make an impact in practice? I do not know how we influence UKRI and, again, it cannot be an academic exercise in isolation. It has to be in collaboration with the caseworkers, and the questions have to be framed correctly.

Lord Fox: The starting point is to ask them. Has anybody actually asked them to start this process of having a dialogue? Somebody has to cross the threshold and say, "Let's have a chat". Is that happening?

Dr Gillian Tully: I do not know, is the answer. One of the reasons why I publish in my annual report what my research priorities are from a quality perspective is so that the academics can see them and use them in their applications for funding to say, "Look, the regulator says this is really important for quality". In some instances, I will write letters of support for academics who are looking for funding to say, "Yes, this is a

really important piece of work and it has my support. It looks right", but at a co-ordinating overall level that is not happening.

Lord Fox: That is a bottom-up rather than a top-down process.

Dr Gillian Tully: Yes, I suspect it is not yet there.

Lord Thomas of Cwmgiedd: The FSS used to have huge databases and it was easy for it to do it. Is there any difficulty in the fragmented market, either legal or practical, in getting proper databanks?

Dr Gillian Tully: I think there is, largely in having the resources to put them together and to cross the various barriers. The Association of Forensic Science Providers does some collaborative research. It has a body fluids forum, which is a marvellous name, which does collaborative research where it shares data on interpretation of body fluid evidence, for example, and that is really good.

I think I am right in saying that the footwear database is held by police but is accessible to forensic science organisations. There are also areas where individual organisations have their own little bits of things, and more could be done to share.

Lord Hunt of Chesterton: There are many other examples, including environmental examples, that I know of myself, which we used to do research in, and there was nowhere to store the data, unless you formed a company, which I did with my colleagues, and you then had the data for 30 years.

It is a curious lacuna that research councils very seldom emphasise the storage of data in some central system. It is extraordinary, and is why we had government labs to do this. In some areas we still do and in some areas we do not. I think your role in forensic science should be about having some discussion with research councils or companies. There has to be something substantial and long term.

Dr Gillian Tully: Yes.

Lord Hunt of Chesterton: How are we to do that? We have had an appeal from Lord Thomas.

The Chairman: Is that a role that you would feel appropriate for a regulator?

Dr Gillian Tully: It is not part of my current role. I will give this some thought when I come back to the Committee on the question of who should oversee the whole thing, because it perhaps comes into that role.

The Chairman: You will come back on that?

Dr Gillian Tully: Yes.

The Chairman: Thank you.

Q207 **Lord Kakkar:** I want to turn to the issues you touched on in your evidence with regard to a lack of progress in securing a robust and sustainable forensic science strategy, and the lack of investment in forensic science research; Lord Fox has touched upon the potential role of

UKRI.

How do you think this can best be addressed? It is quite worrying to hear from the regulator that there has been poor progress in these two areas, which seem to be fundamental to ensuring that forensic science moves at the kind of pace and scale that will be important for the criminal justice system in the future.

Dr Gillian Tully: Yes. One area where I think this is particularly important is digital forensics, because law enforcement will get left behind by those who are on the other side and they will not be able to keep up with the technology side. That is a really important issue and there is a lot that academia could lend us in that sphere. Computer science departments all over the country must have lots to add in this area, but it is not sufficiently co-ordinated or articulated currently.

Lord Kakkar: Who should be driving the collaboration between the Home Office, the MoJ and UKRI? Is it the overall commander of the system as touched upon by Lord Thomas? Is it the regulator? How does this finally happen?

Dr Gillian Tully: It is not currently part of the regulator's role to do that. It could be but it is not currently.

Lord Kakkar: Is the regulator well positioned to take on that role?

Dr Gillian Tully: I think it is part of the broader oversight question that needs a bit more thought. Getting the Home Office and the MoJ working collaboratively together on this would be a good start.

Baroness Morgan of Huyton: Oh, great.

Dr Gillian Tully: I know that they are really considering how they can involve UKRI. Certainly the Home Office is considering this currently.

Lord Kakkar: Why would this be a complex question for the Home Office, the MoJ and UKRI, as a matter of interest?

Dr Gillian Tully: I do not know. I do not think I can answer that question. It does not seem that difficult. The science and justice forum chaired by Julie Maxton is having its final meeting, I believe, next week, and we are going to be presented with some recommendations at that point, particularly about how research might be taken forward.

It is perhaps wise to wait to see what that says and whether good recommendations come from it in order to ensure that we tie in the MoJ, the Home Office, UKRI and the practitioners somehow, that we have this link between practitioners, academics and the police and that they are linked into the whole system, so that we understand the whole problem and we do not just address little bits that do not get implemented into practice.

Lord Oxburgh: Is our system generating enough graduates in forensic science?

Dr Gillian Tully: It is probably generating more graduates than there are jobs, but I could not say for sure. We do not necessarily need to

distinguish between graduates in forensic science and graduates in good hard science. Any organisation that takes on graduates takes the degree as a starting point and trains them to do the role. Most of the older forensic scientists have a degree in chemistry, biology or physics. You could also have a degree in mathematics and statistics. There are all sorts of degrees that are useful. People doing fibres might have a degree in textiles.

It is not so much whether we are developing the right graduates. It is whether we have the training programmes that can take them from being graduates to being the leaders of the future. Currently, we have the training programmes to take them from being graduates to being competent at doing their little piece of the process.

What I am concerned about is that they are not getting that broader exposure to ongoing research, to collaboration with international partners, to writing and reading scientific papers, and that broader ongoing scientific development that would take them from being competent at their little bit of the process to being a forensic science leader in the future.

Lord Oxburgh: Are you saying there could be scope for a postgraduate diploma that converts graduates in any of the other sciences that you have been talking about into people who could see opportunities for applying their training in that direction?

Dr Gillian Tully: There are already a number of master's courses in forensic science and there have also been a number of PhD studentship programmes in this area. I am not sure that I see the need for an extra diploma, more that we make sure that we invest sufficiently in the whole field so that people do not get stuck just doing their little bit of the process and lose the broader picture.

Q208 Lord Griffiths of Fforestfach: I would like to ask some questions regarding innovation.

First, how do you distinguish in your area between innovation and research? Where is the innovation taking place? What is the difference between the innovation done in the public sector and in the private sector in forensic science? How would you assess the quality of it? Do you feel that innovation is meeting the needs of the criminal justice system? To what extent is there a distinctive culture of innovation within forensic science? If you had a magic wand and you could move the culture in a direction, what would that be?

Dr Gillian Tully: A large part of the innovation, which I would define as moving some science that exists elsewhere and making it something practical, comes from commercial providers of instruments and so on. It is not the commercial forensic science providers but commercial providers of kits and equipment. Currently, a lot of the DNA innovation, in massively parallel sequencing for example, is coming from companies that make massively parallel sequencing instruments, kits and consumables and so on.

Lord Griffiths of Fforestfach: They will sell to the companies that are actually doing it.

Dr Gillian Tully: Yes, so they tend to work collaboratively, at the later stages of their development at least, with academic groups in forensic science. There are some leading groups, particularly in Austria and Switzerland and other countries, where they will take that and do the final bit of moving it from what could be a product into an actual product, and doing testing and so on.

Beyond that, you also need the data to support the interpretation of what you are getting out of that. That needs to be done largely within the forensic science organisations, so they are using the methods that they have developed, taking them, testing them and producing enough data to say, "I might be able to detect this very tiny amount of DNA in the background of everything else, but what on earth does it mean in the context of the case?" That needs to come largely from the forensic scientists, ideally with the input of our academic colleagues as well.

On the other hand, research is carried out more in the universities and there will be research in a range of different scientific disciplines. Some of it may lead to something that is useful in forensic science, but it takes someone perhaps with a background in forensic science to spot that it might have that value and use in forensic science, to try to take it from a promising idea into something that can be used in a case.

Again, that valley of death aspect can be very difficult in forensic science, because you need that investment to get over the gap. Again, the development tends to be done in the forensic science organisations, some of it in the police and some of it in the main providers—things such as collections of footwear and so on. It is split in different ways.

I would like to see more of a scientific and innovative culture enhanced by more secondments between these organisations. I would like to see forensic scientists going off and doing a sabbatical in a university for a while and vice versa. I would like to see police and forensic science organisations with more crossover, because I think you get different ideas from all the different parts of the community and you start getting it working well together.

Lord Griffiths of Fforestfach: Would that be moving from private to public and from public to private?

Dr Gillian Tully: Yes, and between the legal and the scientific. There are universities that specialise in different parts of this. There are some that bring together their legal academics with their forensic science academics and they do some interesting work on understanding reliability, and that sort of thing.

Within the universities, we need to look at different departments working together. I suspect that statistics, computer science and legal departments rarely work collaboratively together, but I would like to see more collaboration and enough resource going into forensic science so that people are not tied to getting work out the door against a contract 90%-plus of their time, so they have a little bit of time to think, to read

the scientific papers, to understand what is going on in the broader context and to bring that into their organisation and become more innovative.

Lord Griffiths of Fforestfach: Funding could be a key constraint, particularly in the private sector.

Dr Gillian Tully: Yes.

Lord Griffiths of Fforestfach: If the private sector is just making a return on its capital, which is what we have heard, if you are running a company and you are just about covering what shareholders expect as a return, you are not going to be able to put too much money into innovation.

Dr Gillian Tully: That is absolutely true, and I think we are in an even less stable environment than that.

Lord Griffiths of Fforestfach: Why do you say that?

Dr Gillian Tully: Assuming that we are making enough return on capital is perhaps more stable than where we are at.

Lord Griffiths of Fforestfach: I see.

Q209 **Lord Borwick:** I would like to ask about the enormous juggernaut of digital forensics that seems to be heading our way. We have received lots of evidence that in perhaps 80% of cases some element of digital could be involved. It does not appear to be used as much. It does not appear that we have the capacity to use it as much as it is possible to be used.

Is that capacity problem a shortage of people or a shortage of understanding digital forensics, and what can be done with digital forensics and what processes are needed? Is the capacity to deal with digital problems the same on the prosecution side as it is on the defence side? What are we doing to get these skills in digital to be used in the forensic service? There were quite a lot of questions in that, I am sorry.

Dr Gillian Tully: I will start on whether we have the capacity to deal with it. No, we do not at the minute. One of my biggest concerns is that it is evolving piecemeal rather than being planned as a sensible forward strategy as to how we are going to get there. I see police forces doing their absolute best to respond to this challenge, but there will be a high-tech crime unit here doing some work and another little unit where some commercial provider comes in and sells them a bit of kit and they think, "That's good, we'll have that", and they will start doing that. There will be some digital media investigators over here doing something else again, and it is not co-ordinated. It is very difficult to control, because it is not just forensic science any more; it is digital investigation. It is permeating all investigation.

I would like to see a proper plan that discusses how effective case management, proportionality and privacy, and avoidance of bias will be achieved in these areas. What does future technology development look like? What does future criminology look like? What does the future of crime look like? How do we get a strategy for delivery that focuses on

articulating future demand, on how we are going to meet that demand and on what we are going to do with the private sector?

Currently, policing seems largely to be developing its own capability and outsourcing its overflow to private companies. That is not enough to encourage the private companies to expand either. There needs to be a much more clearly articulated route forward for the future and real thought given now to what that future looks like. There is a lot of digital evidence being analysed by the police at varying levels of quality. I have reports coming in in a fairly ad hoc manner about front-line officers not feeling properly trained or equipped to use the kiosk technology that they are having supplied to them.

Lord Hunt of Chesterton: Did you say kiosk technology?

Dr Gillian Tully: The first line in a digital case is often that a police officer will go to a self-service kiosk that will have limited functionality. He will plug a phone into it and it will download some data.

Lord Hunt of Chesterton: That is a kiosk.

Dr Gillian Tully: Yes. As yet, those have not all been properly tested. A great piece of work has been done centrally looking at how those could be properly tested. It needs to be updated now because it is all moving on quickly. We need to understand the limitations of that and what we expect to get out of the first line. We will not get everything off the phone at that point. We will get some things and other things that we might get off some phones but not off others.

The second layer is a hub that you would go to, where there will be a few experts who will help you as a front-line officer to get some analysis.

The third level is the experts who sit in the centre and who will do more complex digital forensics work. We need to do more training and testing at the front end and more building of capacity at that expert end, I think.

Lord Borwick: This is the first time we have heard this word "kiosk" in our evidence. Is it part of the regulator's job to check that the people who are operating this part of the process are accurately taking the evidence from the phone into whatever form without adding or deleting something, for example?

Dr Gillian Tully: It is my role to set quality standards for any of that work. For that type of front-line kiosk, let us say that the Met Police are looking at rolling out 100 kiosks across London. If I said they all had to be on its scope of accreditation, UKAS would never leave the Met Police and would be there all the time.

To gain a proportional level of assurance, the requirement that I have set is that each force that is going to use these sorts of deployments must have one typical deployment on its scope of accreditation. That means that it has to be able to demonstrate to UKAS that it has been tested, that the limitations are known, that there is a way for updating the software and checking it in the process and that there is a way of training the staff and keeping their training up to date. I have said, "Right, policing, you make sure that when you roll out multiple versions of that

they have the same controls on them as the central one you have on your scope of accreditation”.

The Chairman: You have got them all excited, and a number of Members want to come in.

Dr Gillian Tully: I need to say that none of the forces has yet achieved that. There is some central work ongoing to get there. That is really important just so that we know what the limitations are.

Lord Kakkar: That means, one would assume, that we do not know what the limitations are at the moment. How much of this material provided in forensic analysis through this particular kiosk technology is entering the criminal justice system and is leading to decisions in trials, convictions and so on?

Dr Gillian Tully: As I said, there has been some central work by a government lab, which used to be part of the Home Office and is now part of Dstl. It has done an initial validation study on these kiosks, but that validation work has not yet been fully disseminated out to forces and nobody has their accreditation yet. We need to find a mechanism to keep it up to date. Some work has been done, but we have not got to where we need to yet.

Lord Kakkar: Is that recognised in the criminal justice system more broadly as this material starts to form part of the evidence and is it challenged?

Dr Gillian Tully: That is where the requirement to declare compliance with the codes of practice and conduct that comes from the criminal practice directions comes in. Any police force putting that evidence into court should declare that it is not compliant with the code of conduct, and that should alert the court to look at it.

The chief issue with those sorts of technologies is not that you are going to get completely erroneous data in a case; it is more that you are more likely to be missing data or you think you have downloaded things but you might only have downloaded some of them and so on.

Nationally, in a good piece of work, the police are trying to ensure that early on in a case—they are starting with sexual offences, I believe—there is identification of the key lines of inquiry in that case, and that those are engaged with early with the defence, to say, “Do you agree that these are appropriate key lines of inquiry?”

Some of the problems with disclosure of digital evidence have come down to what the police were searching for in the output of the forensic science. It was not faulty forensic science; it was wrong searching in the outputs. It is about identifying the key lines of inquiry and agreeing search terms and that sort of thing, so if something does not show up in that first line of inquiry, that first kiosk work, it is a question of whether we need to go on to level 2 and level 3-type analysis.

Lord Fox: The person most excited by the kiosks is Lord Vallance, who thinks he has finally found a use for telephone boxes.

I am more excited by the animus of the police to do this in-house. What is driving them to do it their way rather than using an outsourced process to do this? Is it because they can? Is it because they want to maintain control of the means of production? Is it some other animus?

The second point is: what kind of people are doing this? I have seen anecdotal observations that they are taking police officers who come through the police system and suggesting to them, "You might like to go in to forensics", which strikes me as a strange way of populating your forensics service when you are talking about scientists and physicists and chemists. There are two points. Why are they doing it and what kind of people do they have doing it?

Dr Gillian Tully: With regard to the first point, I guess you would get 43 different answers from different police forces who are doing things differently. Some are outsourcing more than others. Others are largely insourcing. The Met Police have outsourced the overall management of a system, but that is largely being brought into policing. There are many different models for delivery and they will all be decided locally.

Lord Fox: It is basically because they can.

Dr Gillian Tully: Yes. With regard to your anecdotal observation, I would say that I have seen similar observations myself. A lot of people start doing digital forensics because they are interested in technology, and scientists have also gone into it, but I would say it is a mixed bag.

Lord Fox: Should we be concerned about that issue?

Dr Gillian Tully: I am concerned that it makes the process of them achieving the right quality standards more difficult, because that process of scientifically evaluating the strengths and limitations of a method has been a foreign concept in this area. That is why it has been such a battle and difficulty to get that done.

I do not think that people who have come through different routes cannot necessarily make good forensic scientists—I am sure they can if they are given the appropriate training—but we need to ensure they are being assessed as competent before we let them loose.

Lord Fox: Should we be more worried about the fact that the police are deciding to do this in-house or that they may not be using or promoting the right people to do this?

Dr Gillian Tully: I would say that we should be more worried that overall they are not managing to achieve the required demonstration of competence both within the people and the systems.

Lord Fox: Could you repeat that for the record?

Dr Gillian Tully: I would say that overall we should be concentrating first on demonstrating the competence of the individuals, but within the system they work in, how they are supported and whether the methods work effectively. I would concentrate there, and if you have the people who have the aptitude who can be trained in those roles and demonstrate that competence, I would encourage that.

Lord Fox: That is very helpful. Thank you very much.

Q210 **Lord Vallance of Tummel:** Mine is a heeltap on my earlier question on accreditation, as it applies to digital forensics. Some witnesses—I think they were largely police forces—suggested that ISO 17025 was simply inappropriate for digital forensics. Do they have a point?

Dr Gillian Tully: ISO 17025 for core forensic sciences is adopted virtually all over the world, and there are also legal requirements. The approach to quality standards for digital forensics is less developed throughout the world. Nobody is quite sure how to go about it at the outset. There is still a vocal group who would say, "There is no problem here. We don't need any quality standards, because there isn't a problem in the first place. What are you trying to address?"

I think we can now move the debate from an abstract discussion on whether this is the appropriate standard to a discussion based on actual data. We now have data from 60-odd assessments against ISO 17025. We have a decent-enough dataset to say, "Is this standard doing anything or not? Is it useful or not?"

From that dataset, we have seen that when UKAS starts to go in to assess, it is finding all sorts of problems. It is finding problems such as the procedures are not detailed enough, there is variable and in some cases poor technical practice, lack of traceability in the notes that are made of the analysis so that when later someone questions what was done they might not know, lack of effective back-up of data. We have had experiences of casework data being lost because of inefficient back-up, lack of objective evidence of competence of the people, insufficient validation of the methods, no robust way of checking the quality of results on an ongoing basis, outputs not always being presented in a clear and understandable way to the investigating officers, poor chain of custody and insecure or inappropriate facilities.

That is just a selection of the problems it is finding when it goes in. When it goes in and finds each of those problems, it raises an action that has to be addressed before accreditation can be gained.

Having looked at it over 60-odd organisations, we are seeing that it is precipitating considerable positive change from a position where some of these issues are quite worrying, should not be happening and are potentially compromising evidence.

Since 2015, approximately 30 organisations have gained accreditation 17025 in different areas of digital forensics. There are practitioners who argue very strongly against those standards. I have heard that evidence, and, again, the evidence that was given to this Committee was referred back to my digital forensics specialists group, which has practitioners, academics, the police, the CPS and others on it. Again, they have considered all that evidence and are still of the opinion that we should be proceeding with this standard on the basis of the data we are seeing and what it is bringing about.

With few exceptions—there are some—the people who are most vocally against the standards have not been through the process of accreditation. There are always people for and against. Sometimes people start off saying, “This is a terrible process. It will never work”, and end up being an advocate, and sometimes they continue saying, “This is a terrible process”.

There is a broad range of views, but we have to come back to the data and what the data is telling us. I have no doubt that the field of digital forensics could be much more efficient in the way it implements the standards. If the people who use tools to extract data, for example, were able to work much more closely with the people who develop and test those tools, and if they were able to agree between them proper testing criteria and so on, it would really reduce the amount of work that has to be done in each of these different digital forensic units. I think there are ways in which the digital forensics community could organise itself better.

- Q211 Lord Mair:** In terms of efficiency and the increasing burden that digital forensics is placing, we heard from a CPS witness that a more detailed analysis of a device can sometimes take five to six months, and we are talking about gigabytes and terabytes of data.

Going back to the earlier discussion about research, surely this is a role for machine learning and artificial intelligence rather than people plodding through masses and masses of digital data.

Dr Gillian Tully: Yes, is the answer. I am not an expert in that field, so I would not want to give you any detailed evidence on that. I know that some digital discovery tools that are there for looking through enormous volumes of data have started to be trialled in some police forces, so there is a start.

- Q212 The Chairman:** You are quite right that the answer is yes, and to go back to the previous discussion there is therefore a role for research and the UKRI and academic departments to develop such artificial intelligence. Before I go on to the last question, which is important, why should your role not be on a statutory basis?

Dr Gillian Tully: I believe it needs to be on a statutory basis, because without that we are exposing the criminal justice system to an ongoing level of risk that nobody has oversight of, essentially. I have a role to try to promote quality standards but not the enforcement powers to ensure that people comply.

Also, I need a power to require documentation to investigate quality failures. Currently, it is all done through agreement. We have recently had a situation where we nearly did not get that agreement. It pulled back at the last minute. As a regulator, I should have automatic access to the data I need to investigate quality failures.

The Chairman: Secondly, what was your reaction to headlines in the newspapers that our forensic science provision for the criminal justice system is not fit for purpose?

Dr Gillian Tully: I guess my reaction is that that is an oversimplification of the situation. I was going to say the vast majority, but I would say that the majority of forensic science is fit for the criminal justice system. Without some change, however, we are likely to see that slide and we will not be able to get from the majority to all the forensic science provision being fit for the criminal justice system.

The Chairman: Do you think the Home Office and the Ministry of Justice are aware of this?

Dr Gillian Tully: Certainly the Home Office hear from me on a regular basis. We have constructive engagement with the Home Office policy department. It is constructive, if rather challenging sometimes, and it is the same with the police.

The Chairman: Thank you very much. Baroness Neville-Jones.

Q213 **Baroness Neville-Jones:** Thank you for your evidence. It contains a lot of good sense. I have to say I am struck by the thought that forensic science cries out for a professional body of some kind, not necessarily a royal college but something of that ilk.

The question I wanted to ask you is which recommendation, in all the things that we have discussed this afternoon, would most advance the cause of higher standards in forensic science and serve the delivery of justice.

Dr Gillian Tully: I would say quickly before I answer that question that there is the Chartered Society of Forensic Sciences, which is a professional body for the discipline.

Baroness Neville-Jones: What role does it play?

Dr Gillian Tully: It plays a role in trying to support practitioners in achieving quality standards, in assessing competence and in moving forward professionally. It also does some level of checking of academic institutions, so it accredits university courses and so on. It plays quite a broad role. It is increasing in its ambitions. It got its royal charter just a couple of years ago. It is starting to increase its role as a professional body.

I would recommend that the Home Office and Ministry of Justice take responsibility for ensuring that effective oversight is put in place and to ensure effective commissioning of forensic science. I know that people have already recommended statutory powers for my role and more funding and so on, but I am going to go back to commissioning. I would recommend commissioning in the contracting of supply, whether internal to the police or external, which takes a national view on sustainability, investment and scientific culture, as well as issues such as value for money and timeliness, and commissioning on a case-by-case basis to ensure that the needs of the whole criminal justice system and not just the commissioning party are met. That would be my recommendation.

Baroness Neville-Jones: Not just the commissioning what, sorry?

Dr Gillian Tully: Not just considering the needs of whoever commissions the initial work but that the needs of the whole criminal justice system are considered as the questions are asked of the forensic scientist.

Baroness Neville-Jones: You want to push the issue back to the government departments, do you?

Dr Gillian Tully: I am saying that I think they should take responsibility for ensuring that oversight is put in place. I have undertaken to come back to the Committee to say what I think that oversight ought to look like. The main thing I would like to see is proper oversight of the commissioning of forensic science.

Lord Thomas of Cwmgiedd: How often do you meet a Minister in the Home Office and similarly in the MoJ, and what level of civil servant do you generally deal with?

Dr Gillian Tully: I last met the Minister for Policing on 10 October. I meet him on a fairly ad hoc basis whenever I feel I need to bring something to his attention or when there is a major change. The civil servants I speak to are at director and deputy director level in the Home Office. I have much less interaction with the Ministry of Justice.

The Chairman: Thank you very much. If nobody else has any questions, I will close this session. Thank you very much, Dr Tully, for coming today to give us evidence. We have taken a lot of your time. You have been very helpful and we appreciate it. Thank you.