



Select Committee on Science and Technology

Corrected oral evidence: Forensic Science

Tuesday 13 November 2018

4.25 pm

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Members present: Lord Patel (The Chairman); Lord Borwick; Lord Griffiths of Fforestfach, 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. 9

Heard in Public

Questions 90 - 98

Witnesses

Dr Julie Maxton CBE, Executive Director, Royal Society; Andrew Rennison, Commissioner, Criminal Cases Review Commission (CCRC); Emily Bolton, Founder and Legal Director, Centre for Criminal Appeals.

USE OF THE TRANSCRIPT

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

Examination of witnesses

Dr Julie Maxton CBE, Andrew Rennison and Emily Bolton.

Q90 **The Chairman:** Good afternoon, ladies and gentleman. Thank you for coming this afternoon to help us with our inquiry. Your contribution will be very important to us. Before I start, it would be helpful if from my left, although I know who you are, you introduced yourselves for the record. If any of you want to make an opening statement, please feel free to do so, otherwise we will move on to questions.

Dr Julie Maxton: I am the executive director of the Royal Society which is the UK's national academy of science. My background is in law. I read law and was called to the Bar at Middle Temple. I have spent much of my life as an academic, as a professor and dean of the faculty and as a practising barrister. The only other thing I would like to say is that I will speak in two capacities. I have put in two responses to the consultation. One is on the programme of work that I am leading at the Royal Society and the other is on a task I have been set by the Permanent Secretary of the Home Office, which is the Science and Justice Forum, which I am doing in my personal capacity.

Andrew Rennison: I am here on behalf of the Criminal Cases Review Commission, where I am a commissioner. I should point out to the Committee that before that I was the Forensic Science Regulator for six and a half years.

Emily Bolton: I am the legal director of the charity and law practice the Centre for Criminal Appeals. We are a law practice that specialises in investigating and litigating suspected miscarriages of justice. In my previous practice I worked in the United States, which has a very different regime for access to evidence, including access to evidence for forensic testing. Since coming back to this country and seeing how it works here, I am appalled. Forensic science has an enormous amount to teach the system about itself and unless we can identify mistakes, we cannot learn from them, and, if we do not learn from those mistakes, the innocent remain in prison and the guilty are left free to commit other crimes. The work of this Committee on this issue is absolutely crucial. I can only bring a lawyer's perspective to this. It is a lawyer's worst nightmare to be on a panel with scientists, but I would welcome any questions in that area.

Q91 **The Chairman:** Might I start off and ask a question relating to the provision of forensic science to the criminal justice system? It is a two-part question. First, is the criminal justice system being equipped with robust, accurate and transparent forensic science? Is there a difference in the forensic science provided to the private sector compared to the public sector, or should I say prosecution and defence?

Dr Julie Maxton: Perhaps I can have a go at your first question. Clearly, there is a lot of forensic science being used in the criminal justice system, but only a small proportion of the cases that get to court use forensic science. One could conclude from that that the forensic science is good

and exculpates people or facilitates a guilty plea, or one could conclude from that that perhaps there is no faith in forensic science. I suspect there is a lot of truth across the whole spectrum.

I would say that there are clearly some cases where some difficulties have arisen with the use of science in the court, and particularly with the use of statistics in the court, and there has also been a growing concentration on the calibre of forensic science, particularly over the last 20 years, and particularly through the work of the Americans from the national research committees of the National Academies of Science, which did a report in 2009 that exposed some of the frailties in traditional forensic science. In 2016, PCAST—the President’s advisory commission—did another report on that and these difficulties, I think, are reflected across the world. I would say that a lot of these difficulties come from advances in science. We now know that many techniques are not scientifically robust, and, of course, we need to address that. In addition, of course, science is changing all the time. Science is a method and appreciation of the method of science is really important in making sure that science advances in pace with its understanding across the whole spectrum of stakeholders in the criminal justice system.

Andrew Rennison: The answer to that is both yes and no. If we take our minds back to the Runciman commission in 1993, the Royal Commission on Criminal Justice, there were serious concerns expressed then about the quality of science and forensic science, and that led to a number of changes, and we saw some improvements in the system. One of the recommendations of that commission is that defence advocates should have access to reliable, transparent and robust forensic science. I feel we are moving backwards in that respect, rather than forwards, even now. There is a real issue with the legal aid cuts which are cutting off access to forensic science to defence advocates and, I guess, to some of the applicants that appear before my commission.

However, in other areas there is a very robust supply. The commercial sector that you referred to supplies some very good and speedy products to police investigations. When I was the regulator, I referred to it as “coalface forensics”. The officers investigating the burglary, the rape or whatever would get their DNA result within a day or two, or with 12 to 24 hours if they wanted a speedy response. That is what should happen and that does not happen in many other places in the world. I went to a research meeting in America about five years ago where the Americans were proud of the fact that their best crime lab could turn round DNA in 30 days. The mean turnaround time across American crime labs at that time was 126 days. In the UK, we are doing it in two days, day in, day out.

There is—and I think you have already heard this—a huge risk growing around this, and I saw the evidence given by the three gentlemen from the laboratories. That risk is to do with the huge cuts in money that are going in their direction. When I started as the regulator in about 2008 there was probably £120 million being spent on forensic science. That is now down to about £50 million or £55 million and the huge risk that presents is a collapse in the market, with few or no contingency plans

that I have seen in place. So it is yes, no, and huge risks hanging around it at the moment.

The Chairman: Thank you very much for that.

Emily Bolton: We have had about 1,000 applications for assistance since we opened our doors as a charity offering free legal services. What we see in that pool of intake—we have only accepted a very small number of those cases, around 20 to 25—is that access to the original source material to be tested is uneven, whether physical or digital, obviously, because it is in the custody of the police. Whether the defence do not end up doing that testing due to funding issues, as Andrew mentions, or just general inertia is a question here. Also, compared to the United States, there is no culture of defence investigation, and that includes forensic science investigation in this country, comparatively. Where the defence gains access to something that it can subject to testing, it may be a poorer-quality copy, so if you are looking at digital evidence you may be looking at a copy rather than a clone, and copies of digital evidence that lack metadata. You would have to fight to get it. I am here to tell you about the reality on the ground. There are many rules around this stuff and accesses that are written into the statutes, but the reality on the ground is that the defence is relying on the work of the prosecution and the police because of the cuts that we are talking about and because of that lack of cultural tradition for investigation.

The only other comment I would make on Andrew's reference to the speed of DNA turnarounds is that those turnarounds are amazing for an evolving investigation on the ground, but those findings, a "match" or otherwise, always need to be contextualised within the circumstances of the case. What they actually mean depends on who was where, when and what they are saying about that. While you may have a superfast "match"/no "match" situation, who is there to take responsibility for the interpretation of that from the beginning to the end, from the gathering of the evidence to its presentation to the jury, is crucial. That is the decision you are asking the jury to make. You are not asking the jury to decide whether this is a "match"—you ask the scientists to decide that—but you need to help the jury and the judge in his preparation of the summing up with an interpretation. Speed is one thing but depth of understanding and clarity about context is also absolutely crucial, and is missing.

Q92 **Baroness Morgan of Huyton:** Can I ask you about the level of understanding within the criminal justice system, so I am thinking about lawyers, judges, juries? In previous sessions and in a seminar we had, we heard about the breakthrough that the primers have provided, in the sense of people coming together and producing something that everybody could work from. I know you have the Science and Justice Forum as well. What I struggle to understand is where they are going, in a sense. Should there be a statutory basis for the forum? How does the work of the forum move forward? Where do we find out about it? When I heard about it, I confess I immediately thought I would look at the Home Office website and it is not there. Where would any practitioner, let alone

a jury member know where to find that information? It is a big step forward doing the primers, but, first, where are they going next, and, secondly, how can that information be disseminated and supported going forward?

Dr Julie Maxton: The instigation of the primers came from Lord Thomas about eight years ago after the Royal Society concluded some work on neuroscience and the law, which was called the Brain Waves project. He later referred in the Kalisher lecture to the importance of having something such as this. It was a challenge which I gladly took up given my background in law and finding myself in the Royal Society. I managed to persuade the council and the president, Sir Paul Nurse at the time, to agree with me. We do the primers with the Royal Society of Edinburgh and I know you have had colleagues from there in front you. It was a challenge for us, but we have got it off the ground and we have a steering committee with judges and scientists from both sides of the border, and we are going on. We have done two, as you know. We have another two in preparation, on statistics and collision analysis, and we have ballistics and scientific testing of drugs also on our list. In order to do the primers, I raised money from a foundation in America.

Baroness Morgan of Huyton: So they are not funded from the Home Office.

Dr Julie Maxton: No, the primers are not funded from the Home Office and, to be fair, it had nothing do with the forum. The primers are one part of a programme that I have developed with colleagues at the Royal Society. There are other parts to it. Over the last four years, we have done 10 seminars on a variety of topics, for example, memory, statistics, neuroscience, pain, substance addiction, genome editing, causation and causality, and robotics is just coming up. These seminars bring together judges, and other practitioners in the legal field, and scientists to discuss areas of common interest, because both law and science pursue the truth. Much of the lexicon is the same but it is often the interpretation that differs.

In addition to that—and I will answer your question—I have been talking to the judges who run the Judicial College and have managed to get one of our best statisticians to speak to 160 judges during their continuing professional development, as it were. I had another one speak to them on substance addiction and we have two more coming up where they are going to be speaking to 160 judges on both occasions. In addition to that, I have also taken the opportunity to make sure that the college in its lecture series includes science. We have had fact and fiction in brain imaging, what makes a decision autonomous and techniques of DNA analysis. This is all part of a programme. This has had nothing to do with the Home Office. We have done the primers together with the Royal Society of Edinburgh, but the other ones were just an initiative from the Royal Society.

To answer your question, if I could come to the Science and Justice Forum, it was set up about two years ago, against a background of the Government Chief Scientific Adviser's forensic report. In that report, he

challenged policymakers with what forum should provide the opportunity for discussions between different participants in the justice system. I think perhaps this was a pilot to see whether it might work. The forum was set up at the request of Mark Sedwill, who was then Permanent Secretary in the Home Office. I chair it but it has on it scientists, Ministry of Justice people, Home Office people, judges, prosecutors, defence solicitors, the Forensic Science Regulator, forensic practitioners and the police. I do not think I have missed anybody out. It is a complex stakeholder base and the idea was that we could facilitate better communications and we could horizon scan for the issues that were concerning the community.

To answer your question, I could talk about the challenges that we have come up against and describe a function that might work, but the form would have to follow the function for it to work properly. Would you like me to go on?

Baroness Morgan of Huyton: Recognising the time, I think that would be very helpful, because it has been clear to me in previous sessions that this is good practice, but where does it lead to and how does it fit into the system? A suggestion of how something more proactive could help would be helpful.

Dr Julie Maxton: With your permission, Chairman, shall I go on?

The Chairman: No. The problem is that we must get through the many questions we have. The briefer and more succinct answers you give, the better it is because they get recorded. If you have detailed information we can always take that subsequently in writing. Focusing the answers on the questions asked would be helpful to begin with. If there is subsequent evidence that you would like us to have, we would welcome it, but it might have to be in writing subsequently.

Baroness Morgan of Huyton: On that basis, I would like to know what form you think a suitable body or approach would be.

Dr Julie Maxton: There are five challenges. We need better communication, a strategic approach to research in the area, education both ways, scientists, lawyers and judges, funding, which is clearly a key issue, and the changing nature of science has to be appreciated. Having said that, I think a co-ordinating mechanism could support research and development from blue sky to application and enable collaboration and communication across science. It could horizon scan for emerging issues, increase investment and influence areas of need.

The Chairman: Thank you very much, Julie. I am sorry to be hard on you.

Baroness Neville-Jones: Is that a standing body?

The Chairman: Is that what you are suggesting?

Dr Julie Maxton: It could be. In the work I have been doing with the Science and Justice Forum there are different models that could be followed. You could follow an institute such as the Turing Institute. You could put it to a university as happens with the migration work that is

being done at Oxford. You could make it a public sector research entity. There are a variety of approaches one could take.

Baroness Neville-Jones: And that has not been decided.

Dr Julie Maxton: It is not for me to decide.

The Chairman: What you are saying is that there is a need to look at the possibility of a national body that might have appropriate representation that may take this work forward for the future on a long-term basis.

Dr Julie Maxton: Yes.

The Chairman: Mr Rennison and Ms Bolton, do you have anything to add?

Emily Bolton: I would simply add that that approach is laudable, but lawyers will all be amateur scientists, and, ultimately, the testing needs to be done by professional scientists. Unless the access to the evidence is there and the funding is there that will have no applicability. The primer teaches us to know that we want it, but unless we can have it, and the CCRC has the funding to be able to commission experts to do the work, and individual would-be appellants have that access and funding, you have just offered us something that we cannot fulfil.

Baroness Young of Old Scone: Give me your verdict on the degree of leadership being shown in all this by the Home Office.

Andrew Rennison: Can I jump in there? Going back to the previous question, I think those are two very exciting developments, the primers and the forum, and we need to watch those closely. It is how we take them forward. The big gap in this at the moment is the absence of any real strategic thinking. I do not think the fault for that lies directly with the Home Office; it is the Ministry of Justice as well, and I think the two ministries should come together to resolve that issue.

Baroness Young of Old Scone: Is part of the problem the fact that there are two departments?

Andrew Rennison: It is part of the problem. The bigger problem at the moment is funding. It is the cuts to funding across forensic science, whether it be through legal aid on the Ministry of Justice side or policing on the Home Office side.

Lord Vallance of Tummel: On education, should those who wish to be barristers in the criminal courts have to have forensic science as part of their education and for it to be part of their qualification?

Emily Bolton: Barristers and solicitors should be so much more aware than they already are of the potential for forensic science to resolve cases swiftly—absolutely.

Lord Vallance of Tummel: It should be part of their formal education.

Emily Bolton: I would be happy with that.

Andrew Rennison: Why not? Squeezing it into everything else they have to do will be difficult. We had these discussions with the Judicial

College, as it is now called, many years ago, and they struggled to fit it in with everything else that had to be done. There is certainly a gap there that needs to be filled with some further teaching.

Q93 Lord Thomas of Cwmgiedd: I wanted to ask Andrew Rennison about disclosure. Your former chief executive identified that the largest single cause of miscarriage of justice was a failure in disclosure. It is surprising that he identified this in 2012-13, but I think he is right in that timing. This is a long-standing failure. In a corresponding period, in civil cases most disclosure in large investigations is done by key word searches and the use of artificial intelligence. What is the answer to the question: why have police not invested in this? I simply do not understand why they spend hours looking at documents when a machine will do it better and, secondly, once you have made the investment, it should be far cheaper. Why have they not done it?

Andrew Rennison: It comes back to this lack of strategic thinking. People have neglected to look far enough forward, although the civil courts have. There are people addressing this. I was at a demonstration two to two and a half weeks ago with one commercial provider which has a tool it has brought in from America that does exactly that. It will just suck everything in in any format. It will take PDFs, photographs and data off the internet in whatever format you want and it can index and sort it and you do exactly that: key word searching. I know they have trialled it in one large fraud trial in court, where anybody could search there and then to see if anything relevant cropped up. The solutions are emerging, although I do not think it is brand new technology; it has been sitting there for a while.

Lord Thomas of Cwmgiedd: My question is: why, considering this is old hat and the problem has been known about and it is causing miscarriages of justice, has not someone put some money into it? Why has the Home Office not invested in the police? You do not know.

Andrew Rennison: I could ask the same question and I can only put it down to a lack of strategic thinking. The strategy has been too focused on a small part of forensic science and it has taken its eye off the ball elsewhere.

Lord Griffiths of Fforestfach: On the previous question, at present, who is funding the Science and Justice Forum?

Dr Julie Maxton: There is no funding. I am doing it. The Home Office is doing it with us, so there is some leadership. The Home Office set this up and it is supplying some of its staff, but I am also supplying a colleague of mine to do it.

Lord Griffiths of Fforestfach: So it is the Royal Society and the Home Office.

Dr Julie Maxton: No, it is not the Royal Society. I have just agreed in my personal capacity to accede to a request that Mark Sedwill made of me two years ago. It has no funding. I am proposing to write a letter

back to him with recommendations of how this could be taken forward, but we are not quite at that point yet.

Q94 Lord Oxburgh: At various stages in this inquiry the name of the regulator has popped up in all sorts of different positions. It seems to be unsatisfactory at the moment in so far as the Government have indicated that they support the concept of a regulator for forensic science but have not done anything about it. There is a Private Member's Bill being put forward and the Government have not opposed it but they do not seem that interested in pushing it forward. Looking at it from your point of view, do you see a need for a regulator, and how would it actually improve the situation over what we have at the moment?

Andrew Rennison: The obvious answer from me is, "Yes, I see a need for a regulator". I was that person for six and a half years. Very early in my tenure I took discussions back to the Home Office about a statutory underpinning of the role, because I saw some problems emerging through people failing to buy into the standards that the majority accepted were required.

I have had exactly this debate at two House of Commons Science and Technology Committees. I had assurances from the Home Secretary, I think in about 2012, that there would be something on the statute books. I am still waiting. I am incredibly frustrated by that and I know that Dr Gill Tully is as well. Frankly, I do not think the Private Member's Bill will make it through the Commons. We are back to square one on that, and I would please encourage you to make further recommendations on exactly that issue. I do not think the argument is whether we need a statutory underpinning; it is when is it going to happen and exactly how it is going to happen.

Lord Oxburgh: What powers would you give to the regulator?

Andrew Rennison: I would like the regulator to have powers to seek information in areas where she is investigating complaints. I would like the regulator to have power to issue enforcement notices if she sees areas of grave concern. That is not far, I think, from what is in the Private Member's Bill at the moment. There also needs to be some clever thinking around the primary legislation that would create powers for the Secretary of State to create standards through secondary legislation to speed things up so that, as and when standards are agreed through the process that works very well at the moment, they could have some statutory underpinning through secondary legislation.

Baroness Neville-Jones: Would she become an enforcer of those standards?

Andrew Rennison: The way I would see it working is the enforcement process would happen through the accreditation process where that is appropriate, because the standards are set out by the regulator. To prove you achieve those standards, you go through an accreditation process, which does not work for every situation. There are people who are niche to all this for whom it perhaps is not appropriate, but for the bulk of laboratory work it is a standard that works very well, and accreditation is

a way of testing that. I can give you a very long answer that explains exactly what accreditation achieves, but it covers some crucial areas that reassure the criminal justice system that the product is worth while and safe. The enforcement notices would be an alternative function, i.e., albeit there might be accreditation in place, as we have seen in some recent examples, the regulator could go in and say, "I accept that is happening but more needs to be done". You have to bear in mind that the United Kingdom Accreditation Service can walk in now and withdraw somebody's accreditation. I have seen threats of that and it makes people move quite quickly.

Lord Oxburgh: You all have experience of the systems that work in other parts of the world. Do all or any of them have regulators?

Andrew Rennison: The UK was the first. America followed with a committee which fell out of some of the work, as Julie mentioned, of the NAS report. I gave evidence to that committee probably about six years ago. That has since been disbanded. This is pretty new territory globally.

The Chairman: Do the two of you have any comments on the question?

Emily Bolton: One of the points that perhaps gets lost in this is that, for forensic scientists doing their work or regulators doing their work of regulating forensic science, they can only come to a good decision on the basis of the evidence in front of them, and, if you do not have adequate recordation of transcripts, for example, to know what a forensic scientist has been saying to juries, you cannot compare that from one case to another. In the United States you have had the right of transcript since 1956. For any felony or crime that carries a sentence of a year or more, there has been a complete transcript of the trial available. That has been vital for, essentially, almost the self-regulation of forensic science, because of the scrutiny that an expert comes under when he or she appears in a subsequent trial. If I am cross-examining an expert, I have read every time that they have testified on this issue, and I am checking whether they are moving with the science, whether their position has shifted justly or whether their position is shifting in a way that is perhaps slightly troubling and suggests that it has more to do with who they are working for than where the evidence is leading them. You have always got to keep your eye on what evidence is coming in to be examined by regulator, or by the forensic scientist, and, unless the system is prepared to show us the evidence, as the regulator, as the scientist, as the lawyer, as the jury, you will not get the best outcomes you could get from this tool.

- Q95 **Lord Mair:** I think my questions are for Dr Maxton wearing her two hats—her Royal Society hat and her Science and Justice Forum hat—about research. You mentioned earlier that there needs to be a strategic approach to research and more effective co-ordination of research funding. My question really is: who do you think should be responsible for, and indeed who should be accountable for, ensuring high-quality research in forensic science?

Dr Julie Maxton: I am not sure I can answer as to who should be responsible. One of the things we have done in the Science and Justice Forum is map the research landscape in forensics to see where the money is going and where it is coming from and where there are gaps. We are doing some end-to-end case studies on different forms of forensic evidence. As I mentioned earlier, you could have different structures for playing this out, but one thing we have talked about, and I notice that the Public Accounts Committee mentioned it, is OSCHR—the Office for Strategic Coordination in Health Research. It would be possible on a kind of mini-OSCHR basis, if you like, to take a strategic view, but I completely agree that a strategic view is needed to urge funders into certain areas. That said, there probably needs to be another funding stream. Of course, with commercial providers that dictates certain behaviours and, often, science evidence is needed in areas that are rare, so one must look at a different funding landscape.

I would also agree that the Home Office and Ministry of Justice will need to be heavily involved in this. Confidence in the justice system is an essential part of our societal stability, in my view. The fact that it is in this state, and it is not only in forensics but it is widely known that cuts across the justice system have been very heavy over the last few years, means that this is an area which the Home Office and the Ministry of Justice could really take leadership in and suggest which kind of body might be the one to take it forward.

Lord Mair: There are two categories of research, and I am sure there are more, but two major categories. There are the new technologies such as advances in facial recognition and rapidly moving digital research techniques and separate to that are the interrogation, the interpretation; the social science almost as much as the hard physical science—

Dr Julie Maxton: The recognition.

Lord Mair: —and how that is all presented and understood. Does UKRI have a potential here, because forensic science has been described to us as being an orphan discipline in that it does not belong anywhere. Do you think that UKRI might, in its new co-ordinating role, be of value?

Dr Julie Maxton: Certainly. I look at forensic science and to me it simply means science that is presented in the court room, although it could come from anywhere else. Certainly, there are the categories you describe, but DNA and its scientific underpinning came from different forms of science. Of course, one does not know where the science is going to evolve and how it is going to be used in a court room setting. UKRI, if it were minded and had the ability, could fund some of these strategic needs. One could take the areas of research interest of the Home Office and the Ministry of Justice as a starting point and look also at strategic needs. Certainly, the judges in the Science and Justice Forum have views on what the strategic research needs are. I think the whole community needs to come together to think about the strategic direction.

Lord Mair: It does seem that research was more productive and more forthcoming under the forensic service that previously existed. Now that is no longer, we are hearing that there is less research done and it is

more reliant on the universities.

Dr Julie Maxton: Certainly, we discovered as we mapped the landscape that many universities work with individual police forces across the landscape.

Andrew Rennison: May I perhaps help a little, Lord Chairman? I think the picture is a lot more complex than we are making out here because there are huge global issues here as well. Forensic science is a global science nowadays and crime is global as well. We have to be good at tapping into the potential for research in America and across Europe. There have been some huge European partnerships in terms of research in forensic science. The University of Lausanne and other universities have been at the heart of that. We must not forget also the bottom-up approach. There is a lot of very good work happening right at ground level with individual police forces and their local universities. I was at Bournemouth University just last week where they were telling me about collaborations with Dorset Police. You have somehow got to capture and nurture all that. You have to be a little guarded about taking a strategic top-down approach because I think you will miss the real richness of a lot of the stuff that is going on at different levels already, not forgetting the global picture. The real trick is recognising everything that is going on, even if it is in the biology labs, the chemistry labs, the data science labs and has nothing to do with forensic science, and milking from that the new technology and new sciences that can have real benefit in the criminal justice system. Over to you for that challenge.

Dr Julie Maxton: I would completely agree with that. I was not suggesting a top-down approach. I just think we need to supplement what we have. There is lots of good practice and good initiatives, but we need a space where these can be communicated and we need a space where they can be supplemented.

Lord Mair: The question really, going back to the point about the strategic approach to research, is it is all very well having lots of different bits going on in all sorts of different police forces and universities, but are we hearing you say that there is, ideally, a need for some sort of body—I am not quite sure what that body should be—to be able to pull it all together and have a strategic approach?

Andrew Rennison: We looked at this to some extent when Bernard Silverman did his review in 2015, which has already been referred to. One of the answers we came up with then was to have a really informative forensic science conference on an annual basis. In the science world, conferences are a fantastic place for picking up on other people's work and ideas and seeing them presented. There is a peer review process that kicks in as well and the presentation of posters. The Chartered Society of Forensic Sciences took up that challenge and has had some very good conferences. It had one just a couple of weeks ago and I think it runs them on an almost annual basis now. When Bernard and I were looking at this, we had in mind the likes of the huge conferences that I used to go to in Australia and America. You had four channels of information that you could plug into over a four-day

conference and the amount of information and new learning was phenomenal. Probably part of the answer to this is a UK/European wide conference on a regular basis, where the new and emerging sciences, at whatever level they are operating, are presented and made available to others.

Lord Mair: I have one last question on this subject. Is it your perception that the funding for research has also been cut in recent years so there is less research going on?

Andrew Rennison: I do not know what has happened in the research councils. We were always assured that the money was still available. There is always a battle to get the funding out of the research councils. There is nothing new there for the universities and the researchers. There is no doubt that the Forensic Science Service spent a good chunk of money on research. There was one particular piece of research that really excited me around probabilistic fingerprinting. When it closed that went and we have lost it. I think that is a crying shame. The current commercial providers fund some research but it is more aimed at validating the new methods they are bringing on board. It is perhaps bringing on board the new sciences that have come from elsewhere, such as the new DNA chemistries, the 17s and 24s chemistries, so research to validate those in their laboratories in their hands. The answer is that there is not as much being spent as there was when the Forensic Science Service was around. If the Forensic Science Service was still here, I doubt it would have the money to spend on it now.

Lord Mair: Would more funding for research best come from the Home Office or from the Ministry of Justice?

Andrew Rennison: Both, and the research councils, the police; everybody with an interest in seeing positive outcomes from research. The police fund some but it is very small now.

Emily Bolton: The orphan discipline remark brings out the problem here, which is that those areas of forensic science that have come unstuck somewhat unspectacularly are typically the ones operating in that orphan area. They are not DNA; they are fingerprints or ballistics—areas where the only reason you have a forensic scientist doing it is because they believe it is valid to look down a microscope and see the number of points of comparison on a fingerprint or look at tool markings. The areas where the science is only for use in court are the ones where the research and the scrutiny is most needed, because they do not get that natural external testing from a medical context or other applications of that strand of science.

Andrew Rennison: But, my Lord Chairman, they would do through the accreditation process and that tests exactly those issues.

The Chairman: In the document that the Royal Society compiled about the way the research is being done and who is doing it, did you find anything in terms of funding, et cetera?

Dr Julie Maxton: This is under the Science and Justice Forum. We know where a lot of the funding is coming from. Some is coming from EPSRC,

for example, and there is some funding coming from European sources. There are lots of different sources but they are small generally. The biggest source we have discovered is the ERC, the European sources.

- Q96 **Lord Renfrew of Kaimsthorn:** Could we shift the focus for a moment to digital forensics? We have been told that the ratio of spending on traditional forensic science versus digital forensics is about six to one, which seems a notable imbalance. Is enough being done to prepare for the important and increasing role of digital forensics in the future? Does the criminal justice system have the capacity to deal with the increased evidence load that digital evidence generates? Could you say a word about cybercrime? On previous occasions we have discussed mobile phones and so on, but it is not just mobile phones for digital forensics; I think the field is perhaps a wider one.

Andrew Rennison: The short answer to that question is, "No" and, "No". There is certainly an imbalance. My view is the only area of forensic science that has seen any growth in the last five years is digital because it has been forced upon us with the explosion in the use of mobile phones, computers, satnavs, the whole digital arena, and it is lagging behind. There has to be a massive investment in that. Dr Tully will say that the whole process is lagging behind in terms of standards as well. I am quite shocked at how tardy some people have been to take up the standards I was asking for five years ago in the digital forensics arena, because I am still not convinced that some of the methods are valid. I am not convinced we know that people are truly competent or that the organisations are competent to deliver it. There is a huge amount to be done to catch up with the huge volumes of work. There are now backlogs in police laboratories for the work to be done. There are huge delays in achieving the standards. Cybercrime is not an area I have ever looked into and I cannot talk with any confidence on that. My focus was very much on the hard forensics of telephones, computers, et cetera, which was the issue I was grappling with five years ago.

Dr Julie Maxton: There has certainly been an explosive growth in this area. There is nothing surer than that. Last year more than 300 hours of video were uploaded to YouTube every minute, for example, and 100 million images are posted every day to Instagram. Of course, it extends far beyond cell phones to all kinds of servers, iPods, GPS, et cetera. It is not surprising that the criminal justice system is lagging behind because the science is going so fast and the algorithms are developing so fast. It is widely realised now that some of the algorithms may have biases in them and some may be protected commercially and this will lead to issues down the track. In fact, at one of the seminars we convened at the Royal Society on this area, one of the digital people said, "I never thought about the ethics or the law; I was just interested in seeing what it could do". It is really important to try to get that communication going as it is developing, otherwise we will be in a catch-up situation.

Lord Renfrew of Kaimsthorn: It is particularly international and global, is it not, which makes it very difficult to grasp just from a national standpoint?

Dr Julie Maxton: Absolutely.

Emily Bolton: From the perspective of the business of representing individuals, the digital explosion has essentially created 100% surveillance, so any individual should be able to, in a sense, defend themselves with their own data, if indeed it is there, if it points to an alibi or innocence or some other exonerating factor. It has enormous potential to reduce the factual disputes that come before the courts because if you can get to that data you can knock aside swathes, days and days of court time just by the hard data, but, again, it is funding access to the material.

Q97 **Lord Thomas of Cwmgiedd:** Just as we use the words “forensic science” to encompass what is really science, such as DNA and something at the opposite extreme—perhaps the comparison of two types of shoeprint—we use the words “digital forensics” to encompass huge amounts. We have talked about one area earlier this afternoon which is disclosure, which some people call digital forensics. Is there anywhere an analysis of what these different problems are? There is the area of facial recognition and cybercrime is another, but you are not an expert in that. Is it possible to break down what is meant by digital forensics, and has anyone done it, because we are using a label to describe many different problems?

Andrew Rennison: Indeed, and these labels get misused and misunderstood.

Lord Thomas of Cwmgiedd: Has anyone ever done that?

Andrew Rennison: I did. Six or seven years ago my digital forensics specialist group had an attempt at that. In the regulator’s office there is probably some documentation that breaks some of this down. You have to understand the scope of the problem before you can start regulating it.

Lord Thomas of Cwmgiedd: If there is something there, it would be very helpful. We talk in generalisations and they are very different problems.

Andrew Rennison: A linked problem is the terms “expert” and “forensic” get confused all the time and they present two different problems.

The Chairman: Before I go to the last question, which is a very important question, and I would value each individual answer to it, I am going to give you an opportunity, for the next five minutes, to say more if there are any areas of the questions that you think, on reflection, you want to say more about.

Andrew Rennison: Can I say something, please? In question 3 there was reference to a paper in *Science and Justice* which cited a figure of 22% of the cases it analysed containing misleading evidence. Can I urge some caution about the reading of that paper, and what you take from it, because I think that 22% figure is a little misleading? There is some good stuff in the paper, but if you are focusing on forensic science, the evidence in that paper around problems in forensic science presents a far less worrying picture, and it fits with work that was done back in the

1990s, and certainly by some of my colleagues in the past. We see very few forensic science issues manifesting themselves as cases coming to the Criminal Cases Review Commission. This paper which has been referred to in the question to us highlights more than anything else the problem with communications throughout the system between the scientists, the police, the lawyers and the courts. There is some mileage in expanding that further from the paper. I would urge caution on what you take from that paper in your reading of it. I am glad to see one of the authors, Professor Ruth Morgan, is advising this Committee so she can help you with that.

The Chairman: Do either of the other two want to enlarge on the answers to any of the questions we asked? Now is your chance, Julie, because I stopped you earlier on.

Dr Julie Maxton: No, that is fine, thank you.

The Chairman: Baroness Neville-Jones.

Q98 **Baroness Neville-Jones:** I want to ask you a rather unfair question in a way, but one which I think helps us crystallise our thinking. When you look at the various issues that this investigation of ours has given rise to, in your opinion, what single recommendation—and that is what is unfair—would have the greatest impact in improving the quality of forensic science and at the same time make a serious contribution to the delivery of justice?

Andrew Rennison: A very simple answer to that for me is funding up stream. Money wisely invested very early on at the coalface of forensics in understanding the science and all the issues we have been talking about, investing that money right up stream, doing it properly the first time, saves huge problems much further downstream, particularly with a wave of work coming my way in the commission further down stream if we do not do things properly, and right, the first time up stream. It is funding up stream where the funding is less than would be needed if you present all the problems a mile or so down stream. I think that summarises everything you have heard in this committee so far.

Baroness Neville-Jones: Perhaps the other two witnesses have a thought.

Dr Julie Maxton: I would suggest a forum to bring together all the players in the system, tasked with making recommendations right across the piece, to build on best practice, to say where the money is needed and to develop the strategic direction, which would underline the importance of science to the justice system and the importance of the justice system to society.

Emily Bolton: I would say better access to the evidence to test it; the simple request that you show us the evidence.

Baroness Young of Old Scone: I wanted to ask about the upstream funding issue. Does that need to be accompanied by a forum that would establish a national view of what it was important to fund up stream?

Andrew Rennison: A forum is certainly a good idea and I would like to see both, but it is more the funding, and the police and the Ministry of Justice having the money to invest in legal aid and in spending proper amounts on forensic sciences. I was really struck by the evidence of the three gentlemen from the forensic science companies. I had not realised quite how low some of their profits are and the risks that is presenting. That has led to police investigations not spending the amount they did on forensic science years ago, and we are losing some skills. We have lost some companies already where some valuable skills have disappeared. It is funding in terms of forensic investigations. It is clearly research as well, but for me it is funding the forensic investigations up stream.

The Chairman: Thank you very much indeed. This session has been extremely useful to us and we appreciate it very much.