Science of Forensic Investigation – part four

Audience member: "How well resourced is your section?"

Sheila Willis: "Not well enough."

Audience member: "I knew you'd say that."

Harvey: "I don't think that's the end of the question."

Audience member: "I'm not asking you to put your job at risk but crime has, well the perception anyway, of expanding at a great rate, and if your department is involved then in investigations in various places are you very much overstretched?"

Willis: "We always have more work than we can handle."

Harvey: "That's called diplomacy by the way."

Willis: "It's not something I'm known for but I'm learning."

Harvey: "Any further questions out there? And just because you ask a question we're not going to take your DNA sample, don't worry. So there is, yes? There's one, just one here."

Audience member: "Hi Dr Willis. Just a quick question or two questions really quickly. I'm interested first of all, as a woman have you found that the field that you're in is particularly male

dominated, and if it is, how have you dealt with that as you've progressed in your career? And also, some of the details of the cases you come across must be quite disturbing and, I'm sure, effect the staff on a psychological level. How do you deal with that within the laboratory as well? Is there counselling available to the staff or anything like that?"

Willis: "OK, I'll go to the first one first and go back a long time. When I applied for this job almost thirty years ago, a long time ago, I really felt that there wasn't a hope of my being successful because I thought, I'm a woman, and this is really going to date it, a married woman at that, unlikely to get a job in what was a male dominated area i.e. criminal investigation. I really thought I hadn't got a chance. Not only was I successful but of the eight people employed at that time, half of us were women. We were a bit unusual, at that time we were a bit unusual as a laboratory because we went and met colleagues in different parts of the world and we had this almost female domination in our little patch. It wasn't common.

"Nowadays, when I interview for jobs there are almost inevitably more women candidates than male, which I find interesting and I sometimes wonder is that connected with the fact that it's a civil service job and the security of a state employment is more attractive to women or not, I don't actually know the answer. That's within the science world of the laboratory. The world of the investigation of crime is definitely male dominated. Did I find it impeded my career? No, I didn't.

"In relation to the case types, like lots of jobs where there's emotionally distressing information that you are dealing with, if you were to get emotionally involved you couldn't survive. I was quite, from my own point of view, quite interested to find that when my neighbour, who is an elderly woman living on her own, was burgled, I found it much more emotionally draining than some of the horrific cases I see in the laboratory because in some way I think your mind just separates out. The final point you raised about whether or not there's counselling, in recent times there is and I don't know what the take-up is like."

Audience member: "Sheila, I just wanted to ask you, just on the preponderance of the sciences that you use: do you think it's more biology or more chemistry or more physics? I know you said about maths earlier, you need maths for everything, but for anyone who might be considering that

career, which is the one that you think is used the most in the lab? Or is that a hard question to answer?"

Willis: "No. because you know I'm going to answer and say that chemistry is the centre of the world. Because of DNA the biological sciences are increasing in their importance in forensic science but, in a way, what is the analysis of DNA other than some form of chemistry? The divide in the laboratory would probably be a split between chemistry and biology, more and more molecular biology."

Harvey: "Does that answer your question?"

[Muffled words from audience member]

Cameraman: "I'm supposed to be behind this camera but I have a question for you: what is the crossover and what connection do you have with the pathology and Marie Cassidy and her team?"

Willis: "Little enough, it might surprise you to find. When there is a murder the pathologist, obviously, has to establish the cause of death and frequently the pathologist will be at the scene, almost always at the scene. Sometimes we're also at the scene and in that case you'd have interaction of that nature but there's no formal interaction. Sometimes our people will go to the PM in the same way that they'd sometimes go to the scene but it will be very much from the point of view of informing what they do afterwards as opposed to a kind of clear chain or link between the two areas."

Harvey: "That's the point I was just asking you about earlier on about the integrity of the chain of evidence. Do you pick up your own samples?"

Willis: "No, the Gardaí – we don't have any legal authority to seize samples of any sort so the Gardaí have the responsibility of actually taking the samples and submitting them to the laboratory."

Harvey: "But is that not always going to ask you, is a good barrister not going to say, 'Were you happy with the manner in which you received the sample? Are you sure it came from the body?'"

Willis: "Well, I tried to raise that point earlier on, that establishing the chain of custody is a critical part of the process."

Harvey: "So the person who picked it up has to effectively swear that they picked it up from where they say they picked it up?"

Willis: "And ideally seal it there and then at the time and be able to say that that's when they sealed it."

Harvey: "But it's clearly an issue, isn't it?"

Willis: "Oh, of course it's an issue, yes. And it's the issue I referred back to with the cold case review because whatever about good practice, as time goes on and the sensitivity of tests becomes more and more sensitive, the actual sample handling becomes more and more critical. That case you referred to, it's one part of it, well the possibility of transferring one particle by one person handling something is very real."

Harvey: "Very interesting. Yes, further question down the back please?"

Audience member: "Hi. I just have a more practical question. The people that come into your work organisation, apart from general science degrees, what other qualifications do you look for. Do they need postgraduate qualifications also?"

Willis: "When we advertise for vacancies in the laboratory, there's very high interest and as a result we're in a very fortunate position where we have a great choice in terms of candidates, so by and large people will have further qualifications although it's not a necessity for the job. The job calls for an honours degree, the vast majority of the people who come in will have some further qualification. The other things that we look for, and I had a slide there later on in the presentation, forensic science is also about how well you can communicate what you find to the court, such that the court has some chance of evaluating the strength or the value of your evidence, so one of the things that we would look for at selection stage is candidates who are in a position of being able to effectively communicate to a lay audience. That's an area that we provide training for in the laboratory later on as well."

Audience member: "Hi. What actually interested you in science? What got you interested in the very first place? If you were to pick two key things, what were the conversion points or moments?"

Willis: "I have to confess to being in a pub last night and we were chatting because one of my colleagues is retiring and we were talking about his career and various people talking about what areas interested them or what attracted them to science. I was remembering that at primary school level, and it really again brings me back into the dark ages, there wasn't easy availability of the Internet or large amounts of information, and a particular teacher used to cut out sections of a book and pass them around the class. I can clearly remember the one I got on the composition of air and I was really fascinated, more so than the one she gave me on how the heart worked."

Harvey: "OK folks, have we any further questions?"

Audience member: "I have a question. This is in relation to the collection of evidence, I think you might have covered it in the beginning of your presentation but I missed a few minutes. You were

saying that the Gardaí are the ones that actually collect the evidence. This is in relation to a murder case there a few years ago where there was a man killed in a house and it was kind of gruesome, they chopped up his body, disposed of the body and then -"

Harvey: "Kind of gruesome?"

Audience member: "Yes, quite gruesome. They cleaned up the scene completely, apparently the house looked completely normal and then later on – I mean I think it was quite a long time later, several months, maybe even a year – the Gardaí went in and they did gather samples but it was in the cracks of the lino and the tiling of the tiles. First of all, how do they know where to look, I mean, when you go into a house and it doesn't look like there's been blood splattered, how do they know? And do you direct them? Do you give them advice and say 'Look here' and 'Use this chemical'?"

Willis: "We would be very likely to be at a scene like that. It's a case of using your head as to what you might expect. There are no magic answers and you do expect – it's a liquid so you expect it to go down through cracks. There may be instances where – I'm not aware of a case in this country although I'm open to correction on that – but I remember in the Soham murder case, I saw that guy's house after the police had examined it and there wasn't a screed of curtain material, of carpet, they just pulled the place apart. Now the difficulty with that, I spoke to the scientist afterwards because I was there looking at this presentation and thinking 'Oh my God, where would you put the things? How would you deal with them?' because the logistics of how you actually deal with the case is, you know, another challenge. And he said, you know, 'They're still packed in the garage in such and such a place'.

"Because wood for trees is one of the things that kind of crops up. When you're at a scene you don't usually have a chance to go back to it again and again and again so you have as much as possible to get as much as you can at that stage. But then there's the competing thing of how do you get it such that you're getting samples that are going to be meaningful afterwards? So what you're trying to do is, well, what would you expect in this situation and find a sample that will support or not that expectation."

Harvey: "Yes sir?"

Audience member: "I've asked you before but I think for legal reasons you haven't gone into that much case histories, but if I can ask what is the most significant case that you worked on and made a breakthrough? And the most amazing case, is there something that happened to you?"

Willis: "Phew. I suppose the most significant case was probably the very first case I did which was the murder of Lord Mountbatten where I did the paint analysis in that case. It was significant for lots of reasons. The evidence was quite critical, it was at a very relevant part for my career and it had a lot of public interest and so on associated with it at the time. I think the most amazing, I think the DNA work at the moment, and it's hard to isolate a particular case, it's almost like magic. I'm not exaggerating. It's just amazing, the amount of information that's obtainable from almost nothing."

Audience member: "Is there a particular case that would come to mind where, without DNA, there wasn't a possibility?"

Willis: "I think there are loads of cases going before the court every day now that if we didn't have the DNA they wouldn't be there."

Harvey: "Thank you. Down the back there? Yes?"

Audience member: "Hi. I wanted to know, when you have crime scenes in the water, freshwater or seawater, does that effect the evidence? Do you have to take special precautions? What do the underwater guards give you, I guess because seawater or freshwater must contaminate evidence?"

Willis: "Well, we may not get anything from a sample that's been in the water. It depends on the case. I can remember a case where we got fibre evidence as trace evidence because it was retained even though it had been in water. I'm not sure whether or not we've had cases where the DNA is relevant although you would – we frequently have cases where the request is to say can the body be identified that's been in water where the water's not going to affect it."

Audience member: "You know we all hear on the news and we see on TV programmes where everybody throws the knives or the guns into the Grand Canal or what have you. You know you were talking about when a gun is fired, you can get all this dust?"

Willis: "You wouldn't get, the chances of getting firearm residue particles in that situation is extremely, extremely unlikely. With a knife you might get blood remains in the crevices still, depending on the design."

Harvey: "Thank you."

Audience member: "Actually it's kind of following on from that question in a way; you mentioned before about the TV programmes, CSI and Bones and so on. Do you ever think that because of all those programmes and the amount of information they're giving us about how you examine crime scenes and the types of forensic evidence you're looking for, that they're kind of helping criminals in a way? Because they are telling us, 'There's the type of things we should not leave behind'."

Willis: "They certainly change the dynamic, you know, there's kind of a mediated reality about the world. I don't think you can turn back the clock in relation to that. I don't think you can say this is a secret or whatever. It hasn't actually stopped forensic science being used for both for and against suspects in lots of cases."

Harvey: "OK folks. We'll take just the last one there."

Audience member: "No sorry, I think I was calling for one last question there."

Harvey: "You were? That's my job. If we have one more question we'll take it. Otherwise we'll move on and say to all of you thank you very much for your participation. The questions are great and I hope that what has happened here today has given you a better understanding of something that is, in the main case, scientific but of course it has such a massive impact on our daily lives. Please put your hands together and give our thanks to Sheila."