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Mapping the criminal mind

The public's fascination for criminal profiling appears endless. One of the latest methods is geographic profiling, which aims to track down where a serial criminal lives from their crime locations. Former Canadian beat cop Kim Rossmo pioneered this science after walking some of the roughest streets in Vancouver. He is now consulted by police forces all around the world. He tells Clare Wilson what it's like to make a living hunting down serial killers



Photo: Marc Asnin

How does geographic profiling work?

Crimes are not just random - there's a pattern. It has been said criminals are not so different from shoppers or even from lions hunting their prey. When an offender has committed a number of crimes, they leave behind a fingerprint of their mental map, and you can decode certain things from that. We put every crime location into a computer program and it produces a map showing the most probable areas the police should target.

Isn't it just common sense - going for the area where most crimes happened?

There's a certain element of truth to that. You are trying to make some logic out of possible confusion and if you do it well, sometimes people afterwards say, "That was obvious." But we also have cases that involve upwards of a million calculations of a complex algorithm. All our decisions are theoretically driven, so if anyone has the perception that this is just looking at the geometric pattern and proceeding willy-nilly, that's really incorrect.

Can you give me an example of how geographic profiling has helped the police?

A well-known case in the US was the Southside rapist in Lafayette, Louisiana. A task force was formed 14 years after the first crime and examined 14 rapes, six linked through DNA, the other eight linked through the rapist's behaviour. They probably had about 2000 tips and 1000 suspects. It would have cost a horrendous amount to do DNA tests on all of them.

We did a geographic profile and left it with the investigator. He got another anonymous tip about a new suspect, and he saw that at the time of the rapes this suspect had lived right in the heart of the area covered by the profile. So they set up surveillance, got a cigarette butt from him, and took it to the lab for DNA testing. It was a positive match. They arrested him, and he confessed.

He's now serving several life sentences. The rapist was a police sergeant - they said if it hadn't been for the geographic profile, they would never have


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was a civil rights activist in Mississippi in the 1960s. Now his mission is to give poor children access to the modern economy by teaching them mathematics

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When Ugandan phys **Noerine Kaleeba** los AIDS, she set about country's attitude to

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prioritised him because of who he was.

How does the computer program work out the map?

As the distance from the criminal's home base increases, there'll be a decrease in the probability of a crime - we call this the "distance decay" or "least effort" theory. But criminals don't want to operate too close to their own homes for fear of being identified - this is the "buffer zone" theory. The program combines these two to work out where the criminal is based.

What else do you take into account?

An offender may go to a given area and commit a number of crimes at the same time - you see this very often. So you could have a cluster of three crime sites over a few weeks in the same geographical area, but that's not really three independent selections by the offender so we have to treat them differently. We put every crime location into the system but we'll weight a number of them zero.

What do you do when you are asked to work on a case?

It takes about two weeks to do a profile. We want to see the crime sites. We have to know information that the investigators have that has not been made public. It's always intriguing to see what the profile will produce at the end of the day - often I can't anticipate that. Then the police have various options, like searching the various databases that may be available to them, or prioritising existing suspects. They could give us a list of 2000 registered owners of late-model blue Fords, and if it's in the right format we can plug that into the profile.

So geographic profiling is used alongside standard investigative methods.

Exactly. It is not a silver bullet. It is one of many tools, and where it has been the most successful it has been used in conjunction with other tools. There was a famous case in England called Operation Lynx, which was a series of unsolved rapes. The police had DNA and they had a partial fingerprint. I gave them a geographic profile, so there were two neighbourhoods they were focusing on in Leeds.

I was in Manchester for a conference and I met with the investigators on a Monday and they said, "We're kind of running out of steam." Then that Friday they matched the partial fingerprint with one from their criminal database. They went to get DNA from this person and that matched, and they got their confession. If you look at the case, geographic profiling, psychological profiling, fingerprints, DNA and ultimately a confession all led to the individual's conviction. So did geographic profiling solve the case? Well it played a major role, but so did all those other things.

Are the police sceptical of new techniques like this one?

Police forces are conservative institutions - rightly so, because if they make mistakes there are repercussions. Experienced police officers have seen many things put forward in the past that weren't necessarily successful. But if they think about it, there have been many things that have been, such as hostage negotiation techniques and breathalysers. We do need progress, we do need innovation, otherwise things are not going to get better - which is why it's important for innovators and police officers to work closely together, rather than at arm's length.

How did you find the shift from being a beat cop to an innovator?

It's definitely been a morphing, but it's not like one was abandoned for the other, they are both still there. I'm just as interested in using existing tools as in developing new ones.

Have you ever been a victim of crime?

Most people are victims of crimes, for example if their car gets stolen. As a police officer you do end up in situations where someone tries to shoot you or stab you. But I don't think those were motivators for me. I was motivated by wanting to merge regular policing with a scientific approach.

How did you get interested in the geography of crime?

My interest was kindled by working in some pretty bad areas in Vancouver - we would call it Skid Road. The patterns are harder to see in a larger community, when you're driving in a car. But Skid Road was a great place, because you walked a beat and you could see the spatial patterns - you had to live and work in them.

My experience on the ground helped me later to develop geographic profiling because I had a very good idea of the type of information that would be reliably known to a police investigation before a case was solved. In addition I can suggest ideas and strategies that could be used to complement the profile.

But I wanted to pursue my graduate education, so I did my masters and then my PhD, when I came up with the term geographic profiling.

And then you got promoted?

I got promoted from constable to detective inspector, which at that time was four promotions at once.

Some colleagues took it less than positively. I want to stress it was a relatively small number of people - we might be talking about 10 or 20 out of 1100. There was probably more resistance to me joining the officers' mess, which is a social club, than there was to the promotion itself.

Does geographic profiling only work for serial criminals?

Well, there was a fellow known as the Abbotsford killer in an area outside of Vancouver. He murdered a woman on the same day that I defended my PhD dissertation on geographic profiling.

It was only the one murder, but he began to phone the police and taunt them, so we had a number of telephone booths we knew the locations of that we could use in the analysis. And then he stole the victim's tombstone from the graveyard and left it in a parking lot. Then he threw a wrench through a window, and on the wrench he'd indicated some other crimes that he said that he had done.

He ended up giving us 10 different locations to analyse. The body was dumped in a remote canal used for fishing, and the police began going through fishing licences using the geographic profile.

But he was caught before they got to him that way because they took his voice from one of his phone calls, and they made it available for people to listen to, and his mother heard it.

Why do you think the public is so interested in criminal profilers generally?

They get a lot of TV coverage, particularly in the US.

One reason is the attention that Hollywood and television have given to this. Geographic profilers become involved in the most exciting types of criminal cases, so it's definitely appealing. But there is a problem with standards. There are what we call pseudo-profilers - anyone can set something up on a web page and claim all sorts of things.

We want this discipline - and I'm including psychological and criminal profiling here - to be helpful to the police, so it has to be based in science, it has to go through peer review. One of the worst things you can do is to do something for the media in the middle of a case, where the offender may be following the media. You don't know what the offender's response could be. They could try to thwart your predictions or follow them.

How many cases have you been called in on now?

I would conservatively say about 150 crime series, representing about 3000 to 4000 crime locations. About one-third of them remain unsolved. But we don't get the slam dunks, we don't get the easy cases. We get the ones where things haven't gone well and sometimes we are called in several years later.

Isn't it depressing spending all your time thinking about serial killers or rapists?

Well, not usually, because for the most part I'm thinking about geography and space and geometric relationships. Sometimes you are out working crimes and you are exposed to that side. But I've been a police officer for 20 years, and I worked some pretty bad areas, so you learn to deal with that fairly early.

What's the best part of your job?

One of the great opportunities for me has been the chance to travel all over the world and work on cases in Africa, Australia, the Middle East, Europe. I've seen several thousand crime sites now. It's really interesting - it's like being a tourist in this world of abnormal behaviour.

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