Murder, he MAPPED

Crime, like most human activities, has a geographic logic that police detective Kim Rossmo is learning how to plot

By Tara Gregson

It started on the night shift in Vancouver’s crime-ridden Downtown Eastside. Kim Rossmo, a beat cop juggling a full-time career and a full load of courses in criminology at Simon Fraser University, realized that the criminal activity he was witnessing every night wasn’t completely random. There was a geographic logic to the choice of crime sites — not much different from the kinds of decisions people make when they’re choosing a grocery store — and a lot of it could be explained, and even predicted, by new research in criminology. He began considering the possibility that what he was studying at school, along with advances in computer mapping, might help him and his colleagues become more effective criminal investigators.

Thirty-one armed robberies committed by two men appear on a computerized map of Vancouver (white dots on grid, above left), prepared by Detective Inspector Kim Rossmo (left). The black dot at the centre is the neighbourhood where a computer program created by Rossmo predicts the robbers were likely living at the time of their spree.
EIGHT YEARS LATER, Detective Inspector Rossmo, the first working cop in Canada with a doctorate in criminology, is getting a chance to test the investigative skills he developed during his studies. On an overcast afternoon, Rossmo has left his police headquarters down the street with plans to revisit the scenes of a series of murders, the last of which occurred six years ago. Over a two-year period, four women were found dead and strung to death, abandoned in back lanes throughout Vancouver. Rossmo pulls into a curving, unpaved street in one of Vancouver's oldest, wealthiest neighbourhoods, and parks behind a sprawling stone mansion. "The body was found here, at the end of the lane," says Rossmo, leaning meditatively against the open door of his unmarked police car. "There's a ledge on one side, and a fence on the other. That gave the offender cover to take the body out of the vehicle, which was essentially a one-minute operation."

Karen Taylor, a 19-year-old prostitute, was found on this spot, the killer second, fourth and last victim. All the women were strangled to the killer, selected at random from street corners in the city's red-light district. Then, just as suddenly as it started, the crime spree ended. There were no witnesses, no descriptions, no solid suspects. The only trace left by the killer: four adjoining points on a map. This is the third body dump site Rossmo has visited, and he is still not exactly sure what's looking for. More than anything, the invention of geographic profiling — an emerging computer mapping technique that uses crime sites to predict the homes or workplaces of serial rapists, anomists and murderers — is helping him to finally link the community crime patterns into relief and deciding where to allocate police resources. In contrast, geographic profiling is a significant new investigative technique. By taking into account what criminologists know about how offenders use urban geography, Rossmo has created a system that can produce detectives with a crucial piece of information: the likely home of a serial criminal.

Back at police headquarters, a sketch of a man in his 30s, glasses, short hair and a mustache, stares out of a computer monitor. — a police artist's rendition of a dashing killer who was fast-tracked by the Fraser Valley community of Abbotsford early this year. Rossmo now turns towards the drawing as he turns on his computer: "I was called in to do a profile on that case, but that's about all I can say at this point because the matter is still before the courts. I can confirm that the person who has been charged was living within a 1.5-square-kilometer area identified in the profile that I prepared."

Not can he discuss the details of his profile of the Vancouver prostitute murderer. Even though the case has long been closed, Rossmo reveals the outlines of what looks like a relief map gradually appear on the screen. "Now this produces, at the end of the day, is a three-dimensional space which expresses the probability of offender residence. That's space is actually an isopleth map, whose undulating ridges are typically seen illuminating levels of rainfall in a given area."

To more clearly display the data, Rossmo prints a colour version of the same map on a transparency which he then lays over a street plan of Vancouver. The grey areas are the city blocks least likely to be Oughton's home; the red areas are the hot spots, the highest probabilities. "It turns out that because there were so many crimes, the program predicts the offender's home in under one percent of the area. And in fact, a red dot appears at 37th Avenue and Cambie Street — the location of Oughton's basement suite in 1985. In other cases, it has picked off Oxford-offenders in a probation office or workplace. In situations like the Paul Bernard case, which had a data base of 3,200 suspects, there were only two offenders. "It's a powerful winnowing tool, a means of sifting a handful of likely suspects from a vast field of names."

To demonstrate his geographic profiling system, Rosmo calls up a colour map of Greater Vancouver. Superimposed on the city grid is a graphic telephone map of the career of John Oughton, a notorious rapist who committed 150 sexual assaults before he was convicted for 18 of them in 1985. "There are 79 crimes on this screen," says Rosmo, "committed over the better part of a decade. Oughton covered a huge area, but turned up the most of them in a rather small area."

That is clearly a better way to think about where the crimes were committed, and it makes sense that the crimes are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed. When Oughton's apartment was searched, however, investigators found a photo of the suspect. Taken by the suspect, the photo looks as though they are randomly distributed.
A graduate student studying under the Brantingham's, Rossmo realized that every time a serial criminal chose a new victim, he seemed to leave a new victim, leaned down into a trash can, or dumped a body, he was leaving behind a new point on the map — and a more complete portrait of his own activity space. If the Brantingham model was correct — if criminal activity was governed by quantifiable spatial rules like the buffer zone and the least-effort principle — a few points on the map could help predict where a serial killer lived.

While still working the night patrol in Vancouver's skid row, Rossmo wrote some of these rules into a computer program that could be adapted to the geography of any city. He tested it on several notorious historical cases, including the 11 murders committed by British Columbia serial killer Clifford Olson. The program produced a map that pinpointed a four-square-block area around the child killer's home on Cottonwood Avenue in Coquitlam, just outside Vancouver, even though Olson had dumped bodies as far away as Golden Ears Provincial Park, 26 kilometres away.

Other police officers, getting wind of the new system, asked him to try it on cases where the criminal was still at large. During a series of sexual assaults in Surrey in the early 1990s — the so-called 'tag team rapes' — one of Rossmo's profiles named the place where the victim was likely to be within less than a square kilometre. In a subsequent limited-area mail-out, the rapists actually received police letters warning them to be on the lookout for suspicious characters. Called in to investigate the Mahaffy/French murders in Ontario, Rossmo localized Paul Bernardo's, and was working on narrowing the focus when another sophisticated technique was used to get away with it. "I was working on the problem of how one girl shows up in a car and then disappears."

Rossmo's geographic profile of the two robbers (above), was made public earlier this year by Crime Stoppers. The robbers stopped immediately after putting on the ad. No arrests have yet been made in the case, but police have since received new leads. The profiles "are not going to lead investigators to an offender's doorstep. But it helps to focus their investigation," says Rossmo.

When life's little bumps get you down...

It's comforting to know that 3M is there.

Cuts and scraps are bad enough, without having to contend with uncomfortable bandages that don't stay put on elbows, knees, fingers or knuckles. So the folks at 3M combined our unique non-woven material with a gentle adhesive to create a bandage that's so soft and comfortable, you'll hardly know it's on. 3M Comfort Strips stretch and flex the way you do, staying where you put them until their job is done. The whole family will appreciate the benefits of Comfort Strips. They're just one more product from our unique corporate spirit — focus on customers, dedicated teamwork and freedom to take risks without fear of failure. It's a culture in which life's little bumps provide the inspiration that enables us to make the leap from need to want.