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Chapter 4
The Modus via of Sex Offenders and the Use of Geographical Offender Profiling in Sex Crime Cases

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4.1 Introduction

Offenders committing sexual offences against strangers need to make decisions before they are able to commit their crime. One of those decisions is about where to commit the crime. Although this might not be a clear, explicit decision the offender consciously makes it can nevertheless be analyzed as a spatial decision. Another decision the offender has to make is when to strike. As for most spatial decisions, location and time are bound together (e.g., you can only go shopping if the stores are open). From the perspective of an offender, location and time determine the opportunities for committing an offence. These decisions are influenced by several factors that determine the perceived opportunity of the offender to find a vulnerable victim.

Understanding offender spatial decision making and the geographical behavior involved in committing a crime can be beneficial for investigations. This is because the location where crimes are committed might tell you something about the offender and where his anchor points are. Analysing the geography of the crimes and predicting an area that is likely to contain an anchor point of the offender is known as geographical offender profiling (Rossmo, 2000; Van der Kemp, 2014). As such, a geographical offender profile, which provides an indication of the anchor point, can possibly increase the efficiency of police investigations. By determining areas that might prove most fruitful in finding the offender, the police can deploy neighborhood canvasses, DNA-searches, or database-inquiries efficiently by targeting a specific area. In this way, geographical offender profiling can act as an investigative decision support system (Rossmo, 2000).

Just as it is common to assess or reconstruct the modus operandi (MO) of an offender in order to understand how the crime has been committed, it is also useful

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to reconstruct and analyze the geographical behavior of the offender. Van der Kemp (2014) introduced the term *modus via* for the geographical behavior of the offender. It is defined as those behaviors that influence or are influenced by the geography of the crime. This goes beyond only the location where the crime took place to include the characteristics of the surroundings, how a crime location can be accessed, or if the crime location is in sight or hidden and might require prior knowledge to find.

The introduction of modus via in the investigation will be useful in being explicit about the information related to the geography of the crime or the need to gather more information. The modus via is also helpful in assessing the importance of geography and offender location choices in the crime and can be used for geographical offender profiling to fine-tune the mathematical approaches. This chapter describes the use of geographical information – the analysis of the offender's modus via – and its usefulness for criminal investigations.

4.2 Sex Offenders, Location Choice, and Spatial Behavior

Early criminological research on the journey-to-crime of sex offenders focused on the relationship between crime characteristics and the traveled distance. Santilla et al. (2007) studied hard-to-solve rape crimes and established a relationship between the amount of planning and length of the offender's journey-to-crime. This finding was quite similar to previous work by Warren et al. (1998) who found that offenders bringing items to their crime (i.e., a 'rape kit') tend to travel longer distances. Such examples show that offender and crime characteristics influence offender travel behaviors.

Because previous studies focus on the journey-to-crime, the travel behaviors of offenders is reduced simply to a travelled distance. This prevents us from viewing the relationship between crime characteristics and the journey-to-crime distance as the result of a decision about where to commit a crime. The perspective put forth in the current chapter however helps to understand that the distances travelled by offenders of a particular crime type are very likely to depend on the area (i.e., urban vs. rural), or even the country where the crimes have been committed. So, overall distance patterns might not be useful, whereas developing insights into local travel patterns might be.

These considerations might lead to a difficult assessment, namely determining whether the crime series that is under investigation is similar to other general patterns that are known. That might be the case, but it also might not be. Van Koppen and De Keijser (1997) explain how aggregate patterns of travel behavior (usually described as the distance decay function) might very well be the result of very different individual travel patterns. Instead of looking at journey-to-crime distances of offenders then, it might be more fruitful for investigative purposes to consider the sex offender's crime location choice. As other chapters in this book address sex offender decision-making in more detail (e.g., Chap. 2), the current chapter simply provides a brief overview to highlight how this knowledge might be of use.

Beauregard et al. (2007) studied the hunting strategy of serial sex offenders in relation to their crime location choices. Almost a quarter of the sex offenders in their sample stated that the crime location was chosen simply because the victim was there and there was nothing to prohibit the attack. A larger proportion (35%) of the serial sex offenders chose a specific, more secluded area to make sure they would not be interrupted and to lower their chance of getting caught. Some offenders chose an area specifically for the availability of potential victims. As an offender is quoted: "for a whore, you go to the whore district" (Beauregard et al., 2007, p. 458). This is an indication of another factor offenders might consider when deciding where to commit a crime – the availability and accessibility of potential victims.

Certain aspects of sex offender crime location choice can be used in an investigation, such as aspects that aid in behaviorally linking crimes. For example, sex offenders do seem to be relatively consistent when considering where to commit their crimes if one looks at the environmental characteristics (e.g., offenders who tend to operate in a rural area are likely to commit their crimes in a rural area; Lundrigan et al., 2010). This consistency in crime location choice is such that it can be used to link crimes to a series (Harbers et al., 2012). However, in considering how to use crime site location choice when geographically profiling the sex offender, we see there are a number of difficulties that arise.

One issue that must be taken into account is that studies of factors that influence crime site location choices provide insight at the group level. The types of offenders or travel behaviors identified in such studies might not fit the specific case under investigation. Reasoning that general findings apply to a specific case might lead to an ecological fallacy. As such, it is useful to have knowledge about the different factors that might be associated with offender travel behaviors to assess if they might be applicable in the crime under investigation. Those factors might be useful to create geographical scenarios in which different hypotheses about the geographical offender behaviors, the modus via, are stated. Before diving deeper into how to use this in geographical offender profiling, let us first have a look at the basics of geographical offender profiling.

4.2.1 The Geography of Crime

The geography of a crime or a series of crimes can be an important element to consider in order to understand elements of how the crime was committed and possibly why the crime was committed at that location. An offender on the prowl might be familiar with the area he is using as his area of operation. He might be familiar because he lives or has lived in that area. He might be familiar because he has relatives or friends living there. Of course, there many ways one can be familiar with a particular area, or with a few different areas, and the connections between those areas. It was this notion that was described by Brantingham and Brantingham (1984) in their Crime Pattern Theory. In order to understand the potential of geographical

offender profiling, and its potential weaknesses, it is useful to first have a look at this theory.

As people tend to take part in their daily routines, they also tend to have routines in their spatial behaviors. One travels from home to work or to their local grocery store. This creates a general spatial pattern of routine activities emanating from an anchor point – mostly the home location – to nodes, and the routes between those locations. Brantingham and Brantingham (1984) suggest that these patterns are likely to be similar for offenders, as most offenders also have routine activities. These activities shape the knowledge an offender has of his surroundings.[1] The most recent routine activities and the related spatial patterns are most prominent in the mind of the offender and are called the awareness space. The areas where there is overlap between the awareness space of the offender and opportunities to offend (e.g., suitable targets in the opportunity space) are most likely to be the locations where the offender will choose to commit his crimes (in the crime space) (Brantingham & Brantingham, 1984). Figure 4.1 shows the Crime Pattern Theory.

Rossmo (2000) describes how movement patterns of offenders and victims interact to determine the likely location where the offender strikes. Indeed, the general model in the Crime Pattern Theory can be shaped specifically for different kinds of offenders. Offenders committing sexual crimes against strangers, for example, might be influenced by their perception of where potential victims are to be found.

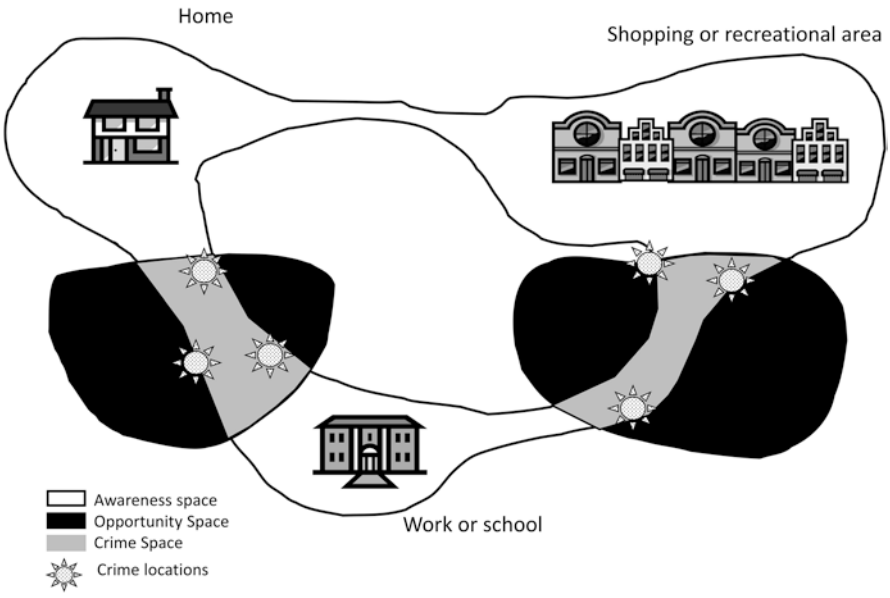

Fig. 4.1 Crime Pattern Theory based on Brantingham and Brantingham (1984). Adapted from Van der Kemp (2014) Modus via: Verfijning van geografische daderprofilering. [Modus via. Fine-tuning geographical offender profiling]. Uitgeverij BOXPress

[1] One can recognize these concepts from the anchor point theory by Golledge and Spector (1978).

Even though the location or movements of victims will influence where crimes will take place, it is assumed that crimes will be located in the awareness space of the offender (Canter, 1994; Rossmo, 2000). For those crimes where the offender has to make a decision about where to search for a victim, the assumption following from the Crime Pattern Theory is that there is relationship between the crime locations and the nodes and anchor of the offender. Predicting the anchor points of the offender based on where he committed his crimes is, in essence, the reversal of the prediction of where an offender commits his crimes that follows from the Crime Pattern Theory (Van der Kemp, 2014). If the offender behaves as the Crime Pattern Theory predicts, the locations where the offender commits his crimes will be related to offender's anchor points. As such, the crime locations should be useful to determine the offender's anchor points.

Using the geographical pattern of the crimes to predict the anchor points of the offender leads to another issue - what the anchor points might be. In geographical offender profiling, the main anchor point is the home location of the offender. This is likely the location that is most useful for investigative purposes. But, we know that not all offenders use their home as the main anchor point when committing their crimes. This was made clear in Canter and Larkin's (1993) distinction between marauding versus commuting offenders. In their study of serial sex offenders, Canter and Larkin found that 87% of the offenders could be typified as marauders and the others as commuters. The home base of a marauder could be found in a circle defined by the range of operation of the offender (the diameter of the circle being the distance between the two most distant crimes). In contrast, those living at a location outside the range of operation were defined as commuters (see Fig. 4.2).

Although we can discuss this model for its utility, or state a convex hull definition of range of operation to be more useful (see Van der Kemp, 2014), the main point here is that some offenders seem to use an anchor point that is not their home location as the base for their range of operation. The circle model at the heart of the marauder-commuter distinction might seem quite different from the Crime Pattern

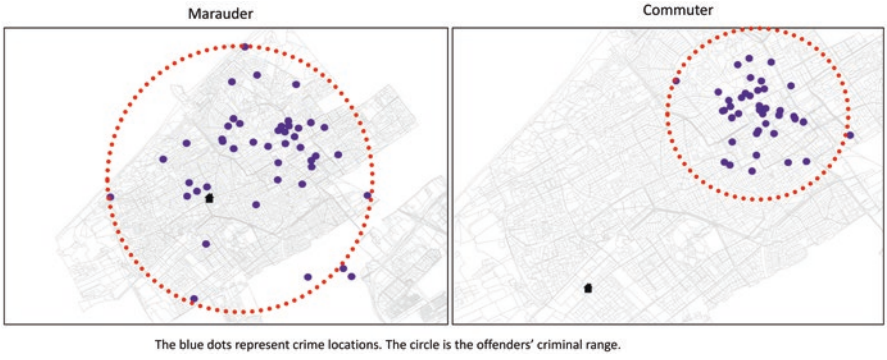

Fig. 4.2 Commuter and Marauder model based on Canter and Larkin's "Circle Hypothesis." Adapted from Van der Kemp (2014) Modus via: Verfijning van geografische daderprofilering. [Modus via. Fine-tuning geographical offender profiling]. Uitgeverij BOXPress

Theory, but there is indeed a connection between the two; the circle model might be describing how an offender commits crimes around one of his anchor points described in the Crime Pattern Theory model. Understanding that the primary anchor point of the offender might well be another frequently visited location other than the offenders' home location (e.g., where he works or often goes for social activities) is crucial for understanding the investigative use of geographical offender profiling.

To summarize, the Crime Pattern Theory describes the relationship between where crimes occur, other activity nodes, and pathways between those nodes, which make up the awareness space of offenders. This allows us to predict the area an offender is familiar with. Geographical offender profiling essentially reverses this process, allowing us to better understand how this pattern of familiarity resulted in the crime locations that were chosen by the offender. This is the main assumption of geographical offender profiling; the spatial pattern the offender created by committing his crimes can be used to predict the area he is familiar with because he has anchor points in that area. Before describing in more detail how geographical offender profiling is conducted, the chapter will first address this main assumption in more detail.

4.3 When Geographical Offender Profiling Works

Geographical offender profiling is an investigative technique. It can be used as a decision support tool in order to focus an investigation on specific geographical areas that are likely to contain anchor points of the offender and help limit the sometimes overwhelming number of potential suspects. In a later paragraph, details of the investigative use of this technique will be described, but let us first consider the conditions under which geographical offender profiling works.

For geographical offender profiling to work, the offender must have relatively stable anchor points from which he starts his journey-to-crime. Around his anchor points he must have choices as to where to commit his crimes or search for his victims. These two conditions should result in a situation where, if an offender chooses his crime locations around his anchor point, it is then possible to use these crime locations to predict his anchor point. Van der Kemp and Van Koppen (2007) describe the conditions in which geographical offender profiling might not be successful. Those conditions are the opposites of when a useful geographical offender profile can be constructed (i.e., no stable anchor points and limited crime opportunities around the anchor points). Let's take a closer look at what to consider before using this investigative technique.

4.3.1 Considerations Before Geographically Profiling an Offender

As geographical offender profiling is based on the assumption that the offender chooses crime locations based on his routine activities and anchor points, it is important to consider the validity of that assumption in the case under investigation before using geographical offender profiling. Van der Kemp and Van Koppen (2007) state a number of reasons why this assumption in a particular case might not hold. They divide these reasons into conditions at the offender level and the situational context of the crime. They describe the general issues for all types of crime, but the conditions below are relevant to sex crimes specifically.

4.3.1.1 Offender Conditions

An offender that does not operate from a stable anchor point might be difficult to pinpoint (Rossmo, 2000). The first difficulty will be if one can distill from the pattern of crimes that the offender might be mobile. At the very least it has to be taken into consideration that the geographical offender profile might not predict a stable anchor point, but a temporary one. The usefulness of predicting a temporary anchor point will depend on the investigation and the possibility to investigate whether there are transient potential suspects. An example described by Van der Kemp and Van Koppen (2007) involved a serial rapist who committed rapes in Amsterdam. As it turned out, this offender came from the former Republic of Yugoslavia and had committed rapes there and in Germany. His temporary anchor point in Amsterdam was the home of his aunt. Although it is not clear how often offenders have such transient anchor points, it might be in a minority of cases (Clarke & Felson, 1993; Cornish & Clarke, 1986). However, in those cases, a geographical profile might not be as helpful as it would be in other cases.

In addition, there might be challenges associated with an offender's spatial behaviors even if he has a stable anchor point. For example, he might not have a stable routine activity pattern or can suddenly deviate from his pattern, even if temporarily. Consider an offender who has committed a number of sexual offences in his local park but now notices increased police presence and decides to move to a different area. We can hypothesize this different area is also part of the geographical knowledge the offender has, but it might previously have not been as prominent in his awareness space. If the offender commits a crime in that different area, the connection with his routine activities and his anchor points is less clear. Whether it is possible to link a potential suspect to that area will depend on the investigative information available.

Also relating to the investigative information available is the fact that it could be unclear what the actual modus via of the offender was. Van Koppen and Jansen (1998) found in their study on travel patterns in robbery that witnesses were not always able to correctly recall the means of transport the offender used. We know

that means of transport is strongly related to the travelled distance by offenders. This obviously will differ between geographical settings, but it is clearly important to consider that an offender was able to use a type of transport that might influence his spatial behaviour. In a crime that occurred in the city centre it might be more likely the offender was on foot. That could lead to the assumption the offender committed the crime in walking distance from an anchor point. The key point here is that depending on the area the crime occurred in the most likely means of transport in that area must be considered in the geographical scenarios and the assessment of the modus via.

4.3.1.2 Situational Context Conditions

The geographical layout of an area will also influence the possibilities for an offender to commit a crime. For example, a city with a river running through it and just a select number of bridges is a type of geographical layout that must be taken into account when sex crimes that are determined to be part of a series are geographically analyzed. In this case, including crimes on both sides of the river when constructing a geographical offender profile neglects the geographical constraints that are there. In other cases, it might not be as straightforward as considering the impact of a river on the offender's spatial behaviors. It might be that social barriers (e.g., characteristics such as ethnic heterogeneity or socio-economic differences between areas) hinder an offender from moving into certain areas as he might not feel safe (i.e., he may feel he stands out; De Poot et al., 2005). So, in analyzing the crime series pattern before the creation of a geographical offender profile, the series should be analysed to consider the influence of the geographical and social layout of the environment in order to determine whether the crime series should be split up by the geographical clustering that occurs. In analyzing the geographically clustered crimes separately, it might be possible to predict different anchor points for those separate clusters. For investigative purposes, that might aid in limiting the pool of suspects and prioritizing suspects more efficiently (Goodwill & Alison, 2006). For example, if a suspect can be linked to both predicted areas for the separate clusters that would be a reason to rank this suspect higher than a suspect that can only be linked to one of the predicted areas.

A second condition relating to the situational context of the crimes is the spatial distribution of potential locations where victims might be found. The mathematical approach of geographical offender profiling considers locations of potential targets to be randomly distributed in space (Van der Kemp, 2014). However, the distribution of potential targets, and how the target backcloth (i.e., the geographical lay out of the area in which the potential targets are located) influences an offender's crime location choices, is not clear (Van der Kemp, 2014). In a study about the possibilities of geographically profiling offenders that targeted prostitutes in the Netherland it was clear the areas the prostitutes made themselves available were specific (for instance, the Amsterdam Red Light District) and therefore of little use for geographical offender profiling (Van Beek, 2013). An offender seeking a prostitute as a

victim has little choice in terms of his crime location. The level of choice the offender has in relation to the geographical distribution of sites for potential victims is likely to determine how his crime locations are related to his anchor points. In other words, the less freedom the offender has to choose his area for finding victims, the less informative these locations are likely to be for pinpointing the anchor points of the offender.

Bernasco (2007) has argued it may be useful to assess potential crime locations that were not chosen by the offender. Although for sex crimes it might not be possible to be precise about locations that were not chosen by the offender to search for a victim, as it is less likely to be known which areas might be seen as areas to have potentials victims to choose from. For other crimes, such as burglaries, analysing potential locations that are not chosen by a burglar could be insightful in an investigation. In a case in the Netherlands where a young girl was brutally attacked and moved to the crime location and left, an analysis was conducted to determine the most likely location the victim was first seen by the offender and his direction of travel (Van der Kemp, 2015). The modus via analysis consisted of reconstructing the route the victim took until the point she was attacked by the offender to determine potentially suitable attack sites along the route. The fact the offender did not choose to attack at other suitable locations led to the hypothesis the offender did not see the victim along that part of her route. The offender seemed more likely to have come across the victim at a later stage. This information was part of the consideration in this investigation to use familial DNA-searching in the neighborhood of the crime site. This third issue adds to the notion that the geographical distribution of potentially relevant locations should be evaluated. That evaluation could lead to the conclusion that further geographical analysis might not be fruitful in the investigation, but without such an evaluation that would not be clear.

The last consideration relates to what crime locations are known in the police investigation. In a sex crime like stranger rape, the most relevant location in order to geographically profile the offender's anchor point is likely to be the location the offender first spots the victim, but that can also be a difficult location to infer if the victim is not aware of the offender. It is straightforward, as Canter (2005) states, that errors in the registered information can occur and can lead to errors in the geographical analysis of the case. In the process of creating a geographical offender profile, the level of accuracy of the crime locations of the case under investigation should therefore be taken into consideration. The crime locations that are considered accurate due to the fact the victim could report them (for instance, the location where the offender attacked her), or because there is evidence (such as CCTV-footage), will be more important in the geographical analysis than crime locations of which there is less evidence of the accuracy.

The considerations described above should be taken into account when assessing the possibility of geographically profiling the offender. As shown, not all considerations mean one cannot analyse the modus via of the offender, but it might hinder a spatial mathematical analysis for creating a geographical offender profile. An assessment of the geography of the crime, what is known about the spatial behaviors

of the victim, and the quality of spatial information are prerequisites before moving on to create a geographical offender profile.

4.4 Geographically Profiling an Offender

Creating a geographical offender profile is usually described as a spatial mathematical procedure used to calculate a location or an area with a high probability of including the offenders' anchor point (Rossmo, 2000). From an investigative perspective it might be useful to view the creation of a geographical offender profile as the analysis of the geographical behaviors of the offender and how it relates to the commission of his crime(s). Van der Kemp (2014) describes this as the modus via approach to geographical offender profiling. This approach does not rule out using a spatial mathematical analysis of the pattern of the crimes, but it makes clear the analysis is predominantly about analysing the geographical behaviors of the offender.

The actual process of creating a geographical offender profile starts with determining if, for the crime that is under investigation, the geography and location choice play an important role. The importance of the geography of the crime is assessed in relation to how specific the crime location (or the location where the victim was found) is and if the offender had to make a decision about where to commit the crime. For a geographical behavioral assessment, at least one crime location is needed. For sex offences, that can be the location where the actual crime occurred, but other types of locations can be insightful, such as the location where the offender attacked the victim, or the location where he set the victim free. It can therefore be quite possible that, in one offence, multiple locations may be known. The more the offender has an influence over the choice for that location, the more likely it will be useful in the geographical behavioral profile analysis.

Beyond using one crime for a geographical behavioral analysis, crimes that are part of a series (providing more crime locations) increases the possibility of predicting the offender's anchor points using spatial mathematical analysis (Van der Kemp, 2014). Those crimes should be linked with at least some degree of certainty to one offender. The geography of the crimes can actually be useful for linking crimes to a series (Deslauriers-Varin & Beauregard, 2014; Woodhams et al., 2019).

In order to be as precise as possible in analysing the geography of the crime locations the coordinates must be determined. In some cases (e.g., burglary), this is usually quite easy. However, for sex offences, it might be more difficult depending on where the crime took place.[2] Sex offences committed inside might be easier to pinpoint if the victim can identify that location. Crimes committed outside, for instance in a park, might be more difficult to precisely locate. It is important to make

[2] For an overview of geographical crime analysis approaches and their development see Van Schaaik and Van der Kemp (2009).

clear that geographical offender profiling is not only about creating a prediction on a map of an area where the offender might have his anchor point, but it is about analysing the geography of the crime and the offenders' modus via to focus the investigation (Goodwill et al., 2013; Van der Kemp, 2014). That said, creating a geographical profile on a map to locate the area predicted to contain one of the offender's anchor is a clear way to focus the investigation on a specific area.

There are many approaches to geographical profiling using mathematical models to calculate an area or a location based on the coordinates of the crimes (Van der Kemp, 2014). Those models range from calculating the centre of gravity or the least effort point of the crimes to using distance decay functions to predict an area. There have been debates as to how to assess which approach is most accurate (Canter, 2005; Paulsen, 2006). Although the different mathematical models create different outputs, they are all likely to be quite accurate if the main assumptions of geographical profiling hold true. All mathematical models use the topological configuration, their spatial pattern, and distances to calculate the geographical offender profile. As Van der Kemp (2014) concludes, the results from journey-to-crime studies (e.g., Capone & Nichols, 1975; Canter & Gregory, 1994; Canter & Hammond, 2006; Davies & Dale, 1995; Fritzon, 2001; Hammond & Youngs, 2011) are not explicitly used to fine-tune geographical predictions.

The modus via approach of geographical profiling is based on the notion that there are factors influencing the geographical behavior of the offender, which can be used to assign weights to the crime locations (Van der Kemp, 2014). This notion follows from the deduction that an offender's geographical behavior entails more than his journey-to-crime and therefore using those insights could be beneficial in an investigation.

In more detail, the modus via approach is focussed on analysing the geographical information in the investigation to establish if certain crime locations are more relevant to predicting the offender's anchor points. As an example, consider a series of crimes of which three are committed in the early morning hours and seven during midday. It is likely those crimes, the early versus the midday ones, are committed in different areas. One can now hypothesize about a "*geographical scenario*". Van der Kemp (2014) defines the geographical scenario as the description of one of the possible ways in which the assumed modus via of the offender has influenced the geographical pattern of his crimes. In this example, a geographical scenario could be that the crimes that were committed in the early morning are closer to the anchor point of the offender than the later ones. An underlying assumption could be that the offender leaves his home on his way to work and that the early crimes have a strong connection to his home location. In the further mathematical analysis, these three crimes can be assigned a weighing factor as to give them more importance in the prediction. The other crimes can be assigned a standard weight (for instance, 1) as they are analysed in the standard manner.

Of course, the geographical offender profile following from this must be interpreted in light of the given scenario that was used. But more importantly, at least one other geographical scenario should also be analysed to compare the profile outputs. Following this example, we can hypothesize the opposite geographical scenario in

which the later crimes are assigned more weight as they might be committed around an anchor point the offender visits during the day. In this example, only one factor is used but obviously more factors can be used and combined depending on the available investigative information. Some examples of potential factors: the order in which the crimes occurred, the level of geographical clustering of the crimes or, by contrast, how much a crime location is a geographical outlier. All these factors can be incorporated into different geographical scenarios and can be used to assign weights to the crime locations. The geographical profiles that are created based on these different geographical scenarios can prioritize a similar or overlapping area, or different ones. For investigative purpose they all can be used to assess if focussing on one or the other area is fruitful in prioritizing potential suspects. Of course, how useful those prioritizations are depends on the other investigative information about the crime and possible suspect characteristics. The geographical offender profile merely helps in prioritizing a search area and might therefore be of assistance.

The modus via approach uses all the available investigative information and the inferences that can be made about that information. Another important aspect is that the modus via approach can be used in all of the current mathematical models. The key element is making systematic use of the relevant geographical information in an investigation in order to gain as much information to aid decision making.

4.5 Investigative Use of the Geographical Behavioral Analysis

In the introduction to this chapter, geographical offender profiling was introduced as an investigative decision support tool. In describing the basic procedure of making a geographical offender profile some references were made to the investigative possibilities of such an analysis.

The main use of a geographical behavioral analysis or a geographical offender profile is to prioritize suspects on the basis of their connection with the predicted area. That prioritization might be by listing ‘known sex offenders’ and rank ordering them in accordance to how strong they are linked to an area. A potential suspect living in a predicted area will be ranked higher than a potential suspect who formerly lived in that area. Suspects might be linked to an area because of them having committed crimes there before (Snook et al., 2006).

Prioritization should not only be considered on the basis of a geographical link to an area; other information might also be used. For example, if a known sex offender has been spotted by the police officer in that area, that could be reason to rank that offender as a potential suspect. Obviously, not only listing known sex offenders is an investigative strategy that can be used. In some cases, there might not even be known potential suspects. In those circumstances, the geographical profile can be used to focus search strategies that come from other tactical information, such as certain car types that are registered if the victim can recall the type of car the

offender was using. Any type of tactical information in the investigation that could be searched based on a registration with a geographical link, such as a postal code, might be useful.

Another clear investigative strategy is focussing on an area for DNA screening that is derived from evidence at the crime scene or on the victim. Potential suspects might be asked to cooperate by giving their DNA or an investigator might select an area for familial DNA-searching. Less invasive investigative strategies such as neighborhood canvassing by police officers or public awareness campaigns can be focussed on the geographically highlighted areas. And operational stakeouts or patrol saturation might be deployed if an offender seems to strike at specific times, increasing the chance of the offender being caught in the act (Rossmo, 2009).

Next to these more or less direct strategies to search for the sex offender, one can also think about using the modus via assessment to further search for evidence by retracing possible routes of the offender. Basically, any investigative strategy that could be focused around a geographical boundary following from a geographical behavioral analysis or a geographical offender profile could be deployed more efficiently (also see Stangeland, 2005). For example, one could search for geo-tagged information posted on social media in the area where the crime took place, or trace the use of cell phones in the vicinity of the crime location.

4.6 Conclusion and Future Directions

During the investigation of sex crimes, it might be quite useful to consider the role of geography. Research on sex offender decision making shows patterns of behaviors can be found, as was described in this chapter. The focus of this chapter was on what aspects of geography to consider in sex crimes investigations and how to make use of that information. On the one hand, there is quite a developed understanding of how to use geographical information of sex offenders, for instance in creating geographical offender profiles. On the other hand, there is still a lot to explore with respect to the fine-tuned use of investigative information in assessing the offender's modus via in practice. From an investigative perspective, it is a matter of making use of what is available in the case under investigation. Alongside trying to establish the modus operandi, investigators should also focus on the modus via as geographical information might be very insightful and useful in an investigation.

Key Points

- Consider the geography of the crime or crimes explicitly. Examine the crime or crimes under investigation in order to determine the geography of the crimes. For example, ask: How much influence did the offender have in choosing the crime locations?
- Assess the modus via of the crime or crimes. Try to assess the modus via of the offender in the crime or crimes. This is about analysing the available information and highlighting information that might be searched for that can help determine

the offender's geographical behaviors. What information is available about the offenders' manner of transport? Is there an indication the offender followed his victim?

- Determine the possibility of geographical offender profiling for the crime or crimes. The assessment of the modus via will shed light on how likely it is the offender behaved in line with the main assumptions of geographical offender profiling. The list of factors described above gives some guidance as to what to consider.
- Consider multiple geographical behavioral scenarios. The investigative information in the case can be used to create a geographical scenario about the relative importance of certain crime locations for predicting the offender's anchor point. This information can be used in a hypothetical geographical scenario, which helps in deciding what weights to assign to which locations. As one geographical scenario is analysed it is useful to also analyse alternative geographical scenarios. The geographical offender profile following from the first scenario can now be compared to its alternative(s) to make investigative decisions as to where to focus the investigation.
- Assess the potential investigative applications. If different geographical scenarios result in different geographical offender profiles investigative efforts might be focused on prioritizing suspects that can be linked to both predicted areas, or to rule out suspects based on their lack of a link to an area. Depending on the size of the predicted area and the amount of investigative information available to prioritize potential suspects, one can consider different investigative search strategies. Again, the key element here is that the decision about what investigate strategy to use could be supported by the geographical behavioral analysis.

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