

RESEARCH REPORT

Spatial Patterns of Serial Murder: An Analysis of Disposal Site Location Choice

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Although the murders committed by serial killers may not be considered rational, there is growing evidence that the locations in which they commit their crimes may be guided by an implicit, if limited rationality.

The hypothesized logic of disposal site choice of serial killers led to predictions that (a) their criminal domains would be around their home base and relate to familiar travel distances, (b) they would have a size that was characteristic of each offender, (c) the distribution would be biased towards other non-criminal activities, and (d) the size of the domains would increase over time.

Examination of the geographical distribution of the sites at which 126 US and 29 UK serial killers disposed of their victims' bodies supported all four hypotheses. It was found that rational choice and routine activity models of criminal behavior could explain the spatial choices of serial murderers. It was concluded that the locations at which serial killers dispose of their victims' bodies reflect the inherent logic of the choices that underlie their predatory activities. Copyright © 2001 John Wiley & Sons, Ltd.

INTRODUCTION

In recent years, growing attention has been paid to the locations at which criminals commit their crimes (Brantingham & Brantingham, 1981; Canter & Larkin, 1993; Rengert & Wasilchick, 1985). This has indicated that these locations are not arbitrary, but relate to the specific experiences of the offenders themselves and imply some form of logical selection on the part of the criminal, even if the basis of the selection is not always clear to the criminals themselves. Any locational choice involves a complex set of decision processes. Attempts to model these decisions have

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emphasized the logic of the choices made by the offender. For crimes in which there is a direct economic gain, such as robbery or burglary, such models based on the weighting of the perceived costs and benefits have much to commend them. But for violent and emotional crimes, such as the murder of strangers, it may be assumed that such logical models may be inappropriate. However, this is to confuse an inherent logic of the location choice with an overt and conscious rational decision. A logical choice would be one that does not lead to detection and apprehension, even though the criminal activity and its motivation may be irrational. This study examines whether the body disposal patterns of serial murderers can be understood using logical models of location selection.

Serial murderers are stereotypically thought of as bizarre, genetically disordered individuals who randomly prey on victims (Revitch & Schlesinger, 1981). Logical or rational behavior is not a term typically associated with such offenders. However, while their motivations and murder actions may be unique, there may be other aspects of their criminal behavior that do bear commonalities with other types of offender. In particular, it may be that, spatially, serial murderers share more in common with other types of offender than typically assumed. For while individual motivations for murder are often thought to be the result of a unique combination of biogenetic, sociological, and psychological factors, it can be suggested that the manner in which any individual interacts with the environment will be influenced by a number of spatial processes that are generic to both criminals and non-criminals alike. For instance, a serial murder whose motivation is a bizarre desire for sadistic sexual excitement is unlikely, in terms of motivation and murder actions, to share any similarities with other types of offender. However, the extreme nature of his motivation and murder actions will not necessarily be reflected in his spatial behavior. For although driven by a unique motive intrinsic to himself, he will nevertheless be subject to both the external influences of, and the internal conceptions of the larger environment. In the present study it is hypothesized that more generic spatial processes such as the psychological importance of the home (Canter & Larkin, 1993), familiarity with one's surroundings (Brantingham & Brantingham, 1981) and individual mental maps (Downs & Stea, 1973) will influence the spatial decision making of serial murderers in a similar way to other types of offender.

Previous attempts to define serial killers in terms of their geographical mobility have classified offenders according to the distances they travel to offend. Hickey (1991) presents a threefold classification of serial killers that he calls (a) travelers crossing state boundaries, covering thousands of miles, (b) 'locals' who remain in their home state, and (c) 'place specific' killers who do not leave home to kill. Hickey's definition of these three groups lacks some precision in that no actual distance ranges are suggested to differentiate between the groups. More recently, Holmes and Holmes (1996) distinguished between geographically stable and geographically transient serial killers. Geographically stable killers live in the same area for some time, kill in the same or a nearby area, and dispose of bodies in the same or a nearby area. In contrast, the geographically transient killer travels continuously (probably to confuse police) and disposes of bodies in far-flung places. As with Hickey's classification, there is a lack of precision and no attempt to define the distances traveled or the size of area for each group. However, both typologies do draw attention to variations in the size of domain over which serial killers operate. They throw little light, though, on what determines the location of that domain or its scale.

Studies of crimes other than serial murder have provided hypotheses for the reasons why people offend in particular areas. In essence, they have proposed that the home base of criminals provides experience and familiarity with an area, and thus shapes where crimes are committed. As long ago as 1946, Erlanson found that 87% of rapists attacked within their own neighborhood. Amir (1971) supported the claim of an influence of home location by showing that 68% of rapists in Philadelphia during 1958–60 offended within five city blocks of their homes. Brantingham and Brantingham (1981) developed the consideration of the familiarity a criminal has with an area beyond the home. They included job and recreational experiences, drawing attention to an action space, consisting of a network of paths and nodes with which an offender would be familiar.

In proposing an action space for criminals, Brantingham and Brantingham (1981) saw crime as a byproduct of other activities in which the criminal engages. Originally developed by Cohen and Felson (1979), this has become known as 'routine activity theory'. Routine activity theory sees crimes as opportunities taken within the awareness space of day-to-day life. The routine activity explanation for offender spatial behavior had traditionally been put forward to explain the target or victim selection stage of an offence. The approach focuses on the discovery of 'opportunities' in the form of victims and targets during non-criminal activities. However, it is proposed here that routine activity theory can equally be applied to the body disposal stage of a murder. The difference lies in the temporal stage of the offence. The likely offender has become an actual offender, the suitable target has been located and the crime has been committed. The search moves from that for a victim to that for a disposal location.

The rational choice explanation of spatial behavior involves the making of decisions and choices which exhibit a trade-off between increased opportunity and greater reward the further an offender travels from home, as well as the costs of time, effort, and risk (Cornish & Clarke, 1986). The benefits of a criminal action are the net rewards of crime and include not only material gains, but also intangible benefits such as emotional satisfaction. The risks or costs of crime are those associated with formal punishment should the offender be apprehended. For example, a serial murderer may place a great distance between his home and the place where he disposes of a victim's body in order to distance himself from the offence, or to reach a particular location with which he associates some emotional satisfaction (the benefit). However, the risk of apprehension may increase the further he travels (the cost).

Bennett and Wright (1984) suggest that the concept of limited rationality best explains the spatial behavior of offenders. Here, it is not presumed that offenders weigh all the relevant factors every time an offence is contemplated, and other factors (moods, motives, perceptions of opportunity, alcohol, the influence of others, and their attitude toward risk) apparently unrelated to the immediate decision often take over. Bennett and Wright conclude that offenders are behaving rationally as they see it at the time, but what might be perceived as rational on one occasion might not be so perceived on another.

The proposal of limited rationality implies some random process in disposal site selection. This would mean that offenders would not be expected to move systematically through an area disposing of bodies. Instead a domain of operation would be hypothesized in which the central influences of familiarity were having an effect, but with the subjective factors introducing some degree of randomness into the selection

of sites. In so far as routine activity was the dominant influence, the home would play a pivotal role. In so far as rational choice was dominant, the actual qualities of the disposal location would be primary.

The different emphases of these two models are reflected in the distinction that Canter and Larkin (1993) made between offenders whom they labeled 'commuters' and those they called 'marauders'. The rational choice would be to 'commute' into an area where the optimum benefits of disposal locations to the offender outweighed the risks. Routine activities would tend to lead to disposal locations occurring on routes from the residential location in the 'marauding' fashion. In other words, the distances traveled by an offender from home to dispose of a body are likely to be less clearly related to residential location for 'rational choice' offenders than for 'routine activity' offenders. There is thus an open question as to which model will be most appropriate for serial killers.

It is hypothesized that serial killers will choose locations for the disposal of their victims' bodies in accordance with aspects of the two models outlined. The different models do give emphasis to somewhat different aspects of the disposal sites and therefore do lead to different predictions but they all emphasize the possibility of a logical location choice. Therefore, if any of these models were supported, they would challenge the view that such killers are totally bizarre and further open up the feasibility of studying serial killers empirically in the same way as other criminals.

HYPOTHESES

- (1) *The role of residential location.* Both models see the home as a significant determinant of offence locations. The difference lies in the centrality hypothesized for the home. Rational choice is more likely to lead to disposals occurring at some distance from the home in locations determined by the attractiveness of the location rather than nearness to home. Routine activity would tend towards the home location being biased at one end of an area within which the disposals occur.
- (2) *Variations in domain size.* The actual size of the area over which serial offenders operate would be expected to vary if they are driven by rational choice. For such offenders, the home will not have as strong a modifying influence in their decision of where to dispose of their victims' bodies. Rather the resources available to the offender will influence the size of the area. Variations would be expected to occur between offenders in relation to both their targets and criminal objectives.

A number of studies of criminals have demonstrated analogous patterns of space use. Baldwin and Bottoms (1976), for example, found that the more valuable the property stolen the further the offender had traveled to steal it. In contrast, routine activity theory places greater importance on the role of the home and the notion of familiarity in influencing spatial mobility. Routine activities may be rather variable for different offenders, and this would lead to expectations of variations in the size of the area over which they would offend, but a relatively small range of distances for each offender because of the modifying influence of home. In terms of any given offender, then, routine activities would predict a reasonable, defined area of criminal activity.

Table 1. Summary of routine activities and rational choice theory hypotheses

	Routine activities	Rational choice
Role of residential location	Home base within disposal area	Home base separate from disposal area
Size of criminal domain	Small range of sizes	Large range of sizes
Directional bias	Along pathways with home at edge	Away from home area in separate area
Change over time	Extension of familiar areas	Move to a different area

- (3) *Directional bias in geographic distribution.* The rational choice model leads to the hypothesis that the area in which the disposal sites are located will be distinct from the location of the home. By contrast, the routine activity model predicts a bias along pathways that link other activities specific to the offender and implies a more random distribution with the home at one edge.
- (4) *Changes in domain size over time.* One further hypothesis that distinguishes between the two models relates to the change in the distances traveled from home over time. The rational choice would be to move on to avoid risk of detection or higher vulnerability due to increased vigilance. Routine activities would keep a person in an area unless the activities themselves took the criminal further afield. A slightly different perspective would be to argue that bodies might be disposed of under the influence of routine activities in the early stages of an offender's career, but as he becomes more committed to this form of crime, more rational considerations would push him further from his home base to dispose of the bodies.

Table 1 summarizes the predictions made by the two models for each hypothesis.

SAMPLE AND PROCEDURE

Within the literature, there are many definitions of serial killers, usually differing in terms of the number of victims any given offender must kill in order to be termed a serial killer. The most common number is a minimum of three victims (Holmes & Holmes, 1996). However, some researchers, such as Jenkins (1994), use four or more as the cut-off point. Our definition recognizes serial killers as those individuals who have killed two or more victims over a period of time with a cooling off period between each murder. The inclusion of a cooling off period ensures that mass murderers are excluded from the definition. The use of "two or more victims" as the defining number allows for those serial killers who, although being responsible for only two known murders, may still exhibit the traits of serial killers who are known to have killed more than twice.

DATA COLLECTION

The data used in the present research were obtained by consulting published accounts of serial killers who had been convicted since 1960. The location at which

they had been residing at the time of their offence was then determined from at least two independent sources. If these sources did not corroborate each other, the offender was dropped from the sample. Attempts were then made to contact police officers or local journalists who had worked closely on the cases in question in order to further test the reliability of the residential location information. At this stage, corroboration was also sought from published information on the locations at which the bodies of the victims were found.

While there are a number of geographical locations associated with any one murder in a series (e.g. point of encounter, murder scene, holding location), the present study focuses on the locations and meaning of the body disposal sites that the offender selects. The locations at which the victims' bodies were left were used because it is the least contentious, most objective information available about the location of a murder. Interestingly, in an analysis of the Hillside Strangler case, Newton and Swoope (unpublished manuscript) discriminated between point of fatal encounter, site where the body was left, and victim residence. They found that the geographic center of the location where the body had been placed most accurately predicted the location of residence of murderer Angelo Buono.

It is important to recognize a number of potential problems associated with such data sources. The information available to the authorities itself may have unreliability in it and they may not have recorded the information correctly. Distortions can also arise due to reporting strategies and concern to protect the victims' families. Unreliability is also introduced due to confusion over which location the offender really was residing in at the time that any particular victim's body was disposed of. Attempts to counteract all these problems were made during the data collecting process that took a number of years to complete. However, although the full reliability of the data can never be precisely gauged, cross checks on its internal consistency have been encouraging. Furthermore, the errors introduced by unreliability are most likely to add noise to the data and thereby reduce the possibility for finding support for the models tested. Any support for the models may therefore be considered, in part, as support for the reliability of the source data. But as in other areas of research, the acid test is through examination of other data sets by other researchers.

Locational information concerning 126 American and 29 British serial killers was collected in the manner described. Collectively, the U.S. killers were known to be responsible for 898 victims, and those in the U.K. for 207. They had been convicted of killing between 2 (1) and 24 (1) people each. Once the relevant geographical information had been collated, the offenders' home bases and the sites at which they left the bodies of their victims were recorded onto local street maps. Where more than one base was known, the one that was used during any particular series of killings was recorded. Thus the base recorded was always linked directly to the offences known to have been committed from that base. The addresses of the body disposal sites and offender's residence were located through street maps and local gazetteers. These were input into a specially developed mapping system, "Mplot", which recorded the locations as relative co-ordinates in a two-dimensional Euclidean space. The software calculates a variety of distances from the co-ordinates as well as statistical derivations of these distances.

STATISTICS FOR DISTANCE DATA

The data used in the present study was not normally distributed. Therefore, as the mean is a parametric statistic, it was found not to be the most appropriate measure of central tendency. Furthermore, because of a small number of offenders who traveled vast distances, the average was inflated and not representative of the sample as a whole. Therefore, where distributions of the entire sample are being described, the median is used to measure the central tendency of the data. Similarly, the standard deviation is a parametric measure and therefore not very useful in describing the data in the present research. Instead, the inter-quartile range is used to describe the range of the sample.

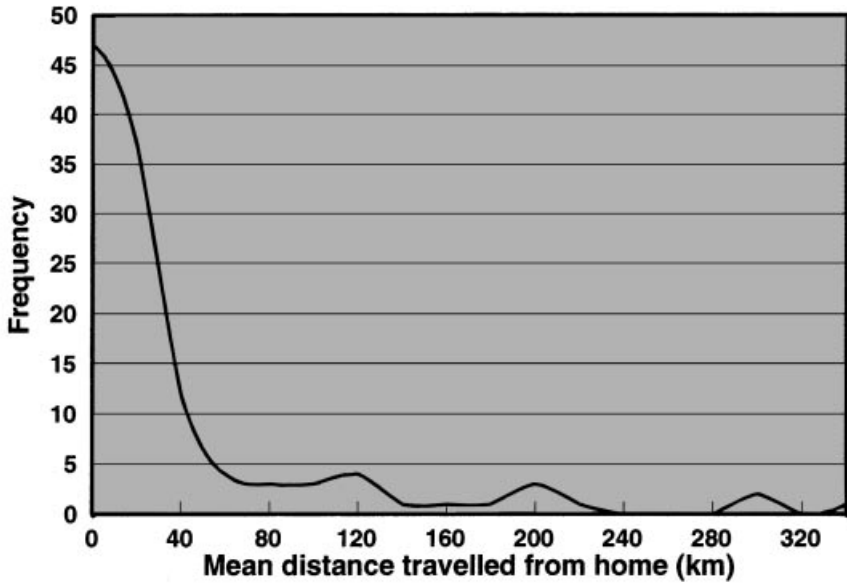
RESULTS AND DISCUSSION

The Home as a Determinant of the Criminal Domain

Evidence for the home acting as a base that forms a focus for criminal activity was sought by Canter and Larkin (1993). They used the simple device of drawing a circle with a diameter either end of which were the offenses furthest from each other. This was a way of defining the area in which the offenses took place with the hypothesis being that if the home did have an important role it would be found within the defined area. They found that 86% of a sample of 45 serial, stranger rapists living in the area of London lived within the "circle."

Taking the sample of 126 U.S. serial killers, the same "circle hypothesis" was supported by finding that 89% of the offenders lived within a circle defined by the disposal sites that were furthest from each other. For the British sample of serial killers, 86% fit the hypothesis. This indicates that similar proportions of serial killers are operating as "commuters" both in the U.K. and the U.S. as were the London serial rapists. The great majority were acting in accordance with routine activity theory, in which a strong relationship between the location of the home and crime sites is proposed.

A further gauge of the relevance of the home in disposal site location choice is to calculate the distances traveled from home to dispose of victims' bodies. The median distance is 15 km (mean of 40 km) for the 126 U.S. serial killers and 9 km (mean of 18 km) for the 29 U.K. offenders. The difference in medians is likely to be a reflection both of topography and the ease of travel in the two countries, but both appear to be within conventional local travel distances. Figure 1 shows that while nine of the American serial killers did travel further than 140 km from home, 50% traveled a mean distance of less than 15 km to leave the bodies of their victims. Furthermore, over 25% traveled an average of less than 5 km. These figures suggest that the criminal domain in which the home is based typically covers a relatively small area. This is possibly within about half an hour's cross-city drive. However, these figures are much larger than those given for other types of offense. This suggests that serial killers may be at the extreme of some kind of criminal continuum. For example, Rhodes and Conly (1981) found that the mean distances



N = 126
Median = 15 km
Inter - quartile range
25% = 5
50% = 15
75% = 40

Figure 1. Frequency distribution of mean distance travelled from home 126 US serial murderers.

rapists, burglars and robbers traveled in Washington, DC, were 1.84 km, 2.60 km and 3.38 km respectively.

The size of the average minimum and maximum distances traveled from home to leave the bodies of victims also indicates that these offenders operate within identifiable domains that related to familiar traveling distances. For the U.S. sample, the median minimum distance is 4 km (mean of 9 km) and the median maximum distance is 33 km (mean of 89 km). For the U.K. sample, the comparable figures are 2 km (6 km) and 15 km (36 km).

Overall, these averages do cover quite large ranges but nonetheless put the scale of these disposal domains into perspective. Vast distance traveled from home, running into hundreds of kilometers, do occur but these are very much the exception, and offenders traveling these large distances may be expected to have some identifiably distinct demands on them, such as jobs that require them to travel long distances.

Variations in Domain Size

Both models predict that offenders will operate over a range of distances from their home that is characteristic of them. They do not predict anything like a random

exploration, in which there would be a complete overlap between offenders, all of them offending at a great range of distances. The hypotheses above have dealt with the average distance an offender might travel from home. Range hypotheses are concerned with the variations around that average that will be typical of an offender. Routine activities would predict a range small in area. Rational choice would produce great variations in individual ranges, with the probability that no overall pattern could be found without knowledge of the details of the offender's location selection process.

One test of this hypothesis is the relationship between minimum and maximum distances traveled from home. If serial killers are reasonably consistent in their criminal range, there should be a substantial correlation between the minimum and maximum distance they travel from home. There is no arithmetic reason why the two should be correlated. An offender traveling very short minimum distances need not be traveling very short maximum distances, unless the same processes are influencing both distances. Figure 2 illustrates the strong correlation of 0.81 ($p < .0001$) between minimum and maximum distances traveled by the U.S. serial murderers. This supports the view that, for these serial killers, an increase in the maximum distance traveled from home was accompanied by a parallel increase in the minimum. Although the sample is much smaller for the U.K. serial killers, the correlation of 0.5 is still significant at $p < .01$.

A consequence of this process that has practical value is the possibility of establishing whether identifiable sub-groups exist that have clear distinctions in the sizes of area over which they operate. For the purposes of the present examination, the mean interpoint distance (MID), a measure of the average area over which

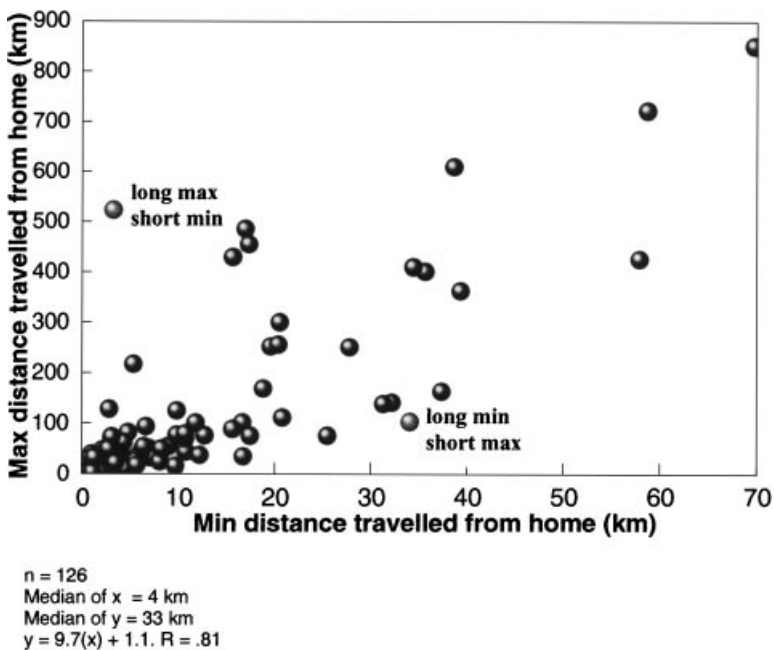
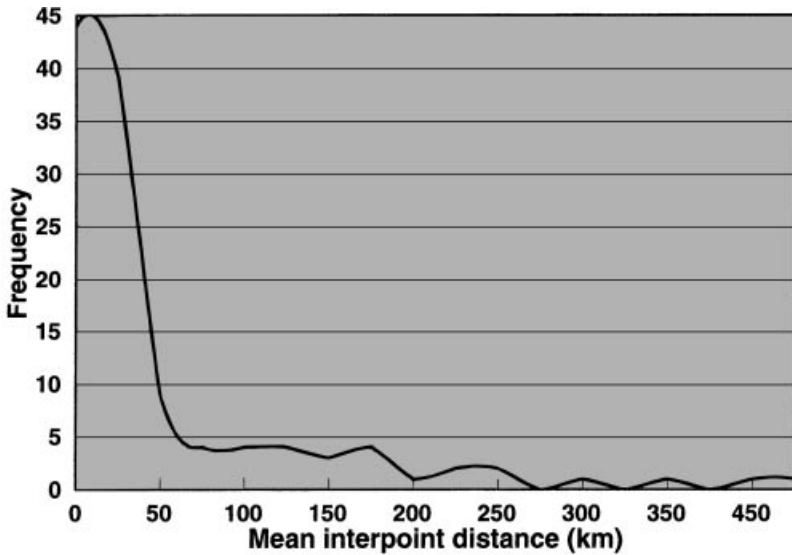


Figure 2. Relationship between minimum and maximum distance travelled to disposal sites for 126 US serial.



n = 126
 Median = 20 km
 Inter-quartile range
 25% = 7
 50% = 20
 75% = 50

Figure 3. Frequency distribution of mean interpoint distance for 126 US serial murderers.

an offender traveled, was used. The MID was calculated for each offender by adding the distances between every disposal site (as defined by measuring the ‘as the crow flies’ distance between two points) and dividing by the number of distances measured. By examining the distribution of MID among the offenders, it was evident that the offenders are operating along a continuum with more restricted spatial mobility at one end and less restricted at the other. Interestingly, the majority of the U.S. offenders (58%) are operating with MIDs of less than 25 km, with 19% within 5 km, indicating again that the criminal ranges involved are relatively small (Figure 3). This indicates, once more, that most serial killers act as if on the basis of their routine activities rather than against a strong rational choice model. The findings also challenge Hickey’s threefold classification of spatial mobility and imply that serial murderers cannot be easily allocated to groups based solely on their spatial behavior.

Directional Bias in Criminal Domains

The domocentric nature of the domain, as supported by the home being within the ‘crime circle’ in the great majority of cases, does not require that the home is at the center of this domain. The different models predict different forms of eccentricity of the location of the home, from the extreme of rational choice to the moderate eccentricity of routine activities.

One possibility for exploring the bias in the location of the home away from the center of the domain is by considering the regression equation created by the relationship between the distances traveled from home with the distances traveled between sites. In other words, if the home is within a region that can be defined by the location of the disposal sites, then the distances (h) that offenders' travel from home should have a strong monotonic linear relationship to the distance (c) between the sites. The function (f) in the relationship $h=f(c)$ will be a consequence of the eccentricity of the home within the disposal domain. This will be true of the relationship of the distances between any pair of sites and the distance from home for either of those sites, provided that all sites are not equidistant from the home. As f approaches 0.5, the home typically approaches the center of the domain. As f approaches 1.0, the home is more eccentrically located towards the periphery of the domain. A value greater than 1.0 would not be expected in the present samples because that would imply that the home is external to the criminal domain as defined by the two sites furthest from each other.

Figure 4 shows the scatter plot for the relationship between the maximum distance between disposal sites and the maximum distance traveled to a site. As anticipated there is a very high correlation, $r=.99$ ($p < .0001$). Of more interest is the evidence given by the regression equation $h=0.79c+3.7$ that the home tends to be towards the edge of the domain. The high value here (0.79) though, is in part a product of those few offenders who do not operate within a domain that includes their home. The U.K. sample (for which $r=.98$, $p < .0001$) provides an equation where $h=0.80c+0.56$.

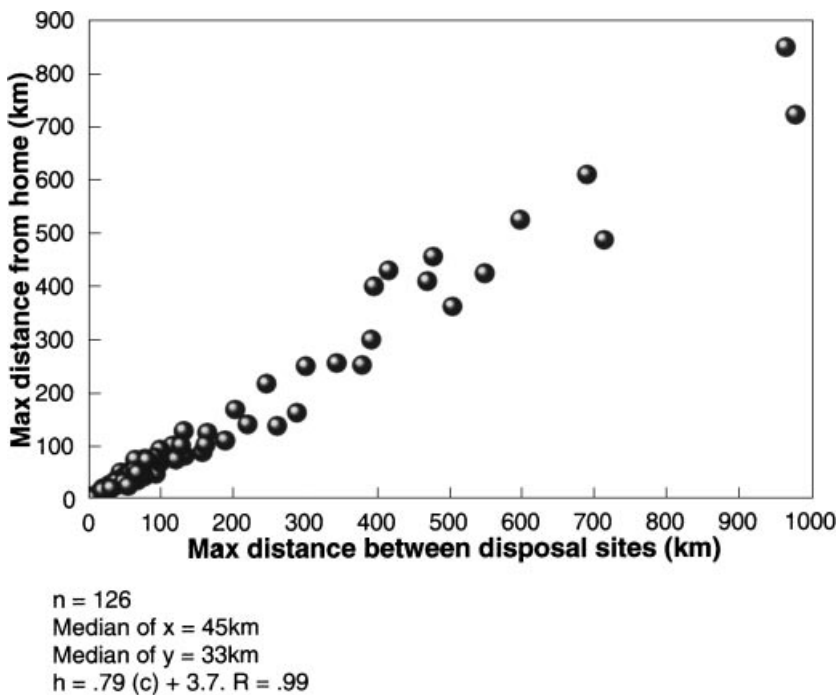


Figure 4. Relationship between maximum distance from home and maximum distance between disposal sites for 126 US serial murderers.

A rather better estimate of the typical eccentricity of the home location can be obtained from considering the minimum distances traveled to disposal sites and between sites. Although errors of measurement will be relatively large for small distances and thus produce a lower correlation, the equation is less sensitive to those offenders who move out of a domocentric domain to dispose of their victims' bodies. Figure 5 shows the relationship between the minimum distance between sites and the minimum distance traveled by the sample. The correlation for this plot is $r = .81$ ($p < .0001$). The regression equation for minimum distances for the U.S. sample is $h = 0.54c + 3.23$.

The constant in this equation of approximately two miles (3.23 km) is of some note because it indicates the distance that these U.S. offenders typically put between their home and their nearest disposal location. This lends support to rational choice influencing the distance a person will keep from home rather than the location they choose in which to offend, a process called a safety zone (Turner, 1969) or buffer zone (Brantingham & Brantingham, 1981). It may be that there are areas immediately around the home base that the offender would avoid disposing of bodies in. For the U.K., sample $h = 0.72c + 0.66$. The 'safety' zone would appear to be even smaller here, around half a mile.

A further test of this eccentricity is to consider the angle between disposal sites. If, as proposed, an offender's activities are biased towards a particular orientation in his domain, then the angle subtended from his home between his sites would be hypothesized to be acute rather than oblique. In other words, rather than radiating out from his base in all directions, the majority of his sites would be expected to be in

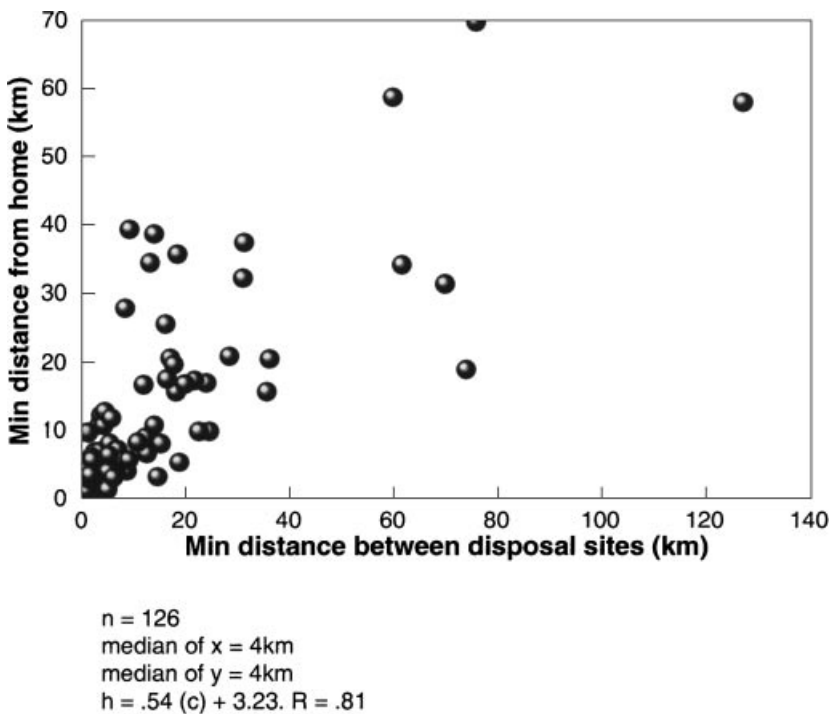


Figure 5. Relationship between minimum distance from home and minimum distance between disposal sites (km) for 126 US serial murderers.

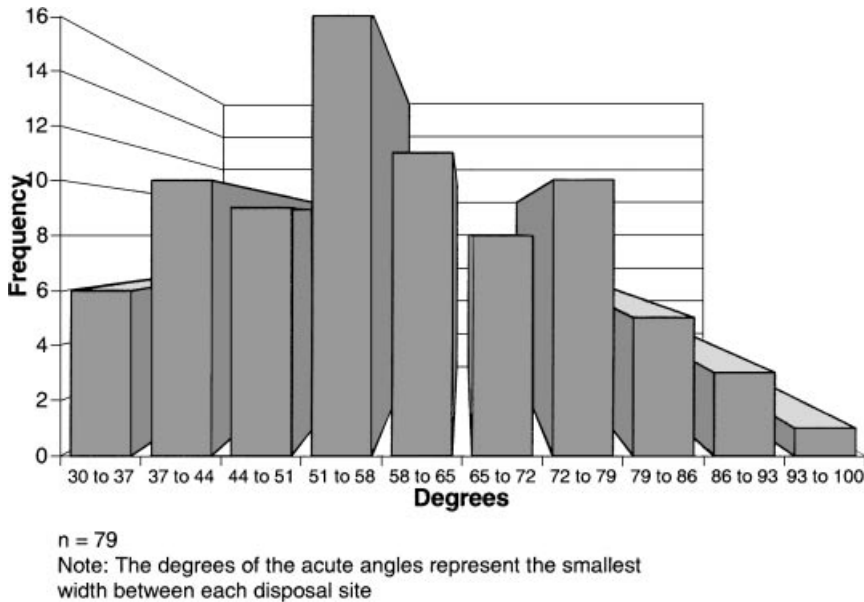


Figure 6. Frequency distribution of mean acute angles as seen from the home base for 79 local US serial murderers.

a dominant direction. To test this hypothesis, Mplot was used to calculate the angle from home between each disposal site and every other site for each offender and then calculate the mean angle for each offender. The distribution of these mean angles is shown in Figure 6. As can be seen, whilst there is variation in these means, the modal value of 60° lends strong support to the hypothesis of a bias in orientation.

Change Over Time

The two theories that have been put forward to explain spatial behavior both predict the possibility of a change over time. The difference between them lies in the nature of this change and why it may occur. The rational choice perspective would predict a change in order to avoid risk of detection because of greater vulnerability due to increased police vigilance. Routine activities would keep a person in an area unless the activities themselves took the criminal further afield. Such a change would be indicative of individual offender development, a choice rather than a necessity.

In order to establish whether there was change over time in the spatial behavior of serial murderers, the mean distances traveled to each successive site in each series was examined. Figure 7 illustrates the mean distances traveled to each site up to and including the tenth offense. A change in the size of criminal domain over time would be reflected in a gradual increase or decrease in the mean distances traveled. As can be seen, there is a general increase in the distances traveled up to and including the sixth site. It appears that the offender may then backtrack to within the previously established range.

In order to determine whether the overall changes illustrated in Figure 7 were significant, a non-parametric version of the repeated measures ANOVA was used. A

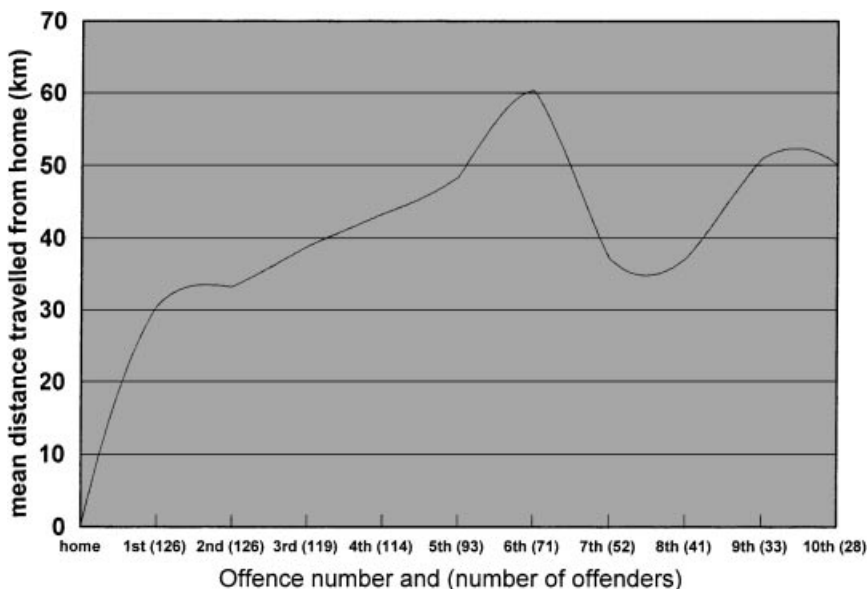


Figure 7. Mean distance travelled from home to body disposal site for each of the first ten offences in series for 126 US serial murderers.

non-parametric test was used because all the results show the distribution of distances traveled do not have a normal distribution or even a symmetric distribution. Analysis using Friedman's ANOVA gave a significant result ($\chi^2=14.95$, $p < .01$). In order to determine which of the changes in distance traveled were significant, Wilcoxon matched pairs signed ranks tests were carried out between each site and each other site. The sites between which significant differences in the distance traveled were found are shown in Table 2.

Table 2 shows that there is no significant development until the fifth site is selected. This suggests that the offender will exploit the areas closest to him before moving to locations further afield. Interestingly, although the offender appears to "retreat" into an already established area after the sixth offense, there is still a significant difference between the first and last (included) disposal location. This gives support to a general increase in scale across a series despite the relative decrease in distance after the sixth site.

Table 2. Disposal site numbers where a significant change over time was found

Site numbers	Significance
1st and 5th	$z = -2.25$ $p = .05$
1st and 6th	$z = -3.03$ $p = .01$
1st and 10th	$z = -2.31$ $p = .02$
2nd and 6th	$z = -2.71$ $p = .01$
2nd and 8th	$z = -2.33$ $p = .02$
5th and 8th	$z = -2.39$ $p = .02$
5th and 9th	$z = -2.48$ $p = .02$

Summary and Conclusions

This study has explored the disposal site location choices of serial murderers from a routine activities and rational choice perspective. It was found that the majority of the murderers operated within an area that bore a strong relationship to their home. However, it is worth emphasizing that it appears that there are a small proportion of offenders that do not live within such a “disposal domain.” It has been suggested that these are offenders who are more likely to be selecting their disposal sites in an attempt to minimize the risk and maximize the benefits to themselves. In contrast, the majority of serial killers appear to be leaving the bodies of their victims in an area that provides ready opportunities for them, possibly familiar to them because of the routine activities in which they are engaged. The relatively small size of the area over which serial killers move from home to leave the bodies of their victims also accords well with routine activity models of behavior.

In the present study, it has been possible to show that serial killers, like other criminals, do operate within distinct domains and that these domains are likely to be indicative of the experiences and conceptualizations of the offender. They are not haphazard and do show an inherent logic. In practical terms, Rossmo (1995) has highlighted an important implication of the empirical modeling of offender spatial behavior. He has illustrated the ways in which the crime locations of an individual serial killer can be used to create a probability surface, where the higher the probability of any point, the more likely it is to contain the offender’s home. Rossmo has shown how such models can be used by law enforcement agencies to narrow their area of search for offenders. In other words, it is possible that, once robust models are established of how serial killers’ locational choices relate to their residential location, they can be built into computer models of use to police investigations.

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