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The place of environmental criminology within criminological thought

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1. Introduction

There are four basic dimensions for understanding the phenomena of crime: the legal dimension, the offender dimension, the victim dimension, and the place (or situational) dimension (Brantingham and Brantingham 1981a). Those who investigate the legal dimension concern themselves with the creation and enforcement of laws; those who investigate the offender dimension, the dominant field of contemporary criminology, concern themselves with why individuals violate the law primarily along the lines of motivation; those who investigate the victim dimension are concerned with why particular targets (people or property) are victims of crime; and those who investigate the place dimension are concerned with the spatial and/or temporal component of crime (Brantingham and Brantingham 1981a). Consequently, the study of the fourth (place) dimension of crime is not particularly concerned with the first three dimensions. The first three dimensions are considered vital in the understanding of criminal events as they are all necessary for a criminal event to occur, but there are two reasons for why a focus on the fourth dimension of space and time is the concern of the environmental criminologist. First, pre-1970 criminological research is dominated by the study of the first three dimensions; as such, we know relatively little regarding the spatio-temporal components of crime; and, second, spatio-temporal patterns of crime are remarkably predictable. Therefore, there is much to be learned from this fourth dimension that can only compliment the existing (and growing) knowledge of the first three dimensions.

Environmental criminology is an umbrella term that is used to encompass a variety of theoretical approaches, all focusing on the fourth dimension: routine activity theory, the geometric theory of crime, rational choice theory, and pattern theory—pattern theory is itself a meta-theory of the other three theoretical approaches.¹ On the last page of his seminal book, *Crime Prevention Through Environmental Design*, C. Ray Jeffery (1971: 279) coined the term “environmental criminology” in a call for the establishment of a new school of thought in the field of criminology. This new school of thought was to retain the principles of the classical school of criminology (the deterrence of crime *before* it occurs), but the focus of this new school of thought was to be the environment within which crime occurs, not the individual offender.

C. Ray Jeffery’s call for a shift away from the focus on the individual offender emerges from his (and others’) realization that past methods of addressing crime have failed:

the deterrence-punishment model of criminal justice (police, courts, and prison) and the treatment-rehabilitation model (therapeutic treatment of the individual). C. Ray Jeffery's claims of these failures were far from novel. Research and government studies repeatedly show the punishment is a failure in deterrence: despite the harsh treatments in the criminal justice system, recidivism remains high, most often unchanged—see Jeffery (1971; 1977) for extended discussions of the failures of these approaches to crime. So what is the environment that C. Ray Jeffery spoke of?

The environment is to be conceptualized very broadly to include the physical design of places (architecture), the built environment (roadways, land use, types of buildings), as well as the legal and social institutions as well. Consequently, the environment that C. Ray Jeffery believed should be modified is quite complex. Most importantly, we must consider ourselves as part of that environment. This is critical because we respond, adapt, and change as a result of the environment we are a part of. As such, criminal behaviour is merely one form of adaptation to an environment. For C. Ray Jeffery, the most appropriate environment is one that has non-criminal behaviour as the fittest adaptation, or optimal choice. This, of course, leads us to the next question: how is this environment to be attained?

The general model that C. Ray Jeffery put forth was to: make crime a high-risk and low-reward activity; create environmental contingencies that control land use, travel paths, and access; and, in the long term, create a society in which the existing laws are respected, potential offenders are busy (jobs and/or education), citizens are given the knowledge to protect themselves through neighbourhood organization and individual actions. But there was a problem. In order to (potentially) identify the specifics of this environment that could be created such that non-criminal adaptations are optimal, C. Ray Jeffery called for the establishment of multiple research centres. These research centres would have significant government research funds operating on a five- to ten-year research program. C. Ray Jeffery recognized that such research centres would be faced with resistance because people want a solution to crime problems today, not in a decade. His response was simple: you could allocate the appropriate resources into these research centres today and wait for ten years and (hopefully/potentially) get that money back many times over with what is learned, or you could spend that same money (tens of millions of dollars) on something you know will fail, the status quo. Though C. Ray Jeffery's argument is persuasive, another author emerged literally months later with potential solutions that could be applied today.

Published on the heels of *Crime Prevention Through Environmental Design* was Oscar Newman's (1972) *Defensible Space: Crime Prevention Through Urban Design*. Oscar Newman's arguments are quite similar to those of C. Ray Jeffery in that Oscar Newman believed that we need to build our neighbourhoods in such a manner that fosters the development of a social cohesion that acts against crime, defensible space. For Newman (1972), defensible space is a model of environments that inhibit crime through the creation of the physical expression of a social fabric that defends itself. This environment is dominantly created through changes in architecture. The result is an environment that exhibits territorial behaviour and a sense of community, something that Oscar Newman argued has been the state of human settlements for centuries, destroyed through modern urban design.

For Oscar Newman, this defensible space was created through the generation of territoriality, the provision of surveillance, uniqueness of design to instil pride in ownership, and being aware of the geographic placement of "safe" and "unsafe" areas. Territoriality is a term that captures a physical environment's ability to create perceived zones of "influence". Influence is used by Oscar Newman in a very specific way. Influence refers to our changing the physical environment (most often in modest ways) to express our territorial nature. Because of this influence, potential offenders recognize that the area they walk into is actively controlled by the individual(s) in residence. This provides an environmental cue that illegitimate actions in this geographic space will be recognized by others. Surveillance, specifically natural surveillance, is the creation of areas that allow the residents to watch over their property without having to make much effort to do so. For example, houses may be designed and placed such that they can watch over their neighbourhood. Uniqueness of design that instils pride in ownership, though listed as separate by Oscar Newman, is interdependent with the previous two concepts: if one does not take pride in ownership (or one's residence, more generally) then one is not likely to behave in a territorial manner or take advantage of the natural surveillance features of a property. This was particularly important for Oscar Newman because he was concerned with public housing that tends to have some stigma attached to it. And lastly, being aware of the geographic placement of safe and unsafe areas refers to placing a parking lot (an "unsafe" area because of the presence of many potential targets) in the unobstructed view of a store clerk (a "safe" area because of the surveillance of the parking lot). All four of these concepts are achieved through the appropriate architectural design of the neighbourhood.

This focus on architecture to create defensible space was criticized by C. Ray Jeffery (1977) in the second edition of his book. C. Ray Jeffery (1977) believed that crime prevention through urban design was a subset of crime prevention through environmental design. As such, Oscar Newman's approach was incomplete, at best, and detracted from the "real" research that needed to be performed, at worst. C. Ray Jeffery's criticisms were likely in part due to the fact that Newman's approach was adopted almost immediately whereas Jeffery's approach was not (Robinson 1999).² The reason for this more rapid adoption is quite simple: C. Ray Jeffery's approach involved a long term research agenda that would necessarily involve long term commitments of significant research funding and Oscar Newman's approach could be applied immediately. In fact, *Defensible Space: Crime Prevention Through Urban Design* contained a chapter titled: Modifying Existing Environments (Chapter 7).

Regardless of their rate of adoption, both *Crime Prevention Through Environmental Design* and *Defensible Space: Crime Prevention Through Urban Design* emerged because of the recognition that the standard methods of crime prevention were failures in terms of both economic investment and recidivism. More importantly for the context here, both of these books spawned a large volume of literature that investigated the role of the environment in crime; these roles ranged from changes in the social conditions of society to the constraints imposed by the built environment to choice structures that are also constrained by the environment.

In what follows, the four environmental criminological theories, their fundamental concepts, and most notable tests and applications are discussed. Though the focus of C. Ray Jeffery, in particular, and Oscar Newman was to prevent crime from occurring in the first place, much of what we call environmental criminology today seeks to understand crime through the perspective of our (ever changing) environment. Crime prevention, the spirit of Jeffery and Newman, is an integral component of the environmental criminology literature, however. As such, what we believe to be seminal contributions to crime prevention are included in this anthology. Because of this environmental perspective, the theoretical understanding of the criminal event has advanced significantly since C. Ray Jeffery first published his work. Consequently, these later theoretical developments help understand *why* crime prevention works and are presented before crime prevention.

The purpose of this discussion is primarily for the new student of environmental criminology to understand the place of environmental criminology within the broader criminological literature. What should be clear now is that theoretical advancements,

irrespective of how significant they may be, do not drop from the sky—neither the work of C. Ray Jeffery nor Oscar Newman occurred in a vacuum. However, before the discussion moves into environmental criminology proper, a similar discussion of social disorganization theory is provided for the context from which this fourth dimension of spatial criminology arose.

2. Social Disorganization Theory

Though focussing on the second dimension of criminal phenomena (investigating how neighbourhoods influence offenders), social disorganization theory was the dominant form of spatial criminology before environmental criminology emerged. Because of the varying characteristics of neighbourhoods, people who lived in different neighbourhoods developed different dispositions toward committing crime. And more importantly, in the current context, the first environmental criminological theory discussed, routine activity theory, makes a distinct break in its fundamental concepts from social disorganization theory. Therefore, understanding social disorganization theory and its fundamental concepts is important in the understanding of how environmental criminology, in general, fits into criminological theory.

2.1. Fundamental concepts

Social disorganization theory is not concerned with the individual characteristics of potential offenders, but the sociological influences on a person's delinquency. Specifically, social disorganization theory is the study of the relationship between neighbourhood characteristics and crime, the strength of any relationship, whether or not any relationships are stable over time, and whether any relationships are related to the residents or the places in which they live. In order to completely understand any relationships that are found, one must also understand why neighbourhoods are structured as they are. In order to do this, Clifford Shaw and Henry McKay invoked the social ecology of concentric zone theory, developed in Clifford Shaw's (1929) graduate work and based upon Burgess' (1925) model of city growth.

At the time, early twentieth century, and continuing today certain areas within a city are dominated by particular land uses; some areas are residential, others for business, industry, and recreation. Within residential land use classifications, these areas can be further divided by economic status. Some areas have low socio-economic status and others have high socio-economic status. Indeed, most modern human settlements can be described along these lines.

In their most basic sense, turn of the twentieth century cities in North America were built around a central business and industrial district, bordered by residential areas differentiated by socio-economic status. As one moves away from the central business and industrial district, the socio-economic status of the residential zones increases. This pattern is most easily understood in the context of the turn of the twentieth century. Industrial districts at that time were dirty and polluted areas, not very desirable for residential housing. Consequently, those who could afford to move away from the polluted industrial zone moved into the more affluent residential zones. This is the essence of social ecology: space in society is limited and scarce, and we resolve that scarcity through economic means. As such, social ecology is a fundamental concept that considers the importance of space and revolves around competition.

The dynamics of this theory of competition over space are its most interesting for understanding crime. Because cities grow, the central business and industrial district also grows and that growth is typically a radial expansion outwards—geographic features such as mountains and water place restrictions on this growth pattern. Therefore, the central business and industrial district encroaches, or invades, the most immediate residential zone. This most immediate residential zone is then not only the most impoverished residential zone, but it is also in a constant state of transition, a zone in transition: a residential area that is being transformed into an industrial area. This transformation further impoverishes the area, decreasing its attractiveness as a residential area even more. Consequently, only the most impoverished of populations live in these areas. This time period was an era of rapid population growth through economic immigration in which the impoverished immigrants settled in the undesirable and low-rent zone in transition simply because they cannot afford anything else. Criminal enterprises also settled in the zone in transition because of: low rent, customer access, and the inability of non-criminal residents to complain effectively to authorities about the criminals in their midst. And because of this situation, those that live in the zone in transition only do so for as long as necessary. This leads to two properties of the zone in transition (and other relatively high crime areas) that lead to what Shaw and McKay (1942) referred to as social disorganization.

2.2. What is social disorganization theory and how does it relate to crime?

Social disorganization theory is the application of social disorganization to the study of crime. Social disorganization is the inability of an area (neighbourhood) to establish social cohesion that can prevent crime.³ Social cohesion cannot be established in the zone in transition because of the high degree of population turnover and ethnic

heterogeneity. Population turnover is present because of the undesirable nature of the zone in transition and ethnic heterogeneity is present because at the time of the development of social disorganization theory new immigrant populations tended to be impoverished and could not initially locate elsewhere. Therefore, multiple immigrant populations lived in the zone in transition. Incidentally, at the time of Shaw and McKay (1942), ethnically heterogeneous neighbourhoods were composed of immigrants from different European countries. With multiple immigrant populations living in these ethnically diverse neighbourhoods, they literally could not speak to each other. This leads to an area with a high degree of population turnover because of the socio-economic conditions and a resident population that is unable to establish any sense of community (social cohesion/organization) because of the inability to communicate.

Contemporary social disorganization theory focuses on social deprivation, economic deprivation, and family disruption as well as ethnic heterogeneity and population turnover (Cahill and Mulligan, 2003; Linsky and Straus, 1986; Sampson and Groves, 1989; Stark, 1996; Tseloni et al., 2002). Increases in any of these factors leads to increases in crime. The mechanism this operates through is simple: neighbourhoods that are unable to establish social cohesion are conducive to criminal activity because they are places with few legitimate opportunities and a high degree of anonymity. Additionally, low level of social cohesion results in the inaction on the part of residents when a problem develops: the police are not called when a car being stolen or a house being broken into, unless it is their own. The result is a neighbourhood with a relative abundance of illegitimate opportunities and a citizen population that is not able to identify outsiders—a prime candidate for criminal activity.

2.3. Testing social disorganization theory

Shaw and McKay (1942) undertook a series of empirical analyses to test their theory. By today's standards their empirical methods were quite simple, but their results are revealing. With regard to population turnover, Shaw and McKay (1942) found that small changes (decreases) in population lead to large changes (increases) in crime rates. However, large changes in population lead to very small changes in crime rates. This means that when an exodus begins (albeit on a small scale) the impact on crime is large, but once a neighbourhood has deteriorated and has a high degree of crime further changes (reductions) in population have little impact.

With regard to ethnic heterogeneity, increases in the degree of foreign-born populations leads to increases in criminal activity. However, what Shaw and McKay (1942) are apt to point out is that it is not ethnicity, *per se*, that is related to crime. In

high crime areas, over a period of time they remain places of high rates of crime, but the ethnic composition of those areas change. Consequently, it is not the ethnic group that is associated with crime, but the social conditions within that place. That is, it is the fact of ethnic (and presumably cultural) heterogeneity that is the problem; different ethnicities/cultures have different social expectations such that neighbourhood residents are paralyzed because no one understands the limits of intervention within which group such that neighbourhood feuds may be triggered: two families that share some socio-cultural characteristic may have different levels of tolerance for some behaviour because they are culturally distinct along other lines—Old World battles may re-emerge in the New World. The trouble is that ethnic composition changes slowly over time, so it appears as though particular ethnic groups are particularly criminogenic.

One last relationship is worthy of discussion here: the relationship between unemployment and crime. It is commonly stated that increases in unemployment increase crime. This relationship exists because increases in unemployment lead to increases in motivation because of a decrease in legitimate opportunities. Indeed, Shaw and McKay (1942) find that the relationship between unemployment and crime rates across neighbourhoods is the strongest of all relationships investigated. However, they also note that during the Great Depression when unemployment and welfare rates soared, there was little change in the level of crime across the city. Consequently, for Shaw and McKay (1942), the unemployment rate explained the overall spatial distribution of crime, but changes in the unemployment rate were not related to changes in the crime rate for *individual* neighbourhoods.

This testing of their theory, however, is problematic. Social disorganization theory states that socially disorganized places have high crime rates and social disorganization is measured by a lack of social cohesion. As such, population turnover, ethnic heterogeneity, social deprivation, economic deprivation, and family disruption leads to a lack of (or breakdown) of social cohesion that leads to higher crime. Therefore, the causal relationship is between social cohesion/organization and crime, not the variables that lead to social cohesion (or lack thereof). The difference is at times subtle, but important. The causal relationship is often referred to as the structural relationship whereas the relationship between measures of social cohesion/organization and crime is often referred to as the reduced-form relationship. What this means is that if one tests a theory only with reduced-form relationships, any support (or lack thereof) may be purely circumstantial.

The first test of social disorganization theory that employed structural relationships was Sampson and Groves (1989), nearly sixty years after the work of Clifford Shaw and Henry McKay first emerged. Though the use of the British Crime Survey to directly capture the presence of local friendship networks, the supervision of youth, and local organizational participation, Sampson and Groves (1989) were able to show that at a structural level, social disorganization theory bodes well for predicting crime. This and other work of Robert Sampson was responsible for the more recent re-emergence of social disorganization theory when investigating the ecological distribution of crime in urban contexts, most often used in conjunction with routine activity theory.

3. Routine Activity Theory

The first theory within environmental criminology to discuss is routine activity theory. This is for no other reason that it was the first to be published as either a journal article or book chapter. Routine activity theory is also a natural topic to follow from social disorganization theory because it makes an explicit break from that literature. Rather than focussing on the neighbourhood and its changing characteristics, routine activity theory focuses on the actions of individuals; routine activity theory also have different fundamental concepts than that of social disorganization theory.

3.1. Fundamental concepts

The fundamental concept behind routine activity theory is human ecology. There are two primary differences between social ecology and human ecology that underline routine activity theory's break from its sociological past. First, social ecology has been criticized for focusing on competitive rather than cooperative relationships to understand the nature of human settlements. However, despite the existence of competitive relationships, much of our society can be understood through cooperative behaviour. Second, though human ecology is similar to the social ecology of Clifford Shaw and Henry McKay through its emphasis on space, it also considers the importance of time. This lack of the incorporation of time into social ecology has been criticized by human ecologists. In fact, Amos Hawley's (1950) famous book, *Human Ecology*, includes a chapter that outlines such a criticism at length. Each of these issues is discussed in turn.

Human ecology provides two concepts that allow us to think of how we humans adapt to our ever-changing environment in a non-competitive way: symbiosis and commensalism (Hawley 1944, 1950). Symbiosis refers to the mutual dependence of

organisms that have functional differences. Such relationships would include the birds that clean crocodile teeth or, in a human context, different people undertaking different jobs within one office. Commensalism, on the other hand, refers to the relationships between organisms that are based on functional similarity; two or more people that perform the same job, for example. These two concepts are then used by human ecologists to define a community in space and time that is based on non-competitive behaviour. The details of this community are not critical for understanding routine activity theory, but what is critical is the understanding that an environmental criminological theory seeks to understand crime from the perspective of non-competitive legitimate activities across space and time. Marcus Felson's (2006) most recent book, *Crime and Nature*, expands upon this ecological approach in the context of understanding crime.

In the context of time, human ecologists state that ecology is generally defined as understanding how a population (humans, for example) survives in an ever-changing environment. Therefore, the role of space is an important aspect of survival (where we live, work, and recreate), but it is only one aspect of that survival. For example, knowing where we spend our time is important, but also knowing when we are there is important. Consider a "high crime area" in a city's central business district. If the vast majority of the people who spend time in the central business district are there during the day and most of the crime in the area occurs at night, the vast majority of the denizens of the central business district are not at a high risk of criminal victimization. Only having the spatial component of criminal activity, therefore, misses extremely valuable information for the understanding of criminal events.

In order to consider the role of time, human ecologists invoke three concepts: rhythm, tempo, and timing. Rhythm is the regular periodicity in which events occur: every work day a person arrives in the office at 8 o'clock; tempo is the number of events per unit of time: the number of crimes per day in a given area; and timing is the coordination of interdependent activities: the coordination of one's work rhythm with that of another. The important concept to get here is that there are spatial and temporal regularities with our non-competitive legitimate activities and changes in those regularities changes crime. If we change where we go, when we go there, how often we go there, and/or with whom we go, we alter the ways in which we can be victimized or victimize someone else.

3.2. What are routine activities and how do they relate to crime?

Lawrence Cohen and Marcus Felson define routine activities as “any recurrent and prevalent activities which provide for basic population and individual needs, whatever their biological or cultural origins” (Cohen and Felson 1979: 593). Generally speaking, all of the activities that we undertake throughout the days, weeks, etc., to maintain ourselves (work, school, shopping, recreation) are our routine activities. Routine activities are most often based on symbiosis and commensalism and involve the coordination of multiple people moving through space and time. As such, routine activities are, by and large, legal and commonplace.

Lawrence Cohen and Marcus Felson go one to state that changes in the routine activities over time can explain changes in crime rate trends. More generally, however, differences in routine activities whether those differences be across time, across space, or between individuals can be used to explain differences in crime rates. It is important to recognize that routine activity theory, as originally proposed, is not a general theory of crime—in later work, Marcus Felson (2002) has expanded the spectrum of crimes that routine activities can explain. The particular types of crimes that routine activity theory tries to explain are referred to as direct-contact predatory violations. Such violations involve at least one motivated offender, one suitable personal or property target, and the absence of a guardian capable of preventing such a violation—the minimal elements for a criminal event. And it is the convergence in time and space of these three elements that is necessary for a crime to occur; moreover, it is the changes in the nature of this convergence that changes crime.

In the decades following the Second World War, incomes increased substantially leading some scholars to refer to this period as the Golden Age of Capitalism (Webber and Rigby 1996). It was also a period of substantial increases in property and violent crime rates throughout the Western world. This is often referred to as the sociological paradox because increases in income were supposed to lead to decreases in crime. This is where routine activity theory comes in. The substantial increases in income in the post-war era led to increased opportunities for more activities outside of the relatively protective environment of the home. With increases in income are increases in disposable income for eating out, shopping, and going to the movies. But there were other changes in society, socio-cultural changes, that occurred at the same time: increased young populations, increased young people leaving home for (post-secondary) school, and increases in the number of women in the workforce. The importance in these changes is that with the changes in income and the corresponding changes in routine activities ever more people were drawn outside of the relatively protective environment of the home placing them at greater risk of criminal

victimization and the presence of increased opportunities for crime. Therefore, as routine activities away from the home increased, crime increased.

The end result is that economic conditions, including income, do matter for understanding for crime, but in a very particular way. It is not income that matters for crime, but how that income affects our behaviour. In fact, the economic approach to crime put forth by Gary Becker, and subsequently by Isaac Ehrlich, predicts that increases in income leads to increases in crime because there are more items to be stolen; it is the relative payoffs for illegal and legal activities that dictate crime rates, not income levels (Becker 1968; Ehrlich 1973). This availability of items to be stolen is also critical for understanding the importance of routine activity theory explaining crime.

The second minimal element of a direct-contact predatory crime, a suitable target, is also important for understanding the relationship between crime and the economy. Post-war changes in consumer products, namely the development of expensive lightweight electronic equipment, led to a massive increase in suitable targets simultaneously with increases in routine activities away from the relatively protective environment of the home—fewer people were home to protect their newly acquired property. The end result is an economy that changed in such a manner to increase routine activities outside the relatively protective environment of the home and create an abundance of suitable targets. As such, routine activity is able to explain why crime rates rose in the post-war era without invoking changes in criminal motivation.

3.3. Testing routine activity theory

The first (macro level) test of routine activity theory was contained within the original article by Lawrence Cohen and Marcus Felson, with more testing in their immediately subsequent work (Felson and Cohen 1980; 1981). The most telling of their analyses was that of burglary rates in the United States, 1950 – 1972. In this analysis, the proportion of young populations, the proportion of those living alone, and the weight of property targets typically stolen in burglary were used to predict burglary rates; the former two were used to represent increased routine activities outside of the relatively protective environment of the home and the latter was used to represent target suitability. They found that the presence of young populations and single-person households increased burglary rates, whereas the weight of the lightest television in a department store's catalogue has a negative relationship with burglary rates. However, this latter relationship, though statistically significant, was the weakest among the three relationships tested. This implied that routine activities away from the relatively

protective environment of the home were more important to how heavy the items were inside the home.

Neighbourhood (meso) level tests of routine activity theory are rather abundant using census boundary areas as the unit of analysis, commonly in conjunction with social disorganization theory (Andresen 2006). These studies assume that routine activities vary across space as well as time. For example, if increases in single-parent families over time are a good predictor of criminal activity and single-parent families also vary across space (the urban landscape), routine activity theory can be used to predict the spatial variations of criminal activity. In fact, routine activity theory has been found to be a better predictor than social disorganization theory in these analyses because unexpected results for “social disorganization theory variables” can be explained through routine activity theory (Andresen 2006).

Lastly, individual (micro) level tests of routine activity have also been undertaken, using victimization survey data to capture both criminal victimization and the routine activities of individuals. Kennedy and Forde (1990), investigating criminal victimization in Canada, is the most comprehensive of such individual-level tests of routine activity theory. Overall, Leslie Kennedy and David Forde find that unmarried young males with lower incomes and routine activities that take them to work, sporting events, drinking establishments, movies, restaurants, and simply walking or driving around have significantly higher rates of victimization than those who do not. Additionally, although individuals who live in socially disorganized neighbourhoods are at greater risk of victimization, they find that the individual-level (routine activity theory) variables are more important, much like the neighbourhood level analysis reported above. Consequently, our individual actions and the places we move through have been shown to impact criminal victimization.

4. Geometric Theory of Crime

Turning specifically to a geographical approach of the criminal event, the geometric theory of crime (commonly referred to as the geometry of crime), did not seek to place itself within the context of its contemporary criminological theories. Rather, the geometric theory of crime sought its explanation of the patterns of crime based on the geographic dimension of human activity patterns and focuses not on the motivation for crime but the perceived opportunities for crime that exist within the urban spatial structure.

4.1. Fundamental concepts

The discipline of (human) geography has a long history of decision-making in spatial contexts (Wolpert 1964; Horton and Reynolds 1971; Lowe and Moryadas 1975) that has relevance to understanding the criminal event, particularly *where* crime occurs. In particular there is the field of behavioural geography (see, for example, Rengert 1989) that investigates locational choices of individuals and how people move through space considering issues such as distance and direction. Specifically, individuals are active agents within their environment, choosing where to go and how to get there. Therefore, it is important to understand the role of the environment and, more importantly, what the environment is.

In the geometric theory of crime, the environment is conceptualized along the lines of C. Ray Jeffery. The term used for the environment is the environmental backcloth. This environmental backcloth represents the built environment, social and cultural norms, institutions, the legal environment, and so on. The critical difference between C. Ray Jeffery's depiction of the environment and the environmental backcloth is that the environmental backcloth explicitly recognizes the dynamic nature of our environment; hence, the use of backcloth instead of context. Brantingham and Brantingham (1993) are very clear to emphasize the dynamic nature of our environment, similar to ecology that refers to our ever-changing environment. The dynamic nature of the environment is sometimes described using the metaphor of a flag. The context of the flag is its emblems and designs, the flag in two dimensions. But because of the inherent dynamism of our environment, the backcloth includes the third dimension of the flag blowing in the wind. Some of the change in our environment is very slow such as the road network in an established urban centre. In other situations, the environmental backcloth changes rapidly: an area is safe in the day but not at night or the sudden presence of an individual makes a once safe place very risky. Though we alter the environmental backcloth once we enter it, we must make our choices of where to locate within and how to move through the environment based on our perceptions of the environment that already exists. And because of the nature of urban (and rural) environments, we can only locate ourselves and move through the environmental backcloth in particular ways.

In his seminal 1960 book, *The Image of the City*, Kevin Lynch classified four elements of the city that were important, and invoked, for the subsequent development of the geometric theory of crime by Patricia and Paul Brantingham: nodes, paths, districts, and edges—Kevin Lynch also identified a further element, the landmark, but this element does not have significance for the geometric theory of crime. Nodes are places (conceptualized as points) that are places within the city that a person travels to and

from; paths are the channels that people move along, often circumscribed by streets, walkways, and public transit; districts are regions within the cities that are defined as areas that have commonalities and identifying features such that they are a congruent spatial units such that any differences within the district must be smaller than the differences that exist between districts; and edges are the boundaries between districts that may be physical and distinct (literally crossing the tracks) or they may be subtle such as the gradual change as one passes from one neighbourhood to the next.

Nodes are that places in which we spend most of our time: at home, work, recreation sites, entertainment, and shopping. In the context of a metropolis or large urban centres, these nodes may be business, entertainment, or industrial districts. Pathways are the channels that we use to move from node to node. Brantingham and Brantingham (1981b) use nodes and paths in order to generate maps of the places we spend our time and the pathways between them. These maps represent our activity spaces. With time our activity spaces also become our awareness spaces; this occurs because over time we develop knowledge and attachments to different locations such that we develop a sense of place, feeling comfortable in some areas and uncomfortable in other areas. The importance of our activity space is that is we are to be victims of crime, this victimization will most probably occur in our primary activity space simply because that is where we spend the majority of our time.

4.2. The geometry of crime

In order to understand the geometry of crime, the nodes, paths, activity space, and awareness space of offenders must be considered. Simply because it takes time and effort to overcome distance, offenders' primary search areas for criminal opportunities are going to coincide closely with their activity space. Consequently, Brantingham and Brantingham (1981b) mark the search areas of the immediate surroundings of activity nodes and the linear paths between them as high-intensity search areas, steadily decreasing that intensity with distance from the nodes and paths.

The important issue to understand here is that potential offenders have similar activity patterns as the rest of the population so understanding how one moves through, and becomes part of, an environment provides an understanding of how potential offenders move through, and become a part of, that same environment. Consequently, we become victims of crime when and where our activity spaces overlap with those of potential offenders. Unfortunately for the potential victims of crime this occurs quite often throughout the day, primarily because potential victims share nodes and pathways with potential offenders. This is simply because of the nature of urban

environments largely dictating where people live, work, shop, and so on—we are *all* at the mercy of the urban planners of yesteryear. Also important in this context is the concept of the edge. By definition, an edge occurs at the boundary of two, or more, districts. Because this is a boundary between two or more districts, it is very difficult, if not impossible, to identify “insiders” and “outsiders”. As a consequence, motivated offenders blend into the environment and are able to search for targets without the concern of residents with territorial behaviour.

Primarily because of the (built) environment it is easy to see that the geometric theory of crime predicts specific patterns of crime: automotive theft (theft of and theft from) will be high at nodes and along paths that have a high degree of automotive theft opportunities, such as unguarded parking lots; likewise, assaults will be high at nodes that have a high degree of convergence of individuals—these geographic patterns are not necessarily going to be similar. Moreover, these nodes that have a high degree of crime will not have crime randomly or evenly dispersed within the node. Rather, crime tends to be concentrated in particular places within these high crime areas. Loosely speaking, these are the “edges” within the nodes—few automobiles are stolen in front of shopping mall entrances, for example. Lastly, the geometric theory of crime predicts that the vast majority of crime will occur within a small percentage of the available area within an urban centre; for example, 80 percent of crimes may occur within 20 percent of the land area in a city.

4.3. Applications and testing of the geometric theory of crime

The geometric theory of crime is a type of theory that does not lend itself well to “standard” statistical tests because it does not have a list of independent variables that can be tested against a dependent variable—one could formulate such a test, but to the author’s knowledge none have been undertaken. Rather, the geometric theory of crime has been used to understand geographic crime patterns or as a fundamental concept in a further application.

The most immediate application of the geometric theory of crime was in the context of burglary, undertaken by George Rengert and John Wasilchick in Delaware County, Pennsylvania. One of the dimensions that Rengert and Wasilchick (1985) investigated for burglary was the use of space. A common, though somewhat paradoxical, finding was the burglars typically chose targets in relatively low socio-economic status neighbourhoods. This is a common pattern of criminal activity across various time periods and locations, but it is paradoxical because there are more attractive targets in the higher socio-economic status neighbourhoods within Delaware County. However,

this pattern is predictable within the geometric theory of crime, particularly though the concept of activity and awareness space. Generally speaking, the activity space of individuals is constrained because it takes time and effort to overcome distance: why travel 10 kilometres to purchase groceries when you can travel less than 1 kilometre? Consequently, the activity space for most individuals tends to be close to home—the travel to and from work is an exception to this rule, but the majority of activity space will be close to home, especially for youth. This is precisely what George Rengert and John Wasilchick found in their analysis. The search space of burglars, then, was within their activity space that was dominantly in the lower socio-economic areas of the county. Additionally, there were social and cultural issues at work that defined the activity space of burglars. For example, in Delaware County there exists a highway that divides its northern and southern neighbourhoods. This edge could easily be crossed, but often was not; because of indicators of social status (clothing, cars, mannerisms) one set of residents may not be able to blend in within another neighbourhood. Along more specific lines, African-American burglars avoided Caucasian neighbourhoods and Caucasian burglars avoided African-American neighbourhoods for similar reasons. In other words, one's social or ethnic status partly determined the activity space of an individual, restricting the areas in which one was willing to commit a burglary because of familiarity, or lack thereof.

The most well-known application of the geometric theory of crime is through the work of D. Kim Rossmo in geographic profiling. Geographic profiling is an investigative methodology that uses the locations of a connected series of crimes in order to determine the most probable area of offender residence. This methodology is most often applied to serial cases of murder, rape, arson, and robbery, but it may also be used for a string of crimes by one person that involves multiple scenes or other significant geographic characteristics—an automotive theft that leads to a robbery and an assault, for example. Such a series of locations allows a geographic profiler to interpret an offender's activity space and predict the most probable location of the offender's geographic anchor point; this anchor point is most often the offender's home, but it may also be another current or former activity node such as work or another person's residence that is well-known (see Wiles and Costello 2000). This methodology is based on years of research in criminology, geography, forensic psychology, cognitive mapping, mathematical modeling, statistical analysis, and investigative techniques by D. Kim Rossmo (Rossmo 2000). Consequently, the basis of geographic profiling is the known spatial propensities of (serial) criminals in

conjunction with the known spatial propensities of humans, in general. Most often, these propensities are the same.

5. Rational Choice Theory

Operating in the background of these spatial approaches to criminology is rationality: social disorganization theory is a theory of motivation that varies spatially, but routine activities are the outcome of rational choices as are our activity spaces. What we refer to as rational choice theory today stems from the work of Ronald Clarke and Derek Cornish, who consistently refer to rational choice as an approach rather than a theory—the term theory will be used here dominantly for consistency with the previous and further discussions.

The disciplines identified by Ronald Clarke and Derek Cornish (1985) were the sociology of deviance, criminology, economics, and cognitive psychology. Though instructive for the understanding of crime along certain dimensions, the theoretical frameworks of these disciplines is limited for the modeling of offenders' decisions. These frameworks are problematic along the lines of generalizability (sociology of deviance), lacking a coherent theoretical perspective (criminology), being too abstract and mathematical (economics), and being too general within the context of criminological decision-making (cognitive psychology). Ronald Clarke and Derek Cornish recognized the common use of choice theory applied to criminological issues in these fields and their goal was to generate a general approach that dealt with crime as a sequence of rational choices that was not burdened by the theoretical baggage and modeling methods of these disciplines.

5.1. Fundamental concepts

Before the discussion turns to how rational choice is used to understand the criminal event, it is important to understand the fundamental concept within rational choice theory—rationality. Invoking the concept of rationality in the context of crime tends to make some people rather uneasy. Most often, there is no difficulty in discussing property crimes (and violent property crimes, such as robbery) in the context of rationality because of an explicit monetary gain. Non-property violent crime, however, tends to cause some concern among people because they themselves do not see such crimes as rational. But exactly is rationality?

Very simply put, something is considered rational if it is considered reasonable, meaning that a decision, for example, is the result of sound thought or judgement.

Consequently, the rationality of one's actions or choices refers to whether or not a person's action or choices are made according to reason. However, it should be noted that rationality implies reasonableness from the offender's point of view, not the objective person's point of view or the average person's point of view (Cusson 1993). Therefore, we need to consider what a choice is "worth" to someone versus other available options. In the discipline of economics, rationality has a very specific meaning. In order to make rational choices, a person must know all available alternative, be able to assess their "value", rank all of these alternatives, and then make a choice—for an exhaustive list of the assumptions (often referred to as axioms by economists) of rationality see an intermediate microeconomics textbook. Clearly, this "pure" form of rationality is not only complex, but rather unrealistic for the real world where we do not have perfect and complete information.

Such criticisms abound outside the discipline of economics, but also come from within the discipline. The general criticisms of the use of "pure" rationality (and the corresponding optimization of utility, or happiness) revolve around: the limitations of the human mind, particularly when a split-second decision must be made; the recognition that gathering and processing information is costly, particularly in terms of time; and that decision-makers are supposed to know what they are trying to optimize. Herbert Simon (1957; 1982) hypothesized that we do not act rationally, but heuristically—this heuristic property has been shown to be present in offender's decision processes in target selection (Cromwell et al. 1991). We act heuristically in our decision-making processes, seeking pleasure and avoiding pain, because situations are complex and we tend to be unable to process and compute every available option or action. This heuristic decision-making process has been termed bounded rationality: we behave in a manner that is as optimal as possible. Or, in other words, we make the best decisions we can with the information available to us; when we know better, we do (optimize) better. Bounded rationality has the additional property of allowing "rational decision-making" to be subjective, or at least individual specific: rationality is individual specific, not what "makes sense" to the rest of us. Of course, the more rigid models of rational choice does not force one person's rational choice to be the same as another person's rational choice, but the use of bounded rationality makes this distinction very clear to the student of rational choice.

5.2. What is rational choice theory?

Rational choice theory sets out as many as four primary choices that must be made for a potential offender: whether or not to commit crime at all, whether or not to select a

particular target, how frequently to offend, and whether or not to desist from crime. Rational choice theory recognizes that there are a host of reasons why a person may commit a crime. The psychological, familial, social, and economic factors of a potential offender's life situation all play a role in that decision. But the important thing to recognize here is that crime is still a decision, we are not "forced" into a life of crime because of our family structure or the neighbourhood we grew up in. Ronald Clarke and Derek Cornish make it clear that there is a conscious choice to become an offender: legitimate and illegitimate opportunities are considered and the "best" choice for that individual is made. Sometimes, the rational choice is to offend.

The second rational choice is in regard to particular targets. Potential offenders must interpret cues given off by the environment to decide upon what or whom to offend: Is the target valuable enough to risk getting caught? Is the area familiar to the offender? Are there potential guardians in close proximity?

The third rational choice is how often to offend. This choice is going to depend upon a number of factors such as the potential offender's social network, peer influences, monetary (or other) needs, and their ability to successfully avoid detection. Again, the key point here is that frequency is still a choice.

Lastly is the decision to desist from crime or continue. A potential offender may have internal issues that interfere with a life of crime such as getting detected (often on multiple occasions), exhausting targets, or aging out of crime; additionally, a potential offender may have external issues that interfere with a life of crime such as getting married, suffering an injury that creates difficulty with the commission of crime, or gets offered legitimate employment that can sufficiently replace the income from criminal activity.

Probably the most important component of this rational approach to criminal decision-making is that this set of choices is specific for each crime. Simply because a person decides to commit burglaries does not mean that same person will commit a robbery or a sexual assault. The same is true for target selection choices because the environmental cues for a burglary are different than those for an automotive theft. And similarly for the frequency of offending and desistance from offending. As such, Ronald Clarke and Derek Cornish caution against any *general* rational choice theory of crime. If we are to understand and implement a rational choice theory of crime (particularly in the case of policy interventions for criminal justice), we must consider the rational choices for each type of crime as independent from all others.

5.3. Applications of rational choice theory

As discussed above, rational choice theory uses choice structuring properties to better understand offender decision-making. This theoretical approach is most famously used in situational crime prevention. Situational crime prevention is an approach to crime prevention that consists of measures to reduce criminal opportunities. This approach is directed at very specific crimes (specific not only in the crime classification, but the time and place of criminal activity), seeks to modify the environment within which crime occurs, making crime more difficult, more risky, and less rewarding (Clarke 1997). As such, there is no panacea approach to preventing crime, just a set of principles to guide situational crime prevention activities:

1. increase the perceived effort,
2. increase the perceived risks,
3. reduce the anticipated rewards,
4. reduce provocations, and
5. remove the excuses for crime.

These five operating principles are further broken down into 25 techniques of situational crime prevention on the Center for Problem-Oriented Policing URL: <http://www.popcenter.org/25techniques/>. And underlying all of these techniques is that potential offenders (or people, more generally) will respond to these activities in a heuristic fashion and reduce or, hopefully, eliminate their criminal activities.

More generally, rational choice theory is often used, though not always explicitly, as a cost-benefit approach to criminal decision-making. Consequently, it is not a theoretical approach that can be tested in the usual sense of the word. Rather, as will be shown in the discussion of crime pattern theory, below, rational choice theory is most often a fundamental concept in and of itself operating in the background, or it is used as method of understanding why a crime occurred involving particular people at particular times and places.

6. Pattern Theory of Crime

The pattern theory of crime developed by Patricia and Paul Brantingham (1993) was the first attempt to develop a meta-theory within the field of environmental criminology. Patricia and Paul Brantingham recognized that this set of theories varied in its content and focus, but there were several aspects of these theories that were common.

Rationality operates in the background of all three theories. Of course rationality is behind rational choice theory, but it also plays an important role in routine activity theory and the geometric theory of crime. Our routine activities are the result of a set of choices that we make in order to carry out our lives. Where we go, how we get there, and when we go there are all the result of rational choices. Similarly, our activity nodes and pathways are chosen, at least partially, upon rationality. Because it is expensive in terms of time and money to overcome distance, we tend to take the path of least resistance. This path is the rational choice because from a heuristic perspective it makes no sense to travel further than necessary to complete a task. And lastly, routine activities are always present within the geometric theory of crime, and vice versa. Nodes are the places we routinely visit, and we routinely travel the pathways between our nodes. In other words, our routine activities have a geometric component. Recognizing these similarities, allows for the development of a common framework for understanding the criminal event.

6.1. Fundamental concepts

In a trivial sense, all of the fundamental concepts of the previous environmental criminological theories are at work in the pattern theory of crime. At a more fundamental level, however, a pattern theory of crime must have something that can be used to unify the three different theories. That something is the crime template.

Developed by Paul and Patricia Brantingham (1978), the crime template is a concept for understanding crime site selection. Our environment sends out signals, or cues, that can be used by potential offenders to identify targets or victims. Over time, these environmental cues may be learned to indicate whether or not a target or victim is “good” or “bad” in the context of crime. This learned behaviour can then be thought of as a template that is used for target or victim selection. Once a crime template is established, it is relatively fixed and influences future criminal behaviour. Furthermore, we may have a number of crime templates, each specific to a particular crime classification or different locations.

The crime template may be thought of as a checklist that must be satisfied for a potential offender to undertake a particular criminal event. This checklist could be a set of conditions (environmental cues) that must be met for a crime to occur, a set of conditions that must not be present for a crime to occur, or some combination of both. Invoking the crime template the three environmental criminological theories can be integrated into a pattern theory of crime.

6.2. The pattern theory of crime

A pattern is a recognizable interconnectedness of objects, processes, or ideas. This interconnectedness may be physical (on a map, for example) or it may be conceptual. Sometimes patterns are obvious, but other times data must be scrutinized for the pattern to emerge. Patterns are particularly important for human activities (including crime) because we are creatures of habit and, therefore, have patterns to our daily lives. Consequently, the pattern theory of crime has a double meaning: first, there are the patterns of our lives to be understood and, second, there are the patterns that exist between the three environmental criminological theories.

The first commonality between the three environmental criminological theories, as well as with the work of C. Ray Jeffery, is the importance of the environment in understanding the criminal event. All of our routine activities, the way we move through the urban landscape, and the decisions we make regarding those activities and movements are all partially determined by the physical, social, legal, and psychological environment. Within that environment are our routine activities that are undertaken within our activity space. Most often, because these activities are routine, they occur within our awareness space such that we are able to interpret the environmental cues that are emitted throughout our routine activities. Through this interpretation we develop a crime template that leads to the commission (or avoidance) of criminal events: the (rational) choice of whether or not to commit a crime. This commission or avoidance of a criminal event in turn reinforces our crime template or begins the process of changing that template, as well as modifying our routine activities, activity space, and awareness space to match our crime template. Rational choices are present at each and every stage of the pattern. The interconnectedness is complete.

In this brief summary of the pattern theory of crime it should be clear that this meta-theory becomes very complicated rather quickly. This is a cost to any crime analysis simply because of the number of factors that must be considered to get an understanding of the criminal event. The benefit of incurring this cost of complexity, however, is along two dimensions: the interconnectedness of the environmental criminological theories and the explicit dynamic nature of that interconnectedness.

6.3. The benefits of the pattern theory of crime

Showing that all of the three environmental criminological theories are connected is important for the understanding of the criminal event, but also for the cohesiveness of

the field of environmental criminology. Each of the three environmental criminological theories is concerned with the environment within which crime occurs: routine activity theory is concerned with changes or variations in the social environment that lead to changes in crime rates, the geometric theory of crime is concerned with the built environment and how it shapes the geographic pattern of crime, and rational choice theory is concerned with the cognitive environment that governs the choice-structuring processes of potential offenders. Individually, each of these theories adds to our understanding of crime, but collectively they are able to provide a meaningful representation of the environment that crime occurs within.

The second dimension that reveals the benefits of the increased complexity within the pattern theory of crime is that it emphasizes the dynamic nature of the decision to offend at a particular time and place through feedback loops. The crime template affects and is affected by the commission (or avoidance) of crime, that in turn affects our routine activities, activity space, and awareness space. A change at any point within this interconnectedness sends a ripple through the decision-making processes that encompass environmental criminology. Therefore, because of this interconnectedness, at the heart of this spatio-temporal study of crime is the recognition that change or dynamism is inherent in the understanding of the criminal event. This recognition of change further legitimizes the place of environmental criminology within the broader criminological literature because it seeks not only to explain the old facts of criminal behaviour, but new ones as well. As a result, it is important to understand where these theories came from so we can see where they are going and how they are changing.

7. The Organization of This Book

This book is organized into three parts. Details of the various papers included in this anthology are provided at the beginning of each section, but a general outline of these sections is in order here. The first part includes early work on the ecology of crime. This research begins in the nineteenth century (France and England) and early twentieth century (United States) and is instructive to the study of environmental criminology because it allows for the reader to understand the nature of previous “environmental” approaches to crime. The second part includes the classics in environmental criminology. This includes the original papers for each of the four environmental criminological theories. Lastly, the third part includes the seminal papers that discuss environmental criminology and crime prevention. The anthology

itself concludes with a chapter outlining how environmental criminology has evolved in recent years as well as where it is going.

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Footnotes

1. See Brantingham and Brantingham (1998) for an outline of the various models and theories of environmental criminology. [↵](#)
2. Oscar Newman (1976) even wrote a comprehensive set of architect's guidelines for creating defensible space that was subsequently withdrawn because many of these guidelines did not work.. [↵](#)
3. Social cohesion is a term used to describe a neighbourhood's ability to stand together, identify common interests, and carry out a (crime prevention) plan for the benefit of the community. [↵](#)