THE GEOMETRY OF FEAR: AN ENVIRONMENTAL PERSPECTIVE ON FEAR AND THE PERCEPTION OF CRIME

by

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ABSTRACT

Understanding fear of crime is the purpose of a significant body of research. Researchers studying the phenomenon span several disciplines including criminology, psychology, geography, architecture and sociology and with them they bring different theoretical perspectives. The goal of this dissertation is to join these perspectives into a composite meta-theoretical framework or theoretical matrix designed to enhance our understanding of research on fear of crime. The fear of crime matrix is tested through the analysis of a series of five community surveys in Vancouver, British Columbia, Canada.

Past research reveals a recurrent theme of disorder, both physical and social, in explanations of fear of crime and perceptions of crime. But the type of disorder is scalable, ranging from proximal cues associated with specific encounters between people or defined micro locations through to general feelings of fear about areas, activity nodes, or major pathways and routes to and from these nodes. This multi-layer scalable component of fear of crime is a core part of the theoretical matrix.

The analysis of five community surveys, all built on similar action research community surveys, provide support for the theoretical fear matrix. Comments by persons interviewed and their cognitive maps identified where they felt afraid and why. The results from the analysis are also compared to police calls for services. This linking of surveys to police incidents is a step towards developing a methodology that would make it possible to forecast or identify where there might be hotspots of fear in communities and where detailed surveys could be of value.

DEDICATION

I am grateful to everyone who has guided me through this academic process, but most of all, to my spouse Kt King who has provided me with endless support and encouragement, while always remaining patient during this educational endeavour from my Post Baccalaureate to the completion of this PhD.

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INTRODUCTION

The purpose of this dissertation is to explore emerging theoretical approaches to disorder and incivility, and use these to obtain a better understanding of the relationship between the perception of crime and human behaviour in the urban domain. These ideas are linked together in a meta-theoretical matrix that may aid in understanding how human perception of the environment affects fear of crime. Secondary data from five community surveys in the City of Vancouver, British Columbia, Canada are used to answer a specific research question about how urban infrastructures, particularly major activity nodes, influence fear of crime.

The antecedents for the research in this dissertation are examined chronologically with an anchor in the field of environmental criminology. This analysis explores how fear and the perception crime change with the introduction of a higher activity node in the meso environment of a neighbourhood. Most previous research on fear and the perception of crime focused on the micro manifestations of disorder occurring at the block level, the micro repercussions of individually-based factors such as gender, race, victimization or age, and the meso impact of neighbourhood characteristics such as informal social networks, collective efficacy and social control.

This analysis founded on principles taken from environmental criminology, is intended to determine whether features in the urban environment have a significant impact on fear and the perception of crime and whether these factors are linked to the macro movement of humans in the urban domain, and consequently their activities and awareness spaces. This research question is

explored with the results from five community surveys. In addition, this dissertation demonstrates the utility of this new action-research survey instrument in determining community standards and perception of crime. The analysis includes a detailed examination of the narrative descriptions of community fear generators by survey respondents, a temporal review of tolerance in a single neighbourhood, a comparative review of the differing levels of tolerance between two communities, a cognitive mapping analysis of locations within residents' communities that generate fear, and the development of a cognitive mapping forecasting methodology.

In 1997, the Grandview-Woodland Community Policing Centre (GWCPC), located just off Commercial Dr. in Vancouver, engaged in a large scale community survey in order to determine local standards on disorder issues. The results from this survey were intended to direct the services delivered. Community policing in Vancouver was a new practice and the GWCPC was one of the first five civilian operated and managed offices. The GWCPC board of directors was comprised of local residents and the centre's activities were carried out by community volunteers. The GWCPC, which espoused a non-profit organizational management style, worked in partnership with the police, as opposed to the police directing the operations and services of this organization. The results from the 1997 survey were the basis of many of the initial programs that were put into place at the GWCPC.

In 2007 Simon Fraser University's Institute for Canadian Urban Research Studies (ICURS), under their community service program, co-sponsored the 10th

anniversary replication of this community survey in conjunction with the GWCPC. Despite the fact that several of the problems and conditions had changed from 1997 to 2007, the exact same survey instrument was used so that accurate comparisons could be drawn. Possibly the most surprising result was the similarity in responses over the 30 questions despite many changes in the neighbourhood that had occurred since 1997. However, the most remarkable result was the cognitive mapping component of the survey.

In both the 1997 and the 2007 survey, respondents were asked to circle the area on a map where they felt there was the highest level of crime. In 1997, the cognitive mapping data were not analyzed, but this comparison is included in the 2007 version (Mosca and Spicer, 2007: 9). The shift in perception is striking. In 1997, perception of crime was along Hastings Street and toward the north end of Commercial Dr., as well as around the Britannia Community Centre and Grandview Park. However, in 2007 the perception of crime had completely shifted to the south end of the study area. It is centered on the intersection of Broadway and Commercial Dr. where the Skytrain station is located.

This radical shift in perception that occurred from 1997 to 2007 in the Grandview-Woodland neighbourhood leaves several unanswered questions for which little explanatory research exists. While there is an abundance of research on the effect of fear and the perception of crime on urban vitality, less focuses on how fear and the perception of crime shapes aggregate human behaviour and action in the urban setting. The literature on this topic offers insight into individual components of this problem, but it does not tie these into a comprehensive

theoretical model. More specifically, the research in the area of environmental criminology does not address this issue from the wider perspective in which fear and the perception of crime is analyzed for its relative effect on the micro, meso and macro interactions that occur between people and the urban setting. Furthermore, this literature repeatedly draws a link between disorder and fear of crime, but does not offer a formalized theoretical model which accounts for the interaction between micro, meso and macro environments and human movement through these spaces.

Several pertinent questions remain unanswered. For instance, does a disorder matrix exist that can be replicated from one study to the next, and also from one city or country to the next? What is the aetiology of disorder? Does it derive from sociological or environmental factors? How is fear and the perception of crime spatially distributed? What are the differences between fear and the perception of crime? Are these reactions predictable? How do incivilities relate to fear and the perception of crime? What crimes are associated with these perceptual patterns? Are there inherent differences between disorder, incivilities, antisocial behaviours and their association with fear and the perception of crime? What are the effects of fear and the perception of crime on general urban behaviour? Are the answers to these questions consistent and can they accurately guide civic and policing initiatives aimed at targeting these problems? How effective is community policing, problem-oriented policing, and reassurance policing in dealing with disorder? Are there other options that need to be considered? Is it possible to accurately forecast fear and the perception of crime?

The relationship between disorder and fear of crime is a complex problem requiring a multitude of explanations in order to understand the dynamic interplay between disorder, human perception and fear of crime. The results from the surveys examined in this dissertation can help to unravel the numerous sociological and environmental components that link human perception of urban street life to behaviour in this environment. The theoretical basis for the study of fear and the perception of crime is multi-disciplinary and the various elements of these surveys provide the real data necessary to examine this phenomenon.

Chapter 1 provides an overview of the fear of crime research by beginning with a review of social disorganization and then further exploring disorder and incivilities. Although social disorganization is very specific to a time in American history characterized by the rapid growth of cities, the constructs describing the physical and social aspects of this theory are linked to more contemporaneous studies on disorder demonstrating how it has a direct impact on fear of crime. The main purpose of this chapter is to investigate individual perception of physical and social behaviours occurring in the micro setting and to understand how this interaction translates into human activity at the block level, and also at the community level. Particular attention is brought to the review of disorder as it pertains to decision making and fear of crime. The main finding in this chapter is that a consistent disorder matrix which can be replicated over numerous studies has yet to be established.

Chapter 2 builds on the previous one by exploring social and human ecology to analyze how social structures, neighbourhood characteristics and physical

aspects of the environment influence fear and the perception of crime. These approaches, while most often applied to criminality, can also be used to understand general human behaviours and interactions that occur in an urban setting. Social ecology can shed light on why some people become engaged in criminality, but also why certain neighbourhoods are plagued by such behaviours. Human ecology and environmental criminology can assist in analyzing how people react to their environment. This leads to an improved understanding of the social processes that occur from the smallest entity, the individual, to the largest component of urban living, the collective. Environmental criminology theories which are rooted in the general behaviour of people have been used to explain criminal behaviour, but can also be applied to fear and the perception of crime. These theories when inverted and used to explain perception of crime, rather than the criminal event, open a new approach to theorizing about this phenomenon.

Chapter 3 ties together the information gathered in the two previous chapters into a new theoretical model of fear and the perception of crime. The study of fear of crime can be enhanced through principles derived from environmental criminology and the inclusion of a multi-scale analysis which takes into account the micro, meso and macro dynamics at work in the urban domain. The theoretical perspectives of social and human ecology can help articulate how people react to the environment in the micro (city block ↔ individual), meso (neighbourhood ↔ community), and macro (city ↔ collective) spaces that exist in contemporary cities. Components of social and human ecology, as well as

environmental criminology are then used to build a theoretical model of fear and perception of crime which links people operating in these three social spaces to the physical places where they interact. The three levels in the model are articulated through perception, human activity, and a social and physical interface. This is a new model for interpreting fear and the perception of crime which shows how these processes are mediated to create either community isolation or integration.

Chapter 4 describes how the survey instrument was developed in 1997 through the GWCPC and became an action research instrument. The replication of this process in 2007 is reviewed and the beta testing of this instrument in two other communities described. The survey methodology is explained including how the questions were developed, how and where the surveys were implemented, the data collated, and the recommendations developed and delivered. Methods used to analyze the survey comments, community variance and cognitive maps are described. Emphasis is placed on the three surveys conducted in the Grandview-Woodland community because two of these were exactly replicated ten years apart during a time period when there were significant changes in the community. More specifically, the central activity node at the Skytrain station underwent modifications which altered the flow of people in that neighbourhood.

Chapter 5 is an exploratory analysis of the survey results. There are two principal investigations which tie into the theoretical model for fear and the perception of crime. In a first instance, the survey comments from the three

surveys conducted in the Grandview-Woodland neighbourhood are examined with specific attention brought to disorder problems, nuances in disorder and the growth of the Skytrain station. Then, the relative levels of tolerance within one community and then from one community to the next is explored as this survey instrument was designed to gauge varying levels of tolerance toward disorder problems. A temporal analysis of survey responses is conducted to discover variations in perception. Then, two communities are compared so that the behaviours that elicit varied responses are exposed. These results show how communities vary in the perception of disorder problems and that environmental factors such as a transportation node play an important role in fear and the perception of crime.

Chapter 6 presents the results from the cognitive maps included in the three surveys conducted in the Grandview-Woodland neighbourhood. The spatial analysis connects police calls for service with areas where there is heightened perception of crime. More specifically, these results show how the introduction of a new environmental feature – a larger Skytrain station – simultaneously impacts crime statistics and perception of crime. This section utilizes different techniques to mine the pertinent data relating to the directionality of fear and pedestrian flow. These results show how the emergence of a large activity node, an environmental aspect of the landscape, significantly alters perception of crime.

Chapter 7 summarizes the major points of the fear of crime matrix and reviews how police practices evolved in relation to this problem. Over the past 30 years, a variety of policing approaches has been applied to perception and fear of crime

without going to the core of this issue. The last component of the theoretical model, although not examined in relation to the data presented in this dissertation, deals with the relative integration or isolation of communities into the greater structure of a city. There has been significant research dealing with community isolation as a result of the proliferation of disorder. However, little has been done on the detailed mechanisms of how fear and the perception of crime affect general human behaviour in the community, and how this process is linked to community isolation. Police models developed to improve conditions in such places, for instance community policing, problem-oriented policing and reassurance policing do not fully address this problem. Therefore, the purpose of this chapter is to identify the tactics and techniques that can be applied to deal effectively with perception and encourage the legitimate use of disordered areas. These are derived from both direct activity, and from coordinated community stakeholder action. Within this context, community action-research is reviewed as a method which can link research to the practice of disorder maintenance. Action-research is a cyclical and stakeholder-oriented process that can elucidate the relative impact of social and physical disorder on individual activity at the block and neighbourhood level. Therefore, this form of research is well-suited to the exploration of disorder and the development of community based management strategies.

Chapter 8 explores future research opportunities by proposing a forecasting methodology utilizing the cognitive maps. This methodology uses a subset of reported police incidents and is tested against two of the cognitive mapping

results to review its effectiveness. The limitations of this approach are discussed and future research opportunities are proposed. This methodology demonstrates how community surveys can be used to measure public perception in relation to crime data. As such, the community survey instrument serves as an effective method for targeting location-specific and stakeholder-oriented action. It identifies core issues and can assist agencies in determining where to funnel resources into areas where perception of crime is high, and where human activity is integral to urban vitality.

Fear of crime is a complex product of urban life which impacts the pace and vitality of a city. While there are general and individual-specific principles that impact the phenomena of fear and the perception of crime, there are also location qualifiers and activity-based elements of the urban domain which contribute to these feelings. Land use decisions and mass-transportation strategies create human movement patterns which at the aggregate leave impressions on the environment. These impacts are manifested in environmental cues which at the micro level influence individual action and in some instances can be linked to specific incidents reported to the police. The theoretical matrix presented in this dissertation sets a framework for a systems approach which can integrate various forms of data into the micro, meso and macro analysis of fear of crime and human movement within the urban domain.

CHAPTER 1: Fear of Crime Research

This chapter traces the history of fear within the field of criminology. This review begins with social disorganization because while this theory focused on the sociological influences on criminality, it also paid attention to the physical manifestations of crime in the urban environment and how disorder impacted human perception. Social disorganization was originally conceptualized as a social phenomenon then, later interpreted as a physical expression of disorder, relating to specific urban markers. Within the context of this chapter, the useful present day aspects of social disorganization are extracted in order to further analyze how disorder and the physical manifestation of this phenomenon relate to fear and the perception of crime. The visible aspects of disorder lead to perception, and then this perception linked to the social interpretation of these signs thus triggering fear and the consequent reaction.

Shaw and McKay's (1942) application of social disorganization is discussed within this context which leads to recent work conducted by Sampson and Groves (1989) where they test the Shaw and McKay (1942) model and further introduce dynamic measures that represent formal and informal social networks. Then Bursik and Grasmick (1993) take these networks to examine how they can become effective crime control mechanisms. Later, Taylor (1997) studies how social interactions occurring in micro-environments strengthen these networks. This is a move away from the static social and physical markers toward the interactive component that exists between disorder, fear and the perception of crime.

This altered interpretation of the Social Disorganization Theory leads to the role of incivilities and disorder in the formation of social ties. The impact of these activities on human behaviour in the urban context is further explored. Disorder is analyzed in order to determine the potential for standardization. However, a review of this literature shows that disorder is a fluid concept going through a number of variations from one neighbourhood to the next and holds different meanings from disorder, to incivilities, to quality of life issues, to antisocial behaviour linking into fear, perceived risk, avoidance and the perception of crime. The consequent reaction to disorder in the form of avoidance is then analyzed from the micro reactions to the macro manifestations. This ties into the theories on disorder as developed by Inness (2004a, 2004b, 2005a and 2005b) and Kelling (1982 and 1996). This interpretation of disorder shows how it is linked to fear of crime and how the micro manifestations in the environment impact pedestrian navigation.

The community context: The urban condition of disorder

Most often social disorganization is understood as a theory of crime rather than a condition of crime and disorder. The difference between these two concepts is that one provides a general explanation of crime whereas the other describes a situation displaying visual markers of crime linked to social reactions. Since recent criminological theory has shown how crime is dependent on the situation and how situations vary according to contextually dependent variables, the Social Disorganization Theory is most useful for its descriptive attributes. Crime occurrences and disorder are robust correlates and it is useful to

understand the various manifestations of this phenomenon and the social constructs stemming from this neighbourhood condition (Shaw and McKay, 1942; Skogan and Maxfield, 1981; Sampson and Groves, 1989; Bursik and Grasmick, 1993; Taylor, 1997; Sampson and Raudenbush, 1999, 2004; and Hipp 2010). Shaw and McKay (1942) present the following factors as leading to a state of social disorganization: low socio-economic status, ethnic heterogeneity and residential mobility. These concepts form the theory, whereas disorder is the product under examination and in need of explanation.

Departing from the work completed by Shaw and McKay (1942), Sampson and Groves (1989) provide a detailed theory of community social organization and are able to test their hypothesis based on data from the national survey in Great Britain. They use Bursik's (1993) definition of social disorganization: "In general terms, social disorganization refers to the inability of a community structure to realize the common values of its residents and maintain effective social controls" (Sampson and Groves, 1989: 777). They go beyond Shaw and McKay (1942) and look at formal and informal social networks. These networks are the true manifestation of community cohesion; a necessary crime control mechanism (Sampson and Groves, 1989). The effect of these networks is broken down into three mediating factors: "sparse local friendship networks", "unsupervised teenage peer groups", and "low organizational participation" (Sampson and Groves, 1989: 783). They add two variables to the original three proposed by Shaw and McKay, (1942): "family disruption" and "urbanization"

(Sampson and Groves, 1989: 783). These five variables are added to Shaw and McKay's original ones and subsequently, make more reliable crime predictions.

The work completed by Sampson and Groves (1989) shows a distinct move away from simply using static sociological descriptors of community such as class, socio-economic status or race in the explanation of crime. Instead, they attempt to explain the more complex constructs and dynamic features of community organization and disorganization. This more recent interpretation of disorganization is of particular interest in the study of disorder as it is no longer linked to the social dynamics that were present when this theory of crime was originally conceived.

In Neighborhood and Crime, Bursik and Grasmick (1993) look at various neighbourhood features such as the reason why certain areas contain a higher percentage of offenders, why other neighbourhoods are more prone to victimization, and how fear relates to these factors. Bursik and Grasmick (1993) use the concept of *systemic control*, which is derived from social control theories, as the basis for this model. This perspective describes how social control is achieved through mechanisms that are present in formal institutions such as schools and other social structures, and also in informal social networks. Hirschi and Gottfredson (1990) and previously Park (1925) already conceptualized the role and importance of formal social control exercised by institutions. Bursik and Grasmick (1993) move beyond these definitions, to look at how these institutions act in the formation of informal social networks.

In the book Fear of Crime, Skogan and Klecka (1977) explore various aspects of victimization including its link to fear which they view as having a great impact on quality of life. When people are fearful in the urban setting they are reluctant to use the streets, the parks, and participate in city life (Skogan and Klecka, 1977). Skogan and Maxfield (1981) further study how crime and the consequent fear reaction can weaken informal social networks because fear causes citizens to retreat from community life and cease their participation in formal social institutions. Skogan (1981) is able to show how fear of crime is positively correlated to larger cities and more specifically to areas which could be labeled as socially disorganized. The markers of crime in these areas are of particular interest to Skogan and Maxfield (1981). In Disorder and Decline Skogan (1990) presents his results from an extensive community survey conducted in poorer Chicago neighbourhoods in which he finds that the visual manifestations of crime cause the most fear. Some examples of these visual cues are: graffiti, dilapidated buildings, broken windows, drug paraphernalia, open air drug use or drug sales (Skogan, 1990). Furthermore, he finds a dissonance between police priorities and community safety priorities, and suggests that a concordance between police action and neighbourhood standards is an essential element for the achievement of community cohesion (Skogan, 1990). This positive correlation between levels of tolerance and enforcement results in strengthened informal social networks which in turn support formal social structures, and halt the decline of socially disorganized areas.

Fear of crime within the context of urban living

In North America, a drastic change in urban development occurred after the 1940s. Another theoretical branch based on urban planning grew as cities changed how people lived and acted in society. In The Death and Life of Great American Cities, Jane Jacobs (1961) provides practical guidelines for urban planners and these rest on personal observations and most often Jacob's own common sense. This is a very different view of urban dynamics, one which respects the diversity of community standards and does not impose middle class values on the vitality of a neighbourhood. Her book describes various contrasting urban situations where vibrant neighbourhoods are compared to socially barren suburbs and housing developments.

Jacobs (1961) refers to the urban planning decisions that create urban zones in transition containing the environmental markers attributed to fear and the perception of crime. Conversely, Jacobs (1961) points to neighbourhood characteristics that support a socially dynamic urban area, lower delinquency rates and higher community satisfaction. These characteristics are of particular interest because these are aspects of urban life which assist in community sustainability, contribute to the vitality of a neighbourhood and counterbalance the negative ramifications associated to the physically negative features of a particular area. While Jacobs (1961) does not directly discuss the importance of quality of life in urban living, the terms she uses to describe healthy neighbourhoods are all integral to what have now become defining features of urban liveability.

At the onset, criminology was almost solely focused on the criminal. The main purpose of this discipline was to identify the reasons for offending and to deal with the consequences of the criminal act. However, Guerry (1833) and Quetelet (1842, 1831) bring place into the study of crime. This led subsequent researchers to transfer their attention away from the offender and to consider the environmental context (Herbert and Hyde, 1985). The study of victimization is a further move away from the offender. Since the 1960s, this topic has been widely investigated leading countries around the world to conduct opinion polls and obtain community feedback on crime and victimization (Ferraro, 1995).

However, victimization only partially and inconsistently explains fear of crime and this state of being, the consistent feeling of anxiety that crime might occur, appears to be triggered by other, more subtle variables (Garofalo and Laub, 1978; Hale, 1988; Killias and Cierici, 2000; Bannister and Fyfe, 2001; and Franklin, Franklin and Fearn, 2008). Thus from this perspective fear and the perception of crime is more closely linked to quality of life than to victimization (Garofalo and Laub, 1978; Hunter, 1985; Bannister and Fyfe, 2001; and Smith, Phillips and King, 2010). The physical and social manifestations present in the surroundings are those cues that produce fear and the perception of crime. This broader theoretical framework, put forward by Garofalo and Laub (1978), led subsequent researchers to turn their attention to variables likely to be associated with quality of life. These would be aspects of the urban fabric that are subjectively experienced during the course of daily activities. Quality of life therefore, is connected to daily routines in which each citizen encounters both

the positive and negative aspects of urban living. As Garofalo and Laub (1978) suggest, this multi-dimensional description of fear of crime is more complex than explaining fear with victimization. The policy implications in the latter are simple: fight crime and reduce fear (Garofalo and Laub, 1978). Since victimization only partially explains fear, it is also important to focus on the more fluid and discreet aspects of fear that are related to quality of life issues and the perception of crime.

Observation is the principal research method used in the *Reactions to Crime Project* conducted from 1975 to 1980 in three American cities, Chicago, Philadelphia, and San Francisco (Skogan et al., 1982). Hunter, who was a researcher in the project, began his address at the 1978 American Society of Criminology with the following observation: “Fear of criminal victimization in urban areas is more pervasive than victimization itself” (1). Hunter (1974, 1978, 1985) introduces the concept of incivilities, and then proposes that crime is correlated to these negative social interactions and these two factors are a more precise manifestation of disorder. Furthermore, he finds that fear is more linked to incivilities than to crime itself. Looking at the root of civility, Hunter (1974, 1978) relates this back to symbolic interactionism as developed by Mead (1934) and then Blumer (1969). He bases his conclusions on Becker’s (1963) work in San Francisco which found that cities create their own subcultures and what may be tolerable in one place, may not be in another (Hunter, 1974, 1978). Similarly, this concept can be readily extended to urban neighbourhoods and what is accepted in one part of the city, may not be in another. These urban subcultural

norms create community unification and help citizens as they experience social interactions in the urban domain (Hunter, 1974, 1978). Conversely, a breach of these community norms perceived as a potential tear in the community fabric and expose unity to dissention.

Hunter (1974, 1978) links incivility to the social control mechanisms present in society. Individuals in society are bound by *civil ties* which connect them at a personal level to other citizens and at an institutional level to the larger community. Social control mechanisms are perceived as lacking when these *civil ties* are broken. This disorder would indicate that the larger social institutions designed to maintain a stable collective are ineffective. Incivility for Hunter (1978, 1974) is both an expression of the micro interpersonal dysfunctions, but also the macro deterioration of social control mechanisms. Hunter (1978) explains that during daily routines individuals will come across what he describes as the "physical residues of the actions of others" (7). These signs indicate what type of people reside and use the area in question and lead them to wonder about, or fear who might be present.

While the *Reactions to Crime Project* looked at the various tactics people use to protect themselves from victimization, the practice of avoidance, in the form of "personal precautions", is implicitly linked to disorder and public incivilities (Skogan et al., 1982: 10). As people travel through cities during their routine activities, they perceive disorder and incivilities in the community and read these as potential markers for crime. As such, these physical signs in the environment cue citizens who will then implement strategies to avoid victimization. These

“personal precautions” are defined as follows:

> personal precautions are routine strategies people employ to avoid being victimized by violent or predatory personal crime. Some of them involve limiting exposure to attack, while others are things people do when they are exposed to risk. A majority of big-city residents reported taking one or more of the precautions investigated in the RTC survey. The frequency with which they did so was related to their fear, personal vulnerability, vicarious experiences with crime, and neighborhood conditions. These behaviors are all habitual and inexpensive, and their frequency was not greatly affect by role constraints or economic factors (Skogan et al., 1982: 10).

Although these strategies may effectively reduce victimization, there are also negative ramifications to these actions (Rader, May and Goodrum, 2007). When citizens avoid situations or locations the informal social controls exerted by the mere presence of law-abiding individuals begin to erode thus creating a social vacuum. Without collective control over a space, unlawful individuals begin to proliferate and social decline occurs (Skogan, 1990).

Hunter (1974) explores the concept of symbolic communities. These are socially defined neighbourhoods where people share a cognitive image and comparable sentiments about the area. Social neighbourhoods differ from geographical ones in their definition of space, social character and linkage to remainder of the city. The cognitive image can run from the micro (block) level, to the meso (neighbourhood) level, and to the macro (city) level. Citizens will have different perspectives depending on a variety of variables including social class, race and gender (Hunter, 1974). Sentiment is an emotive response based on community attachment and mediates how the cognitive image of a place develops and evolves. Hunter (1974) finds that despite the growth of a city such as Chicago, neighbourhoods maintained their symbolic definition, as people were able to share perception of the area even though several decades had passed.

This implies that neighbourhoods maintain a social definition, and arguably local standards of behaviour, despite the ongoing population migration patterns that accompany urban growth and development (Hunter 1974, 1985).

Creating a disorder matrix

An overview of the criminological literature on disorder does not reveal a consistent matrix of behaviours or physical manifestations of disorder. These aspects of disorder, which are also defined as incivilities, antisocial behaviours, and quality of life issues are generally referred to as though there is a consensus as to what fits into the disorder paradigm. In fact, this term has become a catch all term for social activities usually displayed in the urban environment which are generally perceived as problematic from a multitude of perspectives including the police, civic administration, and the general public. These activities or conditions are conceived as having a negative impact on the overall quality of life, but since they do not appear to be defined, they are rarely dealt with systematically.

Disorder is only tangentially associated with criminal law as the majority of problematic behaviours do not fall under the criminal caveat. As such, the responsibility for disorder management becomes shared and often this results in improperly coordinated civic and other social services (e.g.: litter on the ground can be the physical manifestation of improper garbage collection). The definition of disorder itself is vague therefore the actual management of the problem is equally undefined. The following section explores the literature to expose consistent themes that arise from the research on disorder. It looks at the actual behaviours or physical manifestations most often related to the term *disorder* and

at some research related to the terms *incivility* and *antisocial behaviour*.

In a first instance, Sampson and Raudenbush (1999) provide the clearest definition of disorder by dividing the problem into two entities: social disorder and physical disorder. Social disorder is carried out by people who are breaching some form of civic ordinance (jaywalking) or committing a lower form of criminal offence (fare evasion). These are visible behaviours carried out in the public sphere (Sampson and Raudenbush, 1999). Physical disorder is present in the environment, similarly to social disorder it is the representation of a breached civic ordinance (littering) or the physical trace of a previously committed criminal offence (discarded condom which can relate back to sex trade work). Again, these physical manifestations are present within the social and public sphere.

Beginning with Hunter (1974, 1978) the following incivilities are listed in his paper at the American Society of Criminology: “burned-out buildings”, “litter”, and “garbage on the streets” (7). Skogan and Maxfield (1981) provide a much more extensive list of problems including: “building abandonment”, “drug use”, “teenage impropriety”, and “vandalism” (82). When Skogan and Maxfield (1981) study these disorder signs in a neighbourhood survey, other problems and behaviours are described: “boisterousness”, “drunkenness”, “untidiness”, “unsupervised teenagers”, “drug dealers”, “graffiti”, and “visible vandalism” (91-94). Possibly one of the more widely recognized researchers on disorder, George Kelling (1982, 1996), refers to broken windows, vandalism, untended property, people being rowdy, teenagers loitering on corners, litter, public drinking, and panhandlers, as all being part of disorder. But in neither version of his Broken

Window Theory does he provide an exhaustive list of all the possible behaviours, nor their relative impact on people (Kelling and Wilson, 1982; and Kelling and Coles,1996).

For Kelling, disorder is important to consider and target because of the potential link between lesser offences, and more serious and violent ones. Ferraro (1995) on the other hand was concerned about disorder because of its link to fear. Ferraro (1995) provides the following list of activities:

> *Physical incivility* refers to disorderly physical surroundings such as litter, abandoned buildings or cars, graffiti, broken or barricaded windows, and unkempt lots. *Social incivility* refers to disruptive social behaviour such as the presence of rowdy youth, homeless people, beggars, drunks ("riffraff" on the streets) or, perhaps, inconsiderate neighbors. (15)

However, while Ferraro (1995) links these various markers of disorder to fear, he does not provide a detailed account or classification of these behaviours in order to assess their relative effect on fear.

For Sampson and Raudenbush (1999) social disorder is classified as an act involving strangers which may be perceived as threatening. They list the following social disorder activities: "verbal harassment on the street, open solicitation for prostitution, public intoxication, and rowdy groups of young males in public" (604). While for physical disorder they list the following elements: "deterioration of urban landscapes, for example, graffiti on buildings, abandoned cars, broken windows, and garbage in the streets" (Sampson and Raudenbush, 1999: 604). These authors, after conducting extensive observations of 23,000 face blocks in Chicago, create two scales with one containing physical disorder and the other social disorder (Sampson and Raudenbush, 1999). The physical disorder scale includes the following ten items:

- “cigarette or cigars in the street or gutter”
- “garbage or litter on the street or sidewalk”
- “empty beer bottles visible in the street”
- “tagging graffiti”
- “graffiti painted over”
- “gang graffiti”
- “abandoned cars”
- “condoms on sidewalk”
- “needles/syringes on sidewalk”
- “political message graffiti” (Sampson and Raudenbush, 1999: 615)

The social disorder scale contains the following seven items:

- “adults loitering or congregating”
- “drinking alcohol in public”
- “peer group with gang indicators present”
- “public intoxication”
- “adults fighting or arguing in a hostile manner”
- “selling drugs”
- “prostitutes on the street” (Sampson and Raudenbush, 1999: 616)

These authors make a clear link between disorder and perception and are able to show that social disorder, while more rare has a greater impact on the perception of crime (Sampson and Raudenbush, 1999).

Other theorists have chosen to focus on land use and the associated behaviours occurring in those defined spaces, and then relate these places back to fear and the perception of crime. For instance, Kurtz, Koons and Taylor (1998) cite bars as a particular crime attractor, especially when placed in a residential area. In another example, they compare land use to the presence of physical disorder and find that places where there is more foot and vehicle traffic attracting litter, graffiti and, what they refer to as “wear and tear on a block” (Kurtz et al., 1998: 123). While these researchers push the study of disorder forward by considering the relative impact of land use on disorder, they do not clearly

connect all the potential disorder to the multitude of land use situations. In later studies the following list of premises are found to be related to higher localized rates of crime and disorder: “Pawn brokers, check-cashing stores, drug-treatment centers, halfway houses, homeless shelters, beer establishments, and liquor clubs” (McCord, Ratcliffe, Garcia, and Taylor, 2007: 299). In this study, a six-item scale is created which contains the following disorder markers:

- “groups of unsupervised teenagers”
- “abandoned buildings”
- “abandoned vehicles”
- “poorly kept yards”
- “loud or noisy neighbors”
- “graffiti on sidewalks and walls in your neighborhood” (McCord et al., 2007: 303)

The results of this study show that people who lived closer to places expected to generate more disorder referred to as *crime generators*, were more likely to perceive both higher levels of crime and disorder (McCord et al., 2007).

Building on the Broken Windows Theory, some researchers have compared perception of crime and perception of disorder to discover whether this relationship exists (Sampson and Raudenbush, 2004; Worrall, 2006; and Armstrong and Katz, 2009). Additionally, since this relationship is to some extent linked to fear of crime and neighbourhood decline, the repercussions of this association between crime, disorder and fear of crime would have significant policy implications. Armstrong and Katz (2009) conducted a study in Mesa, Arizona which contrasts perceived incivilities to crime. The incivility index they developed includes the following measures:

- “loitering”
- “drunks/tramps”

- “harassment”
- “fighting/arguing”
- “noisy neighbors”
- “drug sales”
- “broken windows”
- “unkempt property”
- “vandalism/graffiti”
- “vacant lots with trash”
- “vacant houses or buildings”
- “abandoned cars”
- “rubbish/litter” (Armstrong and Katz, 2009: 289)

The perceived crime measures only included four crimes: burglary, car theft, robbery, and assault. Armstrong and Katz (2009) find some overlap between these two aspects of perception, yet caution what particular indicators are used to compare the two (Armstrong and Katz, 2009).

In his study, Worrall (2006) uses a different set of indicators for perceived incivilities and crimes. For instance, Worrall (2006) merges abandoned cars and buildings into one measure and adds truancy. With regard to the crime categories, he adds sex and gun crimes to those used by Armstrong and Katz (2009) and establishes a more general crime category labelled “violent attacks” (Worrall, 2006: 371). Spelman (2004) looks at the variation of disorder throughout 30 Baltimore neighbourhoods. He suggests that given this variation, it is best to target locally-identified problems as opposed to implementing city-wide disorder initiatives (Spelman, 2004). Indeed, what may be acceptable in one place might be intolerable in another. Spelman (2004) explains the variance in tolerance:

> One reason for the lack of consensus may be that the norms and values that are “conventionally accepted” differ from one neighborhood to the next. For example, a raucous late-night party in an otherwise-quiet suburb signals a breakdown in social control; the same party on fraternity row signals a good time. Teenagers hanging out on a street corner may be regarded as harmless in a tightly knit neighbourhood

> where everyone knows them, but as highly suspicious in a transient neighbourhood where few do. In either case, noise and teenagers may be regarded as “problems”; the party keeps you up at night and the kids have nothing to do. But the extent to which it is a cue for crime may differ greatly from place to place. (65)

Locating the specific disorder problems that affect individual neighbourhoods is an important step that can help harmonize service delivery and improve the management of fear and perception of crime. The assumption of a fixed incivility or disorder scale is likely not the most appropriate approach when the intended outcome is to assess the subtle differences in perception that can occur from one community to the next.

In some countries, government surveys are used to test the presence of disorder in citizens’ daily lives and how this problem is perceived. For instance, the British Crime Survey, which has been implemented since 1982 includes a measure for antisocial behaviour. Antisocial behaviour is the term used in the United Kingdom to describe behaviours and conditions that resemble those for disorder and incivilities. The measures included in the British Crime Survey consist of seven questions on perception of antisocial behaviours:

- “teenagers hanging around on the streets”
- “vandalism, graffiti and other deliberate damage to property of vehicles”
- “people using or dealing drugs”
- “people being drunk or rowdy in public places”
- “rubbish or litter lying around”
- “noisy neighbours or loud parties”
- “abandoned or burnt-out cars” (Flatley, Moley and Hoare, 2008: 2).

Respondents are then asked to rank these behaviours as being anywhere from a big problem to not a problem at all. The biggest problems were found to be teenagers hanging around and rubbish (Flatley et al., 2008). The Home Office also created a typology for antisocial behaviour dividing these acts into four

categories each containing subcategories listing a number of issues:

1. “misuse of public space” – 23 activities
2. “disregard for community/personal well-being” – 21 activities
3. “acts directed at people” – 9 activities
4. “environmental damage” - 10 activities (Home Office, 2004: 2)

This is an exhaustive list with the purpose to provide practitioners with a guide which can assist in developing local working definitions of antisocial behaviour.

More recent work completed in Australia on everyday incivilities through the *Everyday Life Incivility in Australia Study* (ELIAS) research project identified through group discussions 294 incivilities (Phillips and Smith, 2004). These incivilities were classified in various groups such as “queue jumping”, “verbal incivilities”, and “people walking into you/inconsiderate use of footpath” (Phillips and Smith, 2004: 385). The ELIAS project uncovered a vast series of actions which are the result of unacceptable social behaviours that occur regularly in the public domain and are intimately linked to quality of life. The results from this project divert significantly from other studies on disorder, incivilities, and fear of crime because the range of behaviour is much larger, less static, and most often non-criminal, thus attributable to a different category of individuals in society found to be middle aged, middle classed males (Smith et al., 2010). These researchers state: “One feels that the catchy metaphor of the ‘broken window’ was taken all too literally by subsequent researchers who fixated on the built and visible form of disorder” (Smith et al., 2010: 7). Therefore moving away from these defined categories and exploring other more subtle aspects of human interaction in the public domain results in the discovery of a whole other series of behaviours which could fall within the disorder category.

This review of disorder is not intended to be exhaustive, but rather to illustrate the divergence in both the definition of this phenomenon and the labeling of such problems. Disorder is also referred to as incivilities, antisocial behaviours, and quality of life issues, where studies have utilized varied definitions and categorizations. There does not appear to be a working definition of this problem which could be carried over from one study to the next or even from one country to another. Comparison therefore becomes a significant problem. However, it is important to note that disorder is consistently linked to fear and the perception of crime, and unlike the categorization of disorder, this remains an undisputed and tested observation. Disorder is complex as it overlaps many different aspects of criminal offending, including behaviours which hold no criminal ramifications. Disorder is often referred to as a nuisance activity, yet one of the common acts included in disorder is drug trafficking which in some countries has serious criminal ramifications and in some cases is more serious than a violent offense such as a simple assault. What remains, however, is that disorder is about public space and repetitive behaviour in public space regardless of the criminal categorization associated with these behaviours. Furthermore, tolerance varies with one behaviour being acceptable in one place and not so in another. Therefore, the best indicators of disorder may be neighbourhood specific and reflective of the levels of tolerance present in that community.

Fear of crime, perceived risk, and micro to macro avoidance

While fear of crime is attributed to an affective reaction to a situation, perceived risk is cognitive and can be analyzed from a decision making

perspective. Fear and the perception of crime have been examined by many criminologists with some focusing on the psychological and individual-level explanations, and others concentrating on experiential and environmental factors. There are ample studies supporting general findings on the fear of crime showing that females experience more fear that males (Garofalo, 1979; LaGrange and Ferraro, 1987; Will and McGrath, 1995; Killias and Clerici, 2000; Wilcox, Quisenberry and Jones, 2003; and Fitzgerald, 2008). In the United States, African American people experience greater fear then Caucasian people (Garofalo and Laub, 1978; and Cobbina, Miller and Brunson, 2008). As well, older people are more fearful than younger ones and similarly, as income level increases, fear decreases (Garofalo, 1979; LaGrange and Ferraro, 1987; Will and McGrath, 1995; Greve, 1998; Tulloch, 2000; Wilcox et al., 2003; and Fitzgerald, 2008). Prior victimization is another amply researched aspect of fear of crime (Garofalo and Laub, 1978; Skogan and Maxfield, 1981; Scheppele and Bart, 1983; Rader et al., 2007; and Franklin et al., 2008). Given these fairly general and varying results, many researchers have focused on the environmental factors linked to fear of crime since these are more tangible and can be addressed through crime prevention methods and civic initiatives.

Fear of crime is seen as a nebulous and broad description of an emotional reaction to a particular situation. On the other hand, the term *perceived risk* has received significant attention in the past two decades (Ferraro, 1995; Brantingham and Brantingham, 1997; Rader et al., 2007; Franklin et al., 2008; Flatley et al., 2008; Taylor, Twigg and Mohan, 2009; Gau and Pratt, 2010; Park,

2008; and Scarborough, Like-Haislip, Novak, Lucas and Alarid, 2010). This term turns an emotion into a cognitive process and therefore, allows researchers to create increasingly precise instruments to measure human perception (Scarborough et al., 2010; and Gau and Pratt, 2010). During daily routines, the manner in which risk of victimization is perceived by citizens can have significant and serious consequences on their social behaviours (Blöbaum and Hunecke, 2005; Rader et al., 2007; Franklin et al., 2008; Park, 2008; Scarborough et al., 2010; and Foster, Giles-Corti and Knuiman, 2010). Since fear itself generates emotions which trigger biological reactions, it is linked to harmful psychological and physiological ramifications such as anxiety, depression, and social avoidance (Bannister and Fyfe, 2001; Franklin et al., 2008; Wyant, 2008; Cornstock et al., 2010; and Ettema, Gärling, Olsson and Friman, 2010). Furthermore, fear can lead to societal harms including social decline (Skogan, 1990; and Sampson and Raudenbush, 2004), general community withdrawal (Wyant, 2008), and the proliferation of disorder and more serious crime (Skogan, 1990, Kelling and Coles, 1996; and Gau and Pratt, 2010). Civic and policing agencies have endeavoured to battle fear of crime because it allows communities to become increasingly cohesive (Skogan, 1990; Kelling and Coles, 1996; Cordner, 2010; and Aiello, Ardone and Scopelliti, 2010). However, since the term itself lacks definition, it is difficult for these agencies to effectively address this problem.

Therefore, the development of an operational term such as *perceived risk* can promote targeted and defined action. Indeed, such a precise term allows

researchers to relate a crime or a situation to a defined course of action since risk perception is a cognitive process which results in observable and measurable human behaviour (Gau and Pratt, 2010). Even though fear of crime is a larger problem, the research resulting from work conducted with a measure, such as *perceived risk*, provides concrete information which gives police and civic agencies the necessary information to combat this problem through structured, cognitive, and behavioural processes (Gau and Pratt, 2010). For example, if groups of people loitering by subway stations generate fear and the physiological reaction of fight or flight, implementing pro-active behavioural and environmental modifications in such locations dispels these feelings (Yavuz and Welch, 2010). Similarly, factoring environmental cues into perceived risk leads to proper management and potential elimination of these features, and to the mitigation of fear in the community (Newman 1972; Fisher and Nasar, 1992; Brantingham and Brantingham, 1997; Pain, 2000; Sparks, Wilcox et al., 2003; Blöbaum and Hunecke, 2005; Gau and Pratt, 2010; Aiello et al., 2010; Randa and Wilcox, 2010; Foster et al., 2010; and Park, Spicer, Guterres, Brantingham and Jenion, 2010).

The cognitive processes involved in the perception of risk are dynamic and complex, but these can include the perception that “someone” is taking care of the problems at hand (Kuo, Bacaicoa and Sullivan, 1998; Herzog and Flynn-Smith, 2001; and Aiello et al., 2010). For instance, community volunteers picking up litter would signal on a cognitive level that people are caring for the community (Keizer, Lindenberg and Steg, 2008). Similarly, graffiti removal would

indicate that the agencies in charge of such a problem are doing what they are supposed to do (Kelling and Coles, 1996; and Innes, 2004b). This action-based approach can change perceived efficiency of social structures because when things decline, the perceptual correlate is often ineffectual social organizations. Conversely, when disorder is visibly managed, the social organizations in charge of these problems are perceived to be enacting social control mechanisms (Sampson and Raudenbush, 2004).

Focusing on the cognitive aspects connected to fear of crime allows researchers to look at specific circumstances and environmental factors which trigger perceived risk; specifically, the various social and physical signs present in the urban landscape which are described by Hunter (1985) as incivilities. Detailed analysis can be completed on the varied influence of different forms of incivilities and the relative impact of physical or social disorder on human perception (Robinson, Lawton, Taylor and Perkins, 2003; Phillips and Smith, 2004, 2006; and Taylor et al., 2009). Sampson and Raudenbush (1999) divide disorder into two categories. They define physical disorder as “the deterioration of urban landscapes, for example, graffiti on buildings, abandoned cars, broken windows, and garbage in the streets” (604). Social disorder is a “behavior usually involving strangers and considered threatening, such as verbal harassment on the street, open solicitation for prostitution, public intoxication, and rowdy groups of young males in public” (Sampson and Raudenbush, 1999: 603-604).

When these activities occur in public places controlled by society as a whole, they set off reactions in those who live there, as well as those who visit

(Sampson and Raudenbush, 1999). In their research, Sampson and Raudenbush (1999) utilize a method called *systematic social observation* to locate and identify both social and physical disorder. This method of research uses observations made directly in the field and follows strict rules so that these observations could be reliably replicated (Sampson and Raudenbush, 1999). Disorder within the context of this research does not cause crime, but rather is an integral part of crime as it is either a sign of a recent criminal act or a violation of established civic rules (ordinances or bylaws).

The manner in which this disorder is informally dealt with becomes a measure of collective efficacy (Sampson and Raudenbush, 1999). Collective efficacy is the ability of a community to positively utilize its social structures in order to combat social problems such as disorder. Sampson and Raudenbush (1999) found that physical disorder was much more common than social disorder which concurs with their theoretical assumption that social disorder resembles crime more closely than physical disorder. However, they were unable to prove the Broken Windows Theory which postulates that disorder causes more serious, predatory crime and they suggest that cleaning up disorder may not, in fact, be an effective way to fight crime (Sampson and Raudenbush, 1999). Rather, they conclude that the manner in which disorder is handled by the community is an expression of collective efficacy, and the increased presence of social and physical disorder a manifestation of weakened social controls (Sampson and Raudenbush, 1999).

Distinguishing the affective measures relating to fear of crime and the cognitive processes involved in risk assessment is an important task. Ferraro

(1995) describes how fear is an affective reaction related to the potential risk of victimization, and the behavioural reaction of how people cope with crime. Regardless, perceived risk and fear remain closely related and the physical presence of disorder in the environment related to fear (Ferguson and Mindel, 2007; and Gau and Pratt, 2010). Gau and Pratt (2010) state:

> Perceptions of physical disorder (vandalism, garbage, abandoned cars, illegally parked cars, run down homes and buildings, overgrown landscaping, and graffiti) demonstrated the strongest correlation to fear of crime (824).

From this perspective, disorder does not cause further, more serious crime as is the hypothesis of the Broken Window Theory, but instead has a much closer link to fear of crime (Gau and Pratt, 2010).

The next phase in this social process involving disorder and collective human activity occurs when people are overly exposed to disorder and withdraw from their community (Skogan, 1990; and Randa and Wilcox, 2010). These environmental cues impact how people behave in society because like crime, disorder follows the patterns of urban land use including areas that are well travelled, such as public transportation and places that are highly social, for instance, entertainment and shopping areas (Taylor, 1997; Brantingham and Brantingham, 1997; and Sampson and Raudenbush, 1999). During routine activities, individuals can enact a number of constrained behaviours, including avoidance, when encountering disorder and these reactions can have either positive or negative implications (Ferraro, 1995; Brantingham and Brantingham, 1997; Rader et al., 2007; and Franklin et al., 2008). One of the positive ramifications of this reaction is that disorder may act as a warning signal and elicit people to engage in protective behaviours which places them in a more

alert state and allows them to detect potential situations of victimization (Rader et al.; and Franklin et al., 2008).

Interestingly, Sampson and Raudenbush (1999) find that the only predatory crime correlated to disorder is robbery. They theorize that robbery is easier to commit in areas where disorder is high as it creates an environment where there are more targets and escape routes (Sampson and Raudenbush, 1999). To be more precise, robbery, pick pocketing, and disorder in and around transit areas are common occurrences (Poyner, 1983; and Smith and Cornish, 2006). However, some people may chose to avoid entire areas as a protective measure and this can lead to the most adverse reaction to disorder which is withdrawal (Skogan, 1990; and Ferraro, 1995).

Individual avoidance and withdrawal causes certain people in the community to be less connected and face a greater risk of victimization (Sampson and Raudenbush, 2004). Their physical and social behaviour separates them from the rest of society and reduces their efficacy (Ferguson and Mindel, 2007; and Hipp, 2010). When people begin to withdraw from certain areas in the city because disorder has overcome the area, a slow decline occurs and the vitality of the city becomes compromised (Skogan, 1990). It is therefore of primary importance to attend to those disordered areas and to maintain vitality throughout the entire city. The physical and visible act of disorder maintenance is the first step to bringing social control mechanisms back to an area to prevent it from entering into a spiral of decline (Skogan, 1990).

Broken windows and signal crimes

In March 1982, Kelling and Wilson published an article in the Atlantic Monthly which would later significantly impact the policing of disorder. Like Skogan (1990), these authors believe that crime, fear of crime, disorder, and the perpetuation of crime are inextricably linked. From this perspective, the visible presence of vandalism in the form of broken windows encourages subsequent offenders to commit more vandalism, and perhaps even engage in violent and predatory crimes (Kelling and Wilson, 1982). This in turn creates a state of general disorder generating fear and driving away legitimate users from the area resulting in the proliferation of violent crimes (Kelling and Wilson, 1982). The proposed solution is to rapidly fix these visual disorder cues in order to prevent further vandalism, reduce fear and more serious crime (Kelling and Wilson, 1982; and Kelling and Coles, 1996).

Kelling and Wilson (1982) explain how this hypothesis was initially tested by psychologist Philip Zimbardo in 1969 (Kelling and Wilson, 1982). Zimbardo set up a car in the Bronx and within a 24 hour time period it was completely pillaged and became a shell (Kelling and Wilson, 1982). He then placed another car in a more affluent neighbourhood (Kelling and Wilson, 1982). When this car was left untouched for a week, he broke part of it and within a few hours the car was completely destroyed (Kelling and Wilson, 1982). The most visible test of the Broken Windows Theory was conducted during the highly publicized graffiti cleaning campaign of the New York subways. During the 1980s, graffiti had completely saturated the New York subway system and it became a metaphor for

social decay. By then, the subway was plagued not only, with graffiti, but also litter, public disorder, crime and fear of crime (Kelling and Coles, 1996; and Maple, 1999). For the New York municipal administration, beating the graffiti epidemic on the transit system was the conduit for resolving the escalating crime problem in New York (Kelling and Coles, 1996; and Maple, 1999). The graffiti removal on the subway stations, often cited by public officials, is the visual expression of disorder removal, and it is figuratively linked to the decline of crime in New York City.

The second hypothesis proposed by Kelling and Wilson (1982) is that increased police presence and police activity around minor offences reduces fear and consequently crime. In New York, the Broken Windows Theory was applied to police tactics and to city management strategies in what was called a *zero tolerance* approach (Maple, 1999). Although this theory is most commonly used to describe police and civic activities around the control of physical disorder such as graffiti, litter and run-down buildings, it also describes the activities around social disorder such as aggressive panhandling and squeegeeing (Kelling and Coles, 1996). However, the internal modifications of police practice that go hand in hand with this strategy are rarely discussed. Maple (1999) describes how the police radically shifted their practice in order to repair internal New York Police Department misgivings that could be characterized as operational broken windows.

The application of the Broken Window Theory in New York has been credited for the significant decrease in crime (Kelling and Coles, 1996; and Maple, 1999).

Disorder reduction was seen to have a direct impact on decreasing crime rates, but it is equally important to consider how the police changed operationally to deliver better services (Maple, 1999). Additionally, there are multiple confounders which might explain this decrease. While there continues to be significant criticism and questioning of the validity of this theory, of its application, and of the accompanying reduction in crime, the theoretical antecedent of this concept is traced back to the origins of the Social Disorganization Theory. Disorder is the manifestation of a state, which has consistently been associated with crime, fear, and the perception of crime (Park, Burgess and McKenzie, 1925; Shaw and McKay 1942; Skogan, 1990; Kelling and Coles, 1996; Taylor, 1997; and Capowich, 2011). Any attempt to pro-actively target disorder would likely have an effect on crime and fear, whether it is directly measurable or not. While it is clear that Kelling's theory is well-found in social disorganization, an alternate understanding of disorder can be found in symbolic interactionism.

Mead developed the theoretical basis for symbolic interactionism although this term was first coined in the work of Blumer (1969) who studied under Mead (Laub, 1983). In Mind, Self and Society, Mead (1934) establishes a theory of human social interaction in which gesture is central to human interaction. Mead (1934) shows how communication occurs on many different levels, but the gestures themselves play a significant role and lead to communication without speech. In society, humans are exposed to social processes from childhood into adulthood and these underline the creation of the mind and self (Mead, 1934). At the most basic level, Mead (1934) believed the mind is capable of interpreting

gestures and assigning meaning to these physical manifestations. Therefore, the development of self is a constantly evolving and reciprocal process. While one can assume this is most often a positive developmental process, this relationship can also explain negative outcomes (Mead, 1934). This is an evolving social learning process which involves the interaction of people who through their experience interpret and then define action, rather than only reacting to a situation (Mead, 1934). Over time, action becomes associated with meaning, thus defining the situation and dictating the social response (Mead, 1934).

Symbolic interactionism is of particular interest in the field of fear and the perception of crime because this sociological process significantly influenced future researchers in this area, in particular Hunter (1974, 1978, 1985), Innes (2004a, 2004b, 2005a, 2005b), and most recently Phillips and Smith (2004, 2006) then Smith et al. (2010). Blumer (1969) set out the foundation of his theoretical framework through the following three premises:

1. Social action is predetermined by individual interpretation because humans attribute meaning to things and situations which shape their actions (Blumer, 1969).

2. Social meaning that is attributed to things and situations is derived from the culmination of social situations and encounters (Blumer, 1969).

3. These social meanings can be altered and modified through successive encounters, thus introducing a progressive social learning process (Blumer, 1969).

Human interaction with adverse situations and negative social structures causes a destructive reaction (Blumer, 1969). Hunter (1974) begins a tradition within the study of disorder, where daily incivilities are seen through the lens of symbolic interactionism to show how these social interactions culminate in negative

experiences, and result in larger, macro sociological processes. This perspective is further explored by Innes (2004a, 2004b, 2005a, 2005b), and then Smith et al. (2010) who look at the diverse reactions to a range of incivilities. Their work goes beyond static markers to examine the sociological processes inherent to human interaction.

Innes (2004b) states that fear of crime lacks in specific definition and the concept is not precise enough to properly guide effective service delivery. He bases his theory of signal crimes on symbolic interactionism as developed by Mead (1934) and Blumer (1969). Innes (2004b) expands on Ferraro's (1995) theoretical perspective where fear is a reaction to a perceived threat. Furthermore, he articulates how this risk is derived from sequential social interactions, which over time settle into the development of individual reactions to signals in the environment. In order to substantiate this theoretical development, Innes (2004b) conducts a number of experiments. He moves beyond Wilson and Kelling (1982) and Skogan (1990) and uses results from semi-structured interviews completed in two neighbourhoods in the United Kingdom to show the variance of perception from one individual to the next. However, he also discovered consistent visual signs that elicit similar responses in many different people (Innes, 2004b). His research is more focused on perception than fear, as he demonstrates that fear is an affective reaction and therefore difficult to categorize.

Through his research, Innes (2004b) finds individuals react differently to crime and disorder. These differences not only exist across various types of people, but

also according to different crime and disorder problems (Innes, 2004b). However, some cues have stronger value and he calls these *signal crimes.* Signal crimes are about the acts and the traces of the acts (Innes, 2004b). For instance, visible drug use is an actual act whereas a discarded syringe refers back to the act of drug use (Innes, 2004b). Further to this, feelings are relative to differing actions (Innes, 2004b). For example, graffiti could be perceived as annoying while public drug use can be seen as frightening. Signal crimes are not always self-created, but rather a product of how crime or disorder is framed as a problem by the media and local officials (Innes, 2004a). In New York, graffiti was defined by government officials as a crime of larger significance than the act itself, so it held a much greater symbolic value for society locally, and internationally. From a crime prevention perspective, the visual battle against this crime would have a more powerful impact on citizens than combating another problem which did not have the same symbolic or visual value in the community.

Micro expressions of disorder: Analyzing the block level

Jacobs (1961) linked healthy cities and neighbourhoods to active street life which is typically expressed through people walking on the sidewalks, using the stores, sitting at coffee shops, interacting with each other, or just sitting on one's front stoop. These urban expressions occur at the smallest measurable unit – the city block. Sampson and Raudenbush (1999) conducted their *systematic social observation* by dividing each city block into two street fronts thus the activities on either side of the block are measurable. As pedestrians navigate city blocks, they have multiple choices when presented with environmental cues: they can

continue walking on the side of the block that they chose, they can cross the street to avoid a situation or a place, and they can completely avoid a block by going in another direction (Park et al., 2011). Also, at the pedestrian level people become increasingly aware of the minute details in the environment, Brantingham and Brantingham (1978) state:

> For example, when driving through an urban area, a person may be aware of residential buildings, commercial buildings, open spaces, major streets, and major structures. The traveller is probably not aware of very detailed characteristics such as small store signs or specific plantings around residential buildings. A person walking along a street, however, may be aware of pavement texture, store displays, plantings, building architectural features. What is perceived depends on the characteristics of the urban environment (...) and the characteristics of the perceiver (111-112).

Therefore, when considering the pedestrian perspective, it is most important to look for smaller, more detailed cues in the environment which may impact perception. For example, Sampson and Raudenbush (1999) used multiple variables to measure physical disorder including such things as cigarette butts on the ground and discarded syringes. These objects would not be visible to someone driving by.

The pedestrian perspective is also significantly different when faced with social disorder. For instance, an aggressive panhandler can be a greater threat when met face to face than when viewed from inside the safe confines of a vehicle. In recent years, city planning has moved toward a new model of urban design that encourages people to live, work and access entertainment within walking distance. This form of planning proposes mixed-use buildings (residential combined with retail), developments built close to public transportation, and structures that encourage pedestrian activities (Cozens, 2008). The purpose of this type of planning technique is to foster sustainability while reducing the use of

cars, encouraging community engagement and improving crime prevention strategies. Within the context of this urban design, the presence of pedestrians in the environment is a central aspect of the planning process, and fear is important to consider from this perspective because when neighbourhoods become fear ridden people will only use the streets in extreme cases.

Brantingham and Brantingham (1997) define five situations where people experience fear while in public places: fear of another person, of being alone, of unknown areas, of encounters with intimidating individuals, and of being out at night (also fear of the dark). They further describe the micro-features of the built and physical environment which cause fear, including blind spots, litter, or metal bars on windows (Brantingham and Brantingham, 1997). Many researchers have studied environmental cues within different contexts with specific attention to the pedestrian perspective. For example, Fisher and Nasar (1992) looked at the fear felt by students in the campus environment. They studied prospect, refuge and escape and how these aspects of the built environment impacted student perception of safety and pedestrian activity within the campus setting (Fisher and Nasar, 1992). Nasar and Jones (1997) expand this research on university campuses and discuss the concept of “hot spots of fear” (292).

Like crime, fear is concentrated in specific areas for defined reasons. Hotspots of fear can be either distal, where feelings of fear are intangible, or proximate, where fear is specifically linked to environmental cues (Nasar and Jones, 1997). There are numerous examples of research on environmental cues and their relationship to both fear of crime and perceived risk. For example, Herzog and

Flynn-Smith (2001) found that perceived danger varied for different alley widths, curvature, and length. Kuo et al. (2001) looked at the impact of trees and grass on inner-city residents, and found that well-maintained lawns and higher tree density increased feelings of safety. Perkins, Wandersman, Rich and Taylor (1993) classified fear generating environmental features into three categories: the built environment, territorial markers, and incivilities. Together these three aspects of the surrounds are filtered through subjective perception and individuals will judge an area based on the confluence of these factors (Perkins et al., 1993).

The environmental aspects of pedestrian navigation have not only been tested in the field at various physical sites (Fisher and Nasar, 1992), but some methods have utilized photographic alteration of the site (Kuo et al., 2001), while other methods have used computer simulations (Park et al., 2010). Park developed several different computer models of urban environments and tested people's perceptions using a Wii controller to facilitate pedestrian navigation (Park et al., 2010). These simulations include models of the Downtown Eastside, Grandview-Woodland and Chinatown neighbourhoods in Vancouver. The Grandview-Woodland model was developed to test the affective aspects of fear of crime based on cues in the environment and compared to results from a street-intercept survey (Park et al., 2010). The results showed that subjects avoided certain situations in the model and were more fearful of social disorder than physical disorder (Park et al., 2010). Some of the cues used in the model were graffiti, broken windows and threatening individuals (Park et al., 2010). This type

of research looks for the minute aspects of the environment most likely to be encountered at the pedestrian level. Moreover, while things such as graffiti may be seen from a vehicle, the cumulative effect of disorder on the behaviour of pedestrians forms the tempo for the meso-movement of the neighbourhood. Indeed, if people are comfortable walking on the street, the presence and attitude of these people will have a rippling effect throughout the entire community. The general ‘feel’ of an area could therefore be dependent on the pedestrians who are present on the streets and the activities they are engaging in.

Reading the environmental cues and decision making

The previous section showed how signs of disorder in the environment are perceived and then used to formulate risk assessments. This section explores three ideas linked to decision making based on reading signs of disorder in the environment. The first concept is the cue template as first developed by Brantingham and Brantingham (1978). This cue template, while conceptualized for criminal offending, is utilized in an alternate manner here to explore how all humans who navigate the urban domain interpret the environment. The second concept explored is bounded rationality as developed by Simon (1957) and Simon, Egidi, Viale and Marris (2008) where humans are seen to have limits in their ability to calculate options, evaluate the risks associated to their choices, and reconcile these thought patterns with various intended goals (Simon, 1957). The last concept explored in the survey comments is constraint behaviour, or avoidance as explored by Ferraro (1995) and later by other researchers looking

at the relationship between disorder and fear and the perception of crime (Wyant, 2008; Cornstock et al., 2010; Yavuz and Welch, 2010; and Ettema et al., 2010).

1- Safety templates and disorder in the environment

Brantingham and Brantingham (1978) introduce several theoretical and probabilistic propositions to construct a model which describes the spatial behaviour of criminals in the environment. The purpose of this section is to review this model, to extract two predominant concepts, to apply these to perception of crime, and the subsequent reaction to this perception. Within their model, two theoretical propositions relate to the formation of crime cue templates (Brantingham and Brantingham, 1978). In the first instance, the environment emanates cues and offenders will read these cues in their target selection (Brantingham and Brantingham, 1978). While they acknowledge that there are other decisions involved in criminal offending, reading these cues allows the offender to interpret the environment and therefore, decide on a path to a target (Brantingham and Brantingham, 1978). These cues can be individual, clustered, or sequenced, and are related to multiple factors including the environment (Brantingham and Brantingham, 1978). The association of these various groupings of cues to specific offenses form a cue template to be used in future offending (Brantingham and Brantingham, 1978).

This environmental information process can be applied to perception and how people read and navigate the environment. From this perspective disorder forms the cues which are displayed in a number of ways. A single cue may be represented by graffiti on a wall. A cluster of cues is graffiti, with litter, and a

panhandler in a single location. A sequence of cues is a panhandler on a corner, then drug dealer on the next corner and so on; this sequence includes a time and movement dimension. Perception therefore can be linked to a number of environmental factors and over time, disorder cue templates are contrasted with experiences of safety, thus creating *safety templates*. These safety templates are used during daily routine activities to assess the relative risk present in the environment and to form safe navigation through the urban environment.

2- Bounded rationality, path selection and disorder cues

The theoretical approach to urban navigation presented here adopts concepts developed in crime site selection where there is a rational decision making process linked to offending behaviour (Cornish and Clarke; 1986; and Bernasco and Block, 2009). Further to this, these choices are sequenced and structured both spatially and hierarchically (Brantingham and Brantingham, 1978; Cornish and Clarke, 1986, 1994; and Bernasco and Block, 2009). This decision process is further defined through what Simon (1957) calls bounded rationality where choices are limited due to human cognitive processes involving choice and goal setting. The theoretical framework developed for criminal offending is derived from human action in general, and therefore can be used to analyze decision making as it pertains to non-criminally motivated individuals navigating the urban environment, interpreting disorder cues, and then making choices regarding their behaviour in said environment. The safety cue template which is formed using signs of disorder interfaces with this decision process and guides the formation of choices.

As people navigate the environment they perceive disorder and the combined effect of individual factors, previous experiences, and these cues serve in the formulation of decisions. These decisions are multiple and successive throughout the navigation process (Golledge and Timmermans, 1990; Golledge, 1999; Park, 2008; Bernasco and Block, 2009; Park et al., 2010 and Park et al., 2011). A feedback loop exists between the environment, decision and action (Park et al., 2011). This loop can be contemporaneous to action, dictating multiple successive decisions. For instance, a group of young teenagers huddling in unkempt, littered areas may be interpreted as a potentially risky encounter, causing an individual to cross the street as a pre-emptive and protective measure. These decisions can also occur overtime, as experience with disorder and certain places, grows and solidifies through various choice options. For example, when selecting a route to and from one location, people may try several options, considering the relative risk of these choices by assessing the disorder signals in the environment. Their choice may be altered due to a number of negative experiences including negative encounters with disorder.

3- Avoidance and social disorder

Ferraro (1995) introduces the concept of constrained behaviour as a reaction to perceived risk. This type of reaction has been researched from an environmental perspective thus locating specific physical features that affect decision making (Fisher and Nasar, 1992; Brantingham and Brantingham, 1997; Kuo et al., 1998; Pain, 2000; Herzog and Flynn-Smith, 2001; Wilcox et al., 2003; Blöbaum and Hunecke, 2005; Park, 2008; Foster et al., 2010; and Park et al.,

2010). Furthermore, both physical and social disorder signs have been found to affect feelings of safety and decision making processes (Cobbina et al., 2008). When disorder cues are assessed against possible decisions, in some situations avoidance is the best and possibly the only decision available (Ferraro, 1995; Rader et al., 2007; and Franklin et al., 2008). At the micro-individual level, this progressive exposure to disorder can translate into an aggregate manifestation of social behaviour. When this aggregation sums up to a negative manifestation of behaviours then entire places are avoided because of the collective enactment of safety precautions.

This chapter reviewed fear of crime in the context of criminology. Beginning with the Social Disorganization Theory, disorder is examined and the lack of consistent disorder matrix exposed. However, this literature review explores the relationship between disorder and avoidance from the smallest individual entity to the collective macro manifestations of fear. As such, the Broken Windows Theory and the Signal Crimes Theory both link disorder to these larger social issues and draw attention to the importance of dealing with disorder in order to mitigate fear in the community. Finally, the pedestrian perspective is analyzed in relation to disorder to show how the decision making process occurs to balance the needs between route taking and fear of crime.

CHAPTER 2: Fear of Crime within the Context of Environmental Criminology

Fear of crime research, as shown in chapter 1, frequently includes disorder and the physical traces of disregard for the community. This chapter builds on this concept by examining the social ecology principles as derived from the Social Disorganization Theory and delving into human ecology and environmental criminology. This chapter explores the theoretical antecedents of social and human ecology and the strengths and weaknesses of these two criminological traditions are discussed in relation to fear and the perception of crime. The Social Disorganization Theory as first conceived by Park and Burgess in 1925, then further practically developed by Shaw and McKay (1942) lacks a strong theoretical model of fear and perception of crime, but includes theories of social ecology which apply to this problem. As such, the underlying ecological ideas at the core of this theory provide potential for supportable theoretical modelling and can help to explain the dynamic interaction between social structures, the physical environment, and human behaviour. However, human ecology and environmental criminology provide a more comprehensive basis for this study as it takes into account a number of added dimensions. The theoretical concepts from environmental criminology are then applied to fear of crime. In a final part, the relationship between human cognition and perception is contrasted to the urban structures that mould individual and collective conception of the city.

Park and Burgess: The foundation for a social ecology of crime

Park and Burgess are most often cited as the forerunners in the ecological study of crime. In the book The City (Park et al., 1925) several theories about urban development and crime are proposed. The most commonly referenced urban crime model from this time is the Concentric Zone Theory developed by Burgess (1925) later applied and tested by Shaw and McKay (1942). Burgess proposes a criminological model for cities based on five concentric zones (Park et al., 1925). Starting from the most central zone, Burgess produced the following concentric model:

1. Zone 1: Central business district
2. Zone 2: Zone of transition
3. Zone 3: Zone of independent workers
4. Zone 4: Residential zone
5. Zone 5: Commuter zone

As the city grows, affluent residents move further away from the first and second zone (Park et al., 1925). This model postulates that zones in the city follow the same pattern as the socio-economic status of the residents who live there. Poor immigrant residents live closer to the central business district while those who can afford to commute reside further away from this area (Park et al., 1925). This model is structured around social ecological principles.

Within the context of this urban zone model, urban growth is described in evolutionary terms as a constantly interactive and progressive urban growth process. The language used to explain this social process is influenced by Darwinian evolutionary and ecological concepts, and certainly also by

thermodynamic ideas and principles of pathology that were being explored at that time. Burgess states:

> If the phenomena of expansion and metabolism indicate that a moderate degree of disorganization may and does facilitate social organization, they indicate as well that rapid urban expansion is accompanied by excessive increases in disease, crime, disorder, vice, insanity, and suicide, rough indexes of social disorganization (Park et al., 1925: 57).

Within this description one is able to extract the theoretical impact of past criminological thinkers. Certainly, Durkheim's illustration of anomie in his book Suicide (1897), Guerry's (1833) work on mapping and documenting suicide in France, and the various crime indexes created by Quetelet (1831, 1842). The terms describing the decay of neighbourhoods are captured in social disorganization which is a grouping of social behaviours that are both explicitly described, for instance suicide and insanity, but also includes larger and vague categories such as disorder and crime.

The social process that creates disorganization produces outcomes that can be linked to physical neighbourhood descriptors, but at the core is linked to the social dynamics of a community. Burgess describes the dualistic nature of urban progression:

> Normally the processes of disorganization and organization may be thought of as in a reciprocal relationship to each other, and as co-operating in a moving equilibrium of social order toward an end vaguely or definitely regarded as progressive. So far as disorganization points to reorganization and makes for more efficient adjustment, disorganization must be conceived not as pathological, but as normal (Park et al., 1925: 54).

For Burgess, population mobility is linked to the physical competition for land in urban expansion (Park et al., 1925). Population growth occurs when numerous immigrant residents come to inhabit certain affordable areas in the city. This

migration of people is constantly changing the urban structure and produces environments where crime and disorder proliferate (Park et al., 1925).

While Burgess seems to be more concerned with the physical layout of the city and the effect of population mobility, Park explores the social control mechanisms present in society. Park states:

> *The church, the school, and the family* - In a great city, where the population is unstable, where parents and children are employed out of the house and often in distant parts of the city, where thousands of people live side by side for years without so much as a bowing acquaintance, these intimate relationships of the primary group are weakened and the moral order rested upon them is gradually dissolved (Park et al., 1925: 24).

Here Park introduces the concept of social bonds and social control mechanisms. He links this community breakdown to crime and views this social process as linked to immigrant populations arriving in the city and who are forced to live in areas that are further away from where they work, thus causing them to commute great distances (Park et al., 1925).

This urban development model was largely abandoned and is limited in its current day application (Brantingham and Brantingham, 1984). While this model is certainly linked to a particular time in history, its conceptual application can be useful when certain constructs are taken and applied to less constringent geographical areas. As well, removing the American middle class bias from this model exposes the specific social process that can occur in socially disorganized areas, more specifically described in the work completed by Sampson and Groves (1989) and then later by Bursik and Grasmick (1993) and then Taylor (1997).

Shaw and McKay: Theory into practice

In Juvenile Delinquency and Urban Areas, Shaw and McKay (1942) use the Burgess (1925) zonal model to compare delinquency crime rates to population growth and mobility in Chicago. While this work is obviously linked to Burgess (1925), it is also reminiscent of the cartographic tradition developed by Quetelet (1831, 1842) and Guerry (1833). This approach emphasizes the visual representation of crime and the extraction of consistent crime patterns (Brantingham and Brantingham, 1984). Mapping crime stems from an ecological principle where crime is a tangible product linked to a geographical area. Within this framework, disorganization is characterized by various social markers, and the most frequently used variable to depict this urban reality is reported crime rates at the aggregate level.

Based on the Burgess (1925) Concentric Zone Theory, Shaw and McKay (1942) develop a predictive crime model, and transfer it to other large American cities, such as Philadelphia, Boston, Cincinnati, Cleveland and Richmond. Shaw and McKay (1942) show the concentric crime composition of Chicago using reports linking where delinquents live and where they commit their crimes. Crime is clustered closer to the centre of the city and concentrated in transitional zones where most delinquents reside. These are neighbourhoods where buildings are dilapidated and stable residents have moved to safer suburbs. In comparing these cities, they find consistencies in the crime distribution and show the connection between crime and the social evolution of a city. This research

supports the idea that crime occurs in areas affected by urban decay where poverty, crime and deteriorating housing are the byproducts of a growing city.

Through this application of theory, Shaw and McKay (1942) discovered crime is most prevalent in transitional zones which confirmed the theoretical framework set out by Burgess (1925). This is also where the majority of delinquents reside. Transitional neighbourhoods are defined as inner city areas where the population movement is high, where there are more individuals who have lower education and income, and where housing is in a deteriorated state. They described disorganization in the following manner:

> Disorganization accompanying rapid change may be virtually complete. If the institutions and social roles of the newcomers do not meet the needs of the new situation and if the population is not able or is not given opportunities to perform the roles in their traditional institutions, the disruption in the incoming group is serious (Shaw and McKay, 1942: 382).

Shaw and McKay's (1942) interpretation of social disorganization has changed since Burgess first explored this concept in 1925. They look beyond population movement to analyze how this shapes the institutions in society, especially those that exert social control mechanisms. While the visual markers of mobility are made apparent in their mapping techniques, they also discuss the institutional process accompanying this movement.

A social ecology of fear

Social ecology looks at how various structures in society interact to create either positive or negative social outcomes (Byrne and Sampson, 1986). Within the context of crime, the sociological influences on delinquency are unravelled (Andersen, 2010). More specifically, features such as socio-economic status,

racial distribution, residential mobility, formal or informal social networks are compared to crime or delinquency rates (Sampson and Groves, 1989). This theoretical framework proposes that crime is the expression of improper social control mechanisms which can also create and increase the fear of crime (Skogan and Klecka 1977; and Byrne and Sampson, 1986).

In 1893, Durkheim drew a link between normlessness and crime (Durkheim, 1893). He called this state anomie and explained how it is a societal condition linked to modern society and consequently urban living (Durkheim, 1893). While anomie is his explanation for criminal behaviour, it does not account for the repercussions of normlessness on individuals in society who do not engage in criminality. Anomie can be seen to have a dual effect of generating criminal behaviour and creating fear.

Fear in society is experienced at the most basic and individual level, and then cycles throughout the system to generate an overall condition of social unease (Skogan and Klecka, 1977; Byrne and Sampson, 1986; Lewis and Salem, 1986; and Skogan, 1990). Fear at the individual level can aggregate into general social behaviour and impact how society as a whole operates (Lewis and Salem, 1986; and Skogan 1990). A social environment free of fear would foster positive social connections and networks able to combat crime, whereas a fearful society negatively impacts these connections. When fear is present both social networks and cohesion become compromised thus becoming less resilient to crime (Sampson and Groves, 1989; and Bursik and Grasmick, 1993).

Social disorganization, like anomie, provokes social dynamics that can explain the occurrence of crime (Park et al., 1925; Shaw and McKay, 1942; Sampson and Groves, 1989; Bursik and Grasmick, 1993; and Andersen, 2010). Social disorganization and anomie are generated by similar processes that create a physical and social environment where crime proliferates (Durkheim, 1893; and Park et al., 1925). The explicit effect of crime also renders a more implicit and rarely discussed reaction within the social dynamics that is fear of crime (Byrne and Sampson, 1986). Crime is the predominant marker of this societal decline which is expressed in delinquency and also in the physical deterioration of the environment (Park et al., 1925; Shaw and McKay, 1942; Byrne and Sampson, 1986; and Skogan, 1990).

However, when the processes that are inherently present in social disorganization are applied to human activity in general, rather than crime alone, fear of crime may help explain the human interactions occurring in the urban setting. Social disorganization can be used to consider overall human activity, which largely includes legitimate users of the area, and thus a stronger link between fear of crime, and urban decline can be established.

The desire to understand the physical and social manifestations of crime ties into crime prevention goals because eliminating, or controlling, such problems helps maintain urban vitality. As well, when cities and neighbourhoods are overrun by crime and disorder, the people who live or pass through such places may begin to retreat from community life (Byrne and Sampson, 1986; Sampson and Groves, 1989; and Skogan, 1990). The consequences of this reaction would

have numerous negative repercussions including social exclusion and health risks (Carver, Timperio, Hesketh and Crawford, 2010; and Ettema et al., 2010). Thus a solid understanding of the underlying factors that contribute to crime, its physical expression and social ramifications leads to prevention and management tactics that can potentially reduce, if not eliminate this social problem. Similarly, fear of crime as it is linked to victimization, vicarious victimization and lack of perceived social control can be better managed when these other social factors are mitigated (Byrne and Sampson, 1986).

Recent work completed by Wikström and Sampson (2006) on social disorganization focuses less on the phenomenon and more on the social processes. They state: “only recently have we witnessed a concerted attempt to theorize and empirically measure the social-interactional and institutional dimensions that might explain how neighbourhood effects are transmitted” (Wikström and Sampson, 2006: 35-36). This direction lends itself to the study of fear and the perception of crime as it involves a human dimension, a socially interactive space and an institutional response.

In the Burgess model, residential mobility is financially driven, space is sparse and competition for urban areas that have higher value creates growth (Andresen, 2010). This model is strongly class-based with the environmental markers typical of disadvantaged neighbourhoods of that time. From this perspective, crime is associated to specific geographical neighbourhoods, and how these affects one’s disposition to commit crime (Park et al., 1925; and Shaw and McKay, 1942). Burgess does not look at how these same processes impact

the rest of the community, nor does he associate the markers of socially disorganized neighbourhoods to the fear or perception of crime.

While Burgess explores the geographical manifestation of crime and urban migration, Park concerns himself with the interaction between social structures and criminal behaviour (Park et al., 1925). He puts forward the theoretical antecedents of the Social Bond Theory by stating:

> It is in the community, rather than in the family or the neighborhood, that formal organizations like the church, the school, and the courts come into existence and get their separate functions defined. With the advent of these institutions, and through their mediation, the community is able to supplement, and to some extent supplant, the family and the neighborhood as a means for the discipline and control of the individual (Park et al., 1925: 106).

Society, using a range of tactics and through social institutions, instills in citizens the values and behaviour codes which translate into self-control and crime abstinence (Park et al., 1925). Criminality results from a breached relationship between an individual and social institutions. From this perspective, citizens who come into contact with situations where these breaches occur will experience a state of being where social control mechanisms have lapsed, thus creating a fearful state (Park et al., 1925; Byrne and Sampson, 1986; and Lewis and Salem, 1986). This process is shown to be associated with criminality, but it is less frequently related to the state of urban livability in which efficient social control mechanisms generate an environment where crime does not proliferate and fear does not escalate. Moreover, the disintegration of community institutions affects how a community is perceived and how it operates. Fear of crime is connected to the deterioration of these social control mechanisms because when crime thrives, people feel less confident in the ability of these institutions to maintain

order (Hunter, 1985; Lewis and Salem, 1986; Skogan, 1990; and Bursik and Grasmick 1993).

Although Gottfredson and Hirschi (1990) reject the Social Disorganization Theory and relegate it to the Classical School of Criminology, the basis of Park's perspective of social disorganization resonates in their Social Bond Theory. Park believes that formal institutions such as schools, churches, and the courts augment community control over individuals (Park et al., 1925). For Gottfredson and Hirschi (1990), self-control is a single explanatory theory in which low self-control is strongly correlated with criminal behaviour and used to fully explain all criminal activity. Self-control is entirely related to social bonds which are formed through family and school, then sustained later through other social institutions (Gottfredson and Hirschi, 1990). Good social bonds result in high self-control whereas weak social bonds result in low self-control (Gottfredson and Hirschi, 1990).

While low self-control, also referred to as impulsivity or lack of constraint, is a robust indicator of criminal involvement, other factors also influence criminal activity (Wolfgang, Figlio and Sellin, 1972; Blumstein, 1986; Farrington and Loeber, 1998; Moffitt, Caspi, Harrington and Milne, 2002; and LeBlanc, 2005). More specifically, environmental factors can trigger occurrences and influence the ability to exercise self-control (LeBlanc, 2005). The Social Bond Theory explains criminal behaviour, but makes no attempt to understand fear and the perception of crime; nor does it explain how ineffectual social bonds generate fear. The relative strength and connection of these bonds can effectively combat

fear of crime (Byrne and Sampson, 1986; Lewis and Salem 1986; and Bursik and Grasmick, 1993).

While the original application of the Social Disorganization Theory by Shaw and McKay (1942) focused on the effect of socio-economic status, racial distribution and residential mobility on criminality, recent work in this area has integrated more substantive information which goes to the core of this phenomenon as it is expressed through the relative strength of formal and informal social networks (Sampson and Groves, 1989; Bursik and Grasmick, 1993; Taylor, 1997; and Sampson and Raudenbush, 2004). These are the social structures that can effectively maintain social control, and the lack thereof is shown to have a significant impact on fear of crime (Sampson and Groves, 1989; and Bursik and Grasmick, 1993).

There are a number of ecological principles that can be derived from this research on social disorganization and then applied the study of fear of crime. The first is the relationship between neighbourhood characteristics and the spatial distributions of crime which ties into the structure of these places and how they influence social behaviour (Park et al., 1925; Shaw and McKay, 1942; and Sampson and Groves, 1989). Second, social cohesion and bonds mediated through social institutions affect the propensity toward criminality (Park et al., 1925). Third, there are geographical areas in the city formed through the competitive social processes that are part of urban growth. These areas which are transition zones where there is a risk for lower social cohesion and social bonds, display specific physical characteristics (Park et al., 1925; and Shaw and

McKay, 1942). These neighbourhood conditions create a state where criminality is more likely to occur (Shaw and McKay, 1942). Social disorganization aims to understand social structures, the social environment and crime, but draws a limited link between environment and human action which likely ties into the perception of crime. This theory does not account for the protective behaviours enacted by those who do not succumb to this cycle of criminality, nor does it investigate the relationship between the physical displays of these neighbourhoods and the perception of crime.

Environmental criminology: A human ecology of perception

The ecological tradition of crime is often linked by criminologists to the work completed by Shaw and McKay (1942) who used the urban concentric zone model developed by Burgess and applied it to crime. They conduct this research under the label of social disorganization and as such, it is linked to social ecology (Andresen, 2010). Understanding the work of Park et al. (1925) and additional work on social disorganization is enhanced by placing this research within the context of human ecology.

Ecology is a field of study that looks at the relationship between organisms and their environment (Hawley, 1986). Social ecology is the study of human behaviour in relation to societal structures and, as such, is closely associated with sociological principles of human behaviour (Byrne and Sampson, 1986). Human ecology is concerned with the organization of human populations within given environments (Hawley, 1986). As such, Von Thünen was the first to study land use within a human ecological framework (Hall, 1966). He studied

agricultural land use and developed a mathematical equation to describe the competitive relationship between product and agricultural space (Hall, 1966). Within the Von Thünen model, space is sparse and the allocation of agricultural land dependent upon the relative importance, cost and perishable nature of product (Hall, 1966).

Human ecology was also explored by Chicago School scholars and in particular McKenzie (Park et al., 1925). McKenzie uses the term human ecology in his essay, but relates it to competitive mechanisms (Park et al., 1925). He investigates the structures used to form cities and how these dictate the spatial distribution of citizens in the urban context (Park et al., 1925). Hawley (1944, 1986) presents an alternative human ecological structure which does not focus on social competition, but rather, interdependence. The combination of the static and dynamic components of collective life causes the growth of cities (Hawley, 1944, 1971, 1986). This represents a move away from a sociological premise where people are viewed in relation to social structures and forces, toward a geographical one where demography, land use and environment feature prominently (Andresen, 2010). Human movement and activity are the core features and these aggregate patterns are the basis for further analysis (Hawley, 1986).

Mapping crime for Shaw and McKay (1942) was merely a representation of social conditions often linked back to sociological concepts. The more recent use of this technique looks for the aggregate display of human activity then further analysis can be applied to the varying environmental spaces that drive this

activity (Brantingham and Brantingham, 1984). This mapping perspective is applicable to the study of fear and perception of crime within the urban context because the aggregate display of this phenomenon provides a good representation of its effect on physical activity throughout the city (Brantingham and Brantingham, 1986, 1995, 1997). A highly feared area will be avoided by many people, whereas an area deemed to have higher vitality is more likely to be frequented (Skogan and Klecka, 1977; Skogan, 1990; and Kelling and Coles, 1996).

In the field of environmental criminology, Routine Activity Theory (Cohen and Felson, 1979), the Geometry of Crime Theory (Brantingham and Brantingham, 1981), and Crime Pattern Theory (Brantingham and Brantingham, 1993a) are seen by many to be derived from the human ecological tradition, and each perspective relates differently to human activity (Andresen, 2010). Rational Choice Theory (Cornish and Clarke, 1984) fits in with these theories by proposing how people make decisions in committing crimes. These theories are not in conflict with social ecology or social disorganization, but rather can be seen as complementing these perspectives. In particular, environmental criminology departs from different theoretical perspectives which are not sociological, but rather encompass numerous fields of study including mathematics, psychology, economics and geography. This multi-disciplinary approach to fear and the perception of crime is useful because it can help clarify the nuanced relationship humans have with their environment by placing added emphasis on the dimension of place and human perception on this place (Cohen

and Felson, 1979; Brantingham and Brantingham, 1981; and Cornish and Clarke, 1984).

These theories focus on human activity in general and are not limited to individual criminal action. Therefore they do not attempt to elucidate the core essence of criminality, but rather place crime within everyday occurrences and use common human behaviour to explain criminal activity (Cornish and Clarke, 1986; Brantingham and Brantingham, 1993a, 1993b,1995; and Felson, 1998). Crime becomes a product of human action and the dimensions which guide human activity in space become part of the explanation of crime (Brantingham and Brantingham, 1993b). For instance, space and time are brought into the equation (Cohen and Felson, 1979; and Andresen, 2010). The human ecological perspective of crime moves away from a competitive spatial model towards one that views humans as working interdependently and cooperatively (Andresen, 2010).

The Routine Activity Theory was developed by Cohen and Felson (1979). They propose that the following factors need to be present for a criminal event to occur: “Most criminal acts require the convergence in space and time of *likely offenders*, *suitable targets* and the *absence of capable* guardians against crime” (Cohen and Felson, 1979: 588). They accept that an increase or decrease in any of these factors results in the consequential crime variance. The importance of the ecological work of Hawley is worth noting. Cohen and Felson (1979) state they use fundamental concepts from Hawley:

> Hawley identified three important components of community structure: (1) rhythm, the regular periodicity with which events occur, as with the rhythm of travel activity; (2) tempo, the number of events per unit of time, such as the number of criminal

> violations per day on a given street; and (3) timing, the coordination among different activities which are more or less interdependent, such as the coordination of an offender's rhythms with those of a victim (Hawley, 1950:289). These components of temporal organization, often neglected in criminological research, prove useful in analyzing how illegal tasks are performed - a utility which becomes more apparent after noting the spatio-temporal requirements of illegal activities (590).

In their article, Cohen and Felson (1979) acknowledge the opportunity structure developed by Cloward and Ohlin (1960), but offer a more comprehensive definition of opportunity because they introduce two new factors: target suitability and guardianship.

Opportunity theory as developed by Cloward and Ohlin (1960) is a social learning process required to access both legitimate and illegitimate activities. As individuals progress through society, some learn through social contacts what activities are proscribed by law and how to commit these acts (Cloward and Ohlin, 1960). Cloward and Ohlin (1960) state: “We believe that each individual occupies a position in both legitimate and illegitimate opportunity structures. This is a new way of defining the situation” (reprinted in Jacoby, 1994: 239). Each individual is considered independently in relation to their differential social contacts and the criminal learning process that accompanies these contacts (Cloward and Ohlin, 1960). The opportunity structure presented by Cohen and Felson (1979), while also based on a learning process, differs significantly from the learning process described in Cloward and Ohlin’s work. Cloward and Ohlin (1960) describe socially transmitted norms therefore opportunity for crime is linked to socialization, whereas for Cohen and Felson (1979), opportunity for crime becomes strictly situational thus removing the social class bias present in the work by Cloward and Ohlin (1960).

Cohen and Felson's (1979) ecological Routine Activities Theory was followed by articles and books by Marcus Felson (Felson, 1980, 1998, 2002). The theoretical orientation was expanded and the importance of the site and situation in an event became clearer. In general, the offender-target-capable guardian crime triangle, with the management angle added by Eck and Spelman (1987), focused on the immediate dynamics before a crime. This situational perspective concentrates less on state or social factors relating to the offender and more on the processes and environmental risk factors (Eck and Spelman, 1987; Eck and Weisburg, 1995; Clarke, 1997; and Felson, 1998). In their crime model, Cohen and Felson (1979) state that opportunity exists at the nexus in space and time of the offender, the target and the guardian.

Although this theory is articulated from the perspective of crimes and criminal decisions, it can also explain the perception of crime. Since the premise rests upon learning processes and on general human behaviour, this model can be applied to perception. While Cohen and Felson (1979) do not articulate it, their argument requires the assumption that motivated individuals are able to read their environment in order to perceive suitable targets and the lack of capable guardians, and then make a decision to commit crime. It can be similarly argued that non-criminal individuals can consciously perceive what they believe to be the presence of potentially motivated offenders, the lack of capable guardians, and then take the necessary precautions to avoid victimization (Brantingham and Brantingham, 1997). Therefore both criminal and non-criminal decisions are not random.

Rational Choice Theory (Cornish and Clarke, 1986) views individuals as free-thinking and thus able to make rational choices. Cornish and Clarke are psychologists by training and form their ideas based on decision theories or choice options. Their ideas are consistent with the premise in the work of Matza (1964), a sociological criminologist. While developed during a time of protest and unrest by middle class American youth, Matza (1964) proposes that individuals engage in crime and other rule breaking activities because they are enjoyable. In this model, crime is not deterministic and the criminal agent is not pre-determined to act. Matza (1964) departs from this deterministic model and states:

> The image of the delinquent I wish to convey is one of drift; an actor neither compelled nor committed to deeds nor freely choosing them; neither different in any simple or fundamental sense from the law abiding, nor the same; conforming to certain tradition of American life while partially unreceptive to other more conventional traditions; and finally, an actor whose motivational system may be explored along lines explicitly commended by classical criminology – his peculiar relation to legal institutions (28).

Here, free-will is not an explicit concept.

Cornish and Clarke (1986) make a clearer departure from deterministic theories by analyzing how criminals make decisions. Current words might include risk assessment, optimization or decision theory, and their theories on decision making include the idea of bounded rationality. They depart from a different theoretical background than the discipline of criminology and later introduce psychology and economics into their theories (Clarke and Felson, 1993; and Cornish and Clarke, 1994). Furthermore, their goal in this theoretical development is to advance crime prevention and deterrence (Cornish and Clarke, 1986). They believe that individuals will assess crime in relation to apprehension which then dictates their next action (Cornish and Clarke, 1986).

Within this model, motivated offenders will consider the gain of their criminal act against the ramifications of apprehension. Once this assessment is completed, they will either commit the offence or restrain themselves, moving onto the next opportunity (Cornish and Clarke, 1986).

This thought process can be reversed to look at how people choose to avoid situations. This is still a decision process but the goal is to avoid potential victimization. This particular decision process can be applied to all individuals who have to navigate an urban environment and who want to avoid victimization or situations where they feel a risk of victimization. People make decisions, tied to possible consequences, to act and take certain risks, or avoid risks, in order to access certain aspects of urban living.

Rational Choice Theory and Routine Activity Theory are easily linked to the concept of crime prevention through environmental design (CPTED) as developed by Jeffery (1971). While choice described by Matza (1964) seems to be rooted in free-will, one could argue rational choice is not. Rational choice can be explained through cumulative experiences in which individuals assess their action in relation to positive or negative outcomes. More specifically, individuals conduct risk-assessments prior to the commission of an offence with particular emphasis on potential gain relative to risk of apprehension (Jeffery, 1971; and Cornish and Clarke, 1986). It should be noted that this theoretical offending model was developed concurrent to a situational crime prevention theory with a marked focus on property offending.

CPTED uses the premise that motivated offenders perceive risk through their environment and suspend their criminal impulse in specific situations when risk seems high (Jeffery, 1971, 1990). This risk assessment is linked to decision making, as to previous learning and knowledge, because criminals understand through their experiences which set of environmental factors are connected to apprehension (Jeffery, 1971, 1990). Similarly, non-criminally involved individuals perceive risk in their environment; this is not risk of apprehension, but rather risk of victimization and then they will make the appropriate decisions. This is also a decision making process that evolves overtime through experiences and individuals in society develop *safety templates* based on environmental cues (Brantingham and Brantingham 1978, 1981, 1986, 1997). The term *safety template* emulates the offender *cue template* as developed by Brantingham and Brantingham (1978). However, a *safety template* applies to individuals who are engaged in active prevention and use environmental cues to protect themselves from potential victimization.

Brantingham and Brantingham developed several theoretical approaches that evolved into Crime Pattern Theory (Brantingham and Brantingham, 1993a). The early ideas addressed how motivated offenders search and move about in space to find a target, and through that movement learn cues and cue templates that identify “good” crime targets (Brantingham and Brantingham, 1978). The spatial component of how and why people move about in space between activity nodes and along routine paths was formalized in theories presented in the *Notes on the geometry of crime* (Brantingham and Brantingham, 1981) and modified further in

their article *Environment, routine and situation: Toward a pattern theory of crime* (Brantingham and Brantingham, 1993a). From the first article come the Geometry of Crime Theory and the second Pattern Theory.

The article *Notes on the geometry of crime* (Brantingham and Brantingham, 1981) presents a geographic abstraction of the daily movement patterns of individuals with their associated learned activity spaces and awareness spaces. This article adds a mathematical component to the research tradition of Lynch (1960). The ideas in this article are presented visually but in a mathematical format in which the first condition is where one offender only works from home and is surrounded uniformly by targets (Brantingham and Brantingham, 1981). As they move through this theoretical abstraction it is like moving through a high school algebra book. Constraints and conditions are added: individuals have multiple attractors, but develop routines; known activity and awareness space are modified and grow and shrink; opportunities are limited and restricted further by cue templates and cue sequences. But as the conditions are added, the abstract model presents the clusters of disjointed crime occurrence locations. The theory is taken to the next step, when individuals with their own awareness space modify this space through their network of friends and form aggregate patterns molded by the structure of a city. Daily activities shaped by routines to and from home, work or school form known space and dictate the location of crimes. Individuals are viewed in the normal course of their daily routines and during these travels they will commit criminal offences. At the aggregate level, these

activities form nodes, paths and edges (Brantingham and Brantingham, 1993b, 1981).

Pattern Theory is a multi-disciplinary approach which assumes that theories of crime cannot follow a uni-causal conception of crime or criminality, but rather needs to cross disciplines in order to explain and understand the complexity of human behaviour in relation to crime and criminality. Brantingham and Brantingham (1993a) suggest that human living is patterned and that people who commit crimes also engage in many non-criminal activities. Brantingham and Brantingham were the first criminologists to argue that criminal behaviour should be researched as behaviour not just as deviant or pathological behaviour. They suggest that the study of crime patterns includes understanding human movement, human decision making and human perception and cognition (Brantingham and Brantingham, 1978, 1984, 1986, 1993a, 1993b, 1995, 1997). They show how using multi-disciplinary approaches improves the understanding of crime. All people develop routine activities, those who commit crime and those who do not. Routines have associated activity spaces and awareness spaces (Brantingham and Brantingham, 1981). It is within these spaces that crime templates are developed and later solidified. Crime templates are formed against an ever changing backcloth and patterns exist within the environment and consequently, in the physical manifestation of criminal offending (Brantingham and Brantingham, 1978, 1993a).

Both the Geometry of Crime Theory and Pattern Theory, while viewed by some in the aggregate, are based on individual behaviour which has been

primarily applied to criminal offending, and can also explain human behaviour in relation to fear and the perception of crime. Pattern Theory suggests that all humans develop activity spaces, but that criminals learn where suitable targets are located within their activity spaces (Brantingham and Brantingham, 1993a). Similarly, legitimate individuals have activity spaces and will receive environmental cues which will allow them to develop *safety templates* that they use to safely navigate their activity space (Brantingham and Brantingham, 1978, 1981, 1986, 1997). Cues in the environment can trigger a series of protective behaviours that can minimize and eliminate victimization (Brantingham and Brantingham, 1997). In these scenarios as well, people may engage in avoidant behaviour, or conversely, risk-taking behaviour (Rader et al., 2007). The avoidance cues vary, depending on the demographic, socio-economic and past experience of individuals (Franklin et al., 2008). Prior victimizations, victimization of friends, and physical vulnerability combine to form *safety templates*. It should be noted that such traits are important and complex. The highest risk group, young males, seems to have in some cases pro-risk templates.

The Geometry of Crime Theory proposes ways to aggregate individual and network level activity spaces and awareness spaces to produce patterns of concentration or clusters, nodes, paths and edges. This aggregate in turn can be used to predict high crime areas (Brantingham and Brantingham, 1981). Similarly, there can be nodes, paths and edges of fear that form from the collective perception of cues and cue sequences linked to fear and the perception of crime (Brantingham and Brantingham, 1993b). These patterns of

perception feed into the larger structure of cities and affect how people flow through the urban environment and which areas they avoid.

Using the cartographic tradition developed by Quetelet (1931) and Guerry (1933), later utilized by Shaw and McKay (1942), Brantingham and Brantingham (1984) go further in explaining the specificity of crime patterns within the urban setting. Furthermore, Brantingham and Brantingham (1981) provide a detailed description on how individual patterns of crime interact with various urban infrastructure systems (roads, land uses) and socio-economic conditions to help shape crime patterns (Nelson, Bromley and Thomas, 2001; and Bernasco, 2010).

Pattern formation can also be applied to the perception of crime, with mapping being one of the techniques used to visualize the phenomenon. More importantly, the patterns can establish a relationship between land use, and the perception of crime (Brantingham and Brantingham, 1997). For instance, Brantingham and Brantingham (1981) state that older cities frequently have an infrastructure system that was built from a single core city centre and, depending on the topography, could grow outward as in the concentric model. While crime is always patchy and never uniform, in these older cities crime is generally higher closer to the core and through the transition zones where foot traffic is also higher (Brantingham and Brantingham, 1981). In older cities these areas closer to the core are places where people on foot will be more likely to encounter the environmental cues that generate the perception of crime. Conversely, in new cities which follow a mosaic distribution of land use, the awareness space is

larger because residential areas are separated from work and entertainment districts and crime is therefore dispersed (Brantingham and Brantingham, 1981). This logic can be converted to the perception of crime. Regardless of the age of the city, land use has a relative impact on crime distribution and also the perception of crime.

Theoretical review: Building a geometry of fear

Visualizing fear and the perception of crime is an integral component of theory development. Environmental criminology concerns itself with the everyday effect that the urban environment has on the people who populate it, and therefore, pays specific attention to the interaction between human activity and physical structures in the environment. Fear and the perception of crime can be predicted using the principles which are applied to criminal activity. The following environmental theories are reviewed. These are then inversed to explore the environmental manifestations of fear and the perception of crime:

- Routine Activity Theory
- Rational Choice Theory
- Geometry of Crime Theory
- Pattern Theory

When these theoretical approaches are applied to the fear and perception of crime, specific patterns of perception can be established. These patterns can be compared to reported police calls for service, and a forecasting methodology can be developed which can estimate locations in the city where there is increased fear and perception of crime. The results produced by such estimates can help police practitioners to identify the spatial distribution of this phenomenon. The

implications of this research are multifaceted as the proper management of fear and the perception of crime is akin to maintaining a high quality of life for citizens and thus, encouraging urban sustainability (Gau and Pratt, 2010; Cornstock et al., 2010; and Scarborough et al. 2010).

The point of measure in this context is reported crime which was accessed through various police databases and can be later compared in future to numerous other environmental factors including census information, public transportation data, or land use data. At the most fundamental level, common human activity and movement through the urban space explain crime site selections. Similarly, these theories can relate human patterns to fear and the perception of crime, and then show how individuals navigate the physical space depending on the disorder cues present in the surrounds.

1- Routine Activity Theory – Cohen and Felson (1979)

The first environmental theory applied to visualizing fear and the perception of crime is the Routine Activity Theory developed by Cohen and Felson (1979). This theory proposes that individuals commit crime during their daily routine activities when they are presented with a suitable target and non-capable guardian (Cohen and Felson, 1979). Both motivated and unmotivated individuals may commit crimes depending on the situation. In some cases, individuals who are engaged in their daily routines without the purpose of committing a crime may come into contact with a suitable target. In this instance, the opportunistic tendencies in this individual will prevail and a crime is committed (Cohen and Felson, 1979).

The Routine Activity Theory dictates that people operate according to daily routines and therefore, come into contact with criminal situations based on those activities. This theory looks at three aspects of the offence: the motivated offender, the location, and the victim (also referred to as a target). This theory again based on offence commission where efforts are made to dissuade the motivated offender through modifying the location and target-hardening. This theory can be flipped to the victim's perspective, individuals conduct their daily routines and during these activities, they are presented with situations where there is a motivated offender and a lack of capable guardianship. Ferraro (1995) suggests that the Routine Activity Theory, which he refers to as the *Criminal Opportunity Theory*, although usually applied to the behaviour and understanding of the offender, can also be used to analyze the thought process of a potential victim. He states:

> Just as the criminal opportunity perspective has been used to model how offenders judge the risk of violations, it may also be useful to conceptualize how *potential victims* may make use of such information in judging their risk of victimization. In other words, while potential offenders may take advantage of information about living quarters, crimes rates, police protection, and neighborhood surveillance in judging risk of a violation, potential victims may likewise use such information to judge the threat of being victimized. (16)

The manner in which this potential victim acts becomes critical to the outcome of the situation. The interaction of the three elements described in the Routine Activity Theory can cause a crime occurrence, but also create a fearful situation or one where perception of crime is high.

From this new perspective, fear and the perception of crime at the aggregate level will occur where there is an intersection between generalized urban movement, reduced guardianship, and an increase in the public and visible

display of criminality. This is both location and time specific as the Routine Activity Theory includes the time dimension as the intersection of the three elements must occur in both a geographical place, and in a temporal space (Felson and Cohen, 1979). For example, people returning from work via public transportation will come into contact with street disorder, which likely peaks during higher commuting times, if the individuals engaged in these disorder behaviours are financially motivated and require increased foot or vehicle traffic to conduct their illegal street business (e.g.; panhandlers, street vendors or squeegee people). Lowered guardianship of the individuals participating in this street disorder can provoke them to become more aggressive in their solicitation practices and elevate fear and the perception of crime for commuters who now find themselves confronted both in their geographic and temporal movement through the urban domain.

2- Rational Choice Theory – Cornish and Clarke (1986)

Cornish and Clarke (1986) developed the Rational Choice Theory which assumes that individuals are rational and a decision making process occurs prior to the commission of an offence. When individuals find themselves in a position to commit a crime, they will weigh the situation, considering both the potential risks associated with the act and the benefits resulting from the act. Based on this assessment, a determination whether or not to commit the crime is made (Cornish and Clarke, 1986; and Clarke and Felson, 1993). This theory suggests that motivated offenders will suspend their activity if the balance of probabilities does not weigh out to their advantage. For instance, if the risk of apprehension is

greater than the probable gains of the act, a motivated offender may chose not to commit the crime in question.

This theory can be inversed and applied to people who are operating in the urban domain, making choices about activities, and the potential victimization related to these choices. When presented with situations, the person in the victim position relies upon rational choice. For example, when someone is walking home and has the choice of going down a lit street where there appears to be many capable guardians versus a shorter route down a dark alley populated by suspicious individuals, the decision to go the presumably safer route is a rational choice. The selection of this path is based upon perceived risk of victimization, the safest route compared to the shortest one, and general knowledge about the area. There is a choice impasse when people are locked into a route and cannot make a rational decision to practice avoidant behaviour. For instance, feelings of apprehension may develop around certain areas or routes where perceived risk of victimization is high and alternate routing is unavailable. These would be situations where the person engaged in the activity is aware of the potential ramifications of his or her actions, but has few choices in relation to the chosen activity. The individual is locked into a choice where crime avoidance is not possible and where victimization is probable.

3- Geometry of Crime – Brantingham and Brantingham (1981)

In *Notes on the geometry of crime*, Brantingham and Brantingham (1981) describe the various search patterns of criminals. This theory is based on human geography where decision making about criminal offending is related to the

urban spatial dimension. Within this theoretical model, the offender's motivation is not of primary concern, but rather, this theory focuses on the manner in which perceived opportunities are formulated (Brantingham and Brantingham, 1981; and Andresen, 2010). Brantingham and Brantingham (1981) introduce the concept of the environmental backcloth. This backcloth is multi-dimensional as it includes the physical environment and other aspects of the human environment such as social norms, and institutional and legal structures (Brantingham and Brantingham, 1981). This backcloth is never static and changes according to multiple variables. Brantingham and Brantingham (1981) suggest that offenders travel through space which is structured with nodes, paths and edges, and within this space develop both an activity and awareness space (Brantingham and Brantingham, 1993b). The environment produces cues that an offender can interpret and translate into perceived opportunities (Brantingham and Brantingham, 1981, 1978). Furthermore, the patterns of offender movement do not differ from the movement of the non-criminal population. At the aggregate level, crime will be concentrated in locations where there is a convergence of environmental factors relating to general human movement with the availability of suitable targets (Brantingham and Brantingham, 1993b).

This theory also applies to fear and the perception of crime. Individuals in society have activities bringing them from one location to another. Individuals travel to work, entertainment areas, shopping districts, and bring their children to school. As they go through these daily routines, they develop an activity space which is related to an awareness space. However, rather than concentrating on

perceived opportunities for the commission of a crime, they will develop an awareness around perceived opportunities for victimization to which they apply their safety templates. Within the course of these daily routines, individuals may alter their behaviour in relation to these perceived opportunities for victimization, or they may be more protective of their person and belongings in particular situations. At the aggregate level, cues that generate fear and the perception of crime may emanate more strongly in specific areas and be linked to very specific displays of criminality and disorder. The human behaviour patterns in these areas may in fact be very specific and predictable.

4- Pattern Theory – Brantingham and Brantingham (1993a)

In *Notes on the geometry of crime*, Brantingham and Brantingham (1981) describe how offenders form an awareness space which is connected to a geographical area surrounding travel paths (Brantingham and Brantingham, 1981). This awareness space is fluid and grows as the offender travels to various places and accesses different forms of transportation. For instance, a new associate of the offender creates both a new location to attend and a new path where the offender will travel (Brantingham and Brantingham, 1981). As the offender travels from place to place, they receive cues from the environment which assists them in identifying suitable targets (Brantingham and Brantingham, 1993a). The more experienced the offender becomes in committing crimes and evading apprehension, the more sophisticated they are at cue interpretation, and eventually develop an offending template (Brantingham and Brantingham, 1993a). Their crimes are committed within their awareness space and the

locations where they attend serve as anchor points around which these crimes are distributed. Eventually, their offending template stabilizes becoming fixed, and leads to the predictability of their offending pattern. This theory can be inversed and applied to fear and the perception of crime (Brantingham and Brantingham, 1997).

The article *Environment, routine and situation: Toward a pattern theory of crime* (Brantingham and Brantingham, 1993a) further integrates and consolidates the theories set forward in *Notes of the geometry of crime*, Rational Choice Theory and Routine Activity Theory. This article defines Pattern Theory which has been referred to by some researchers as a meta-theory in the field of environmental criminology (Andresen, 2010). The main derivative of Pattern Theory is the crime template (Brantingham and Brantingham, 1993a). Originally developed in 1978, this template is further explored within the context of Pattern Theory (Brantingham and Brantingham, 1978; 1993a). A crime template is developed overtime during routine activities and through the awareness space. The environment sends out cues to offenders who then identify potential targets (Brantingham and Brantingham, 1993a). This template evolves over time as offenders further experience cues and test these out against criminal action. Eventually the template becomes fixed and also predictable (Brantingham and Brantingham, 1993a). Pattern Theory can be applied to fear and the perception of crime, but rather than developing crime cue templates, individuals who act in a protective manner develop *safety templates*.

Individuals in urban places travel from one location to the next in their daily routines and create awareness spaces around these travel paths. They will read cues in the environment and develop cognitive maps that include the information emitted from these cues. Feelings of safety will vary throughout the course of their travels depending on the cues they receive and how these relate to the locations they are attending. Over time, these cues inform a *safety template* with some cues fixed and others linked to specific places. The choice regarding these places is either to avoid or cope with the environment through a heightened sense of vigilance. Ferraro (1995) refers to this tactic as constrained behaviour and names three types of activities: partial or entire avoidance of the situation, defensive behaviour (such as carrying a weapon), and a combination of defensive and avoidance behaviour.

Certain places or contexts when combined with specific cues may trigger higher feelings of fear. The reason for this may depend on the relative emotional feeling linked to that place, or the manner in which this place can be negotiated, and also the particular context of the situation. For example, a parent walking his or her child to school may experience heightened sensitivity to cues which would alert them to someone who may cause their child harm. Any presence of such cues within the awareness space surrounding this travel path may cause these parents to experience a higher perception of potential victimization of their child. This would occur due to two primary instincts: the first of which is cause by a heightened state of awareness as they are in a position of guardianship over their child and the second which stems from the instinctual protective nature of

the parent-child relationship. In this scenario, when a particular route is laden with cues causing concern, alternate routing is a likely solution.

Ferraro (1995) uses a similar example and states that during “routine travel to work, church, or shopping, people are familiar with routes and carjacking may not even enter their minds. On vacation, in a rental car, however, they may be more careful and vigilant-and perhaps fearful” (10). It is also important to consider that fear may be greater in situations where people are obliged to take a defined route and where cues that trigger fear are strong. For instance, many people have to take public transportation and cannot avoid mass-transit stations as they have to use them to get where they need to go (Walsh, 1999; and Yavuz and Welch, 2010). They are in fact locked into a definite path and are exposed to specific cues for two reasons: first, they have to go there and second these are typically places that attract people who are motivated offenders. The level of fear will likely be greater in these situations where alternate route planning cannot be practiced; a natural reaction to fear is to avoid the situation. Therefore these are places where people must suppress the fight or flight reaction naturally linked to fear, resulting in an anxiety ridden state.

The spatial distribution of fear and the perception of crime

In the Image of the City, Lynch (1960) describes how cognitive images of the city are created and how these relate to way-finding. This is a two way process between the individual and the environment (Lynch, 1960). Therefore, these images of the city are individual, but can resemble the image of other people who may share similar experiences of the environment (Lynch, 1960). The city is

structured through major or minor elements which are paths, edges, nodes, districts and landmarks (Lynch, 1960). These elements are as follows:

- Paths: These are channels designed for movement such as streets, sidewalks, bike paths, or transit lines. Major paths would carry large numbers of people, whereas minor ones have lower flow on them (Lynch, 1960).

- Edges: These are barriers between two places which vary in how penetrable they are. For instance, a river is very impenetrable whereas a change in land-use is less of a physical barrier (Lynch, 1960).

- Nodes: These are geographic points which generate concentrated activity. Nodes can be the crossing of two paths which create a condensation of retail stores where many people go to shop. Nodes are connected to paths in that these are high activity spaces and paths will lead to these places. Nodes are generally predominant features in perceptual images of the city (Lynch, 1960).

- Districts: These are sections of the city and each one has its own identifying character. Cities are structured by districts and while these districts hold similar geographical definitions from a general perspective, each individual person will place these in a different hierarchical order depending on their own personal experience. For instance, if someone lives in one district and works in another, these two places will hold a higher meaning and place in their total image of the city (Lynch, 1960).

- Landmarks: These are reference points which are physical objects in the environment. These can be well-known landmarks which can symbolize a direction (Lynch, 1960). For instance, in Vancouver the mountains indicate north. These landmarks can also be local and known only by those using a certain neighbourhood, such as a store or a restaurant.

These elements join to form the image of a city. Since many of these aspects of the environment are experienced on an individual level, the images can vary significantly from one person to the next (Lynch, 1960).

Couclelis, Golledge, Gale and Tobler (1987), build on these concepts to formulate an anchor point hypothesis. This theory uses the elements established

by Lynch (1960) to show how space becomes conceptually clustered which then affects judgement about this space (Golledge and Stimson, 1997; and Golledge, 1999). Anchor-points are closely akin to landmarks as described by Lynch (1960). However, where landmarks are both individually and collectively experienced, anchor-points are only found in individual cognitive maps which assist in the retrieval of personal information. These are places like home or work, unrelated to the collective because these would be specific to the person forming the cognitive map (Couclelis et al. 1987). They state:

> Much of the recent work in spatial cognition has stressed the fundamental non-homogeneity of cognitive spatial representations. In particular, results from many different experimental studies seem to point to the conclusion that spatial knowledge is represented hierarchically, that it is structured in discrete spatial units, and that salient cues play a role in its organization and retrieval (Couclelis et al., 1987: 100).

Brantingham and Brantingham (1993b) transpose these geographical concepts of nodes, edges, paths and anchor-points, and apply them to the field of criminology. Through these concepts, space becomes structured and crime can be analyzed, and predicted both at the individual and aggregate level. While the purpose of this work in criminology has focused on the occurrence of crime and the commission of crimes, perceptual and cognitive mapping also pertains to fear and the perception of crime.

Perception of crime in blocks, neighbourhoods and cities

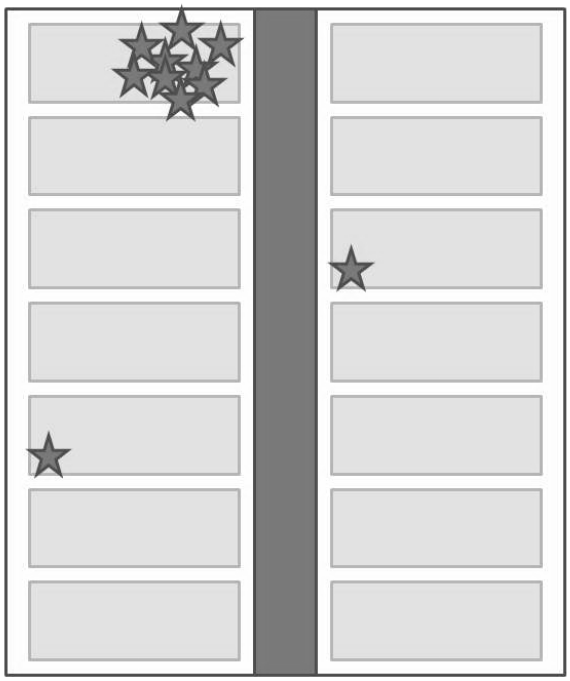
Spatially locating perception of crime within the urban domain can be done using a mapping technique in which individuals who are familiar with an area are presented with a map, and then asked to indicate the area where they perceive there are higher levels of crime. The degree of precision depends on multiple

factors including the size of the study area and the individual's knowledge of problems in the area. For instance, if residents of a particular city block are presented with their block and asked to mark the place where there is the highest crime, they would likely select the residence that generates the most disturbances, a place where the police regularly attend, or where there are parties, or where there are numerous domestic disputes, or a premises which may seem particularly unkempt and abandoned. The place selected would generally not comply with the social or environmental norms present on that block.

This experiment could also be duplicated on a commercial block where store owners are asked to select the place where there is the most crime. Again, respondents would chose a place which generates the most physical and visual disturbances. This location could be a bar where patrons spill out onto the street and get into fights, or a pawn shop which attracts suspicious individuals trying to sell presumably stolen property. In both these examples, the majority of respondents would select the most obvious location which could be identified through physical descriptors or police calls for service, with a few selecting a place which would "fly under the radar". The respondents who select locations deviating from the norm may have some inside information about these places. For instance, they may know that a particular business is into money laundering, something which may not be common knowledge. Similarly, in the residential example, one respondent may have location specific information which would alter the general pattern. For example, they may be able to see certain things

that are happening in one place which no other person on the block can see. This hypothesis proposes that people from a specified area, with knowledge of that area, would select a consistent place where the most crime is believed to occur with most picking the same location and a few picking other places. Figure 1 shows what this map would look like if completed at the block level.

Figure 1: Block level example

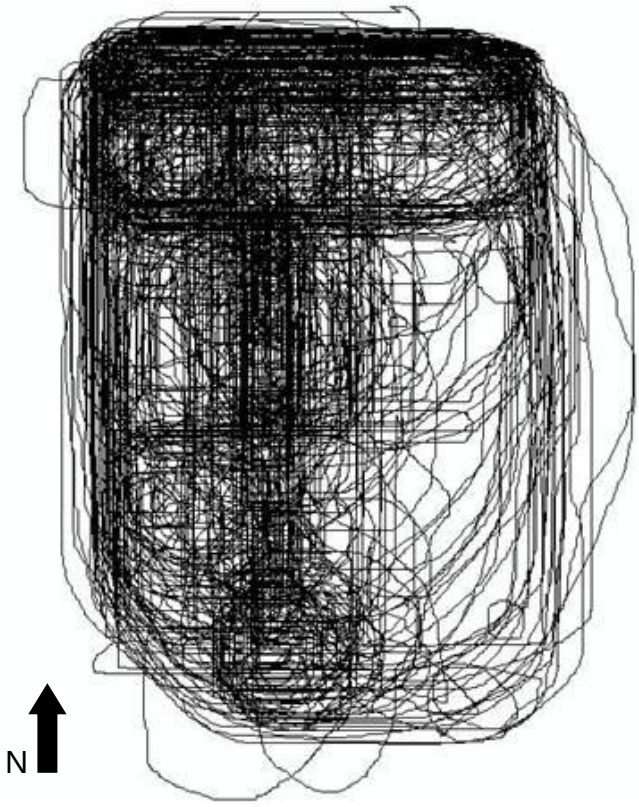


A further assumption is that this selected location in many cases would generate police calls for service, thus validating this selection process.

A similar exercise could be conducted at a neighbourhood level and respondents asked to circle the area on a map where they feel there is the highest level of crime. The variation in selection is dependent upon the relative familiarity the respondent has of the area. This experience could be impacted by daily routines (e.g.: a vehicle commuter versus a public transportation commuter), by length of time living or attending the area, by the relationship to

the area (e.g.: resident, business owner, or visitor to the area), and by usual markers which have been shown to explain variation in the perception of crime (e.g.: age, gender and age). Regardless, general patterns would emerge with certain focal points becoming apparent. Figure 3 shows the Grandview-Woodland neighbourhood in Vancouver. Survey respondents were asked to circle the area on the map where they felt there was the highest level of crime. This experiment was conducted in 1997 and respondents drew polygons on a map. These polygons were then digitized[1] and the sum of these polygons is displayed in Figure 2.

Figure 2: 1997 polygon map



[1] The program used to digitized these polygons is ArcGIS 9.

The area that stands out in this figure is the northern section of the study area which comprises a major road, and in 1997 this was the road along which the majority of commuter buses ran from the eastern suburbs to the downtown core of Vancouver. To the north of this road, is primarily an industrial area which was referred to as a *kiddy stroll* because under age prostitution occurred there regularly. The dense section of polygons which bisects this area from north to south is Commercial Dr., a major commercial strip, which includes stores, restaurants and pubs. The majority of residences on the west side of Commercial Dr. are multi-dwellings where there are also more polygons. Whereas on the east side, there are single family homes, where there is the least amount of polygons. At the southern tip of this area there is a transit hub which also shows a cluster of polygons.

A similar experiment could be conducted at the city level where respondents are presented with a map of the city, and then asked to circle locations on the map where there is the most crime. Certain places would consistently emerge and would be commonly known as high crime areas. These locations would possess the markers associated with fear and the perception of crime such as higher levels of social and physical disorder, but would also be labelled by police and government officials as high crime areas. As such, the majority of people might avoid these places which would then become more secluded and disjointed from the rest of the city.

This chapter reviewed social and human ecology. Then environmental criminology was analyzed in detail and the concepts and theories that pertain to

fear and the perception of crime extracted. Most importantly, this theoretical perspective offers a structured approach to organizing physical spaces by assigning nodes, pathways, edges, and landmarks to the environment. These can be both collectively experienced as proposed by Lynch (1960), or individual-based as anchor points as proposed by (Couclelis et al. 1987). Regardless, these concepts help to interpret the cognitive maps people have of their lived environment and as such can be transposed to fear of crime studies.

CHAPTER 3: A Theoretical Model for Fear and the Perception of Crime

This chapter proposes a theoretical model of fear and the perception of crime which accounts for the dynamic interplay between the environment and social structures. This model stems from social and human ecological principles. These frameworks serve as a valid point of departure for the study of perception and fear of crime and its relationship to urban life. The strengths of these theories are brought together in this theoretical model of fear and the perception of crime. This model begins with the micro spaces where individuals interact in the city block environment, which then builds into meso neighbourhoods, and finally, flows into the macro structures of the city. The focus of this model is shifted away from crime itself to its manifestation and effect on general human and social behaviour.

Micro – meso – macro interactions

The following model is intended to be theoretical and aims to link the activities of people from a micro entity (individual) through to the macro entity (collective), and then to the urban environment, also from the micro entity (city-block) through to the macro entity (city). This model is based on principles derived from social and human ecology, and environmental criminology. Social disorganization is used to understand the social ecological principles associated with fear of crime, whereas environmental criminology helps to explain the human ecological principles related to perception. Social disorganization is broken into two parts with the first being the sociological ramifications of this state and the second, the

visual manifestations of such a condition. Environmental criminology can explain the movement of people from the block to the city level, and how this movement then shapes the environment. The block level activities aggregate into the general behaviour of neighbourhoods, and likewise distinct physical communities build cities. It is not the purpose here to discover all the potential influences on fear and the perception of crime as it is well accepted that mass-media can significantly influence general perceptions of crime (Garland, 2001). Rather, the focus of this model is to look at environmental features and how micro-structures feed into the meso behaviour of communities and fuel the macro vitality of a city, then how these macro structures feed back into the smaller components of the system.

At the most basic level, citizens experience cities at the micro level as they build their awareness space through their routine activities, travelling the meso structures of neighbourhoods through established paths and nodes (Cohen and Felson, 1979; Felson, 1980, 1998; and Brantingham and Brantingham, 1981, 1993b). When these daily patterns are continuously interrupted and potentially jeopardized by disorder and incivilities this has an impact both on the individual, but also the collective (Hunter, 1974, 1978; Skogan, 1990; Kelling and Coles, 1996; Sampson and Raudenbush, 2004; and McCord et al., 2007). Regardless of the variance that exists at the individual level, these average out through collective encounters with social and physical disorder. When disorder overwhelms the positive aspects of a particular block or neighbourhood, community cohesion erodes (Sampson and Raudenbush, 2004; and Hipp, 2010).

This becomes a reflexive process between micro interactions and the macro manifestations of these encounters (Sampson and Raudenbush, 2004). Over time, if disorder saturates the micro-structures, social decline begins as citizens retreat, avoid and re-negotiate their community (Skogan, 1990; Taylor, 1997; Killias and Clerici, 2000; and Rader et al., 2007).

Since cities are in effect the conglomeration of multiple neighbourhoods, the social decline of one has a rippling effect on other parts of the city (Skogan, 1990; and Talen and Shah, 2007). On one level, signs of social and physical disorder imply ineffective social control mechanisms – both formal and informal (Hunter, 1974, 1978; Sampson and Raudenbush, 2004; and Taylor et al., 2009). Furthermore, the long-term sustainability of informal social control within an urban setting is linked to stable formal control mechanisms (Hunter, 1985; Bursik and Grasmick, 1993; and Sampson and Raudenbush, 2004). The deterioration of these mechanisms happens over time and their inefficiencies visualized through physical and social disorder. Citizens read these signs, thus building distrust in formal institutions and this social break triggers discordance between the macro and micro social structures. Therefore, when disorder overtakes a city, the decline of formal social control systems becomes one of the forces driving the decline of collective and institutional efficacy (Hunter, 1985; Skogan, 1990; Bursik and Grasmick, 1993; Capowich, 2003; and Franklin et al., 2008).

Cities are the combination of people and places (Jacobs, 1961; and Brantingham and Brantingham, 1984). People are individual entities who aggregate as a community and are overseen by collective social forces. Physical

spaces are located at the most basic city block level and combine to form neighbourhoods which jointly structure a city. Each of these components is impacted by distinctive factors which mediate how individuals perceive block-level occurrences and how they act in the community. These individually-based perceptions and actions either positively or negatively add up to form the fabric of a community (Hunter, 1974, 1978; Sampson and Raudenbush, 2004; Aiello, et al., 2010; Bellair and Browning, 2010; and Hipp, 2010).

Similarly, the collective forces exercised properly or improperly on a community create a set of specific outcomes (Sampson and Groves, 1989; Bursik and Grasmick, 1993; and Sampson and Raudenbush, 2004). This can dictate how a community interfaces with the rest of the city (Skogan, 1990). When favourable influences from both individuals and the collective are directed toward the community at the neighbourhood level, then this neighbourhood will be integrated into the rest of the city (Skogan, 1990; and Sampson and Raudenbush, 2004). Conversely, when these influences are destructive, the result is decline and then community isolation (Skogan, 1990). For example, the mere presence of police - a formal control mechanism - in a disordered neighbourhood does not automatically create a desired outcome. It is specifically the actions and purpose of the police in a specified neighbourhood that will create the positive ramifications inherent in this formal control mechanism (Williamson, 2008). In the next section, constructs in the theoretical model of fear and the perception of crime are broken down and the internal dynamics present in this cycle contrasted to current research.

People in the cycle of fear: Individuals - community - collective

A human ecological perspective of fear and perception of crime would include the human component and articulate how individuals interact with their environment (Park et al., 1925; Hawley, 1944, 1971, 1986; Brantingham and Brantingham, 1978, 1981, 1993a; Cohen and Felson, 1979; Cornish and Clarke, 1986; and Andresen, 2010). On the other hand, social ecology can articulate the relationship between social structures and group dynamics (Park et al., 1925; Shaw and McKay, 1942; Skogan and Klecka, 1977; Skogan and Maxfield, 1981; Sampson and Groves, 1989; Skogan 1990; Sampson, 1991, 2004; Sampson and Raudenbush 1999, 2004; and Hipp, 2010). The combination of these two ecological traditions helps to build the constructs of this model. Human interaction occurs at the individual level then, aggregates to the community and at each stage, different factors influence these entities. Individuals, in their experience of the environment, are affected by experiences relating to prior victimization and safety experiences they will have enacted to avoid victimization (Garofalo and Laub, 1979; Garofalo, 1982; Skogan and Maxfield, 1981; Hale, 1988; and Tselonni and Zarafonitou, 2008). Furthermore, individual demographic differences would serve to shape these experiences (LaGrange and Ferraro, 1987; Tullock, 2000; Pain, 2000; and Yavuz and Welch, 2010). At the community level, entirely different factors come into play as groups of people interact with the environment. Informal control mechanisms influence the manner in which people behave and how they form social networks (Gottfredson and Hisrchi, 1990; Sampson and Groves, 1989, Sampson and Raudenbush, 2004; and Hipp,

2010). These agreed upon norms may vary from one community to the next, but regardless, compel people to behave or to react in a certain manner. The relative strength of these mechanisms and networks stimulates collective efficacy. This is a constantly reflexive social process as individuals are continually moving in and out of community. Finally, at the collective level, there are formal control mechanisms that instil order in society (Park et al., 1925; Gottfredson and Hisrchi, 1990; and Sampson and Raudenbush, 2004). These mechanisms embedded in structural systems fluctuate depending on the manner in which they operate, and translate to varying degrees of institutional efficacy (Bursik and Grasmick, 1993). The collective reflects back onto the community generating different cycles depending on the efficiency of these systems.

Individual

- *Prior victimization:* Although there are differing results in studies conducted on the relationship between fear and prior victimization, some results indicate that individuals do sustain effects from these prior experiences and adjust how they behave (Garofalo and Laub, 1979; Skogan and Maxfield, 1981; Hale, 1988; Killias and Clerici, 2000; Fitzgerald, 2008; and Tselonni and Zarafonitou, 2008).
- *Safety experiences:* In their daily routines, people develop tactics that help them to negotiate perceived risks in the environment. Ferraro (1995) calls this constraint behaviour. Over time, these strategies can add up to limited victimization and shelter people from adverse reactions to fear

and the perception of crime (Ferraro, 1995; Rader et al., 2007; and Yavuz and Welch, 2010).

- *Demographics:* There are established demographical differences in how people experience fear. Research indicates that females, older people and those in lower income brackets experience more fear (Scheppele and Bart, 1983; LaGrange and Ferraro, 1987; Will and McGrath, 1995; Grever, 1998; Tullock, 2000; Pain, 2000; Fitzgerald, 2008; Tselonni and Zarafonitou, 2008; Cobbina et al., 2008; Taylor et al., 2009; and Yavuz and Welch, 2010).

Community

- *Informal control mechanisms:* Informal social control mechanisms are enacted by the community through agreed upon norms and standards. When these mechanisms are organized around pro-social activities, then communities can effectively combat crime. However, when communities are organized around antisocial standards, then crime can proliferate (Sampson and Groves, 1989; Hancock, 2001; Robinson, Lawton, Taylor, and Perkins, 2003; Brown, Perkins and Brown, 2004; Sampson and Raudenbush, 2004; Doran and Lees, 2005; and Ferguson and Mindel, 2007).
- *Social network:* People organize themselves in social networks. Cohesive communities form when these social networks are strong and connected. The general purpose of these networks shape crime outcomes with two contrasting results, the first being networks structured against crime

(e.g.: block watch) and on the other hand, networks organized to commit crime (e.g.: gangs) (Sutherland, 1924, Park et al., 1925; Shaw and McKay 1942; Hunter, 1985; Sampson and Groves, 1989; Bursik and Grasmick, 1993; Taylor, 1997; Pain, 2000; Capowich, 2003; Robinson et al., 2003; Ferguson and Mindel, 2007; Kitchen and Williams, 2009).

- *Collective efficacy:* Communities can work in unison toward a common purpose and cohesion around behavioural standards is achieved when efficacy is high. Segmented communities are unable to effectively carry out a common purpose. Progressive division can occur over time as communities deteriorate and crime is one of the main indicators of this process (Durkheim, 1893; Park et al., 1925; Shaw and McKay 1942; Hunter, 1985; Sampson and Groves, 1989; Bursik and Grasmick, 1993; Taylor, 1997; Pain, 2000; Hancock, 2001; Robinson et al., 2003; Sampson and Raudenbush, 2004; Innes, 2005a; Ferguson and Mindel, 2007; Hipp, 2010; and Foster et al., 2010).

Collective

- *Formal control mechanisms:* These are the institutions in society that are designed to maintain social control. Their expressed role is to exert influence on society and overtly impose standards on human behaviour (Park et al., 1925; Hunter, 1985; Gottfredson and Hirschi, 1990; Kelling and Coles, 1996; Maple, 1999; Pain, 2000; Lee, 2001; Sampson and Raudenbush, 2004; Innes, 2005a; and Hipp, 2010).

- *Structural systems:* Within the context of crime, there are systems within society that are interconnected with the purpose to instill formal control mechanisms. There are macro systems such as the Criminal Justice System, with sub-systems that are structurally linked to the larger framework. These structural systems can be either properly organized to control crime or ineffectual in this area. The relative proficiency of these systems can positively or adversely affect fear and the perception of crime (Kelling and Coles, 1996; Lee, 2001; Doran and Less, 2005; and Cordner, 2010).
- *Institutional efficacy:* Both individually and collectively, institutions operate in society to control various problems including crime. The efficiency of these institutions determines the manner in which these types of problems are managed. A high level of internal and external efficacy will result in successful outcomes in managing fear and the perception of crime (Hunter, 1985; Kelling and Coles, 1996; Maple, 1999; Doran and Lees, 2005; and Cordner, 2010).

Places in the cycle of fear: Block – neighbourhood - city

People interact individually and collectively in the different strata of a city structure. In the micro-environment of a city block, design, and the manifestation of social or physical disorder are some of the most impacting environmental features that can potentially generate fear (Hunter, 1974; Brantingham and Brantingham, 1997; Taylor and Harrell, 1996; Sampson and Raudenbush, 1999; and Wyant, 2008). Depending on how these features display and interact,

individuals will perceive and use these areas in extremely different ways (Blöbaum and Hunecke, 2005; Foster et al., 2010; and Park et al., 2010). These individual movement patterns at the block level combine to form the total use of these locations (Brantingham and Brantingham, 1984). City blocks do not exist in isolation, but rather form neighbourhoods and the type of paths, the influence of nodes and effect of edges collectively guide the human activity occurring in neighbourhoods (Brantingham and Brantingham, 1981; and Talen and Shah, 2007). The manner in which neighbourhoods link together through land use, social design and infrastructure drives human activity at the city level (Brantingham and Brantingham, 1984; and Taylor, 1997). These systems are sometimes properly interconnected, and at other junctures ineffectually linked. These mergers with their positive or negative feedback shape how people use space as individuals and communities, but also as a collective. Within each physical layer of this urban structure (block ↔ micro – neighbourhood ↔ meso – city ↔macro) there exist specific dynamics which impact that layer and its interface with the other components of the total structure.

Block

- *Social disorder:* These are behavioural manifestations that breach either proscribed social norms or legally prohibited activities. Social disorder is closely akin to actual crime and occurs at a lower frequency than physical disorder. Since social disorder confronts people with people it has been shown to generate more fear (Hunter, 1974, 1978; LaGrange, Ferraro and Supancic, 1992; Duneier and Molotch, 1999; Sampson and

Raudenbush, 1999; Robinson et al., 2003; Wyant, 2008; and Randa and Wilcox, 2010).

- *Physical disorder:* Physical disorder is created by people and remains in the environment as traces of individual action. It is the result of either breaches of proscribed social norms or legally prohibited activities. The degree of impact associated with the physical disorder is dependent upon the human action it is related to. Physical disorder serves as a perceptual cue and indicates that there are potentially more serious things happening in the area (Hunter, 1974, 1978; LaGrange et al., 1992; Sampson and Raudenbush, 1999; Robinson et al.,2003; Doran and Lees, 2005; Wyant, 2008; Randa and Wilcox, 2010).
- *Physical design:* Blocks are designed to have different lengths, curvature, angles and alleys. As well, sidewalks have different widths with various types and degree of vegetation and street furniture. Individual buildings have assorted design features such as alcoves, corners, and doorways which impact how the environment is experienced. These design features are connected to social and physical disorder, as well as the level of fear and perception of crime experienced in the block (Jeffery, 1971; Newman 1972; Fisher and Nasar, 1992; Brantingham and Brantingham, 1997; Taylor, 1997; Kuo et al., 1998; Pain, 2000; Herzog and Flynn-Smith, 2001; Wilcox et al., 2003; Blöbaum and Hunecke, 2005; Foster et al., 2010; and Park et al., 2010).

Neighbourhood

- *Edges:* Edges demarcate one area from the other. For example, a commercial strip is an edge between two residential neighbourhoods where on one side of the strip the residents are known to each other, but are not socially connected to the people on the other side of that street. Edges have different levels of sharpness or crispness, and the adjacent areas have varying levels of porousness. Crime gets heavier as the edges become sharper. While there are temporal edges, it is the nature of the physical ones in neighbourhoods that are of interest in this model and linked to fear and the perception of crime (Shaw and McKay, 1942; Brantingham and Brantingham, 1993; Kinney, Brantingham, Wuschke, Kirk and Brantingham, 2008; and Brantingham, Brantingham, Vajihollahi and Wuschke, 2009).
- *Activity nodes:* There are places where crime occurs at a concentrated level. These clusters are determined by various environmental factors which would contain similar physical features that would create a suitable environment for both physical and social disorder. Likewise, these places would generate heightened fear and perception of crime. For example, a mass-transit site contains all the necessary environmental attributes to generate such feelings (Brantingham and Brantingham, 1993; Nelson et.al, 2001; McCord et al., 2007; Kinney et al., 2008; Bernasco and Block, 2009; and Yavuz and Welch, 2010).

- *Pathways:* Activity nodes are connected by pathways and crime is more likely to occur along these routes. Within neighbourhoods there are main travel paths that connect different parts of the community such as parks to commercial strips, community centers, schools and mass-transit systems. Like crime, social and physical disorder will peak along these routes with some places more likely to attract the conglomeration of these activities. Thus fear and the perception of crime will peak along these routes becoming more concentrated as these paths connect to high activity nodes (Brantingham and Brantingham, 1993b; Taylor, 1997; Felson, 2002; Kinney et al., 2008; Brantingham et al., 2009; and Yavuz and Welch, 2010).

City

- *Land use:* Land use divides cities into various sub-areas. Variations in this land use throughout cities can create areas where there is more crime and similarly increased fear and perception of crime. Incivilities occur more prominently in non-residential areas forming perceptual pathways where fear and the perception of crime would peak (Shaw and McKay, 1942; Sampson and Groves 1989; Brantingham and Brantingham, 1993; Kurtz et al., 1998; Sampson and Raudenbush, 1999; Pain, 2000; and McCord et al., 2007).
- *Social design:* Social design flows from land use and city planning. The location of places that are central to the formation of community ties (schools, community centres, and parks) and land use planning

decisions about these focal points can result in various outcomes that influence crime rates, fear and the perception of crime (Skogan, 1990; Pain, 2000; Hancock, 2001; Sparks et al., 2001; and Cozens, 2008).

- *Infrastructure:* The infrastructure is the macro system that connects neighbourhoods and creates flow throughout the city. These connections can foster anything from positive to negative flow. Some examples are roads, transit systems, or bike routes. Infrastructures that are implicitly integrated with land use create fewer edges between areas, encourage better flow along pathways and through activity nodes, thus lowering fear and the perception of crime (Hawley, 1986; Hale, 1988; Skogan, 1990; Walsh, 1999; Pain, 2000; Hancock, 2001; Cozens, 2008; and Foster et al., 2010).

Interfacing people and places: Community integration or isolation

In the urban environment, fear and the perception of crime happens at the nexus which connects people to places. The interface between an individual and the activities that are occurring on city blocks are mediated by perception. This is a variable state dependent on the relative activities, disorder or incivilities occurring on the block and the individual's prior experiences which also impact how, when, and if human activity is carried out in the neighbourhood. When perception reaches a certain threshold, as it relates to individual circumstances, fear may be engaged and the consequent reaction of avoidance or retreat. The summation of these human interfaces at the block level filters into the

community. Multiple negative experiences adversely affect community dynamics and conversely, positive interactions increase community vibrancy. Simultaneously, the community receives feedback from the larger control mechanisms enacted by the collective, and these influences can either positively or negatively impact community. The connection of community to neighbourhood occurs through human activity, and to the city through an interface. Depending on how this interface occurs, a community can either be integrated or isolated. The proper integration of all communities in a city forms the healthiest urban dynamic. However, community isolation if repeated over multiple communities creates overall urban decline.

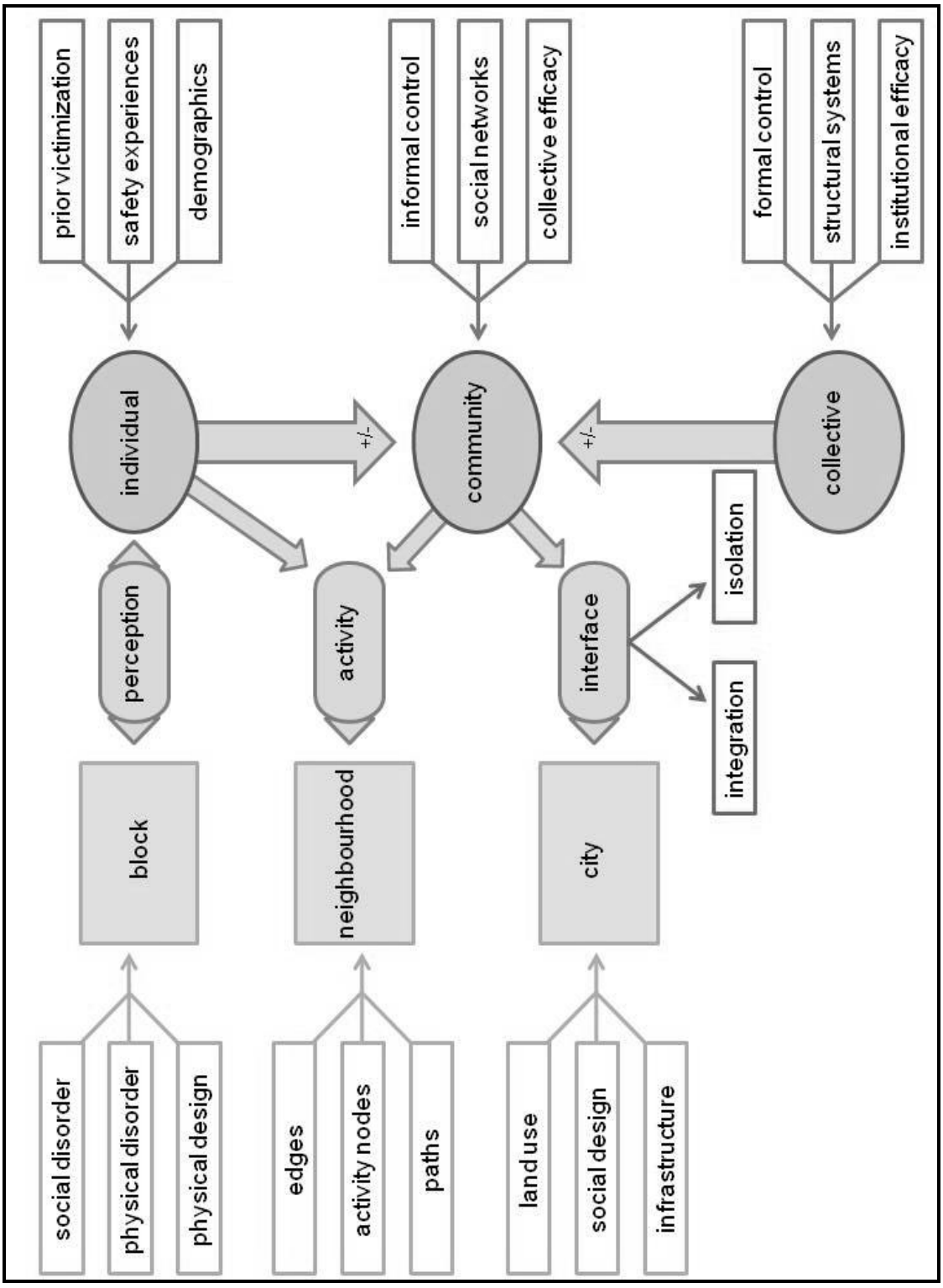
The Downtown Eastside (DTES) in Vancouver, British Columbia is used to illustrate this community isolation process. The DTES is located near the downtown core of Vancouver. It is one of the poorest and most violent areas in Canada (City of Vancouver, 2006). The DTES is also the oldest neighbourhood in Vancouver, and contains five distinct communities: Chinatown, Strathcona, Gastown, Victory Square, and Oppenheimer (City of Vancouver, 2006). This neighbourhood is affected by poverty, lower education rates, mental health, drug addiction, prostitution, crime and it includes a highly transient population (City of Vancouver, 2006). The drug trade in the DTES fuels prostitution, the illegal market for stolen goods, and street level drug dealing. Violence often accompanies these activities and affects the quality of life of law abiding residents who live in this neighbourhood.

At the block level, incivilities, social and physical disorder are considerable and visible with public drug trafficking, drug use, street vending, and street activity organized toward criminal activity. This can generate fear, apprehension and perception of crime for people who enter this area for legitimate reasons as there are very few places in the DTES that would be considered “destination” locations (e.g.: park, movie theatres, or shopping areas). Visitors would likely try to avoid this community as they navigate it to go from one place to the next. Since the DTES is sandwiched between two other historical districts – Chinatown and Gastown – many people flow through the DTES to go from one to the next, but would not likely stroll the DTES to browse the area. This community has several informal social networks organized around crime, and informal control mechanisms are weakened because residents fear retaliation, so collective efficacy is hindered. The human activity in this community further perpetuates the situation as the street level drug market operates seven days a week. From a collective perspective, formal control mechanisms are unable to exert the necessary influence on this area to dissipate the proliferation of unlawful activities occurring in the DTES. The structural systems are not organized toward optimal efficiency and this causes a defective interface between the DTES community and the rest of the city. The repercussions ripple into adjacent communities that struggle to maintain their vitality and are consequently impacted by higher crime rates.

In Figure 3, the relationship between physical spaces and social spheres is illustrated. This interaction occurs simultaneously in the micro, meso and macro

levels of the model and the influences on the spaces and spheres are variable. The manner in which the dynamics occur at all levels creates a rippling effect throughout the entire system and either creates community isolation or integration. The micro level includes city blocks and individuals, the meso level encompasses community and neighbourhoods whereas the macro level engages the collective into the city. Perception is linked to the micro environment and lead to the meso human activities and finally dictates the interface between individual communities and the rest of the city.

Figure 3: Theoretical model for fear and the perception of crime



Fear and the perception of crime is a complex by-product of the interaction between people and places. While this phenomenon can be studied at various levels in the system, the total impact of such a reaction to crime results from the interplay of multiple factors. However, community is the central component in the system because it merges individual and collective influences to shape how activity is conducted in the neighbourhood and how the community interfaces with the city. From this perspective, balance can be changed at the community level because this is where action can be effectively carried out. Community-based action research can assist in resolving the disjointed aspects of the system by identifying where the breaks and interruptions are occurring. Since this research process is both cyclical and progressive, it is well-suited for community and urban development.

Some policing strategies attempt to implement this process without a comprehensive grasp of the total system or the impact of individual action on the rest of the structure. For instance, the mere visible presence of police officers walking an area, a policing activity often considered a key mandate of community policing, will not always translate into a positive increase in community and individual activity into a neighbourhood even though this is likely the intended response. Similarly, the removal of graffiti from public spaces, while important in reducing physical disorder, is not sufficient to remove fear or the perception of crime if the area is simultaneously overwhelmed by social disorder and poor physical design. Thus reducing or targeting a single component of the system into an action with an intended outcome to alter the dynamic of the total system

will likely fail. Alternatively, an action research approach can harmonize activities because action is consciously carried out with knowledge and understanding of the total system.

The main proposal set forward in this chapter is that people interact in physical spaces, and because of this interaction each aspect of the system has to be considered at the micro, meso and macro level in order to fully understand the dynamic nature of fear and the perception of crime. The majority of studies have focus on the micro components, either the spaces that trigger fear or the people who are fearful, and some on the meso level either looking at social influences within communities or the physical structures of communities. Very few studies have touched upon the macro structures or how the entire system works together to create community isolation or integration. As such, this theoretical model is useful in guiding future research on fear and the perception of crime as it offers a conceptual matrix which can aid in understanding the various aspects of this dynamic system.

CHAPTER 4: Data and Methods

This chapter provides an overview of the data under study in this dissertation and the methods used to gather and analyze these data. The data were collected over a period of 13 years in three communities in the City of Vancouver. These are secondary data and the methods presented here are meant for exploratory analysis. In a first instance, the statement of research areas clearly outlines how it relates to perceptual cues in the environment and consequently the perception of crime. Then the survey instrument is reviewed and the manner in which the survey questions were selected is explained. The approach used to draft the survey questions is explored to expose how each survey template reflects the unique character of the community under study. Then the neighbourhood make-up of the three study area is described. Specific attention is brought to the Grandview-Woodland neighbourhood as many changes occurred from 1997 to 2010 during the time period when the three community surveys were delivered.

The street-intercept method used to implement the majority of the surveys and the on-line survey delivery mechanism used for one portion of the *2010 Commercial Drive Community Survey* are discussed. The value and limitations of community surveys is examined with particular attention brought to the size of the sample, and value of the survey comments and perceptual maps. The data gathered in the surveys are then presented to outline the four levels of analysis completed on these data. First, the survey comments from the Grandview-Woodland surveys conducted in 1997-2007-2010 are analyzed using content analysis. Second, the results from the three communities are contrasted to show

community and temporal variability on disorder issues. Third, the data from the Grandview-Woodland cognitive maps are presented and the methods used to compare these data to police calls for service examined. And finally, the cognitive maps are discussed and the manner in which they can be used to formulate a forecasting methodology explained.

Background: Survey instrument[2]

In the spring of 1997, a GWCPC board member heard George Kelling speak about the *broken windows* approach in policing (Mosca, Spicer and Brantingham, 1997). The key message delivered during his talk was the importance of matching community standards and police objectives (Mosca et al., 1997). This information was shared with the board of directors of the GWCPC, members from the community and a local constable deployed on bicycle in the area (Mosca et al., 1997). This small group of people knowledgeable about the diversity of political beliefs, lifestyles and culture in this neighbourhood, realized that it would be difficult to determine baseline community standards without a thorough survey. Given the multiple opinions and perspectives held by people who lived and worked in this neighbourhood, it was acknowledged that police constables working in this area would also be unclear about these standards. Indeed, this neighbourhood accepts and appreciates certain behaviours that would generate quite different reactions in other parts of the city or surrounding municipalities (Mosca et al., 1997). Therefore behaviours tolerated in this

[2] In 1997, this researcher was the coordinator of the GWCPC and the lead on this survey project.This researcher then contributed in the design of the four subsequent survey instruments under discussion in this section.

neighbourhood may require police intervention in another place, and the unilateral application of disorder maintenance may not be the most effective way to garner public support for police action, especially in a community such as Grandview-Woodland.

1997 Commercial Drive Community Survey instrument[3]

The *1997 Commercial Drive Community Survey* instrument was created to gauge neighbourhood opinions on problems and conditions reported to the GWCPC. The questions in the survey were intended to obtain a range of views on conditions which would not all be considered problematic. Naming only standard disorder problems could trigger respondents into a set response rate. Rather, the questions were varied and included positive community attributes to encourage respondents in considering each one and their opinion related to it. The questions were derived from the GWCPC complaint log book as it provided a general overview of disorder problems that were of concern to the neighbourhood. Furthermore, the issues brought to the GWCPC were those that many in the community felt went beyond the purview of police intervention. For example, unleashed dogs are not typically viewed as a police problem, but were regularly reported to the GWCPC because of its ability to interface with multiple agencies, and in this case the dog pound.

[3] This researcher was employed by the GWCPC when this survey was created. The original template was designed by this researcher. During the past 13 years, this researcher has continually participated in this survey project as it was replicated in the Grandview-Woodland community and subsequently in the two other neighbourhoods. As such, the work presented here may be considered participatory research. The statements made in relation to the survey instrument, its implementation and the subsequent pro-active projects are based on detailed field notes maintained by this researcher.

Once the questions were drafted, these were shared with the board of directors of the GWCPC, and then tested on a group of volunteers. Feedback was requested from other stakeholders working in the neighbourhood. A final set of 30 questions were listed on the front page of the survey (See Appendix A for the list of these 30 questions). Respondents were asked to rank the questions on the following five-point scale:

1- Completely unacceptable (You think the appropriate agency should stop it.)
2- Unacceptable (You prefer not to see this and might do something about it.)
3- Tolerable (You don't like it, but it does not bother you enough to do something about it.)
4- Acceptable (You are not bothered by it.)
5- Completely acceptable (You perceive this as a good thing.)

For each of these questions, respondents were also asked whether or not they had seen this activity.

The back page contained demographic questions identifying whether the respondent was a resident, employee, business owner, or visitor to the area (See Appendix B for this list of additional questions). A map was placed at the end of the survey and respondents were asked to circle the area they felt had the highest level of crime. A comment box was also included to elicit open-ended responses. The survey was implemented with the majority of respondents identified and surveyed at the street level (See Appendix C for the locations where the respondents were surveyed). Therefore, the survey design facilitated rapid completion so that each one would take less than ten minutes to finish.

The respondent target group were people in the Grandview-Woodland neighbourhood, specifically those using the major commercial strip called Commercial Dr., including residents, employees, business owners and visitors to

the area. During the summer of 1997, this survey was delivered through a street-intercept methodology where people were approached on the street, at local cafes, at the parks, walking on Commercial Dr., and panhandling or squeegeeing at the corner of Commercial Dr. and 1st Av.. Trained volunteers attended local events at parks, and set up tables at banks and at the community centre. Surveys were also hand delivered to the majority of businesses and community agencies in the neighbourhood, and went out to Block Watch groups. Volunteers attended and surveyed people at seniors' groups, local high schools, and community agencies that delivered services to special needs groups in the neighbourhood.

By the end of the summer of 1997, 720 surveys were completed and were entered into an Excel spreadsheet for subsequent analysis in SPSS[4]. The analysis included in the report was exploratory and a 42 page document was created outlining the results with individual recommendations for each of the 30 questions (Mosca et al., 1997). The findings were shared with a number of organizations including the VPD and the City of Vancouver. These results were used to request specific action. These findings further guided work completed on identified problems for several years after its implementation.

Survey replication: *2007-2010 Commercial Drive Community Survey*

In 2007, ICURS in collaboration with the GWCPC co-sponsored the replication of the 1997 survey. The survey questions and format remained exactly the same. Respondents were selected using similar methods as in 1997. This survey was

[4] These results can be accessed through the following link: http://www.sfu.ca/icurs/docs/1997%20Commercial%20Drive%20Community%20Survey.pdf

implemented at the same time of the year and respondents approached in the same locations as identified in Appendix C. There were 727 surveys completed. At the time, the data were entered into Excel and then subsequently analyzed[5]. A 55 page document was produced which included recommendations (Mosca and Spicer, 2007). As in 1997, these finding were shared with a number of organizations and guided the work completed by the GWCPC.

After the release of the 2007 results, the British Columbia Ministry of Public Safety and the Solicitor General (PSSG)[6] became interested in this project and organized a stakeholders' meeting to address the top five concerns identified in the survey which had remained the same from 1997 to 2007 (discarded needles – condoms on the ground – litter – aggressive panhandlers – sex trade workers near schools and in residential areas). Three subcommittees were formed and implemented several initiatives[7].

In 2010, the GWCPC with the assistance of ICURS implemented a smaller scale community survey using a similar street-intercept methodology as the 1997 and 2007 community surveys. The *2010 Commercial Drive Community Survey* used the same design with some new questions (See Appendix D for the list of 2010 questions)[8]. The reverse side of this survey instrument was also changed to ask more questions about victimization and perceptual area knowledge (See Appendix E for these questions). An on-line component was added to this survey

[5] These results can be access through the following link: http://www.sfu.ca/icurs/docs/2007%20Commercial%20Drive%20Survey.pdf

[6] This Ministry is now called the Ministry of Justice.

[7] This researcher was present at this meeting and subsequently participated in one of the three subcommittees.

[8] This researcher assisted with the design and implementation of this survey.

and 131 on-line surveys were completed utilizing a snowball method. The questions in this 2010 survey were changed from the two previous community surveys to include more contemporaneous issues affecting the area. For instance, in 1997 there was a question regarding skateboarding on the street because there were bylaws prohibiting this activity, but since then these laws have been eliminated. This question was replaced with a more common activity, prohibited by a bylaw, which is bicycling on sidewalks.

Community survey methodology replicated

The PSSG requested that a community survey methodology be established so that this type of approach could be replicated in other neighbourhoods. As such, the Community Survey Handbook was created through the ICURS Community Service program (Mosca and Spicer, 2008). This methodology was subsequently applied in two other Vancouver communities in the neighbourhoods of Renfrew Collingwood[9] and Mount Pleasant[10]. ICURS assisted the community policing centres in these two neighbourhoods with survey tool development, survey training, analysis, and preparation of the survey result booklet.

Each of these two community policing centres devised their own 30 questions pertaining to problems and conditions identified in their communities. They followed the same type of process used in the *1997 Commercial Drive Community Survey* to draft these questions. The point of departure was their

[9] The actual name of this neighbourhood is Renfrew Collingwood. However, the community policing centre that services this area referred to this survey as the *2008 Collingwood Renfrew Community Survey*. As such, the neighbourhood will be referred to as Renfrew Collingwood, but the survey will retain the title it was assigned.

[10] This researcher assisted these communities with the development of their survey templates and then trained the volunteers who delivered the street-intercept surveys.

report log. Then they consulted with their board of directors, volunteers and local stakeholders. The questions for the Renfrew Collingwood neighbourhood were specifically selected to reflect the conditions in that community (see Appendix F for the list of these questions). This survey template included a unique set of questions on the reverse (See Appendix G for these questions). The Mount Pleasant survey template was almost identical to the *2008 Collingwood Renfrew Community Survey* with the questions in the same order and the only difference in one question about loitering (see Appendix F and G). These two surveys also included a mapping component where respondents were asked to circle the area on the map where they felt there was the highest level of crime. As well, a section was placed at the end of the survey to elicit open-ended comments from the respondents[11].

Overview of the three Vancouver neighbourhoods

The three neighbourhoods included in this study were not randomly selected and are located in the City of Vancouver. Initially this survey was implemented in the Grandview-Woodland neighbourhood, and then it was adjusted and carried out in two other Vancouver neighbourhoods: Renfrew Collingwood and Mount Pleasant. The City of Vancouver is divided into 23 different neighbourhoods. The following neighbourhood information was retrieved from the City of Vancouver website community profile section and outlines the character of each area

[11] These two surveys were conducted in 2008 and the results reported in print in 2009. The Collingwood Renfrew results are in Guterres, Sall and Brantingham (2009a) and the Mount Pleasant Results are in Guterres, Sall and Brantingham (2009b).

included in this study (http://vancouver.ca/community_profiles/CommunityList.htm)[12].

Grandview-Woodland

The Grandview-Woodland neighbourhood is 448 hectares large and contains a mix of land use including residential (single family and multiple dwelling, industrial and commercial). The neighbourhood is anchored by a single street named Commercial Dr. which contains a wide variety of shops, cafés, restaurants and pubs. There is a community centre in the middle of this neighbourhood called Britannia Community Services Centre which at the time it was built was one of North America's largest facilities containing a high school, elementary school, child care centre, library, and recreation centre designed to accommodate the very mixed population that was in this area. This community centre is adjacent to Grandview Park which covers a one block area and is a focal point. The southern part of this neighbourhood contains the largest public transit station in British Columbia where two Skytrain routes connect and funnel into cross-town buses (Mosca and Spicer, 2007).

The 2006 census showed that the population was 28,205 compared to the total Vancouver population of 578,041. The majority of the population was between the age of 20 and 64 with 62% having English as their mother tongue. The median household income was $35,342 and over 50% of the population in this area had moved since the last census. Although nearly 50% of the

[12] The most recent profiles available at the time of writing were from 2006.

population used a car as their primary mode of travel to work the other 50% used public transit, cycled or walked to work.

Renfrew Collingwood

The Renfrew Collingwood area is further from the downtown core than the Grandview-Woodland neighbourhood. It remained a semi-agricultural area until the 1930s when it began to develop as a residential suburb. This area underwent rapid development from the 1980s onward, and as of the 2006 census the population was 48,885 in an 820 hectare area. The majority of the population between the age of 20 and 64, and for 42.7% of these residents Chinese was their mother tongue. The median household income in 2006 is listed at $47,320. There is a mix of housing in this neighbourhood from single-detached houses (25.6%), to detached duplexes (37.7%), to apartment buildings under five storeys (20.7%), and to those over five storeys (13.4%). The majority of these residences were built after 1981 (56.4%). Most residents used a vehicle to travel to work (64.6%) and the other 32.4% used public transit to work. This neighbourhood is bisected by two commercial strips, which are Joyce St. and Kingsway Av.. It contains a Skytrain transit stop funnelling buses to other areas in the city.

Mount Pleasant

Like the Grandview-Woodland neighbourhood, Mount Pleasant is close to downtown Vancouver. In earlier days, the expectation was that this neighbourhood would develop into a fashionable uptown area where industry could develop. By the 1930s, the character of this neighbourhood was

established with a mix of small residential lots combined with industrial zones. Later, these industrial areas were replaced with low-rise offices and warehouses. This area still contains many heritage buildings including the Heritage Hall at the corner of Main St. and 15th Av.. The area is bisected by a major commercial strip Main St. which contains a variety of shops, cafés, restaurants and pubs and a major commuter arterial street called Broadway which bisects the entire city from east to west.

The 2006 census showed a population of 23,615 in an area of 364 hectares. The majority of the population are between the age of 20 and 64 with 62% who had English as their mother tongue. Nearly 60% of the population had moved from the 2001 to 2006 census and the average median household income was $37,782. The vast majority of housing in this area are apartment buildings under five storeys (74.4%), and nearly 72% of these residences were built before 1980. The majority of the population (54%) used transit, walked or cycled to work, whereas 44.8% took a car to work.

Table 1: Overview of the three neighbourhoods

	Size (ha)	Population	Mother tongue	Median household income	Transit to work
Grandview-Woodland	448	28.205	62% English	$ 35,342	50%
Renfrew Collingwood	820	48.885	42.7% Chinese	$ 47,320	32.4%
Mount Pleasant	364	23.615	62% English	$ 37,782	54%

Historical community information: Grandview-Woodland

This section outlines the changes that occurred in Grandview-Woodland. Briefly these are as follows: The expansion of the Broadway and Commercial Skytrain station, increase in retail businesses at the south end of the study area, a 210% increase in property value from 1998 to 2008, the introduction on the Commercial Drive Business Improvement association, the beautification of sidewalk with new street trees, furniture and banners, and an increase in the number of homeless people in the area (Mosca and Spicer, 2007). These changes are contrasted with the survey results from 1997 and 2007 where there are only a few significant variations occurring in the responses over the 30 questions (Mosca and Spicer, 2007). The most considerable change in the respondents' views is found in the cognitive maps from 1997, 2007 and 2010. The emergence of a higher transit activity node at Commercial Dr. and Broadway is of particular significance because of the magnitude and growth of this Skytrain station. The analysis of the survey comments and the cognitive maps clearly shows the pull of this node.

Translink was formed in 1999 with the purpose to amalgamate the transportation plan for the Greater Vancouver Regional District (GVRD)[13] into one agency with the oversight of major roads, transportation, while also coordinating land use plans from 20 municipalities (Translink, 2008). At the time, this model was unique to North America and initiated because of a fast growing disconnect between commuter needs and required infrastructure (Translink, 2008). Prior to Translink, the Skytrain was managed by an independent company – BC Rapid Transit Company – which did not tie into a comprehensive GVRD transportation plan (Translink, 2008). There were multiple successive modifications that occurred from 2000 to 2008 which resulted in a 58.7% increase in Skytrain ridership[14]. These changes were particularly impacting to the Grandview-Woodland neighbourhood as the intersection of Broadway and Commercial Dr. became the transit hub between the Expo line, Millennium line and the 99 express buses to University of British Columbia (UBC). The pertinent changes are as follows (Translink, 2008):

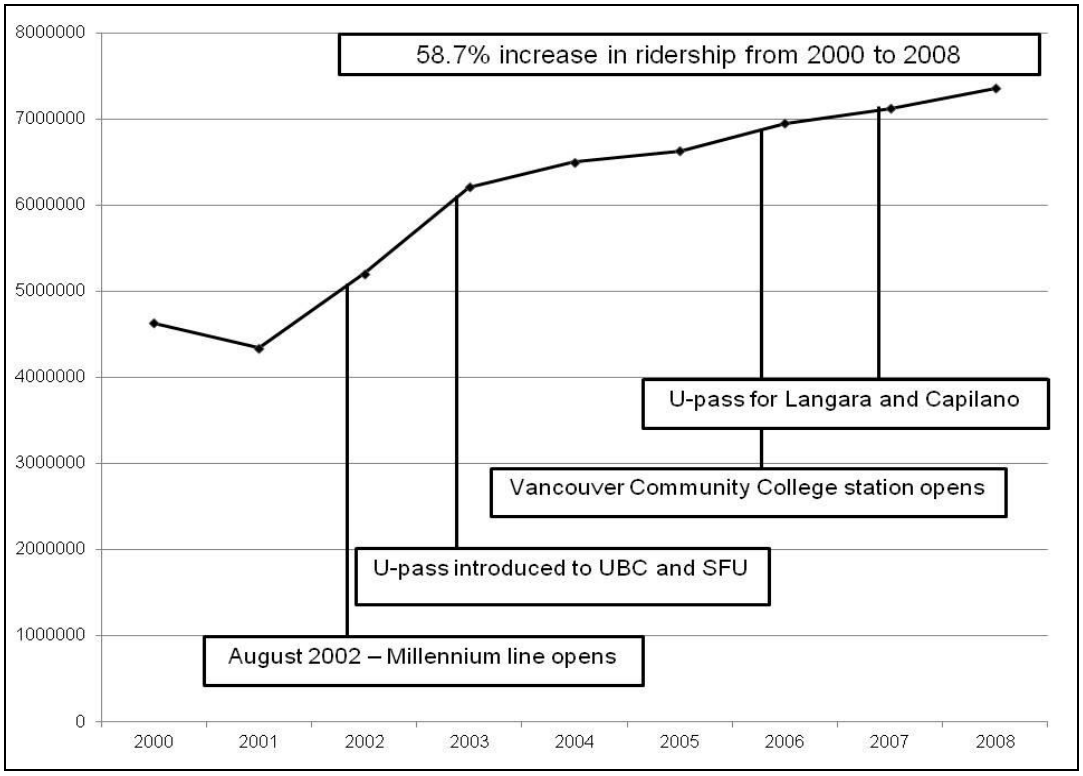
1. August 2002: The Millennium line fully opens.
2. September 2003: U-pass introduced to UBC and Simon Fraser University (SFU).
   UBC ridership increases by 53% in the first year.
   SFU ridership increases by 39% in the first year.
3. 2006: 10th Millennium station opens at Vancouver Community College.
4. September 2007: U-pass expanded to Langara and Capilano College.

[13] This region is now referred to as Metro Vancouver.

[14] These figures were derived from Translink annual reports which can be retrieved from: http://www.translink.ca/en/About-Us/Corporate-Overview/Annual-Reports.aspx. Skytrain ridership is only available for 2000 to 2008 – after 2008 the public numbers include overall ridership on the transit system.

Figure 4 displays these changes while contrasting these to the continual increases in the ridership.

Figure 4: Skytrain ridership and changes



Street-intercept survey methodology

The fabric of a neighbourhood contains multiple social, geographic and environmental features. The socioeconomic mix, geographical layout, political make-up, and the commercial and cultural character of an area form the community life that exists there. Similarly, there are various users who shape neighbourhoods, such as residents, business owners, visitors to the area and staff from various agencies who are local service providers. While these people may concur on the basic character of the neighbourhood, their views regarding the strengths and challenges in the area may vary dramatically. As well, their

perception of where problems are occurring may vary drastically depending on their experiences of the neighbourhood.

A properly designed community survey delivered at the street-level can effectively capture both the various users of an area, and the diverse opinions held by community members (Halkitis, Manasse and McCready, 2010). Unlike other forms of surveying, a street-intercept methodology, conducted by trained community members, is a viable means to access a large-scale sample of diverse respondents to ascertain community opinion and degrees of tolerance on disorder occurring in the area (Mosca and Spicer, 2008). This survey method obtains responses from subjects who may not respond through other means and by going directly to the location where they are is the most effective way to garner their information (Katzman, Gulati, Higa, Welch and Wood, 2007, and Peterson, Baer, Wells, Ginzler and Garrett, 2006). Furthermore, the information gathered through this survey approach can assist and guide local agencies in targeting resources to solve the identified problems (Mosca and Spicer, 2008). While this survey methodology is rarely used in Criminology because of the time and resources required, it can effectively identify street-level users of an area or in a subculture, and as such is applicable to the study of disorder within the urban environment.

Since a street-intercept survey was the selected method of implementation, the survey instruments was designed with ease of completion in mind. It was tested on a number of people, varying in age, cultural and educational background, in order to ascertain how easily and quickly it could be completed.

Some features of the instrument include 12 point font size so that people approached on the street without their reading glasses could still complete the survey. Also, every other question was shaded so the contrast between each question allowed for rapid reading. Simple language was used so that the questions would be widely understood and local lexicon applied to the disorder problems (e.g.: needles on the ground as opposed to syringes on the ground).

Surveyors were trained in order to ensure consistency of implementation. They attended survey locations with multiple clip boards so that respondents could take their surveys with them, sit if required, and easily complete their surveys. During some events, such as the Food Not Bombs meals at Grandview Park, there could be as many as 15 respondents simultaneously completing the survey. Similarly, when patrons were approached at outside cafés, multiple respondents were able to complete their survey while still seated. As well, respondents intercepted on the street could easily complete the survey while still standing. Finally, and probably most importantly, volunteers were trained to recognize when survey respondents might want to complete the survey, but were unable to do so because of literacy limitations. As such, these volunteers would read out the questions and potential answer, then record the information for the respondent.

On-line survey methodology: *2010 Commercial Drive Community Survey*

A different methodology was introduced in the *2010 Commercial Drive Community Survey.* This survey employed a mixed methods approach where

roughly half of the surveys were delivered using a street-intercept technique and the other half used an on-line survey methodology. The street-intercept aspect of this survey was carried out in a similar manner and comparable locations as the two previous ones delivered in the Grandview-Woodland neighbourhood. The on-line version employed a different survey template as the questions were designed with the FluidSurvey software.

The distribution of the on-line survey was significantly different than the street-intercept version. These surveys were disseminated using a snowball technique starting with the GWCPC which sent e-mail to all Block Watch captains in the Grandview-Woodland area and this e-mail contained a link to the on-line survey. The Block Watch captains were asked to fan this link out to people they knew who lived, worked or visited the area. A duplication control mechanism was implemented so that one person could not submit multiple surveys. It should be noted that this survey instrument required significantly more time for respondents to complete. While the street-intercept version took on average ten minutes to finish, the on-line version could easily take double the time. Another difference is found in the cognitive mapping aspect. As opposed to circling an area, respondents were asked to select pre-determined quadrants. As such, these data are not used in the cognitive mapping analysis. Furthermore, the comment section was not capped at a word count and therefore many of the respondents' comments in the on-line version are substantially longer because of ease of typing and space. However, this could be considered a valuable aspect of the on-line version and these comments are included in the analysis.

Value and limitations of this community survey methodology

The primary value of a well-designed community survey on disorder such as the ones discussed here is to help direct programming and services (Mosca and Spicer, 2008). As most community agencies have limited resources, such an exercise serves to highlight significant community issues, while pointing to those that may be of lesser concern (Mosca and Spicer, 2008). Specifically, the survey methodology presented here was designed to go beyond crime statistics to those issues thought to be related to perception of crime and the social and physical activity of respondents within the community (Mosca and Spicer, 2008). While the primary function can be to direct services, the secondary research purpose is rich in potential discovery about the discrepancy between perception and reality.

The principle difference between the survey methodology presented here and those previously conducted on disorder and fear of crime research is arguably length. Indeed, the survey template used by Skogan (1990) was almost 100 pages in length[15]. Conversely, this community survey methodology employs volunteers in the data collection, accesses a very large sample because of ease of completion, and gains the trust of the respondent since the volunteers implementing the survey are from the community. While the purpose of structured research derived from surveys on disorder is detail, the purpose of the survey presented here is more akin to a snapshot – a textual representation of a community's level of tolerance, the users groups present in the area, and their views toward disorder and locale. Second, the survey presented here was not

[15] In 1997, this researcher consulted the survey template developed and used by Skogan when the original *1997 Commercial Drive Community Survey* was designed.

derived from traditional research on disorder. Had it been, the questions would have been significantly different and resemble those presented in chapter 1 as this community survey was delivered concurrently to studies such as the one conducted by Sampson and Raudenbush (1999).

Rather than pooling questions from previous research on disorder, this survey methodology takes directly from the community those issues that are pertinent for that neighbourhood at that time. Furthermore, the questions are balanced with what may be considered positive community attributes so that while certain disorder issues are targeted, positive attributes are actively fostered. This approach intuits the findings Keizer et al. (2008) where subjects were found to subconsciously notice disorder maintenance in the form of people sweeping the sidewalk and therefore form a more positive perception of the area despite the presence of disorder.

However, there are limitations inherent to this survey methodology when the results are used within the context of academic research on fear and the perception of crime. Since the actual purpose of this survey instrument is that of service delivery, altering the interpretation of these results to answer research questions needs to be done carefully with regards to these limitations. First of all, these surveys were delivered by community volunteers and certain ones completed by volunteers to account for the illiteracy of some respondents, as such interviewer bias potentially introduced into the responses (Palys, 1997). A further concern comes with the replication of the *2007 Commercial Drive Community Survey*. While there was an effort to replicate locations where the

surveys were implemented and sampling technique, this is inherently imperfect by virtue of respondent rate and acceptance to complete the survey. Further issues of replication include changes in target groups where some existed in 1997, but not in 2007. Since the main purpose is to collect a snapshot of those present in area and their opinions about the matters in that area, randomization was not possible and therefore results should not be extended to the general population. Finally, since many volunteers administered these surveys, multiple decisions were made in regards to these data which were not necessarily recorded.

Despite these limitations, the value of these data remains significant for exploratory research on disorder and toward furthering the theoretical model for fear of crime as presented in chapter 3. The data collected in these five community surveys are extensive and varied. These surveys contain three distinguishable forms of data (answers to the questions – open-ended textual comments – cognitive mapping data), and demographic and user information (resident – business owner – visitor). As such, perceptual disorder cues can be explored as they vary according to type, user, location and neighbourhood.

Community survey data

The data in these surveys are secondary data collected through the Grandview-Woodland Community Policing Centre which oversaw the *1997-2007-2010 Commercial Drive Community Surveys,* and The Collingwood Community Policing Centre which oversaw both the *2008 Collingwood Renfrew Community Survey* and the *2008 Mount Pleasant Community Survey*. The survey results

were coded and entered into an Excel spreadsheet. In these data there are the results for the 30 questions, the general demographic questions asked of the respondents, their comments and their cognitive maps. The data under study in this dissertation are divided into three categories: survey results from the 30 questions presented in chapter 5, the respondents' comments which are analyzed in chapter 5, and the cognitive mapping information examined in chapter 6 and then further explored in chapter 8.

Survey questions data

These data are the results from the 30 questions regarding neighbourhood conditions contained in the five community surveys. While the *1997 Commercial Community Survey* and the *2007 Commercial Drive Community Survey* both have identical questions, the questions in the *2010 Commercial Drive Community Survey* are significantly different. The *2008 Collingwood Renfrew Community Survey* and the *2008 Mount Pleasant Community Survey* employ almost the exact same instrument. The questions follow the same order with only one question being different. In the Collingwood Renfrew survey the question on loitering is specific to the Skytrain station whereas in the Mount Pleasant survey this problem refers to public places.

In a first instance, the data from the surveys are ranked by mean so that behaviours that are consistently viewed as problematic are extracted. As well, those features that are positively viewed highlighted. The data from the survey questions are then explored to look at how perception of disorder varies temporally in the Grandview-Woodland neighbourhood and how it varies by

neighbourhood between Renfrew Collingwood and Mount Pleasant. Then behaviours that are transient are distinguished from those that are fixed or permanent.

Respondents' comments data

These data include 390 comments made by the respondents through the three community surveys conducted in the Grandview-Woodland neighbourhood in 1997, 2007 and 2010. The comment section was placed at the end of the survey and was intended to solicit open-ended answers from respondents on any topic they wished to discuss. A manifest content analysis extracts those disorder issues which consistently emerge as a concern. Since these data are collected in the same neighbourhood where a significant environmental feature is introduced, the comments are explored to illustrate this feature's impact on the perception of respondents. As such, this exploratory analysis shows how perception and disorder cues interact. More specifically, the comments dealing with decision making are contrasted to the theoretical model proposed in chapter 3 where individual perception and action within the block and neighbourhood are mediated by the presence of disorder.

Cognitive mapping data

The exploration of cognitive maps is based on the five community surveys conducted in the three separate neighbourhoods in Vancouver. Table 2 outlines these data.

Table 2: Overview of cognitive map data

Year	Name	Number of maps
1997	*Commercial Drive Community Survey*	430
2007	*Commercial Drive Community Survey*	458
2008	*Collingwood Renfrew Community Survey*	173
2008	*Mount Pleasant Community Survey*	117
2010	*Commercial Drive Community Survey*	66

A map of the area such as the one presented in Figure 5 was included at the end of the surveys and respondents were asked to circle the area on the map where they thought there was the highest level of crime.

Figure 5: *1997 Commercial Drive Community Survey* map

Some respondents drew several circles on their maps indicating that these respondents viewed several areas as containing the highest level of crime.

The maps were then manually digitized and each polygon was assigned a number linking back to the original survey. Therefore, the cognitive maps can be cross referenced with such variables as age or gender. While the majority of respondents circled just one area on the map, some chose multiple areas;

therefore the number of polygons included is larger than the number of maps. For instance, in the 2007 C*ommercial Drive Community Survey*, 458 maps generated 572 polygons. The vast majority of the polygons were either circular or oval in shape. Marks, such as an x, were transcribed as a very small circle around the area marked by the x.

A review of the criminological literature reveals very few studies pertaining to the cognitive mapping of fear and the perception of crime or how these patterns relate to police calls for service. Conversely there is ample academic and practical material documenting crime mapping and the use of this approach in theory development. However, research in this area has not used this type of cognitive maps as a tool to determine and study the environmental dynamics linked to fear and the perception of crime. This research tool would prove to be significant for practitioners involved in the field of crime prevention as cognitive mapping could potentially identify the activities and locations most likely to generate fear and the perception of crime. This knowledge in turn could assist in further targeting resources to areas considered focal nodes in the community where perception is high and where these nodes are necessary to the vitality of the city. As well, cognitive mapping would aid in furthering theoretical advancement in this field as the maps would inform current fear of crime concepts.

Geographic information systems (GIS) are an effective method of visualizing a particular problem (Satur and Liu, 1999; and Fotheringham and Rogerson, 2009). From a theoretical perspective, this aspect of problem exploration can lead to a

better comprehension of the core elements that formulate a particular situation. However, it is important to realize that there are limitations to these techniques, and that these results may only lead to further exploration as opposed to concrete conclusions (Satur and Liu, 1999; and Fotheringham and Rogerson, 2009). Hotspot mapping has been used extensively in the policing world, yet this technique has almost uniquely been applied to reported crime (Chainey, Tompson and Uhlig, 2008). The research on the visualization of crime perception is very sparse and therefore, visualization techniques for this phenomenon are yet to be fully developed.

The kernel density function is a mathematical equation which can be used to estimate the intensity of events in a given area (Kloog, Haim and Portnov, 2009). Through GIS programs, this function can be applied to crime events thus creating a visual representation of crime density in space. While there are several limitations to this technique, the positive attributes are of interest within the context of research on the perception of crime. The cognitive spatial data are in the form of polygons and used to describe diffused areas where perception of crime is higher. This perception is not in point form. While police incidents are in point form, they can be converted through the kernel density function into an area of varying intensity as an attempt to simulate the perceptual space. The value of this conversion is twofold, in a first instance density of crime becomes comparable to the density of perception, and second, the police calls for service can be explored to discover those that can approximate the perceptual areas.

One of the weaknesses of the kernel density function is that it makes assumptions about the value assigned to an area as it extends the value of a point to an area established through a search radius (Kloog et al., 2009). Furthermore, this function assumes an isotropic space distribution by assigning a uniform circular area. Therefore, variations in intensity cannot be directional (Chainey and Ratcliffe, 2005). While the most precise representation of police data is arguably point form, the ethical considerations associated with this representation are significant. Similarly, the raster function was attempted, but a 10 by 10 meter cell size did also expose single incidents thus compromising ethical standards. Increasing the cell size did remove this concern, but created maps that were not useful in the current research framework because the patterns became overly aggregated. Therefore from a research ethics perspective, the kernel density function is an effect way to make these incidents anonymous while also creating a density measure. Alternate visualization techniques were further contemplated for this analysis, in particular interpolation methods. However, these methods were deemed inappropriate because with the police data all incidents are known and an estimation of value is not required (Maantay, Maroko and Herrmann, 2007).

The kernel density function was selected because it is a good way to visualize these police incidents in relation to perception of crime. Indeed, this function smoothes the area around a point and therefore, diffuses the strength and locality of that point to a wider area (Chainey and Ratcliffe, 2005). This is a limitation of this technique when applied to crime data because crime is discrete,

point data (Chainey and Ratcliffe, 2005). However, perception is a diffused expression of human cognition, so various visualization techniques need to be developed in order to capture this aspect of cognition (Satur and Liu, 1999). The kernel density function may not be the perfect way to predict perception because it is an isotropic function, and perception may have specific and varied directionality as shown in the results presented in chapter 6.

The maps from the three Grandview-Woodland surveys for 1997, 2007 and 2010 are used in chapter 6 to demonstrate how perception of crime changed over this course of time. These maps are analyzed using the raster function to show how the density of perception changed both in location and magnitude[16]. These maps are further explored to show directionality of perception of crime and how this becomes concentrated along pedestrian channels. The maps are also compared to police calls for service to extract those crime patterns that match perception. The cognitive maps from the two other surveys conducted in Mount Pleasant and Renfrew Collingwood are used in chapter 8 to explore a forecasting methodology where maps and police calls for service in one neighbourhood are used to forecast perception in another neighbourhood.

Vancouver Police Department (VPD) calls for service data

All crime data used in this dissertation are provided by the VPD and kept in a secure lab at ICURS. The VPD is the police of jurisdiction in the City of Vancouver which is where the three communities under study are located. The VPD is divided into four districts. The Mount Pleasant community and the

[16] The program used to complete this analysis was ArcGIS 10 with service pack 3.

Renfrew Collingwood neighbourhood are located in District 3, whereas the Grandview-Woodland community is located in District 2. The boundary between District 2 and District 3 bisects the Broadway Skytrain station which features in the cognitive maps of the *1997-2007-2010 Commercial Drive Community Surveys.*

The police data used in the analysis are calls for service retrieved from the police Computer Aided Dispatch (CAD). The data were extracted from January 1st to December 31st 1997 and from January 1st 2007 to December 31st 2007. The incidents contained in these two years are a complete set of incidents that occurred during this time period and then were geocoded. The original 1997 dataset contained 320,784 records and was geocoded to 95.8% with 13,420 records unmatched. The original 2007 dataset contained 258,572 records and was geocoded to 96.7% with 8578 records unmatched. These incidents include the location, time, date and nature of the incident. The incident codes utilized in the CAD data are set by the police of jurisdiction and were changed three times in this ten year period. It is only once an incident is written as a report that it gets coded with a Uniform Crimes Report (UCR) number. As such the comparison between 1997 and 2007 takes these differences into account. This CAD data are used to analyze police calls for service patterns in the Grandview-Woodland area to specifically illustrate the changes that occurred from 1997 to 2007 as a result of a larger activity node. This CAD data are then explored to extract those crimes that fall in the heightened perception area and in order to develop a forecasting methodology presented in chapter 8.

Description of methods and link to research questions

The five community surveys conducted in these three neighbourhoods are used to explore various aspects of the theoretical model presented in chapter 3. This section outlines the methods used on these data while tying this analysis to the various components in the theoretical model. There are four types of analysis in this dissertation: content analysis of the survey comments, statistical analysis of variance, cognitive mapping as it relates to police calls for service, and forecasting perception of crime utilizing a subset of police calls for service.

Content analysis of survey comments

After establishing recurrent themes, a quantitative, manifest content analysis is applied to the comments from the *1997-2007-2010 Commercial Drive Community Survey*. This method of analysis was selected because it allows the research question to be explored in comments made by the respondents (White and Marsh, 2006 and Krippendorf and Bock, 2009). More specifically, these comments can be tied back to pertinent aspects of the theoretical model. The following three categories were created after an initial scan of the comments.

1. Variance of disorder: The micro↔block level of perception within the model can be explored in relation to variance of disorder as many respondents comment on how certain types of disorder are dependent on the context.

2. Visibility of disorder: The comments also elicit the repetitive and visible behaviours that occur at micro↔ block level and affect perception. The change of behaviour is exposed as emerging disorder problems come to light.

3. Named location: The importance of named location and the change that occurs from 1997 to 2010 can be explored to discover the impact of meso↔neighbourhood level environmental structures and their influence on perception.

Although the comments section was not structured with the explicit intention to complete this content analysis, the value of these open-ended answers cannot be overlooked. Indeed, since these were completely unsolicited, voluntary and placed at the end of the survey, the spontaneous nature of these comments becomes even more interesting because emerging themes and structures in the environment can be explored. Once the data are placed in these three categories, a frequency count per year is conducted in order to show how disorder, environmental features and disorder nuance changed over the course of 13 years.

The comments from these three surveys are then reviewed and those pertaining to the perception of disorder and decision making are examined to determine the micro↔block interpretations of the environmental cues and how these impact meso movement within the neighbourhood. The structure of the comment section did not solicit this type of information. Therefore there are only very few comments to review as most respondents did not provide this information. These specific comments are viewed from this angle because it aids in attaining a clearer understanding of the interactions between people, disorder cues and their consequent reactions.

Community variance

A quantitative analysis of the survey respondent questions is conducted on the questions from the five community surveys. Specifically, using SPSS 19 a descriptive mean frequency is presented to show how the respondents in these communities rank their answers. In a first instance, the *1997-2007 Commercial Drive Community Survey* responses are compared to see whether variability occurs from the 1997 sampling to the 2007 one. The Mann-Whitney U is calculated in SPSS 19 and the results presented in a table format. This test is selected because the data are ordinal and non-parametric, and the measure shows whether the median difference between 1997 and 2007 is of statistical significance.

Then, the *2008 Collingwood Renfrew Community Survey* and the *2008 Mount Pleasant Community Survey* are compared to explore community variability. These two surveys are selected for comparison because the questions are in the same order and exactly identical expect the loitering question in the *2008 Collingwood Renfrew Community Survey* is tied to the Skytrain. The Mann-Whitney U is calculated on these variables in SPSS 19 and the results presented in a table format. The comparison of these two communities mine disorder problems that generate varied opinions. In another section, the answers from all five surveys are consolidated into a descriptive table to show how some disorder problems are more visible than others.

These results are compared to two aspects of the theoretical model:

1. Physical and social disorder: Previous research on disorder shows that social disorder causes more concern that physical disorder. The results

presented here confirm this finding and tied back to the micro↔block level perception.

2. Community variance: Previous research shows that community variance toward disorder exists and that some neighbourhoods remain consistent despite sociological changes in the community. This exploratory research confirms these findings which are linked to the community integration or isolation aspect of the model.

This section further supports a community survey design which attends to locale and the specificity of issues occurring there. The survey methodology is reviewed in relation to the strengths of the findings in this section.

Cognitive mapping analysis

The cognitive maps from the *1997-2007-2010 Commercial Drive Community Survey* are analyzed. Specifically, the raster function reduces the drawn polygons from the cognitive maps to 10x10 meter squares. Therefore, the density and magnitude of perception can be compared from one year to the other. Then, this perceptual information is compared to VPD calls for service. While there are limitations in contrasting point data such as calls for service, with polygon or surface data, these are overcome by creating a density measure for the police calls for service. These calls are displayed using the kernel density function to show the variation of the ratio for calls for service per square kilometre. These results are compared to three aspects of the theoretical model.

1. Physical and social disorder: Previous research has compared the presence of social and physical disorder to other forms of more serious crime and fear of crime. This analysis takes police calls for service to look for clusters of crimes that occur within heightened perception areas.

2. Meso-environmental features: This visual representation of the three surveys conducted in Grandview-Woodland illustrates the pull that a growing activity node has on the meso-environment.

3. Macro-structural decisions: The theoretical model suggests that macro-structural decisions have a rippling consequence on the rest of the system. The Skytrain mission statement set out in 1999 clearly outlines these macro-decisions. The existence of 1997 perceptual data which pre-dates these decisions helps to demonstrate how the overall influx of people into the system can significantly alter perception of crime.

This section supports further research into perception of crime and how it relates to the meso-structures in the environment and the macro-decisions which influence aggregate human movement patterns.

Forecasting perception

In the last chapter of this dissertation, the cognitive maps from the surveys conducted in Grandview-Woodland, Renfrew Collingwood and Mount Pleasant are used to explore forecasting perception using police calls for service. These two neighbourhoods are complementary to the perceptual analysis conducted in the Grandview-Woodland area because one of these neighbourhoods – Renfrew Collingwood – has a Skytrain station in the study area while the other does not. These patterns can be compared to the theoretical model while accounting for the distribution of calls for service. This forecasting methodology engages all aspects of the theoretical model while proposing areas for future research.

Calls for service are analyzed in relation to the 1997 and 2007 Grandview-Woodland cognitive maps. The top ten calls for each time period are reviewed to assess the differences in call load between these perception hotspots and two other crime hotspots which were not identified by the respondents. In order to

remove the crime impact that the Skytrain station has on a location, the perceptual hotspot at Broadway and Fraser St. in the Mount Pleasant study area is analyzed. The calls for service are reviewed to find those that are disproportionately high within this area. Three call types are identified and then used to forecast perception of crime in the two other study areas.

This chapter has provided an overview of the data under study in this dissertation. This includes the manner in which the data were collected and then the methods utilized to analyze the data. These data are extensive because they are gathered from three different neighbourhoods during a span of 13 years. The sample sizes are large which allows for a detailed examination of the survey comments and the cognitive maps. In particular, valid temporal comparisons can be drawn between the *1997* and *2007 Commercial Drive Community* Survey because the exact same survey instrument was utilized and a very similar sample size drawn. Similarly, community differences in perception can be explored using the Collingwood Renfrew and Mount Pleasant survey results because these two survey instruments employ virtually the same questions on disorder and place these in an identical order. Therefore these are community-specific survey instruments which exemplify community variance on perception and conception of disorder. The introduction of a high-activity node within the meso-environment of the Grandview-Woodland neighbourhood was not forecasted when the *1997 Commercial Drive Community Survey* was conducted. However the retrospective value of these data in advancing knowledge on

perception of crime, specifically patterns of perception within the meso-environment, is definite.

CHAPTER 5: Results – Community Variance and Disorder Cues

This chapter reviews the data collected in the community surveys and in particular the survey comments, and the results from the 30 questions. There are five sections presented in detail. In the first instance, the survey comments from the *1997-2007-2010 Commercial Drive Community Surveys* are analyzed using content analysis with three themes emerging from these comments. Then these comments are reviewed and those dealing specifically with decision making further examined. The next section deals with the relative visibility of disorder explored and compared to other research to show how some forms of disorder are transient and therefore less frequently observed, while other forms are fixed aspects in the environment. The *1997* and *2007 Commercial Drive Community Survey* results are then ranked from the most serious issue to the one that generates the least concern. These results are then explored using the Mann-Whitney U statistical test in SPSS 19 and the issues that drew varied responses exposed. This leads to a temporal assessment of conditions as they vary within a community over time. Then the results from the *2008 Collingwood Renfrew Community Survey* and the *2008 Mount Pleasant Community Survey* are ranked and compared using the Mann-Whitney U test. This exposes differences in perception and introduces an inter-neighbourhood comparison of disorder. In a final part, the results are reviewed and linked to the theoretical matrix.

Analysis of survey comments from *1997-2007-2010 Commercial Drive Community Survey*

The survey comments from the *1997-2007-2010 Commercial Drive Community Surveys* are analyzed in this section using a content analysis approach. The original compilation of the 1997 survey results utilized a method to organize these comments that was replicated in subsequent reports documenting the results. In a first instance, comments on disorder issues were extracted and presented with the quantitative results for that question. The remainder of the comments then fell under the following six categories:

1. Positive comments about the area
2. Negative comments about the area
3. Comments on the police
4. Positive comments on the survey
5. Negative comments on the survey
6. General philosophical or political comments

The content analysis conducted here goes beyond ordering respondent comments into categories which fit into a report. Rather, these comments are examined in relation to the micro-expressions of disorder and how this relates to locations in the physical environment and meso decision making processes. Table 2 presents an overview of the survey comments under study and a breakdown of the demographic distribution of respondents who provided comments.

Table 2: Overview of comments - *1997-2007-2010*
Commercial Drive Community Survey

	1997	2007	2010 street	2010 on-line
# Respondents	720	727	131	135
# Comments	198	77	44	71
% Comments by respondents	27.5%	10.6%	33.6%	52.6%
% Comments by male	38.9%	45.5%	61.3%	40.8%
% Comments by female	54.5%	46.8%	38.7%	59.2%
% Comments gender missing	6.6%	7.7%	0%	0%
% Comments under 19 years	3.5%	4%	5%	0%
% Comments 20 to 29 years	19%	21%	11%	5.5%
% Comments 30 to 39 years	29%	43%	39%	20%
% Comments 40 to 49 years	26%	14%	20%	36.5%
% Comments 50 to 59 years	14%	13%	14%	28%
% Comments 60 + years	3.5%	2.5%	9%	10%
% Comments age missing	5%	2.5%	2%	0%

In a first instance, the comments from the three surveys were scanned and three recurrent themes were established based on frequency. The following themes were created:

1. Nuance of disorder: These are survey comments where the respondent names the disorder problem and then articulates a reason why their opinion would vary on the matter (e.g.: "Unleashed dogs accompanied by owner who cleans up after them and keeps them under control is acceptable, but dogs running free, defecating everywhere, attacking other pets and digging up flower beds is not. " – *1997 Commercial Drive Community Survey* – respondent 683).

2. Cited problem condition: These are survey comments where a specific problem is discussed, brought up or mentioned (e.g.: "Drive by drug dealing and break ins are a problem in my neighbourhood." – *2010 Commercial Drive Community Survey* – respondent 29 – on-line survey).

3. Location: These are specific locations that are mentioned by respondents and accompanied by the problem or condition related to that location (e.g.: "VCC Clark Skytrain. It's the wall where the East Van cross statue is. That is impressive graffiti." – *2010 Commercial Drive Community Survey* – respondent 7 – on-line survey).

These three themes are analyzed separately in relation to the theoretical matrix. The first step in ordering these comments required a review of each and then those that apply to one of the categories ordered accordingly. There are

comments which were not categorized because the content did not concur with these themes. For example, some respondents commented on the actual survey instrument stating its strengths or limitations and these comments were not included in the analysis. Then a table was created to compare the three surveys and lists the frequency distribution of these comments within each theme.

Nuance of disorder

In the comment section, respondents sometimes discussed problems stating that their tolerance would vary depending on the context. In some cases, respondents were very detailed about the context, naming such things as time of day, location and gender. Table 3 lists the issues brought up by respondents who stated that their reaction would vary depending on the context.

Table 3: Nuance of disorder in respondent comments

Nuance of disorder	1997	2007	2010
# comments that cite one or more nuance	62	17	6
% of comments where a nuance is stated	34.4%	22%	5.2%
Bicycling on sidewalk	0	0	1
Bongo drummers	4	0	1
Camping	2	1	0
Condoms	2	2	0
Dogs	14	0	1
Drug paraphernalia shops	0	1	0
Festivals	1	3	0
Graffiti	7	8	2
Litter	2	1	0
Marijuana smoking in public	12	2	0
Murals	3	2	0
Musicians	7	1	1
Needle exchange	2	1	0
Needles	2	2	0
Outdoor café	2	2	0
Panhandlers	4	0	3
Posters	2	0	0
Public drinking	17	4	0
Sex trade workers	19	3	0
Skateboarding	2	0	0
Squeegees	5	1	0
Traffic	1	1	0
Vendors	7	5	3

There were far more comments made in 1997 where nuance was applied to the problem. In 1997, 34.4% of the comments provided contextual nuance to the disorder issues, this falls to 22% in 2007 and 5.2% in 2010. In 1997, four issues in particular stand out which are: dogs, marijuana smoking in public, public drinking and sex trade workers.

A further analysis of these four issues also reveals some consistency in how respondents tender their comments on these problems. The major theme that accompanies unleashed dogs is owner responsibility. With the majority of respondents stating that unleashed dogs are acceptable providing their owner controls them. The theme that accompanies public smoking of marijuana is discretion especially in relation to children being present. Conversely with public

drinking, it is not so much the act that is tempered, but rather the state with most respondents claiming that public drinking is acceptable, but not drunkenness. Finally, sex trade workers generated the most comments. Respondents placed this issue within a legal and health care framework, thus providing legalization as a means to remove the problem from the streets and to improve the health of those involved in this practice. In particular, this disorder problem exposed the community's sense of collective care toward these individuals with many respondents stating that sex trade work within industrial areas presented significant danger to the workers themselves. Furthermore, many respondents suggested the problem rests with Johns rather than the sex trade workers themselves, and that enforcement strategies should be directed toward these individuals.

Cited problem condition

While many respondents provided some nuance to the problems listed in the survey, several also clearly stated in their comment section which problems were of particular concern to them. In some cases, these problems were contained in the survey questions. However, most of the issues were not listed on the survey. Some examples are jaywalking, Johns, cigarette smoking or litter, and business sandwich boards. In 1997, 32.8% of the comment included one or more problems, this is reduced to 28.6% in 2007, and then 17.4% in 2010. Table 4 lists the cited problem and provides a count for each one.

Table 4: Cited disorder problem in respondent comments

Cited problem condition	1997	2007	2010
# comments that cite one or more problems	65	22	20
% of comments where a problem is cited	32.8%	28.6%	17.4%
Aggressive panhandler	3	2	2
Bongo drummers	2	0	0
Break ins or BNE	4	1	0
Business sandwich boards	1	0	0
Businesses selling alcohol	0	1	0
Camping	1	0	0
Cigarette smoking or cigarettes as litter	0	1	1
Condoms	2	0	0
Dirty area	4	1	0
Dogs	5	1	2
Drug paraphernalia shops	0	1	0
Drug dealers or dealing	4	4	4
Drug litter	0	1	0
Drug users or addicts or crack addicts	5	8	3
Festivals	0	0	1
Fencing property	1	0	0
Fights	1	1	0
Gangs	0	1	0
Graffiti	2	1	1
Homeless people	0	2	0
Jaywalking	1	0	0
Johns	5	0	0
Litter	11	1	1
Loitering	0	0	4
Loud music	1	0	1
Mental health	0	3	0
Musicians	1	0	0
Needles	3	2	1
Noise	2	0	0
Panhandlers	6	0	2
Pawn shops	2	0	0
Pimps	1	0	0
Pot smoking	0	1	2
Public drunkenness	4	3	1
Public urination or defecation	0	1	0
Sex trade workers	10	2	1
Shoplifter	4	0	0
Squeegees	4	0	0
Traffic	9	2	3
Vendors	1	0	1

This table displays a very wide variety of problems many of which did not appear on the survey. Three in particular peak in 1997: litter, sex trade workers and traffic. There are also new disorder problems that emerge in 2007 and 2010.

While the number of comments in 2007 that specifically deal with mental health is very small it could be an indication of a growing disorder problem that was not as prominent in 1997. Similarly, in 2010 loitering is named by four respondents, but does not appear in any of the comments from 1997 or 2007. As well, in 1997 some comments refer to drug users, but never crack addicts, which begin to appear in the 2007 comments. Finally, in 1997 Johns are cited as the problem in relation to sex trade work and this contrast does not show up in subsequent surveys.

Location

Survey respondents list specific problematic locations. In most cases, actual problems are cited in relation to the location. Interestingly this table shows a different trend than in the two previous tables where the 1997 results generated the highest responses. In table 5, it is in 2007 when the most respondents cite a problem location. There is an apparent shift from 1997 when Commercial Dr. is the most often listed location to 2010 when it is the Skytrain. This is especially more obvious when two other locations nearby are factored into the general area which surrounds the Skytrain. It should be noted that overall, none of these locations near the Skytrain station are mentioned in 1997, whereas in 2007 ten respondents refer to this area and it grows to 13 in 2010. In table 5, the Skytrain and the two adjacent areas are highlighted to illustrate this noticeable shift in perception.

Table 5: Problem locations

Location	1997	2007	2010
# comments that cite one or more location	23	22	31
% of comments where a location is named	11.6%	28.6%	27%
6th and Semlin	0	0	1
11th Ave and Woodland	1	0	0
Alley between 3rd and 4th	0	1	0
Alley between 6th and 7th	0	1	0
Britannia	0	1	0
Britannia Park	0	0	1
Broadway and Commercial	0	2	3
Clarke and 1st Ave	1	0	0
Clarke Dr.	1	0	2
Commercial Drive	9	3	2
Commercial and Grandview	0	3	2
Commercial and William	0	3	0
Grandview Park	6	7	5
Grant and Commercial	0	0	2
Hastings St.	0	1	1
MacDonald School	1	0	0
McSpadden	0	0	1
Mosaic Park	0	1	0
Named business	8	2	7
North of Hastings St.	1	0	1
Skytrain	0	5	8
Venables	1	0	0
VCC Clarke Skytrain station	0	0	1
Victoria Drive	2	0	1
Victoria Park	0	0	3

There are a number of trends occurring in this table. First, the Skytrain area becomes a greater focal point. Furthermore, there are places listed as problems in 1997, but not in the two other time periods. Conversely, there are places named in 2010 which do not come up in the previous surveys. For example, in 2010 three people cite Victoria Park as a problem location for public drinking and loitering, whereas in the two previous surveys this does not come up. Similarly, MacDonald school at the north end of the study area on Hastings St. is mentioned in 1997, but not in subsequent years. The most detailed comments pertain to Skytrain with some respondents discussing land use decisions,

landscaping problems, street furniture placement and the quality of the tiling in the station. For example respondent #31 from the 2010 survey states:

> I really don't like all the street kids that hang out at Broadway/Commercial drive station. They are completely disrespectful to people and property. I also think that there should really be daily sidewalk cleaning around the skytrain stations and more regular garbage pickup, as the bins are usually overflowing. The tile flooring at the skytrain station is also very slippery on rainy days, it should be replaced.

Detailed analysis of survey comments and decision making

This section goes beyond the content analysis conducted on the survey comments to examine the few comments where decision making is apparent. Since this comment section was not designed to solicit such information there are only very few comments which include this information. However, these are reviewed because this information supports the theoretical matrix and how micro perception feeds into meso activity. As such, these comments are analyzed with future research in mind as they provide a better understanding of how decision making pertains to environmental cues and activity nodes such as the Skytrain station.

The 1997 survey results contain one comment which directly related the cumulative effect of disorder and the consequent reaction of avoidance. Respondent #453 in the *1997 Commercial Drive Community Survey* states:

> I find panhandling in this area to be very irritating and in some cases a source of great concern. It is annoying to be asked for money 3-4 times per block... but even worse is that several people are verbally abusive and some people have been physically intimidating – blocking my path or following me (until I enter a store). Also, there are times I will avoid certain stores – stores I would normally frequent – because the panhandlers are in front of the store. I get tired of being hassled.

In this comment, the respondent refers to a number of repeated behaviours. For instance, the respondent is asked for money three or four times per block. However, this is coupled with verbal abuse and path blocking. The respondent

appears to have become familiar with particular panhandlers and when they see individuals in front of certain places they will avoid the business. In future research, the insight gained from this comment could help in structuring qualitative questions which would solicit the decision making process that occurs when activity is interfaced with disorder in the community and to elicit the successive processes that occur when respondents are presented with sequenced disorder cues in the environment.

A review of the 2007 survey results revealed only two comments which involved a potential decision making process and these were far more significant than in 1997 as both indicated a potential decision to move out of the area. Respondents #270 stated:

> This area has degenerated dramatically over the last 2 years. We are leaving the area by next spring because of it. And pulled our son out of Britannia Elementary because of it too. Grandview Park is "run" by gangs. (we live right next to it) and this situation is completely out of hand!! The park is NOT SAFE AT ALL! We fear for our safety on a daily basis. HELP PLEASE!

While respondents #249 stated:

> Open use of crack cocaine has increased dramatically in this area over the past few months, especially during the past few weeks dealers stand at the corner of Grandview and Commercial. Comments: I'm beginning to look for a new place to live, because I feel unsafe when I leave for work in the morning. A ground level apartment is easy to break into. There are desperate, destitute people roaming the street on my block now. It wasn't like this when I moved here.

It is not possible to extrapolate from these two comments a confirmed sense of whether things are in fact getting worse. However, for these two respondents it appears it has. Future research could concentrate on discovering thresholds of tolerance which engender a sense of things getting worse, or whether the situation has in fact become worse. Upon first coming to an area, lack of familiarity may lower perception of crime

and with experience and knowledge of an area it is possible that perception increases thus bringing respondents such as these ones beyond their limits of tolerance.

A review of the 2010 survey results revealed three comments. It is interesting to note that these three comments were about the Skytrain area. In this first case, respondent #30 makes a clear statement about feeling of safety in the area around the Skytrain and extends this concern to the wellbeing of his son:

> I HATE the skytrain station at Commercial, I do not feel comfortable, nor do I like my son to walk around there. Clean up that area and I'm sure that it will make a difference. Good news about the central Mental Health/Drug Addiction centre now open there... what a great way to attract families!

In this next example, the decision to choose alternate routing because of disorder cues is illustrated in the comment by respondent #16:

> I live on Woodland and 8th and at night or earlier in the winter I do not feel safe on any of the ways I can get home ei: 8th Ave groups in the park Grandview Hwy - north side very dark and scary - 6th av - dark and group in school at night.

The dilemma in path decision here is clear. This respondent has to travel a distance of less than 250 metres from the Skytrain at Broadway and Commercial Dr. to his or her residence at Woodland Dr. and 8th Av.. This pedestrian navigation process is further complicated by the geographical layout of the area combined with design features associated to this layout. The respondent clearly states that he or she does not feel safe because of groups of people in a park versus groups of people near a dark sidewalk and school.

In this last example, respondent #107 refers to a cluster of disorder cues and then clearly states his decision to avoid the area. He states:

> The new and nicely landscaped area near the bus driver station near the Broadway and Commercial Skytrain station has become a dump because of large groups of people loitering. People there are noisy, drinking, smoking pot, and spitting excessively (since they turn around to spit, more than once we have narrowly escaped being accidentally spit on). We now avoid walking by this area when occupied, even though this is the best way to walk home.

Future research could delve further into the specificity of disorder in problematic locations. These last three comments show the value of such an approach as the respondents are able to recognize the disorder problem and at the same time clearly state their decision making process.

Observed versus less observed disorder comparisons

While these surveys were conducted at different times and in various neighbourhoods, it appears disorder problems are similarly ranked with definite patterns separating the more serious forms of disorder from the positive aspects of street life. In particular, problems such as discarded needles, condoms on the ground, aggressive panhandlers, litter, drug dealing, and injecting drugs or smoking crack cocaine consistently appear in the top ranked disorder problems. Conversely, outside cafe seating, musicians soliciting donations, festivals and murals, consistently emerge as appreciated aspects of social life.

These surveys also asked respondents whether they had seen the behaviour or not. For most questions, over 90% of respondents stated they had seen the activity. However, certain behaviours were less frequently observed and in some cases, over 50% of the respondents had not seen the activity. These activities could be classified as more temporally specific, location centered and as well, those engaging in these activities more transient in their behaviour. For instance,

in the *2007 Commercial Drive Community Survey*, only 50% of respondents observed people using Grandview Park as a camping site. Another example in this survey shows that 56% of respondents had not seen the needle exchange vehicle making scheduled stops in the neighbourhood. Whereas fixed aspects in the community and repetitive street behaviour were observed far more often. For instance, in the *2007 Commercial Drive Community Survey*, 98% of respondents had observed outside café seating as a positive street life attribute. This could also be said about widespread conditions in the community such as litter, since 97% of the respondents in the *2007 Commercial Drive Community Survey* had seen this in the community. These differences in observation remain fairly consistent across the neighbourhoods.

Table 6 is used to divide consistently observed conditions and problems from those which are less observed. The results from the five community surveys are included in this table. The break off point was set at 70%. Activities which were observed by more than 70% of respondents placed in the higher observation category and those being observed by less that 70% of the respondents placed in the lower observation category. The survey questions are divided into four categories. The first is social disorder, the second physical disorder, the third classifies other identified conditions and the fourth category contains positive attributes in the community. Discarded needles on the ground fall into the two categories because in the *2007 Commercial Drive Community Survey* 70% of respondents observed needles on the ground, whereas in all the other surveys, this figure is lower.

Table 6: Observed and less observed classified

	Higher than 70% observed	Lower than 70% observed
Social Disorder	• Smoking pot in public • Passive panhandlers • Drinking alcohol in public • Aggressive panhandlers • Street vendors selling without a city permit • Sex trade workers working in industrial areas • Squeegee people cleaning car windows • Skateboarding on city streets • Skateboarding on sidewalks • Riding bicycles on sidewalks • Unleashed dogs in parks • Unleashed dogs on residential streets • Unleashed dogs in public places • People going through dumpsters • People loitering around Skytrain stations • People loitering in public places	• Sex trade workers working on Commercial Drive • Sex trade workers in residential areas or near schools • Sex trade workers working in commercial areas • People injecting drugs or smoking crack cocaine • People using Grandview Park as a camping site • Drug dealing in public areas • Illegal garbage dumping
Physical Disorder	• Condoms on the ground • Needles on the ground • Litter • Litter on Commercial Drive • Litter in lanes • Run-down and neglected houses, stores or vacant lots • Run down and boarded up commercial stores • Run down and messy residential premises • Graffiti on public property • Graffiti on private property	• Grow ops • Needles on the ground
Other conditions	• Current levels of vehicle traffic • Film locations in the neighbourhood • Merchandise from stores on the sidewalk • Bongo drummers playing in Grandview Park • Yard sales	• Giving methadone in clinics and pharmacies • Needle exchange making scheduled stops in the neighbourhood
Positive attributes	• Promotional posters • Outside café seating • Organized public art (murals) • Organized festivals • Car free festivals • Street musicians soliciting donations	• Liquor stores open on Sundays • Police walking the beat on Commercial Drive • Community Police Centre volunteers picking up litter • Health care workers picking up discarded needles in the area

Building on the Broken Window Theory, Doran and Lees (2005) study the role of visible forms of disorder and avoidant behaviour. In their study, they create a collective avoidant map and then contrast this map to a physical disorder map based on the Sampson and Raudenbush (1999) study. Doran and Lees (2005) then create a visibility scale for each of the disorder issues. For instance, “evidence of homeless people” is scaled as very visible whereas “cigarettes or cigars in street gutter” as not very visible (Doran and Lees, 2005). The disorder in the study area is mapped using this visibility scale and then compared to the collective avoidant map (Doran and Lees, 2005). These the two maps do not overlap, rather avoidant, fearful behaviour appears to have a stronger relationship to generalized human patterns. The observed and less observed disorder issues identified in the community surveys build on this research by classifying problems into transient and fixed occurrences. Further research in this area could supplement the visibility scale with this dynamic aspect of disorder. And perhaps, identifying highly visible disorder problems that intersect these movement patterns may improve this area of research.

Community variance: *Commercial Drive Community Survey*

The community survey conducted in the Grandview-Woodland neighbourhood was originally designed to gauge level of tolerance on recurrent conditions in the neighbourhood. The replication of this survey, in its entirety ten years later, creates the opportunity to discover how these opinions vary temporally. Hunter (1974, 1978) suggests that neighbourhoods form their own subcultures and despite the flux of residents coming and leaving the area, the

nature and character of communities remain fairly stable despite these changes in population and other relevant issues such as disorder. The results from the two surveys conducted in Grandview-Woodland neighbourhood are ranked using the mean for the answer. In comparing the 1997 and 2007 results, the top five concerns are in the same order and the Mann-Whitney U confirms there is not a statistically significant difference between these top five concerns.

The three most significant differences between these two surveys are issues that have changed over the course of ten years: skateboarding on city streets, squeegeeing and liquor stores open on Sundays. In 1997, skateboarding was a prohibited activity and bylaws were in place in 1997 under which skateboarders could be ticketed. This bylaw was eliminated and there is now much more tolerance toward skateboarding with it becoming an accepted aspect of Vancouver's culture and lifestyle. This change in law and perception is reflected in the Mann-Whitney U results as there is a statistically significant difference on this question with respondents listing it as a more serious problem in 1997 than in 2007. Similarly, the disapproval for squeegeeing grows from 1997 to 2007 as the police regularly enforced this activity. Inversely, respondents become more tolerant of liquor stores being open on Sunday as more government and off sales stores have opened in Vancouver.

There are four other conditions which vary over time: bongo drummers, graffiti on public property, graffiti on private property and sex trade workers on Commercial Drive. There is less statistical significance on these variables. While there appears to be increasing tolerance from 1997 to 2007 toward sex trade

workers on Commercial Drive and bongo drummers in Grandview Park, the contrary is true for graffiti on public and private property. The remaining 23 survey responses do not vary in a statistically significant manner from 1997 to 2007 thus suggesting that temporal stability toward disorder exists within this neighbourhood. Since 1997, several changes occurred in Grandview Park where the majority of bongo drummers are located. In particular, enforcement of park closure has increased, thus the bongo drummers have become more controlled and therefore less troublesome to the direct neighbours of this park. Since 1997, there has been a shift in the perception of sex trade workers and in the Grandview-Woodland area, respondents expressed concern for the safety and well being of these individuals. The survey results in 2007 show an increase in tolerance toward the visible display of this activity on Commercial Dr.. However, when it comes to graffiti both on public and private property, respondents in 2007 were less tolerant of this behaviour than in 1997. Since 1997, civic and policing initiatives have aggressively targeted this problem and likely community members have become attuned to the negative impact of graffiti on the urban landscape.

In table 7, the disorder problems are listed in ascending order from most unacceptable to most acceptable. The mean value is used to create this order. The median value is also provided because the Man-Whitney U test is based on the median. Table 8 lists the questions as they appear on the survey. The U value and the p value are provided for each question in order to compare the results from the 1997 survey to the one conducted in 2007.

Table 7: *1997 and 2007 Commercial Drive Community Surveys*: Ascending means and median value

	1997	Median	Mean	2007	Median	Mean
1	Needles on the ground	1	1.16	Needles on the ground	1	1.17
2	Condoms on the ground	1	1.38	Condoms on the ground	1	1.37
3	Sex trade workers near schools and in residential areas	1	1.39	Sex trade workers near schools and in residential areas	1	1.43
4	Litter	1	1.45	Litter	1	1.44
5	Aggressive panhandlers	1	1.65	Aggressive panhandlers	1	1.59
6	Sex trade workers on Commercial Drive	1	1.75	Sex trade workers on Commercial Drive	1	1.84
7	Graffiti on private property	2	2.05	Graffiti on private property	1	1.91
8	Run-down and boarded up commercial stores	2	2.23	Graffiti on public property	2	2.07
9	People using Grandview Park as a camping site	2	2.26	Run-down and boarded up commercial stores	2	2.15
10	Graffiti on public property	2	2.27	Run-down and messy residential premises	2	2.19
11	Run-down and messy residential premises	2	2.29	People using Grandview Park as a camping site	2	2.19
12	Sex trade workers in industrial areas	2	2.41	Sex trade workers in industrial areas	2	2.35
13	Drinking alcohol in public	2	2.46	Squeegee people cleaning car windows	2	2.37
14	Current levels of vehicle traffic	3	2.52	Drinking alcohol in public	2	2.55
15	Unleashed dogs on residential streets	2	2.56	Unleashed dogs on residential streets	3	2.59
16	Smoking pot in public	3	2.77	Current levels of vehicle traffic	3	2.61
17	Squeegee people cleaning car windows	3	2.80	Unleashed dogs in parks	3	2.76
18	Unleashed dogs in parks	3	2.86	Smoking pot in public	3	2.77
19	Passive panhandlers	3	2.91	Passive panhandlers	3	2.98
20	Skateboarding on city streets	3	2.98	Street vendors selling without a city permit	3	3.28
21	Street vendors selling without a city permit	3	3.34	Skateboarding on city streets	3	3.31
22	Liquor stores open on Sunday	4	3.61	Needle exchange making scheduled stops in the neighbourhood	4	3.54
23	Bongo drummers playing in Grandview Park	4	3.61	Bongo drummers playing in Grandview Park	4	3.74
24	Needle exchange making scheduled stops in the neighbourhood	4	3.61	Promotional posters	4	3.77
25	Film locations in the neighbourhood	4	3.82	Film locations in the neighbourhood	4	3.79
26	Promotional posters	4	3.83	Musicians soliciting donations	4	3.83
27	Musicians soliciting donations	4	3.87	Liquor stores open on Sunday	5	3.83
28	Outside café seating	5	4.59	Outside café seating	5	4.50
29	Organized festivals	5	4.62	Organized public art (like murals)	5	4.55
30	Organized public art (like murals)	5	4.65	Organized festivals	5	4.57

Table 8: 1997 and 2007 Commercial Drive Community Surveys: Mann-Whitney U test of significance

	Commercial Drive Community Survey Questions	U	p
1	Street vendors selling without a city permit	249994	0.420
2	Graffiti on private property	238562	0.039*
3	Graffiti on public property	234655	0.024*
4	Sex trade workers on Commercial Drive	233431	0.030*
5	Sex trade workers near schools and in residential areas	240939	0.087
6	Sex trade workers in industrial areas	237035	0.391
7	Musicians soliciting donations	250453	0.379
8	Unleashed dogs in parks	246433	0.210
9	Unleashed dogs on residential streets	251391	0.678
10	Bongo drummers playing in Grandview Park	238354	0.031*
11	Passive panhandlers	241669	0.309
12	Aggressive panhandlers	237411	0.103
13	Skateboarding on city streets	219333	0.000**
14	Promotional posters	249093	0.291
15	Drinking alcohol in public	246452	0.194
16	Smoking pot in public	254937	0.967
17	Current levels of vehicle traffic	233875	0.126
18	Outside café seating	244160	0.380
19	Organized public art (like murals)	247433	0.186
20	Litter	249606	0.226
21	Run-down and boarded up commercial stores	237285	0.210
22	Run-down and messy residential premises	238778	0.066
23	Organized festivals	255560	0.899
24	People using Grandview Park as a camping site	244964	0.412
25	Squeegee people cleaning car windows	212979	0.000**
26	Film locations in the neighbourhood	249879	0.564
27	Liquor stores open on Sunday	229942	0.001**
28	Needle exchange making scheduled stops in the neighbourhood	241298	0.284
29	Condoms on the ground	253512	0.634
30	Needles on the ground	254746	0.645

* $p < 0.05$ ** $p < 0.001$

Community variance: Mount Pleasant - Renfrew Collingwood

While there are minor temporal variations in the Grandview-Woodland neighbourhood example, the opposite is true when the Mount Pleasant and Renfrew Collingwood communities are compared. In this example, there are 23 responses for which there is a statistically significant difference between the two communities. In these 23 responses, the Mount Pleasant subjects provided a more tolerant response to the condition than the Renfrew Collingwood respondents. There are seven questions for which no statistically significant difference between the two communities: graffiti on private property, aggressive panhandlers, skateboarding on sidewalks, litter, run-down and neglected houses, stores or vacant lots, needles on the ground, and condoms on the ground. It should be noted that three of these conditions (aggressive panhandlers, needles on the ground, and condoms on the ground) are in the top five problems in these two surveys and in the *1997-2007-2010 Commercial Drive Community Surveys*.

Future research on disorder in Vancouver should concentrate on these seven disorder variables as they may be the *broken windows* of Vancouver. These variables also appear in the *1997-2007 Commercial Drive Community Survey*, a composite measure could be created to see if results remain consistent through all three communities. Furthermore a second composite measure could be produced using questions that appear in the three communities so that variations in tolerance toward disorder can be explored. While certain disorder issues may generate consistent responses, other ones may draw diverse reactions. These three communities have distinctive character and these results indicate that the

Mount Pleasant community is more tolerant towards disorder. There could be several reasons for this difference. However, the community profiles discussed in chapter 4 shows that 32.4% of Renfrew Collingwood residents commute via transit to work, whereas 54% of Mount Pleasant residents do so. One could surmise that transit users are more tolerant of street disorder by virtue of their daily interactions with this pedestrian space.

In table 9, the disorder problems are listed in ascending order from most unacceptable to most acceptable. The mean value is used to create this order. The median value is also provided because the Man-Whitney U test is based on the median. Table 10 lists the questions as they appear on the survey. The U value and the p value are provided for each question.

Table 9: Collingwood Renfrew and Mount Pleasant surveys: Ascending means and median value

	Collingwood Renfrew	Mean	Median	Mount Pleasant	Mean	Median
1	Needles on the ground	1.17	1	Needles on the ground	1.19	1
2	Injecting drugs or smoking crack cocaine in public areas	1.18	1	Injecting drugs or smoking crack cocaine in public areas	1.31	1
3	Drug dealing in public areas	1.20	1	Drug dealing in public areas	1.35	1
4	Sex trade workers near schools and in residential areas	1.29	1	Condoms on the ground	1.37	1
5	Condoms on the ground	1.35	1	Sex trade workers near schools and in residential areas	1.43	1
6	Aggressive panhandlers	1.37	1	Aggressive panhandlers	1.46	1
7	Grow ops	1.46	1	Litter	1.50	1
8	Graffiti on public property	1.51	1	Grow ops	1.71	1
9	Graffiti on private property	1.55	1	Graffiti on public property	1.75	1
10	Litter	1.51	1	Graffiti on private property	1.70	1
11	Sex trade workers in commercial areas	1.73	1	Sex trade workers in commercial areas	2.00	1
12	Smoking pot in public	1.87	1	Run-down and neglected houses, stores or vacant lots	2.04	2
13	People loitering around Skytrain	1.92	2	Smoking pot in public	2.35	2
14	Run-down and neglected houses, stores or vacant lots	1.92	2	Skateboarding on the sidewalk	2.44	2
15	Drinking alcohol in public	2.07	2	Drinking alcohol in public	2.49	2
16	Unleashed dogs in parks	2.28	2	People riding bicycles on the sidewalk	2.50	2
17	Passive panhandlers	2.29	2	Unleashed dogs in parks	2.51	3
18	Skateboarding on sidewalks	2.35	2	Passive panhandlers	2.58	3
19	People going through dumpsters	2.47	3	Loitering in public places	2.71	3
20	Bicycles on the sidewalk	2.67	3	People going through dumpsters	2.79	3
21	Needle exchange making scheduled stops	2.82	3	Needle exchange making scheduled stops	3.32	4
22	Giving methadone in clinics and pharmacies	2.82	3	Giving methadone in clinics and pharmacies	3.35	3
23	Merchandise from stores on the sidewalks	3.16	3	Promotional posters	3.53	4
24	Promotional posters	3.22	3	Merchandise from stores on the sidewalks	3.60	4
25	Liquor stores open on Sunday	3.56	4	Liquor stores open on Sunday	3.87	4
26	Musicians	3.56	4	Musicians	3.95	4
27	Yard sales	4.00	4	Outside café seating	4.22	5
28	Organized public art (like murals)	4.00	4	Yard sales	4.23	5
29	Outside café seating	4.22	5	Organized public art (like murals)	4.25	5
30	Organized festivals	4.39	5	Organized festivals	4.51	5

Table 10: Collingwood Renfrew and Mount Pleasant surveys: Mann-Whitney U test of significance

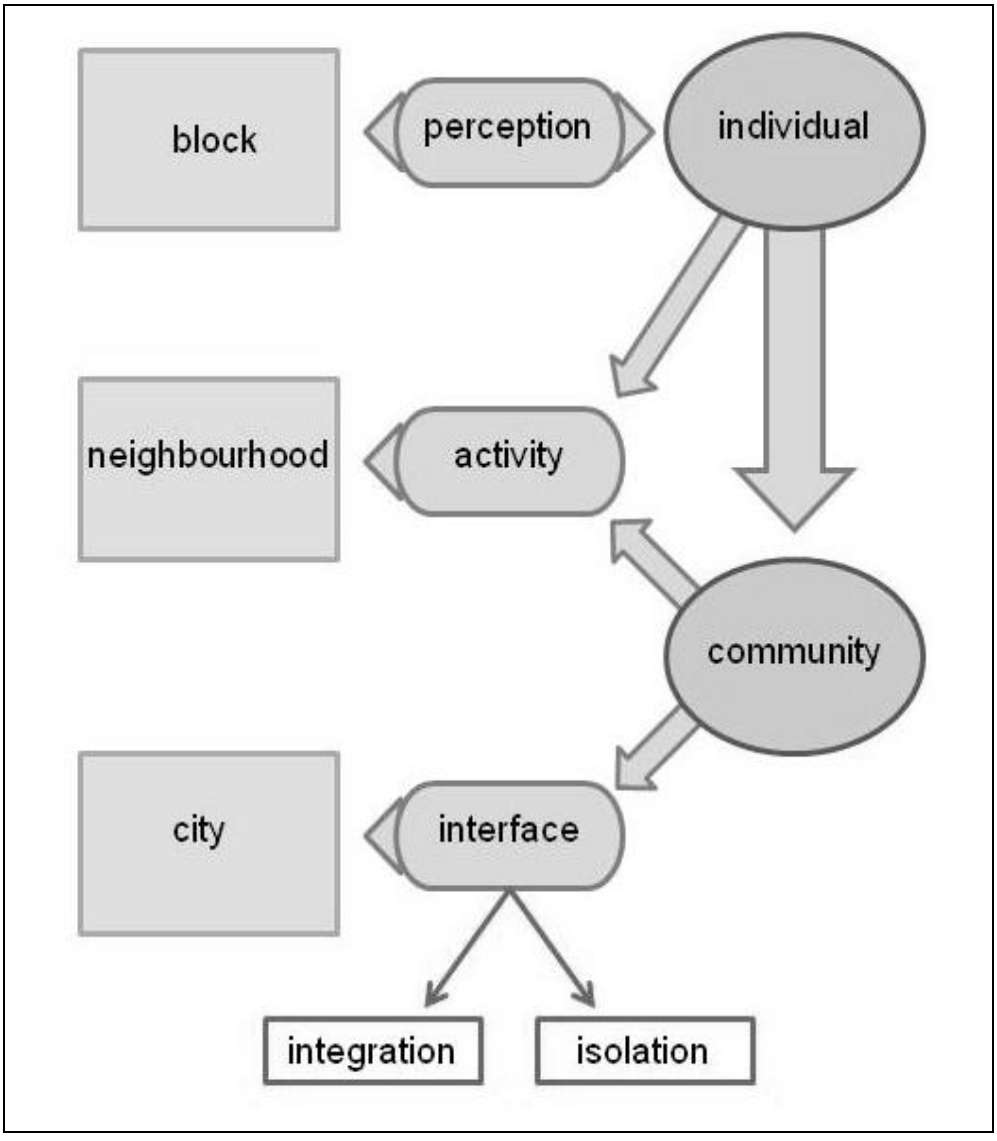
	Collingwood Renfrew Survey and Mount Pleasant Questions	U	P
1	Yard sales	59510	0.000***
2	**Graffiti on private property**	**66465**	**0.122**
3	Graffiti on public property	62644	0.002**
4	Drug dealing in public areas	65514	0.002**
5	Sex trade workers near schools and in residential areas	65779	0.021*
6	Sex trade workers in commercial areas	60829	0.001***
7	Musicians soliciting donations	55363	0.000***
8	Unleashed dogs in parks	63518	0.015*
9	People riding bicycles on the sidewalk	63935`	0.034*
10	Organized public art	58934	0.000**
11	Passive panhandlers	58222	0.001***
12	**Aggressive panhandlers**	**64077**	**0.184**
13	**Skateboarding on sidewalks**	**67376**	**0.400**
14	Grow ops	60322	0.008*
15	Posters in public areas	57766	0.000***
16	Drinking alcohol in public	56874	0.000***
17	Smoking pot in public	54713	0.000***
18	Outside café seating	62436	0.009***
19	Injecting drugs or smoking crack cocaine in public areas	63717	0.001***
20	Loitering in public places / around Skytrain stations	43718	0.000***
21	**Litter**	**69268**	**0.858**
22	**Run-down and neglected houses, stores or vacant lots**	**62899**	**0.113**
23	Organized public festivals	63700	0.030*
24	People going through dumpsters	56798	0.000***
25	Methadone in clinics and pharmacies	50814	0.000***
26	Liquor stores open on Sunday	58987	0.000***
27	Merchandise on sidewalks	54680	0.000***
28	Needle exchange making scheduled stops in the neighbourhood	52868	0.000***
29	**Condoms on the ground**	**67331**	**0.635**
30	**Needles on the ground**	**73996**	**0.483**

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Review of findings and future research

The theoretical model presented in Chapter 3 shows how the micro dynamics transfer up to the meso behaviour of the community and then this translates into community integration or isolation. Figure 6 presents the basic elements of this model to clearly outline the different levels in the model and how these feed into community integration or isolation.

Figure 6: Micro - meso - macro interactions



The results explored in this chapter reveal that some behaviours are assessed similarly by different communities, whereas other issues receive significantly differing levels of acceptance and the limits of tolerance vary from one community to the next. While not the purpose of this dissertation, it is likely that disorder depends on the social and physical context and that variations can easily occur from one place to the other thus explaining these differences. Therefore there are certain benefits to retaining the same survey questions in the identical order as was the case in Mount Pleasant and Collingwood Renfrew surveys because this allowed a direct comparison of two distinct neighbourhoods. In future research such an approach could be applied to neighbourhoods across a city, including areas considered highly disordered, to further verify this continuum of tolerance and how it relates to the potential isolation of disordered neighbourhoods.

Neighbourhoods are self-contained entities both physically and socially (Talen and Shah, 2007). The ability of a community to interface with the rest of the city may in fact be dependent upon the level of tolerance toward certain forms of disorder in that particular community. For example, when the threshold of tolerated behaviours in a particular neighbourhood is significantly above what is the city's average then, it may become isolated from the rest of the city. This occurs because the 'outsiders' from this neighbourhood would not tolerate the conditions occurring there and those who inhabit this place may not be accepted elsewhere because of their behaviours. This process is most likely incremental

as tolerance to disorder relates back to the micro and individual behaviours present in a particular place.

Overtime, those who are intolerant of certain behaviours or conditions will move away from these places while those who are tolerant, may be attracted to them (Dabbagian, Jackson, Spicer and Wuschke, 2010). The micro shifts of people aggregates into neighbourhoods which contain people who have established levels of tolerance to match the disorder present in these communities. This is a constantly evolving community process which occurs at the micro level because people are confronted by varying levels of disorder within their daily routines. When individual levels of tolerance become compromised, consequent decisions are made which may include moving out of the area. These decisions sum up to the meso environment as disorder problems breach tolerated community standards and communities shift in their resident make-up. Overtime, these changes can create such a shift in a community that it becomes isolated.

There exist however a temporal stability in a neighbourhood such as revealed in the analysis of the *1997* and *2007 Commercial Drive Community Survey* where changes in perception were less stark than those found between the Mount Pleasant and Renfrew Collingwood neighbourhood. At the extreme expression of this model, tolerance of certain forms of disorder, which would be unacceptable anywhere else, creates isolation because to the average ‘outsider’, these places would contain too many intolerable behaviours and conditions. Therefore, the average person would only go to these places if it were

unavoidable (e.g.: they may work there or need to commute through this neighbourhood).

These surveys show that respondents in three different communities are aware of both physical and social disorder, and react to this disorder. Additionally, there are a number of conditions in these communities which are viewed as completely unacceptable with similar ones ranking higher. The disorder problems included in these surveys resemble the issues under research in other studies on disorder and sometimes, the problems presented in these five community surveys are much more detailed. For instance, the questions about unleashed dogs differentiate between this activity being carried out in a park, street or in a public place. Furthermore, these surveys are designed with local concerns in mind, thus creating even subtler differences in the way the questions are worded and opens the possibility of exploring variance in community tolerance. Individual perception of disorder is clarified in these surveys as respondents appear more attuned to fixed and repetitive behaviours than transient ones. The street-intercept methodology could be utilized in a much more targeted manner in future research. As certain locations surface as focal points of perception, this type of survey could be modified to gather small samples of respondents who could provide very detailed information on the environment, the cues that are present in these locations, and how these affect fear of crime and the movement of people in these spaces.

CHAPTER 6: Fear of Crime – Cognitive Mapping

In this chapter, the cognitive maps from the *1997-2007-2010 Commercial Drive Community Surveys* are explored in detail. The theoretical matrix creates an interface between physical and social spaces thus bringing in various aspects of the physical meso environment. These elements, such as high activity nodes, pathways and edges, are shown to be associated with aggregate crime patterns (Brantingham and Brantingham 1993b, 1995). Therefore, prior to examining the cognitive maps, police reported calls for service are mapped to illustrate the general crime patterns in 1997 and 2007. Within this study area, these patterns changed during this time period. In particular, there is increased density of police calls for service where the Skytrain station is located. The intensification of this activity node is also reflected in the cognitive maps. However, the change in perception is starker than what occurs in the crime pattern. Specific attention is then brought to the calls for service that peak in the heightened perception areas and how this distribution differs within areas where calls for service are denser and perception is not as concentrated. In a final section, the results are reviewed and linked to the theoretical matrix which supports these findings.

Police calls for service Grandview-Woodland 1997 and 2007

The VPD calls for service are first displayed using the kernel density function so that the pattern of these calls can be compared to the perception hotspots generated from the *1997*and *2007Commercial Drive Community Surveys* cognitive maps. The search radius for each call for service is set at 250 meters,

and the cell size set at 10 meters. The search radius was selected to emulate a visual space generated by highly visible police incidents. The purpose of this research is to compare police calls for service to perception of crime, and through this comparison locate those calls which trigger perception. The assumption is that certain police incidents generate a higher visual impression that can lag through space and effect perception of crime (Sampson and Raudenbush, 1999 and Doran and Lees, 2005). This distance in the search radius extends the intensity of an incident to a few blocks. While certain incidents go unnoticed, other ones create a significant visual impact and can be seen by people for several blocks. For example in Vancouver, the arrest of an individual breaching their conditions not to be found in an area results in them being placed in handcuffs, usually with a marked police car close by, a couple of members in uniform and a larger police vehicle used to transport the suspect to jail. Such an activity would catch the attention of people even if a few blocks away.

This technique generates a visual pattern which is similar to the technique used to display the perception of crime. It is important to note that the crime data are in point form, thus discreet events, and the perception is in polygon form, thus a diffused form. The techniques used to display these two datasets are different and setting the same raster dimension allows for some comparative analysis. Therefore the police calls for service maps can be visually compared to the cognitive ones to expose the similarities or differences in pattern distribution. The police calls for service are displayed using the rate of crimes per square kilometre thus the legend demarcates crime density. For instance, the bright red

area contains 28,000 to 32,000 calls for service per square kilometre and the lowest area in green contains 0 to 4,000. In order to directly compare the 1997 and 2007 map, the same legend is used for both maps. Clearly the density of crime has significantly increased from 1997 to 2007.

In 1997, there are no areas in the three higher ranges of this scale (light orange – bright orange – red). Conversely in 2007, a noticeable hotspot surfaces at the intersection of Commercial Dr. and Broadway. The remainder of the study area is almost the same in the two time periods. In 1997, there is a peak of calls at Commercial Dr. and 1st Av. which becomes more elongated in 2007. The northern area of the study contains a denser concentration of police calls for service in 1997 than in 2007. As well in both maps the west quadrant south of 1st Av., where there are more multi-dwelling units, contains a denser distribution of calls for service.

In 1997 and 2007, the Skytrain station features prominently in the crime maps. The difference is expressed in the density of police calls. In 1997, this area contains 16,000 to 20,000 police calls for service per square kilometer and in 2007, this density increases to 28,000 to 32,000 police calls for service per square kilometer. This represents a 75% increase. Furthermore there is a much denser pattern of crime forming along Commercial Dr., especially between the Skytrain to the south of the area and 1st Av. in the centre of the study area.

Figure 7: Grandview-Woodland 1997 police calls for service per square kilometre

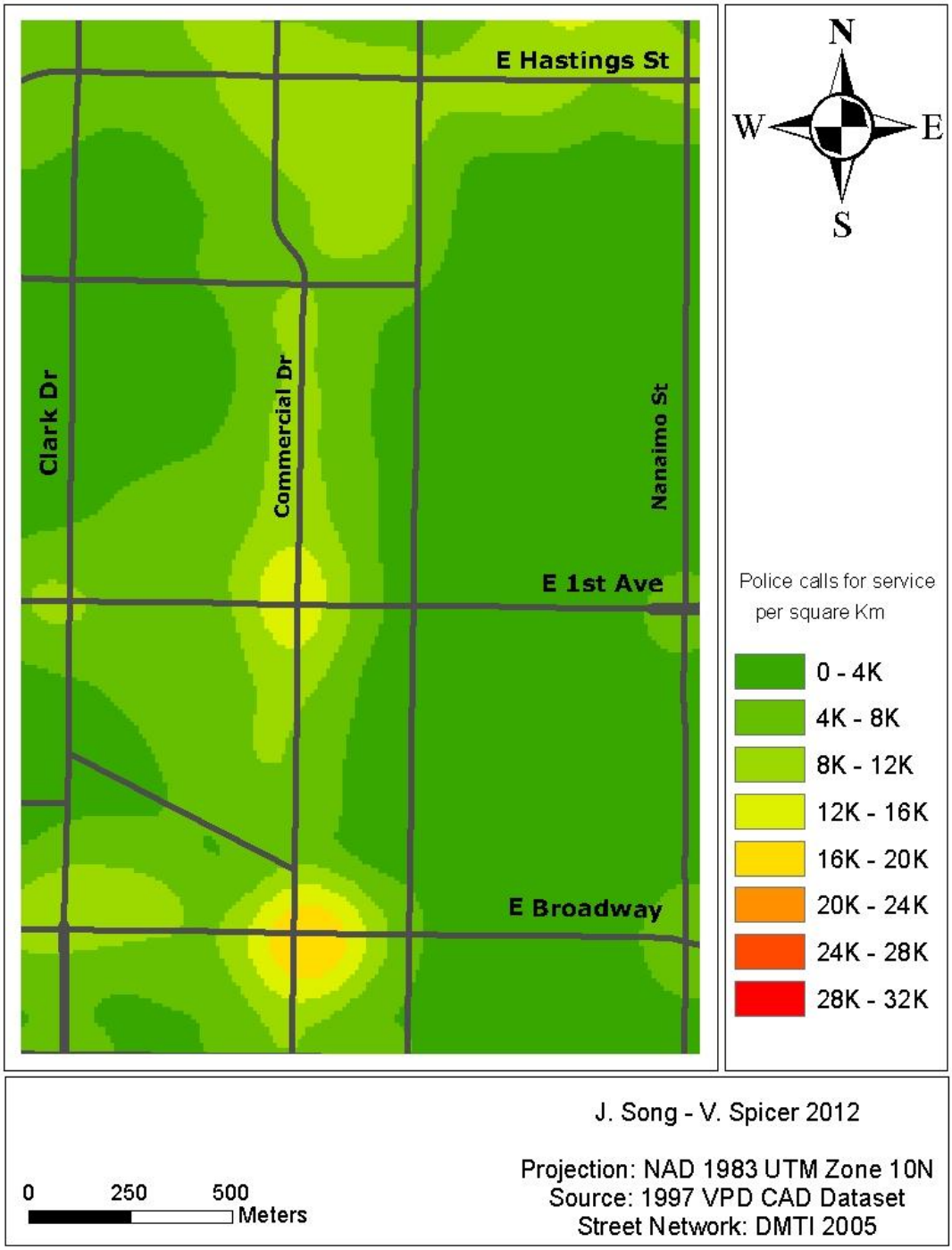
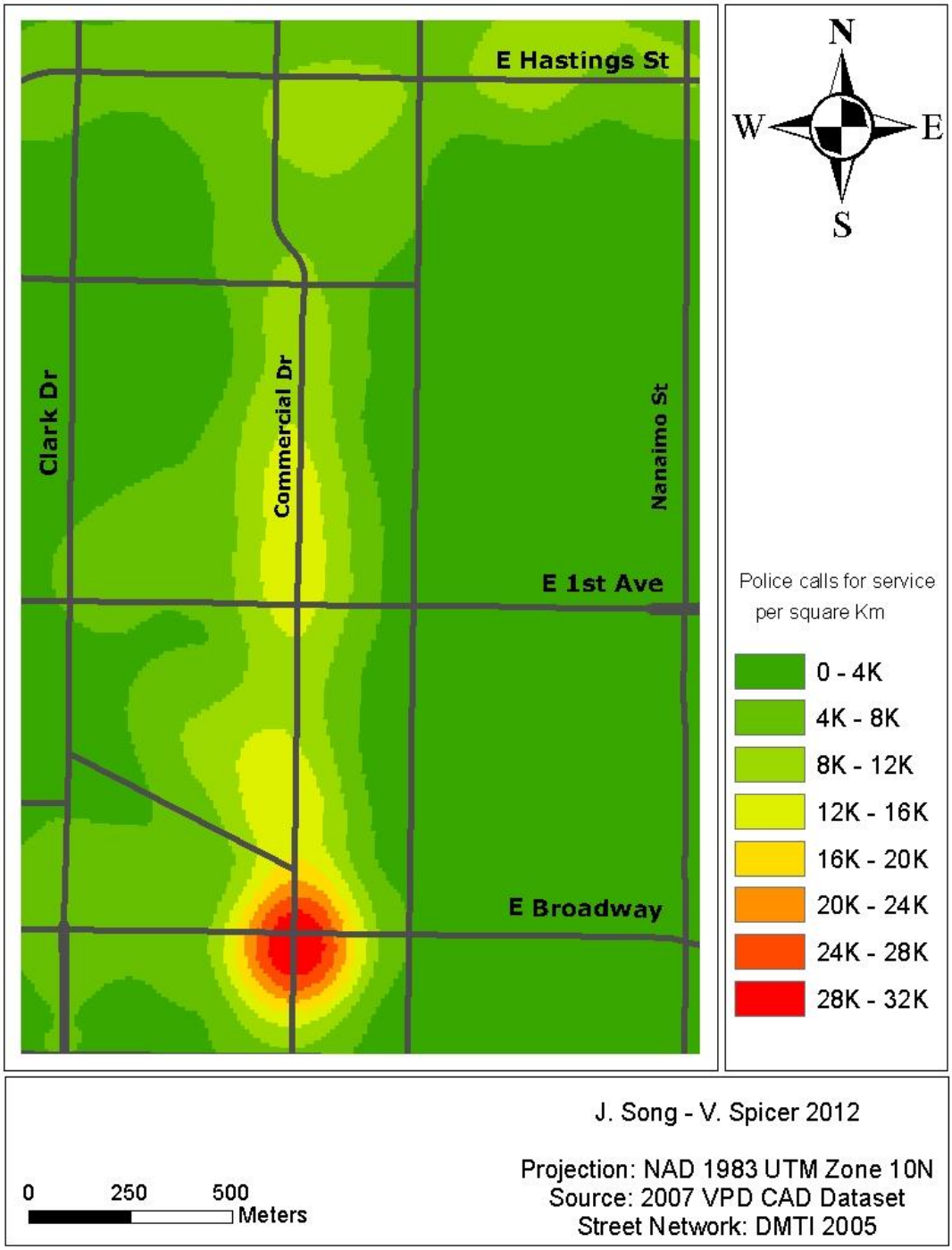


Figure 8: Grandview-Woodland 2007 police calls for service per square kilometre



Analysis of cognitive maps *1997-2007-2010 Commercial Drive Community Survey*

This section explores the cognitive mapping information from the three community surveys conducted in the Grandview-Woodland neighbourhood. First the drawn maps from the paper surveys were digitized into polygons. The polygons were then run through the raster function using a program loop to maximize this process. The model for this program is contained in Appendix H. The polygons were divided into rasters which are 10 by 10 meters square so that these maps could be visually compared to the previous police calls for service maps created with the kernel density function. Once the raster function was run for each of the maps, the results were displayed using a legend which breaks down the perception into 5% increments. This legend has a set with a 50% maximum because 47% is the maximum value which was experienced in 2010. The legend is the same for all the cognitive maps and thus one is comparable to the other. While these cognitive maps can be compared to each other with respect to the actual percentage of respondents who picked a particular area, these cannot be directly compared to the police calls for service maps. The cognitive maps display the percentage of respondents who picked an area, and the police calls for service map uses a rate of calls per square kilometre. However, the visual patterns can assist in locating comparable areas that are either similarly dense or sparse.

Figure 9: 1997 Perception of crime - Grandview-Woodland

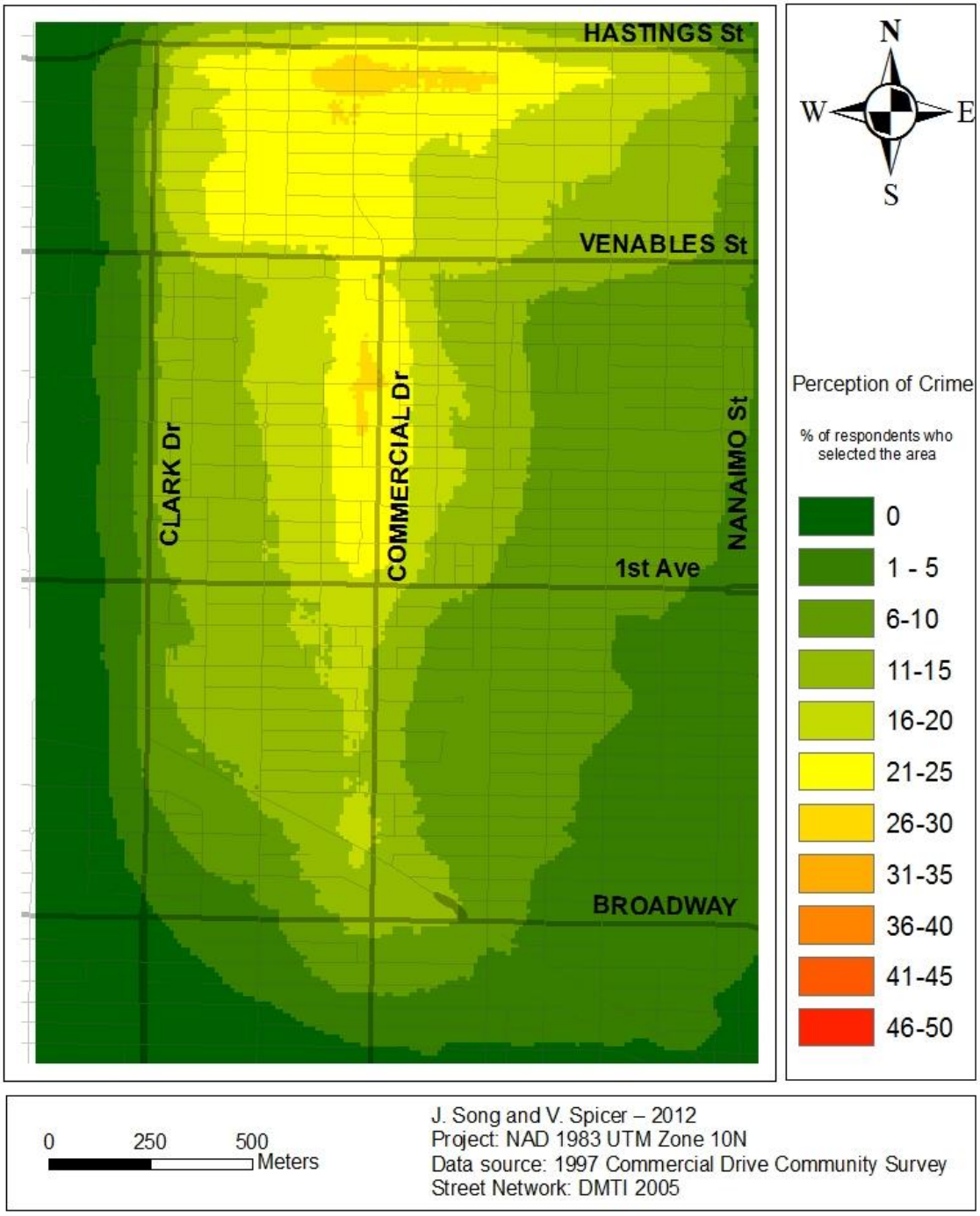


Figure 10: 2007 Perception of crime - Grandview-Woodland

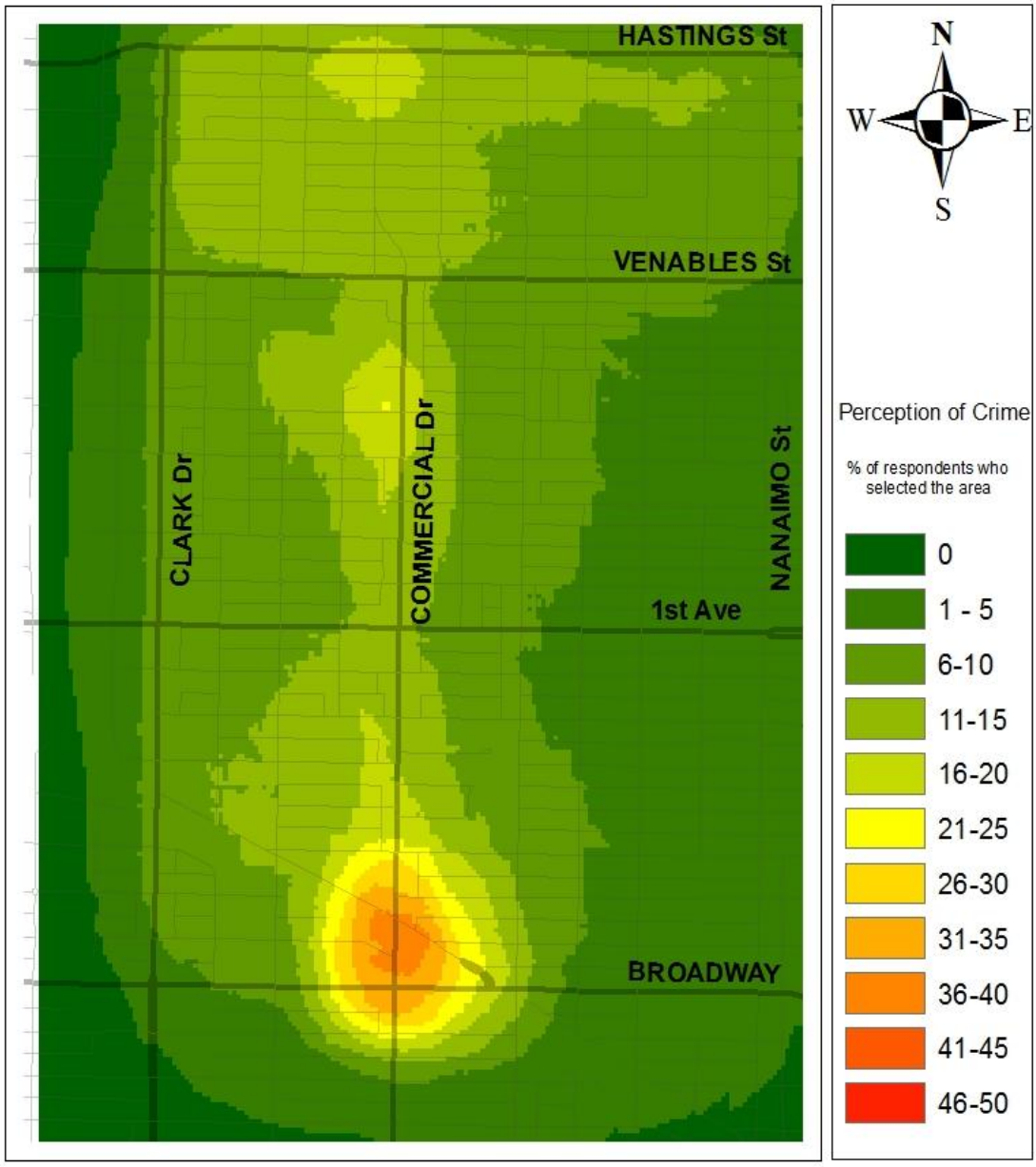
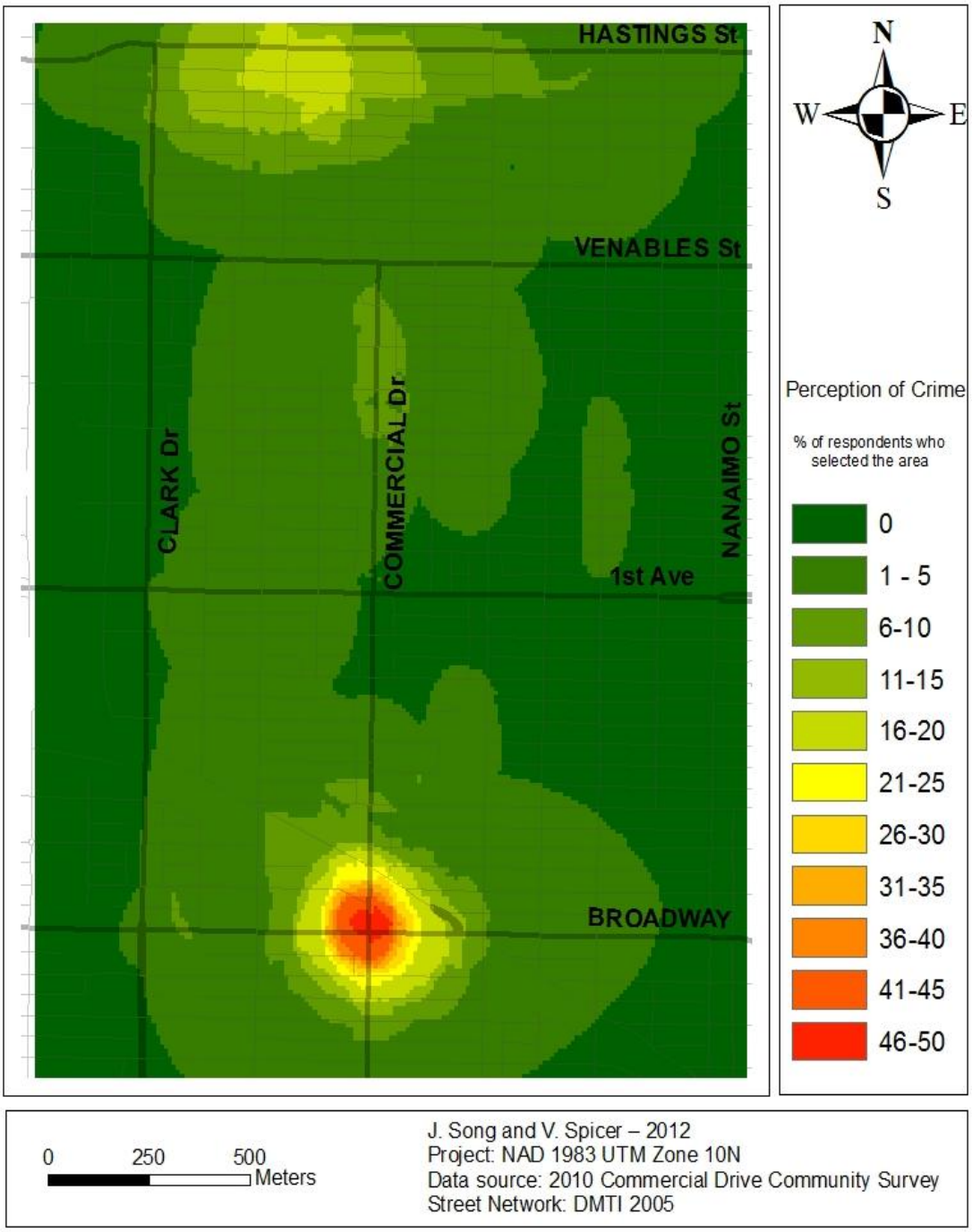


Figure 11: 2010 Perception of crime - Grandview-Woodland



In 1997, there are two places where there is a peak in perception. These locations are the intersection of Commercial Dr. and Hastings St. at the north end of the study area. And the second place extends from the Britannia Community Center into Grandview Park. The surface of this area, identified by over 25% of respondents, is 85,120 square meters. The most identified area, selected by 29% of respondents, is located at the intersection of Commercial Dr. and Hastings St.. In 2007, there is only one place where there is a peak in perception. This area is the intersection of Commercial Dr. and Broadway. The surface of this area, identified by over 25% of respondents, is 91,022 square meters. The highest peak is selected by 37% of respondents. In 2010, the place chosen most often continues to be the intersection of Commercial Dr. and Broadway. where the Skytrain is located. The surface of this area, identified by over 25% of respondents, is reduced to 43,000 square meters. However, the highest peak is selected by the most people as 47% of respondents chose an area covered by 13 rasters located north of this intersection.

The growth in the concentration of perception is clearly demonstrated in these maps. In 1997, perception is diffused and mostly at the north end of the study area. Although this surface is large, it is also diffused. At the time, Hastings St. was the major commuter artery for the bus route going east and west with a well-established sex trade strip to the north of this street. This transportation situation changed when in August 2002 as the Skytrain Millennium line opened causing this transportation node to significantly grow in volume and draw the commuter traffic from Hastings St.. The perceptual pull of this activity node is

apparent in these cognitive maps with the intensity of perception only increasing from 2007 to 2010. By 2007, perception of crime has totally shifted to the south end of the study area and the concentration of perception is much more centered on the intersection of Broadway and Commercial Dr.. In 2010, this perception becomes markedly focused on this one location with very little diffusion happening toward the main pedestrian area to the north of this node. The meso shift in the urban context is very stark in this example. The significant change in the public transportation system from 1997 to 2007 shows how people who navigate the environment are impacted. Visible street level disorder likely follows this pattern and the concentration of a transit node draws in and focuses perception into a central peak.

Crime patterns were more diffused in 1997, and this situation is reflected in the 1997 cognitive map. When police calls for service are more concentrated as is the case in the 2007, perception also becomes more focused. In 1997, the area of perception picked by 25% or more of the respondents covers 85,120 square meters (1.5% of the study area) and in 2007 it is 91,022 (1.6% of the study area) square meters. While these two surfaces are similar in size, the distribution of police calls for service within them has changed considerably. Indeed in 1997, 4.6% of the total calls for service fall within this area, in 2007 this has gone up to 9.4%. The 2010 police statistics are not yet available however, it is expected that this percentage would only increase. Areas where perception is concentrated correspond to locations where calls for service are denser.

Therefore, it is possible to conclude that respondents are perceptually aware of where these higher crime locations are.

Analysis of directionality *1997-2007-2010 Commercial Drive Community Survey*

Perception of crime patterns may follow the pedestrian flow as people who are engaged in daily routines are confronted with street-level disorder. Since Commercial Dr. is a well-established pedestrian artery, the interface between directionality of perception and pedestrian flow is of particular interest. Commercial Dr. north of Broadway is where there is a higher concentration of restaurants, pubs and shops; especially between Grandview Hwy. and Venables St.. Similarly there is more bus traffic flow toward the west along Broadway. The design of the north side of the Skytrain station which opened in 2002 takes these two directions into account as the north exit comes onto Commercial Dr. and the south exit onto a structured bus platform on Broadway so that commuters can line up for the 99 bus which goes to UBC.

Since the cognitive maps are analyzed using a set raster function, variance of perception is notable every 10 meters. This perception is bisected along Commercial Dr. and Broadway to show the relative decrease from the centre of the intersection to a distance of 200 meters from the intersection. Two graphs are produced using this information; the first is for Commercial Dr. and the second for Broadway. The results from the three surveys are displayed on the same graph to show how density and directionality of perception changes over the course of this time. The blue line represents the perception as it was in 1997. This

perception is quite low compared to the other two study years, however, there is an interesting pattern with a steady incline in perception from the south to the north. In 2007, the green line shows how this progression becomes more apparent as the perception increases significantly with a pronounced bulge to the north of Broadway on Commercial Dr.. Conversely, the 2007 perception along Broadway is less intense and smoother. This situation changes again in 2010, where the perception is most pronounced at this intersection. The decrease in perception on Commercial Dr. is much starker on the south side than on the north side of Broadway. Similarly, the decrease of perception on Broadway occurs faster towards the east than the west.

Figure 12: Directionality of perception - Commercial Dr. 1997-2007-2010

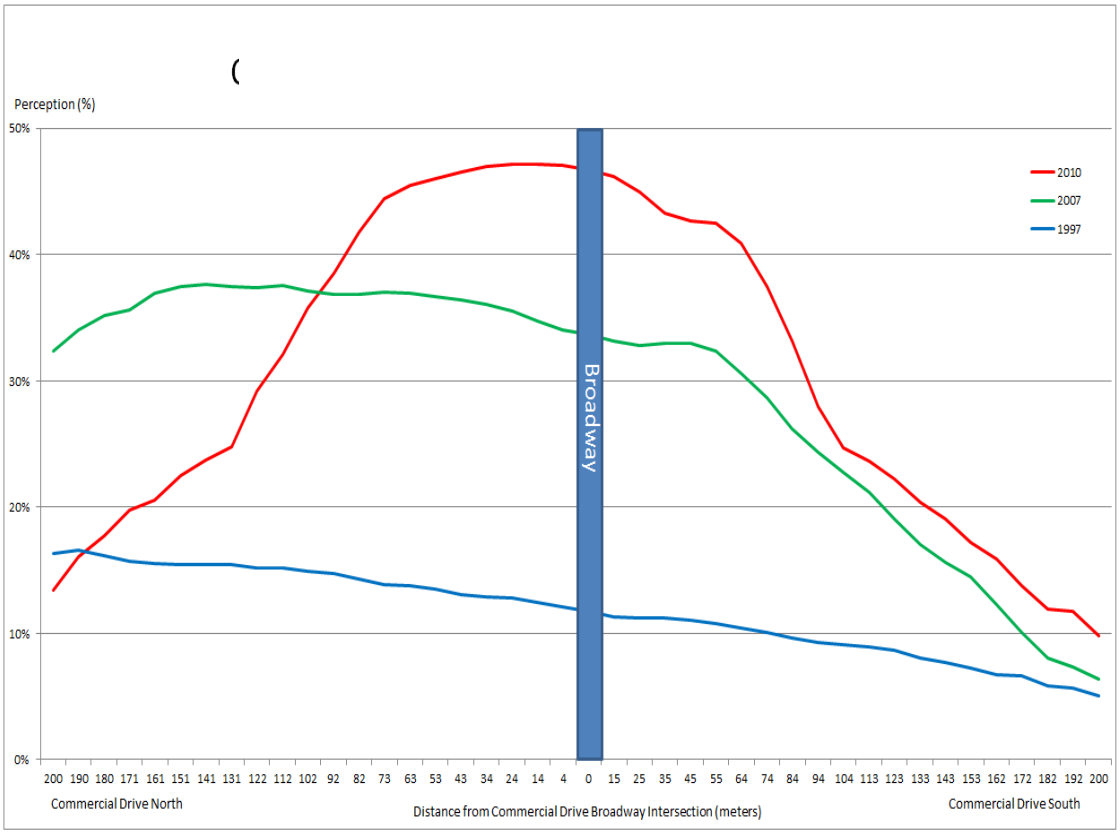
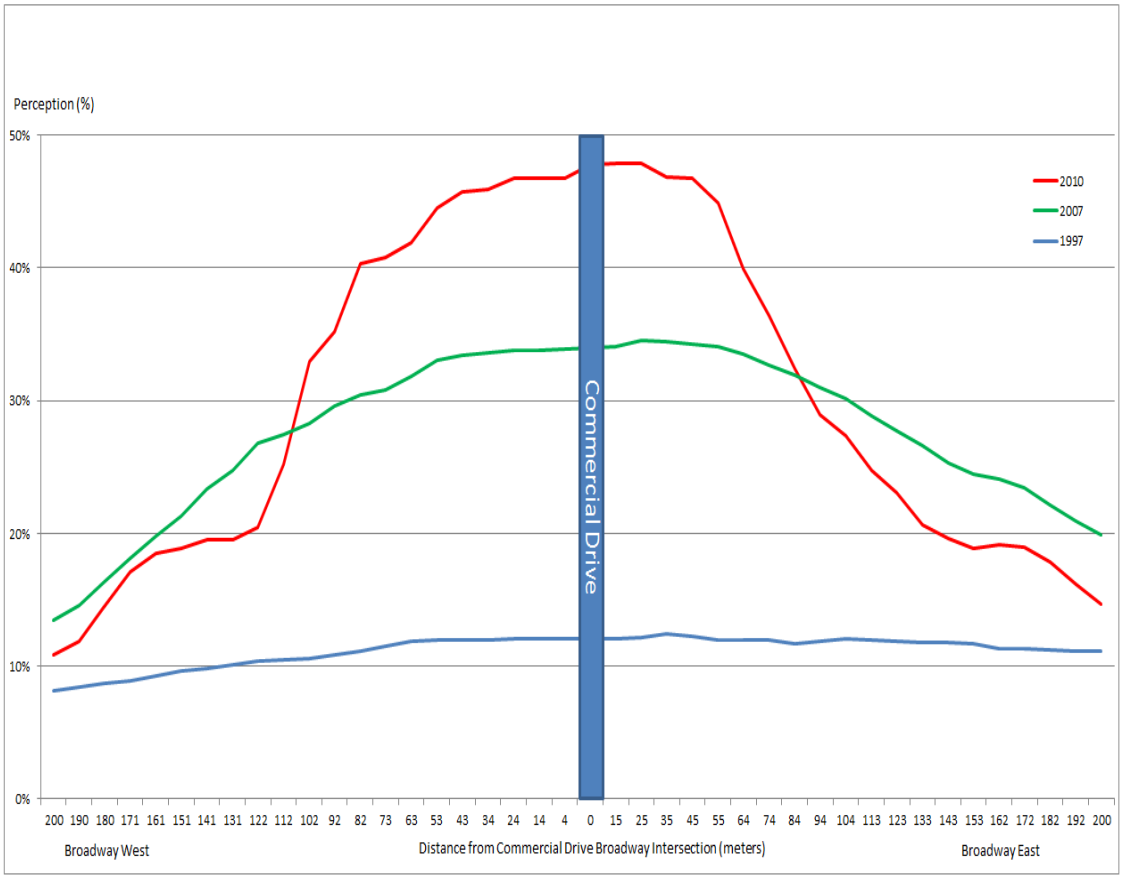


Figure 13: Directionality of perception: Broadway Av. 1997-2007-2010



Analysis of police calls for service in perception areas

The perception maps from 1997 and 2007 were further analyzed in relation to police calls for service. The area where 50% of the perception occurred was outlined and then crossed referenced with police calls for service in that area. Then the top ten crimes falling in these perception areas were selected and compared to the rest of the area to assess how police calls for service are distributed in relation to where perceived crime is high. Table 11 and table 12 compare the police calls for service in the perception hotspots relative to the rest of the study area. These call types were created by the VPD and have changed several times since 1997. Therefore direct comparison between call types from

1997 and 2007 is difficult. However, certain trends appear consistently. In both these study periods, theft reports are the highest call type with 22% of theft reports occurring in the 1997 perception area and 55% of these occurring the 2007 perception area. This increase in theft reports within the perception area is likely due to the environmental dynamics in these two perception hotpots as the 2007 area contains several large stores which would generate more of these reports.

It is also interesting to compare the combined numbers of person annoying and suspicious person. These calls are usually generated by individuals who are engaged in street-level disorder behaviours such as sex trade work, panhandling, street vending, public drunkenness, public use of drugs or drug trafficking. In 1997, 16.5% of person annoying and suspicious person calls for service occur in the perception hotspot, whereas in 2007 this has gone up to 23%. It is also important to note that even though the percentage has gone up, the actual count of person annoying has almost tripled in the perception area (235 incidents in 1997 and 651 in 2007), and suspicious persons have doubled (131 incidents in 1997 and 233 in 2007) This increase in the public display of street level behaviours, in the form of social disorder, may be a contributing factor in creating a denser perception area in 2007. Future research should consider the discreet manifestation of these calls because the narrative text within these would reveal more about the actual situation that triggered the police call for service.

Table 11: 1997 calls for service

1997	Perception Hotspot			Study Area		% in hotspot
	Complaint	**Count**		**Complaint**	**Count**	
	AUDIBLE ALARM	292		AUDIBLE ALARM	1673	17%
	THEFT FROM AUTO	237		THEFT FROM AUTO	1592	15%
	PERSON ANNOYING	235		PERSON ANNOYING	1115	21%
	SUSPICIOUS CIRCUM	201		SUSPICIOUS CIRCUM	1445	14%
	THEFT REPORT	193		THEFT REPORT	895	22%
	B&E REPORT	182		B&E REPORT	1620	11%
	ASSISTANCE REQUESTED	156		ASSISTANCE REQUESTED	1078	14%
	NOISE COMPLAINT	138		NOISE COMPLAINT	1030	13%
	GENERAL BROADCAST INFO.	134		GENERAL BROADCAST INFO.	772	17%
	SUSPICIOUS PERSON	131		SUSPICIOUS PERSON	1102	12%
Total Calls in Top Ten		1899			12322	
Total Calls	Perception Hotspot	4873		Study Area	31579	
Percentage of all Crimes		39%			39%	

Table 12: 2007 calls for service

2007	Perception Hotspot			Study Area		% in hotspot
	Complaint	**Count**		**Complaint**	**Count**	
	ANNOYING PERSON	651		ANNOYING PERSON	2339	28%
	SUSPICIOUS PERSON	233		SUSPICIOUS PERSON	1487	16%
	DISTURBANCE	216		DISTURBANCE	1798	12%
	WARRANT	168		WARRANT	769	22%
	SHOPLIFTING	162		SHOPLIFTING	295	55%
	ASSIST POLICE, FIRE, AMBULANCE	155		ASSIST POLICE, FIRE, AMBULANCE	835	19%
	DRUGS	147		DRUGS	386	38%
	THEFT	145		THEFT	1298	11%
	PROPERTY CRIME	144		PROPERTY CRIME	674	21%
	ASSIST GENERAL PUBLIC	137		ASSIST GENERAL PUBLIC	1279	11%
Total Calls in Top Ten		2158			11160	
Total Calls in	Perception Hotspot	4033		Study Area	27395	
Percentage of all Crimes		54%			41%	

There is an interesting change in 2007 due to the creation of a new call type called drugs, and 38% of these calls fall in the perception area. Since police calls for service have not changed from 2007 to 2010, the future comparative analysis of these calls could delve further into the occurrence of such incidents in 2010.

In both 1997 and 2007, there are two police calls for service hotspots that appear on the maps, but are not picked up by respondents as high perception areas. In 1997, this area is the intersection of Broadway and Commercial Dr.

where the Skytrain in located. The kernel density map in figure 9 shows this area has the densest crime distribution in the whole study area. Even though in 2007, the pattern of perception is much closer to the one for the calls for service, there is still an area from Semlin Dr. to Nanaimo St. north of Hastings St. which has a higher density of calls which is not mirrored in the cognitive map. These two hotspots are further analyzed to see whether certain calls for service stand out.

In 2007, this hotspot between Semlin Dr. and Nanaimo St. contains 1,490 police calls for service and 6.3% of the suspicious or annoying person calls fall in this area. In 1997, the hotspot at Broadway and Commercial Dr. contains 857 police calls for service and 4.3% of the suspicious or annoying person calls fall in this area. Both of these hotspots have significantly fewer calls for service which could be described as visible street level behaviours. It should be noted that in the 2007 example, the call type labelled drugs does not even appear within the top ten calls in this hotspot.

Review of findings and future research

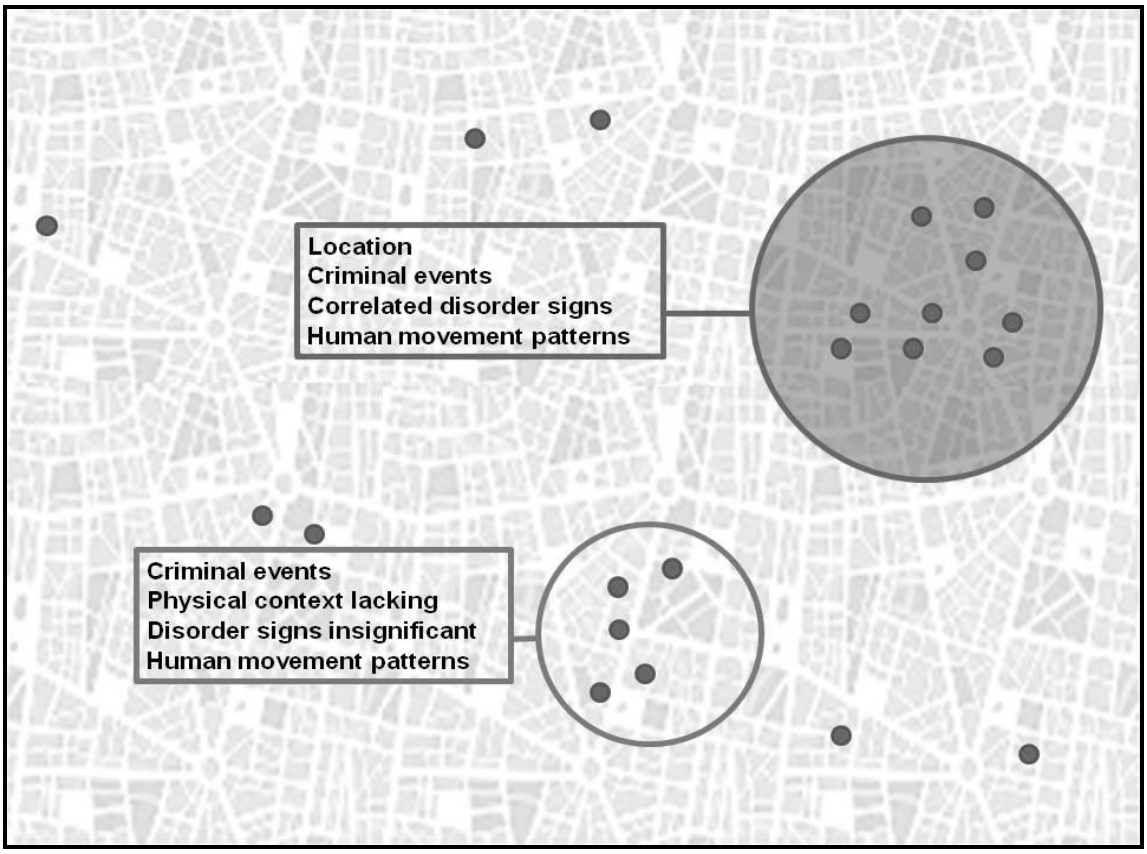
The perceptual analysis presented in this chapter shows how the introduction of higher activity node focuses perception of crime into one central location. While in 1997, this perception is less intense in its locality, by 2010, perception becomes completely associated with a very specific site. This finding is also reflected in the content analysis of the respondent comments as the actual word *Skytrain* is repeated far more often in 2010 than in 2007 while not even appearing in the 1997 comments. Therefore, funnelling aggregate human activity into a central location comes with potential fear of crime repercussions as the

location itself becomes an aspect of routine activities which intersects with disorder signs and criminal events.

The analysis of police calls for service reveals that certain call types are associated to perception areas. Both in 1997 and 2007, two call types stand out in particular: annoying person and suspicious person. These are linked to street level behaviours which fall within the definition of social disorder. These calls are distributed throughout the entire area however, in certain locations, they cluster in higher density. Interestingly, in both study years these two call types are less concentrated in the crime hotspots that do not intersect the perception hotspots. A possible threshold may exist for these behaviours which at one point triggers perception. In order to delve into this question, several factors would require further research. In particular, a temporal analysis needs to be completed in relation to who generated the call. As well, the location and role of the caller would need to be further defined. Furthermore, a content analysis of the call description could help classify the actions or behaviour of the individuals labelled within the call as an annoying or suspicious person.

Figure 14 contrasts an abstraction of two crime clusters. One occurs in the non-shaded circle where human movement patterns are less centralized than in the shaded circle. The shaded circle is a hotspot of fear because of the increased human movement patterns occurring there. It is a central activity node.

Figure 14: Hotspot of fear: Human movement - location - crime indicators



In this figure, the dots represent police calls for service. Some calls cluster, for instance in the non-shaded circle there may be a series of burglaries, but the physical context for fear is lacking, disorder signs are not present and the human movement pattern is not affected by this crime series, therefore this circle does not encompass a fear hotspot. However, in the shaded circle, the location becomes critical to human movement patterns and the cluster of criminal events, coupled with the disorder signs, help to generate a fear hotspot as is the case in the cognitive maps from the community surveys. These hotspots of fear may be intensified in places where the aggregate human patterns are locked into the location and routine activities dependent upon it. Transit hubs are such locations

because people depend on this transportation option and alternate routing is often difficult to attain.

The theoretical matrix presented in chapter 3 creates a link between the micro interactions that occur at the block level and extends these to environmental features present in the meso structures of the city. The analysis of these cognitive maps shows that respondents are aware of areas where there is a higher level of social disorder. This is expressed in the police calls for service under the call type annoying person and suspicious person. These perception hotspots overlay concentration of street-level disorder in the area of a mass transportation node. These are places where meso social structures such as informal social control mechanisms, social networks and collective efficacy are not as effective at preventing criminal events. This is simply because, these are places where strangers interface at an extremely high pace and the guardianship of these locations is neither stable nor consistent. In both 2007 and 2010, the perception peak drops off quite radically within 200 meters of the Skytrain station as these meso social structures that define the Grandview-Woodland neighbourhood are quickly engaged and create a sense of community oversight.

Beyond the boundaries of the transportation hub site, the pedestrian outflow needs to be carefully considered as the directionality of perception follows the pedestrian movement away from this location. Indeed, the analysis of directionality presented here shows how perception of crime drags further along the higher pedestrian artery of Commercial Dr.. This is most visible in the 2007 cognitive map where perception grows to the north of the intersection. It should

be noted that after the release of the *2007 Commercial Drive Community Survey* results, the VPD implemented a foot patrol in this area. Although there were other simultaneous activities delivered, by 2010, perception of crime while more focused on the Skytrain station, quickly drops and, 200 meters north of the station this perception is significantly lower in 2010 than in 2007. Therefore, focusing police resources in a centralized location such as the one identified in the *2007 Commercial Drive Community Survey* may have notable effects on perception of crime. The next chapter builds on this concept by reviewing three forms of police intervention aimed to target disorder and fear of crime. An alternate approach is then proposed which builds on the findings from the cognitive maps.

CHAPTER 7: Fear of Crime and Policing Implications

Throughout this dissertation, disorder has been discussed because of its relationship to fear and the perception of crime. The pattern that emerges in the review of the literature on this topic is that disorder, if left unmanaged, impacts how people perceive and use the urban environment. As such, this problem has revealed itself to be of major concern to civic and police agencies. Since the 1970s, many forms of policing have evolved with one of the goals being to reduce disorder and therefore, fear and the perception of crime. These forms of policing have moved away from reactive, 911 call-driven policing to pro-active approaches that aim to reduce crime and increase feelings of safety (Silverman and Della-Giustina, 2001). This shift has brought to the forefront lesser criminal activities, some not even within the criminal realm, but implicitly thought to be related to fear and the perception of crime, and by extension, to quality of life and urban vitality (Talen and Shah, 2007). For instance, unkempt properties fall within the purview of civic bylaws or ordinances, but at the same time are found to be associated with fear and the perception of crime, probably because of the human activities occurring there are sometimes of a criminal nature (e.g.: drug house). Therefore, the management of these issues crosses several administrative bodies and the coordination of these services is essential to the effective resolution of such problems (Eck and Spelman, 1987; and Goldstein, 1990).

In this chapter, three policing approaches are reviewed in order to analyze how disorder is targeted and how fear and the perception of crime is managed. Goldstein (1979) introduces the concept of problem-oriented policing which sets

forward a different style of thinking about crime problems thus leading to a different way of managing police practice. This approach divides, classifies and specifies problems in order to identify the root cause thus leading to the solution. This method of solving crime problems is intrinsic to community policing which is based on the SARA (Scan – Analyze – Respond – Assess) problem-solving model developed by Eck and Spelman (1987). Community policing goes beyond problem-oriented policing in that it also emphasizes community relations and organizational restructuring. Furthermore, this approach is particularly centered on disorder issues and working at reducing fear and the perception of crime (Eck and Weisburg, 1995). The final method reviewed in this chapter is reassurance policing as theoretically developed in the 1970s and implemented in the United Kingdom in the mid 2000s. This policing approach was used to resolve the discord between decreasing crime rates and increased fear of crime (Innes, 2005b). Reassurance policing directly targets those issues found to be linked to fear of crime with the sole purpose of reducing perception and increasing feelings of safety (Innes, 2005a).

In a final section, action-oriented research is introduced as a viable means to effectively deal with fear and the perception of crime. The complexity of this social and urban problem requires a systematic method capable of dealing with the intricate details of disorder and the proper articulation of resources required to combat the diverse issues that fall under such a label. The community survey instrument is presented as a means to begin this process by establishing community standards. Since disorder and the associated reaction of fear and the

perception of crime are ubiquitous products of urban life, the solution to these problems is therefore complex (Talen and Shah, 2007; and Garnett, 2011). Action research is both process and stakeholder driven allowing for the proper analysis of problems and then allocates appropriate stakeholder responsibility in relation to each identified problem. This new approach is an effective means to manage disorder as every problem can likely be subdivided even further thus reducing the complexity of disorder and creating proper ownership of the problem. A shared stakeholder approach that properly assigns responsibility builds on the original ideas of problem-oriented policing, and furthers this method by accounting for the complexity of problem definition and accountability.

Problem-oriented policing: Disorder and fear of crime

During the 1980s, problem-oriented policing arose out of a need to balance limited police resources and growing crime and disorder problems in the United States and other countries facing similar challenges (Rosenbaum, 1988; Goldstein, 1990; Reisig, 2010; and Tilley, 2010). By the end of the 1970s, the policing model derived from a reactive 911 call-driven crime-fighting model began to show its weaknesses and inability to deal effectively with the demands placed on police (Goldstein, 1979, 1990; Knutson, 2003; Williamson, 2008; and Reisig, 2010). Academic researchers, specializing in the field of police practice, investigated the complexity of policing tasks and compared these to the general tactics deployed (Goldstein, 1979, 1990; Knutson, 2003; Williamson, 2008; and Reisig, 2010). These researchers worked collaboratively with various police forces to introduce new approaches. Early experiments showed the benefits of

alternate solutions to crime problems (Reisig, 2010). The problem-oriented policing method developed by Goldstein (1979) was introduced into police practice sporadically during the 1980s and then more widely throughout the 1990s (Williamson, 2008). While it can be applied to serious crime such as domestic violence, it became a way to deal with nuisance incidents requiring significant police resources (Goldstein, 1979, 1990; Eck and Spelman, 1987; Williamson, 2008; and Weisburg, Telep, Hinkle and Eck, 2010).

Within the context of problem-oriented policing, disorder becomes a classifiable product. The various manifestations of this problem can be broken down and compartmentalized. After this task is completed, the problem can be properly analyzed and an appropriate response delivered (Goldstein, 1979, 1990). Eck and Spelman (1987) developed the SARA model, a practical step by step process for the problem-oriented policing approach. The SARA model was specifically developed for police practitioners in order to assist them in structuring the problem solving process (Eck and Spelman, 1987). In the first stage, the problem is reviewed using various methods not limited to crime statistics in order to determine the breadth of the problem (Eck and Spelman, 1987). During the second stage, deeper analysis is conducted so that the root cause of the problem can be uncovered to help build appropriate solutions (Eck and Spelman, 1987). In the third stage, a response is implemented (Eck and Spelman, 1987). Then, in the final stage, the response is assessed in order to determine whether the problem has in fact been solved (Eck and Spelman, 1987).

The SARA model has become a widely used policing tactic (Reisig, 2010; and Weisburg et al., 2010). However, one of the limitations of problem-oriented policing is that it remains problem focused and therefore, the identification and definition of problems is both central and integral to the solution. Since the attention is centered on problems, the actual processes are sometimes neglected. In this approach, problems are identified by police working in the community, and this would be considered a bottom-up process (Goldstein, 1990). However, most often, problem-oriented policing reverts to being top-down with upper managers identifying repetitive reported crime problems and then implementing a quasi problem-oriented policing approach. This process, which can be arguably effective in dealing with reported problems, may not be suitable for the proper management of disorder, which remains quite often un-reported, and results in fear and the perception of crime.

While crime and reportable disorder (e.g.: an aggressive panhandler or a street drug dealer) are discrete events and therefore, quantifiable entities, other forms of disorder are diffused and non-reported to police, but intrinsically connected to fear and the perception of crime (e.g.: litter, discarded needles or condoms). For this reason, process is the key to solving fear and the perception of crime because it helps link community concerns to larger civic institutions. For example, a drug house can easily become an identified problem and rather than reacting to it as a result of repetitive police calls for service, a problem-oriented approach can be implemented utilizing various resources which ultimately can result in the premises being shut down. Needless to say, drug houses are a

common urban reality and rather than dealing with these as individual problems, an approach that mirrors a reactive response, implementing a reliable process may serve to increase community confidence in institutional efficacy. Effective institutional processes that reflect community concerns around identifiable disorder problems serve to demonstrate that collective forces enacted in the structural systems of society are working efficiently to resolve community-based problems.

Community policing: Introducing disorder into everyday policing

Community policing as an actual practice grew out of problem-oriented policing. In early literature on this topic, the words community and problem were often interchanged (Williamson, 2008; Reisig, 2010; and Tilley, 2010). Unlike problem-oriented policing, community policing is less definite and structured in its practice. The SARA model is one of the tenets of community policing, but several other factors come into play including community empowerment and inclusion in the decision making aspects of policing (Williamson, 2008; and Reisig, 2010). However, like problem-oriented policing, community policing focuses on locally identified issues which are outside the scope of call-driven policing (Kelling and Moore, 1988; Trojanowicz and Bucqueroux, 1990; Cordner, 1999; Silverman and Della-Giustina, 2001; and Reisig, 2010). Most importantly, from the perspective of disorder management, community standards are an essential aspect of this policing approach and guide decisions made by police managers (Reisig, 2010). The most common organizational display of community policing is to have police on foot or bicycle assigned to a particular area (Skogan, 2008). The primary goal

of this tactic is to break down barriers between the community and the police, thus fostering better relations (Reisig, 2010). In the United States, community policing attracted significant attention during the 1990s with substantial federal funding allocated through the Department of Justice (Reisig, 2010). In particular, the Community Oriented Policing Services (COPS) was created and funding was allocated to police departments involved in community policing (Reisig, 2010).

While Goldstein's (1979) article is recognized as labelling the concept of problem-oriented policing, sometimes the Kelling and Wilson (1982) article on the Broken Windows Theory is credited for promoting community policing. This theory draws attention to the importance of tending to disorderly, usually non-reported incidents, and the larger implications of such disorder on crime and violent offending (Kelling and Moore, 1988; Skogan, 2008; Reisig, 2010; and Garnett, 2011). However, the specific articulation of community policing in relation to outcomes and activities, especially with regards to the management of disorder, is often too vague and carried out without intended purpose. Indeed, while being on foot naturally puts police officers in closer physical proximity to actual citizens; this may not translate into stronger or more efficient ties between the police and community. Therefore, the practice of community policing, if it is intended to effectively reduce disorder and the consequent reaction of fear and the perception of crime, is far more complex than resource deployment.

Since disorder itself is a multi-faceted product displayed in a dynamic environment, resource allocation needs to be equally intricate. Furthermore, management of disorder is one of the core goals of community policing; as is the

need to respond to significant community issues which are unreported through the reactive system (Skogan, 2008). The easiest deployment response to such a goal is to render police non-reactive which is what occurred through beat and bicycle patrols (Reisig, 2010). However, Kelling (1972) showed that the public noticed no difference when police patrols were varied in their frequency and the question remains as to why this would be different if they are on foot or on bicycle. The primary underlying principle of community policing is the establishment of community-based standards so that the consequential police response matches those standards (Kelling and Coles, 1996). From this perspective, process is the core element in disorder management, rather than the manner in which police are deployed because this is how standards can be matched to practice.

Reassurance policing: Policing fear of crime

The term *reassurance policing* was coined by Bahn (1974) and was related to the concept of visible police presence. Bahn (1974) believed that this police activity provides the public with reassurance and feelings of safety by maximizing the proximity of police. Bahn (1974) suggests that reassurance is best attained when the public can communicate with police because they are located in areas that are dense and thus, cognitively central. Within the reassurance policing model, police are placed in strategic locations which Bahn (1974) refers to as *fixed posts*. Bahn (1974) links this fixed post idea to the theory of cognitive mapping as developed by Lynch (1960) in the Image of the City. Bahn (1974) suggests that police should be placed static, perhaps even on a pedestal, like

traffic officers in the United Kingdom, in areas that hold strong cognitive value such as intersections. This strategic placement of visible police officers would serve to provide the public with ease of access to the police and therefore, in Bahn's (1974) opinion, increase feelings of safety.

Although reassurance policing was not implemented as a formal policing practice in the United States in the same way that problem-oriented policing or community policing were implemented, it was used during the mid 2000s under the United Kingdom National Reassurance Policing program (Herrington and Millie, 2006; and Peterson, 2010). The goal of this program was to decrease the gap existing between lowered crime rates and increased perception and fear of crime, referred to as the reassurance gap (Singer, 2004; Herrington and Millie, 2006; and Peterson, 2010). The principal goal of reassurance policing was to build the public's sense of security through public engagement, heightened visibility of police, and increased accessibility (Singer, 2004; and Peterson, 2010). Whereas the pursuit and capture of criminals can be labelled as a *hard policing* task, *soft policing* tasks tend to hold a much vaguer definition and fall under terms such as reassurance policing (Innes, 2005b). However, the foremost aspect of this form of soft policing, reassurance policing, is that it makes explicit the symbolic function of police in uniform and on foot (Innes, 2005b).

Unlike problem-oriented policing, which recognizes that the majority of police problems are those of other organizations, reassurance policing places police at the forefront of managing fear and the perception of crime, despite the fact that this is a much more intricate social product extending far beyond the scope of

police practice alone. Indeed, returning to the original conception articulated by Bahn (1974), reassurance policing is in fact a location specific practice pertaining to the urban social reality as it relates to perception of safety. Bahn (1974) based this policing practice on two core urban concepts, the first developed by Lynch (1960) and the second by Milgram (1970). He takes from Lynch (1960) the idea that certain urban spaces hold higher cognitive value because of the activities that occur there (e.g.: two highly used pathways that connect into a square where people congregate). And from Milgram (1970) the idea of variability of tempo and pace in urban living which deeply influence civil ties between people and then ripples into relative feelings of safety. These ideas are synthesized into high value, visible policing (Bahn, 1974).

Similar to the other policing approaches described here, reassurance policing is lacking in its ability to target the totality of the social processes that generate fear and the perception of crime. While visible and accessible police presence, especially when placed in focal locations, may serve to increase feelings of safety. Police presence alone cannot comprehensively resolve the social interactions, physical aspects of the environment, or other processes which create fear and the perception of crime.

Milgram (1970) explores the erosion of civility in urban living. The urban tempo and pace create social interactions that result in negative human contacts, such as people physically bumping into each other. Over time, such contacts create the feeling that people are not looking after each other, therefore, they may not intervene in time of need (e.g.: interrupt an assaultive situation by providing

assistance to the victim). More recently, researchers have turned to their attention to the relationship between daily incivilities and fear and the perception of crime. Smith et al. (2010) show that daily negative social interactions between people who are not criminally involved, or committing various forms of lower criminality, are engaged in normal routine activities, create this intangible feeling of fear and the perception of crime. Thus, the simple application of a police practice such as reassurance policing fails in addressing the core processes that generate fear and the perception of crime because it is uncertain, and most likely improbable, that police presence and accessibility alone can instil civility into urban liveability.

Action-oriented research: A process driven approach

Fear and the perception of crime is a complex by-product of the interaction between people and places. While this phenomenon can be studied at various levels in the system, the total impact of such a reaction to crime and disorder results from the interplay of multiple factors. However, the community is the central component in the system because it merges individual and collective influences to shape how activity is conducted in the neighbourhood and how the community interfaces with the city. From this perspective, balance is most likely altered at the community level and this is the location where action is best carried out leading to the proper integration of communities into the total city structure.

Community-based action research can assist in resolving the disjointed aspects of the system by identifying where the breaks and interruptions in the process are occurring. Since this method is both cyclical and progress-oriented, it

is well suited for community and urban development. Police practices, such as problem-oriented policing, community policing, and reassurance policing attempt to implement solutions without a comprehensive grasp of the total system or the impact of police action on the rest of the social structures or processes. Often these approaches target a single component in the system with an action and an intended outcome to alter the dynamic of the total system. An action research approach which utilizes a community survey methodology serves to harmonize specific actions with results because these would not be carried out without knowledge and understanding of the total system.

In this dissertation the cognitive maps from the community surveys visualize fear and the perception of crime by contrasting heightened perception of crime to police calls for service. While reported crime aids in the forecasting of perception, other aspects of the urban environment are explored in order to further understand the patterns of perception that are created using visualization techniques. The meso structure of the neighbourhoods is related to the macro movement of people throughout the city in order to understand macro manifestations of fear and the perception of crime. This visualization shows that fear and the perception of crime is location specific and also ties into identified, reported crime categories and as such, becomes a manageable problem through an action research approach. The policing models discussed earlier in this chapter focus on micro or meso conditions and lack the macro component necessary to permanently resolve an issue. But community-based action research goes directly to the core of the problem at all three levels of the system

and attempts to coordinate these three levels in order to implement a permanent solution.

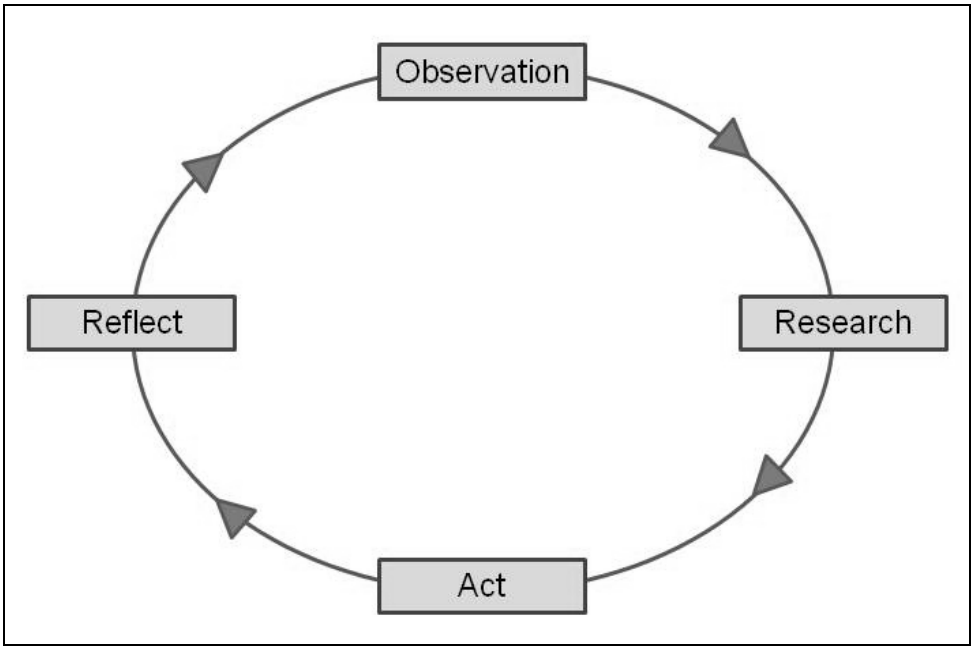
Lewin (1946) is credited with coining the term *action research* and states: “It is important to understand clearly that social research concerns itself with two rather different types of questions, namely the study of general laws of group life and the diagnosis of a specific problem” (36). Lewin (1946) describes a four step, cyclical process which includes planning, execution, fact-finding and evaluation and is derived from a philosophy of management. Action research is therefore a team process where researchers work collaboratively with practitioners in developing knowledge for the purpose of effecting change (Stephens, Barton and Haslett, 2009). It is a reflexive and cyclical process based on observation and collaborative work (Bradbury Huang, 2010; and Flood, 2010). This approach has been used in various fields, and it is regularly utilized in the health sciences because it can help to further clarify the complex interactions occurring between the stakeholders and intended outcomes (Westhues et al., 2008; Pontin and Lewis, 2008; and Nomura et al., 2009). In these different studies conducted in health sciences, the researchers explore a variety of issues such as early intervention options with dementia patients, perception of nurses’ workloads, and best practices in mental health services. More recently, this research method has been applied to crime problems. In particular, Sullivan, Bhuyan, Senturia, Shiu-Thornton and Ciske (2005) used action research to study the interactions between stakeholders working in the field of domestic violence.

Within the Criminal Justice System (CJS), various organizations and systems work toward controlling, managing and ultimately, defining crime and disorder in society. As processes move through these structures, there is feedback into the system which can create fluctuations (Flood, 2010). The implementation of decisions within this interrelated system creates chain reactions which are both predictable and unpredictable (Flood, 2010). Action research applied to the CJS serves to structure action, form collaborative working groups between stakeholders, departs from observation, focuses on completing tasks, then reflecting on the process. This is an ongoing activity, working toward the general improvement of a situation. While the CJS is geared toward improving crime and safety in society, action research applied to this system brings reflection to the forefront, stakeholder participation becomes imperative, and purposeful consideration of the actions delivered to the smaller and larger aspects of the system. Rather than solely focusing on disorder and its potential ramifications on other forms of offending, action-research, when applied to disorder, becomes an urban development strategy which is geared toward improving the quality of life of citizens rather than simply reducing crime (Garnett, 2011).

The CJS is primarily offender centric with lesser concern for the larger community (Talen and Shah, 2007). The capture, processing, warehousing and, hopefully, rehabilitation of offenders, has somewhat monopolized, and to a certain extent, paralyzed the system. Conversely, fear of crime takes a marginal position in the mandate of the CJS and delivery of services. However, fear and the perception of crime is a critical component of human action in society as it

involves the dynamic interplay between organizations, individuals, and social spaces and their structures. Action research can be readily applied to this problem because various stakeholders dealing with problems can come together to observe and then understand the complex dynamics influencing both individual and collective behaviour. Since many perspectives can help to elucidate the fundamental dynamics of a particular situation under study, it is beneficial to bring together stakeholders who are vested in seeking out solutions. The action research cycle begins with observation, which leads to research and then combines into action. Finally, a reflective stage needs to occur in order to assess whether the intended activities impacted the situation as predicted. This cycle can be completed multiple times as stakeholders work through particular problems (Bradbury Huang, 2010). Figure 15 shows this cycle with both practitioners and researchers working together throughout each of these stages.

Figure 15: Action research cycle



This process is mirrored in the SARA model as developed by Eck and Spelman (1987) where the problem-solving process goes through four consecutive steps starting with scanning (observation), analysis (research), response (act), and finally, assessment (reflect). Action research requires practitioners to work with academics in order to develop lasting solutions for crime problems. The community takes on a role, as do stakeholders, in the system which allows solutions to be successfully attained. Fear and the perception of crime is part of larger processes and crime is viewed as the result of a complex relationship between offenders, targets and situations (Cohen and Felson, 1979; and Cornish and Clark, 1986). Action research takes the emphasis away from the offender and brings other factors into the process. This approach moves beyond problem-oriented policing because the focus is on the processes thus leading to the resolution of the breaks and interruptions which are causing the problem. As such, action research can be applied simultaneously to the micro, meso and macro levels of the social and physical system, and address the core issues which fuel fear and the perception of crime.

Community survey: An action research tool

Action research is a bottom-up methodology (Murray, Greer, Houston, McKay and Murtagh, 2009). For this reason, it is well suited for the exploration of disorder and its effects on fear and the perception of crime. The *1997 Commercial Drive Community Survey,* although not explicitly developed as an action research tool, can be retroactively considered as such. At the time a community organization, the GWCPC was unable to ascertain community

standards on problems and conditions occurring in the neighbourhood. The survey was developed with a clear intent to establish these standards which would then guide further action conducted by this agency. Furthermore, this survey was designed to offer other service providers with accurate knowledge about the community. However, most importantly, this instrument did not just cover typical disorder problems, but also included those aspects of community street life which could be considered positive. Based on the information collected in the surveys, recommendations were drafted and targeted to the service provider or agency that was tasked with handling the identified problem. Rather than assuming a top-down management of this area, the GWCPC endeavoured to provide accurate, community generated information that would then help tailor services specific to the area. In so doing, this survey follows Spelman's (2004) recommendation regarding disorder and incivility which encourages the development of community based definitions about disorder issues.

The *1997 Commercial Drive Community Survey* sets forward a methodology where disorder is identified at the community level, therefore, what is tolerated in one area, may not be in another. As well, some activities occur locally and as such, help create community character and if these same activities are taken out of the neighbourhood context, they may in fact be considered disorder. The process utilized to develop the questions in the survey was very specific, starting with local complaints into the community policing centre. The nature of these complaints varied greatly because of how they would be handled by the CJS and other community agencies. For instance, aggressive panhandling can escalate

into a criminal offence if the aggression is such that it constitutes an assault, whereas, passive panhandling would almost never constitute a criminal offence. Once a series of issues were identified, they were expressed in very basic language which would be familiar to the respondents. This survey did not borrow measures from accepted studies being conducted at the time, but rather, included questions very specific to the area under study. For example, one question asks how respondents feel about bongo drummers playing in Grandview Park. This is a measure that could be construed by some as a disorder problem, and by others, an activity contributing to the character of the neighbourhood. These questions were then presented to the board of directors of the GWCPC who were mostly community residents, and then, to other service providers in the area.

Had this process been reversed to a top-down approach, it is probable that the questions would have been significantly different and most likely imported from other disorder studies. The diversity of questions that have been created through these five community surveys contribute to the field of disorder and incivility research. Many of the questions do not appear as measures in other studies conducted on disorder. Furthermore, these community surveys are much more specific when it comes to articulating the nature of the problem under study. For instance, sex trade work is contrasted to different settings:

- “Sex trade workers working on Commercial Drive”
- “Sex trade workers working in residential areas or near schools”
- “Sex trade workers working in industrial areas”

The respondents ranked these three locations differently in the *1997 Commercial Drive Community Survey* with sex trade work being more unacceptable near schools or in residential areas (76% completely unacceptable), and the least unacceptable in industrial areas (34% completely unacceptable). Respondents also expressed great concern for these individuals in their comments and shifted the blame for this activity over to the Johns. For example, in the *1997 Commercial Drive Community Survey*, respondent #624 states: “Sex trade workers should be left alone, Johns should be busted”. The specificity of the questions both with regards to the activity and also the space, allows stakeholders to develop solutions which are unique to the character of the community and at the same time, address the problem in its location.

This survey helps to locate different types of disorder and the places where these activities are happening. This represents a guide for service providers who can target very specific areas and behaviours. This can be a cyclical process, as certain problems are passing phases in community life and also, new legislation is constantly impacting how the CJS can react to the identified problems. As well, as some issues are resolved through community action, other problems may emerge as people become attuned to community centered service delivery. Regardless, the principal difference between this action-oriented approach and other forms of police practice which attempt to target fear and the perception of crime, is that police are essentially peripheral to the process, thus going to the core of Goldstein’s problem-oriented approach. Indeed, he found that 80% of police problems were in fact the problems of other agencies and that police

should re-locate responsibility back onto the appropriate agency (Goldstein, 1990). Since the survey tool represents a means to an end, the recommendations presented with the results are targeted to the appropriate agency in charge of such problems. For example, city agencies are responsible for litter, health and addiction services have a role to play in public drunkenness, and civic urban revitalization agencies can foster positive aspects, such as outdoor café seating, murals, and festivals. While the issues included in the community surveys were identified at the level of non-profit policing organizations, clearly the long term solutions must come from a number of agencies.

Far too often, problem-oriented policing is led and implemented by police without a serious attempt to appropriately re-assign responsibility. By its very process, action research does this as it is stakeholder driven, thus those tasked with the problem are also inherently part of the solution. Since the survey instrument presented in this dissertation is very detailed in the identification of problems, the process utilized to solve each one needs to be equally precise. It should seem obvious that while litter is consistently identified as a strong sign of physical disorder and a marker for fear and the perception of crime, it is not the responsibility of police to clean or manage litter. However, confusion arises around these issues simply because they are associated with fear and the perception of crime, which like the problems connected to this phenomenon are the responsibility of multiple agencies, but mostly assigned to police. An action oriented approach clearly assigns responsibility, and when dealing with disorder

and the consequent reaction of fear and the perception of crime, this is a very critical and important aspect of the process.

The manner in which stakeholders are organized around a specific problem becomes central to the solution. For instance, since signs of physical disorder have consistently been associated with fear and the perception of crime, clean-up programs for such things as litter or graffiti, seem to be an ongoing community policing practice. While this visible policing activity may promote some form of community leadership and cohesion, it does not address the systemic problem especially when those responsible for such issues are not pro-actively involved in the process. Therefore, problem solving needs to be properly coordinated so that the intended outcome is carried forward. An action research approach ensures through careful examination of the problem that actions match a specified outcome and are then assessed in order to verify that the intended outcome did occur and that the proper processes are engaged at the stakeholder level.

In this chapter, various policing approaches are discussed in relation to disorder and its relationship to fear and the perception of crime. Problem-oriented policing is first reviewed because this practice shows a clear move away from the traditional role and responsibility of the police. This is then tied into community policing, which in the United States became a federally funded initiative. This funding bolstered this form of policing and it became a very popular approach throughout the 1990s. Community policing changes police activity by bringing them back into the community in a visible way. Through this direct interface with the physical space, community policing changes the priority from reacting to

crime, to dealing with lesser criminal offences and disorder problems which are less likely to be reported to 911, but permeate urban spaces. Finally, reassurance policing is analyzed in relation to disorder because this form of policing is specifically intended to reduce the gap between actual crime rates and perceived crime rates.

However, from a systems dynamic perspective, these three forms of policing do not appear to deal comprehensively with the breaks and interruptions that occur between the micro, meso, and macro structures, both physical and social, which combine to either generate or dispel fear and the perception of crime. Action research and the community survey instrument are presented as an alternative approach which can properly re-assign responsibility for problems, and then formulate a lasting solution. While most often disorder problems can be effectively addressed at both the micro and meso level, it is the macro structures which become disjointed from local concerns. And policing tactics such as problem-oriented policing, community policing and reassurance policing tend to be neighbourhood-based and potentially lack the ability to deal with the macro structures which, if ineffective, generate disorder and the consequent reaction of fear and the perception of crime. Whereas an action research perspective takes into account the totality of the system, focuses on the processes in order to maximize outcomes, and is a suitable means to tackle disorder and dispel fear and perception of crime.

CHAPTER 8: Future Research

This chapter builds on the results by looking at how the cognitive maps generated in four of the five community surveys can be used in a forecasting methodology. While the top ten higher density calls for service identified in the 2007 Grandview-Woodland perception hotspot do not effectively forecast perception, a much smaller subset of calls located in the Mount Pleasant perception hotspot does accurately forecast perception of crime in both the Grandview-Woodland neighbourhood and the Renfrew Collingwood study area. These results show that certain crime types have a strong relationship to fear and the perception of crime. This will be looked at in more detail in this chapter to uncover those police calls for service which trigger fear of crime. It is generally found that visible incidents carried out in the public sphere have an impact on perception of crime. The call types exposed in this analysis further confirm this finding. These results are discussed in relation to current research on disorder and incivilities. Future recommendations are presented as this is a new field of study involving the development of unique forecasting methodology which can be integrated into the fear of crime theoretical matrix.

Review of finding: How to proceed from here

The comment analysis is aimed at two components of the theoretical model. A micro feature of this model describes how individual perception occurs at the block level. Two of the themes extracted from the comment analysis focus on this detailed aspects of disorder. The first theme is labelled *nuance of disorder* as

many respondents clearly outline how their assessment of disorder varies according to context. The second theme is labelled *cited problem condition* which extracts disorder problems listed by respondents. These two themes expose the detailed observations exacted by the respondents. A further review of the comments shows how decisions are linked to disorder in the environment and how perception is attached to the micro environment which then translates into meso activity. Specific comments are used to illustrate the mechanisms linking disorder to decision making. The review of the survey comments then exposes fear locations and how these change over the course of 13 years. This is a critical component in the theoretical model which stipulates that meso environmental factors shape patterns of perception and guide human activity in the neighbourhood.

The second level of analysis takes statistical information from the community surveys to explore the temporal variance in opinions on disorder and to discover how one community's perception of disorder varies from another. The variance of opinions revealed in this section supports Kelling and Coles (1996) assertion that police practice around disorder issues should be tailored to community standards. While certain problems can be ranked as a high priority in one community, these may not be in another. Standardization of police services around such problems signals to local communities that police are not cognizant of community standards. Whereas once these differences are factored into service delivery, community support increases (Kelling and Coles, 1996; and Spelman, 2004).

This aspect of service delivery is part of both the meso and macro components of the theoretical matrix. At the macro level, the standardization of formal control systems which unilaterally deliver services to communities can transform the unique character of neighbourhoods which may have different levels of tolerance toward disorder issues. And what may be part of the unique character of a neighbourhood in fact related to its tolerance toward disorder. Similarly, in the meso neighbourhood, informal control systems, social networks and collective efficacy may be organized to recognize those issues which draw heightened levels of fear and react appropriately toward these while not responding to lesser issues. Thus the imposition of an order which does not match community standards may cause the dissociation of these mechanisms.

While the community survey data presented here cannot be used to replicate the analysis conducted by Spelman (2004) in 30 neighbourhoods, these data can be used to further understand how differences in community perception regarding commonly identified disorder problems can lead to community isolation or integration. The purpose here is not to make assertions about the results, but rather to illustrate that communities perceive problems differently which can ultimately isolate a neighbourhood. This idea is reflected in the meso component of the theoretical model where perception at the block level filters into human activity in the neighbourhood. When disorder overwhelms an area and tolerance thresholds are breached, then this affects the pace and vitality of a neighbourhood thus engendering community breakdown. These variations in perception are perhaps more pronounced between two different communities

than within a single neighbourhood as it evolves over time. The community survey analysis supports this assertion as the intra-community temporal variations were less pronounced than the inter-neighbourhood differences.

The analysis of the cognitive maps visually shows how patterns of perception change with the introduction of a major activity node within the meso environment. These patterns are linked to specific police incidents and social disorder is a clear indicator for fear of crime. Indeed, calls for suspicious and annoying persons are more common in the heightened perception area which links into the mass transportation hub. At this location, the social aspects of the theoretical model which control the meso structures are in fact lacking due to the environmental dynamics of such a location. These are places where informal control, social networks and collective efficacy are eroded by the simple reality that people are constantly moving through these areas and these mechanisms cannot be enacted.

Forecasting perception of crime with police calls for service

The perceptual outlines from the Mount Pleasant map was used to interface with the calls for police service data. In a first instance, a perceptual template was created using the *2008 Mount Pleasant Community Survey.* This perceptual template was derived from the area where 50% of the perception fell and then intersected with police calls for service data from 2007[17] (Spicer et al., 2011). These calls were further analyzed to determine the crime types most likely to be

[17] VPD 2007 police calls for service were used in this study because it contained a complete year of data. The 2008 data was not available at the time of this study.

associated with this perception area. In the Mount Pleasant study area, there were 120 different call types categorizing 7,030 calls, whereas there were 81 call types in the heightened perception area accounting for 716 calls (Spicer et al., 2011). As well, this perception area contains 10% of the calls for service whereas it spatially represents 6% of the total study area (Spicer et al., 2011).

The heightened perception area was examined in detail to reveal the conditions that drive this phenomenon. The calls within the perception area were selected and those call types containing more than ten incidents within the perception zone compared to the rest of the area to determine the likelihood of these incidents occurring in this area (Spicer et al., 2011). The cut-off point for the number of calls was set at ten because it is the visible repetition of a criminal activity which is of interest in the exploration of perception of crime (Spicer et al., 2011). Table 13 illustrates these results for the top ten calls.

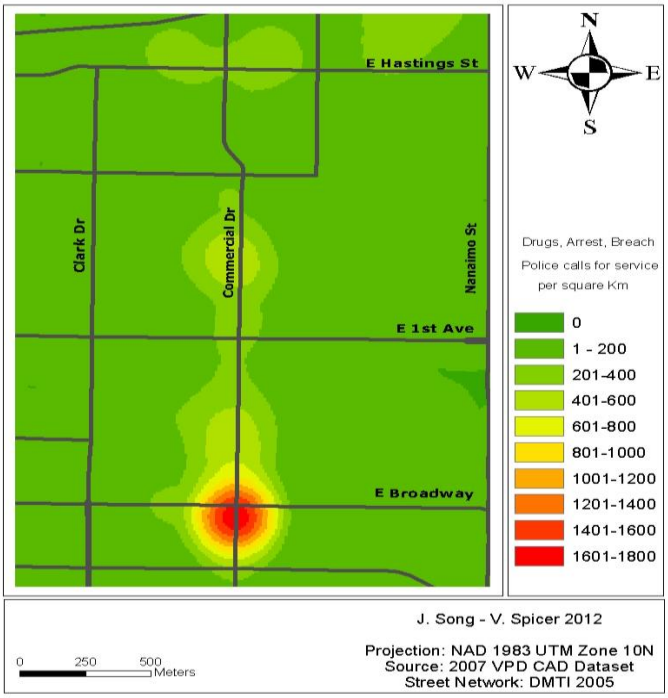
Table 13: Comparison of crimes in perception area and study area

Perception Area			**Study Area**	
Incident	Count	% of total	Incident	Count
Arrest	21	36%	Arrest	59
Drugs	17	35%	Drugs	49
Breach	22	30%	Breach	72
Warrant	43	25%	Warrant	174
Mischief	12	22%	Mischief	54
Annoy	80	22%	Annoy	363
Assault 1	15	18%	Assault 1	83
Intel	23	16%	Intel	139
Weapon	11	16%	Weapon	69
SIPP	10	15%	SIPP	65

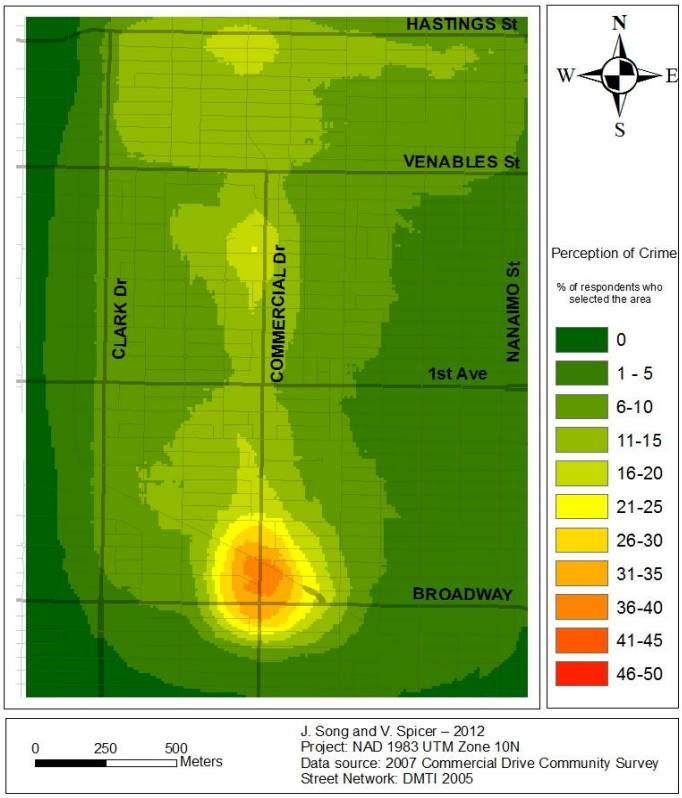
These top ten calls types were used to forecast perception of crime in the Grandview-Woodland area. However, once the kernel density function was run on these incidents, the visual representation of perception was diffused throughout the entire area and therefore not an appropriate forecasting methodology (Spicer et al., 2011). The results produced from this map did not reflect the patterns of perception nor would such a map be useful within a practical situation in which police resources are pro-actively used to reduce this perception. A second test was conducted using only the top three calls types: arrest, breach and drugs. These crime points were then used to create the kernel density map (Spicer et al., 2011). The search radius for each call for service is set at 250 meters, and the cell size was set at 10 meters. As previously mentioned, this radius is large enough to encompass a few blocks thus increasing the view angle of the visible police incidents found to be associated with the perception of crime. The map generated using this search radius on the three most repetitive police incidents is much closer to the actual cognitive map drawn by the respondents in the *2007 Commercial Drive Community Survey.* These three incident types are all visible in nature. Both the arrest and breach call type usually require marked police units to conduct an arrest on the street thus creating a sense of heightened crime since police arresting people can be linked to the notion that a crime has occurred at that location. The drug call type does not impact the environment in the same visual manner. In this case, it is the repetitive nature of this activity, rather than the police presence, that draws attention. This forecasted map provides a condensed version of where

heightened perception occurs. It could be argued that this abstraction is a useful spatial template within which action research further conducted. Figure 16 shows the forecasted map and the actual cognitive map derived from survey results.

Figure 16: Forecast and cognitive map *2007 Commercial Drive Community Survey*



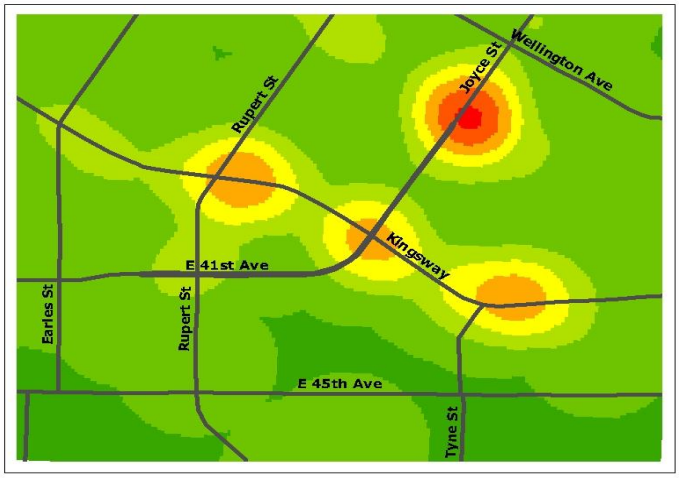
2007 Forecasted Map



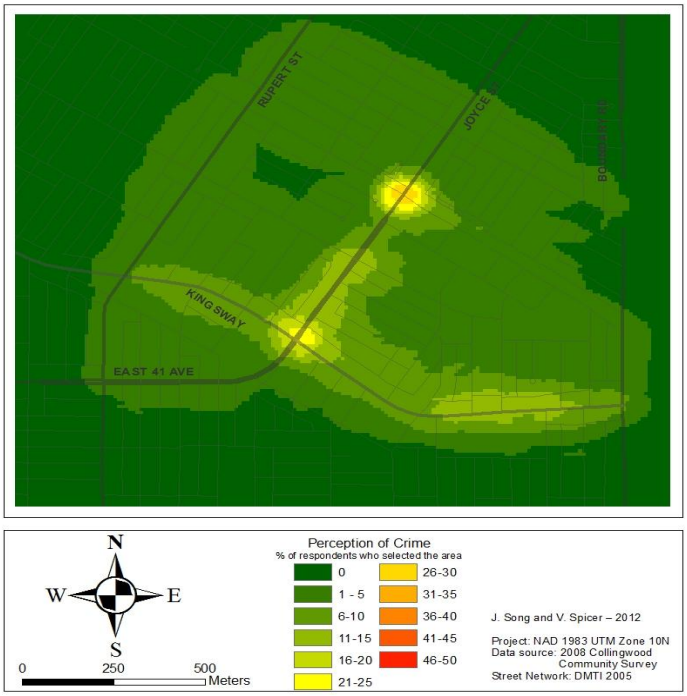
2007 Cognitive Map

This method was then applied to the Renfrew Collingwood and Mount Pleasant neighbourhoods and produced similar results. Figure 17 contrasts the forecasted map with the one produced with the *2008 Collingwood Renfrew Community Survey* results. While the perception hotspots in this forecasted map are far more pronounced than those in the survey map, the patterns presented by this forecast follow similar levels of intensity. In the cognitive map, it is important to note that the same legend was used in all three maps so that a comparison could be drawn between these study areas. In the *2010 Commercial Drive Community Survey* 47% of the respondents picked an area and this very dense perception is captured in the legend. This level of intensity does not occur in the *2008 Collingwood Renfrew Community Survey*. In fact, the four upper values in the legend are not used in this map. Therefore changing the classification within this cognitive map easily alters the display. Regardless in both the forecasted and cognitive map the densest area is the intersection where the Skytrain station is located. The secondary locations in the forecasted map are three intersections which appear with similar levels of significance. In the cognitive map there is only one secondary location (Kingsway Av. and Joyce St.) which is more prominent and lags toward the Skytrain station. The two other intersections generate less perception which is also more diffused. The cognitive map shows the pedestrian connection that exists along Joyce St. between the Skytrain Station and the intersection of Joyce St. and Kingsway Av.. Conversely, the forecasted map shows a more definite link between the intersections along Kingsway Av.

Figure 17: Forecast and cognitive map *2008 Collingwood Renfrew Community Survey*



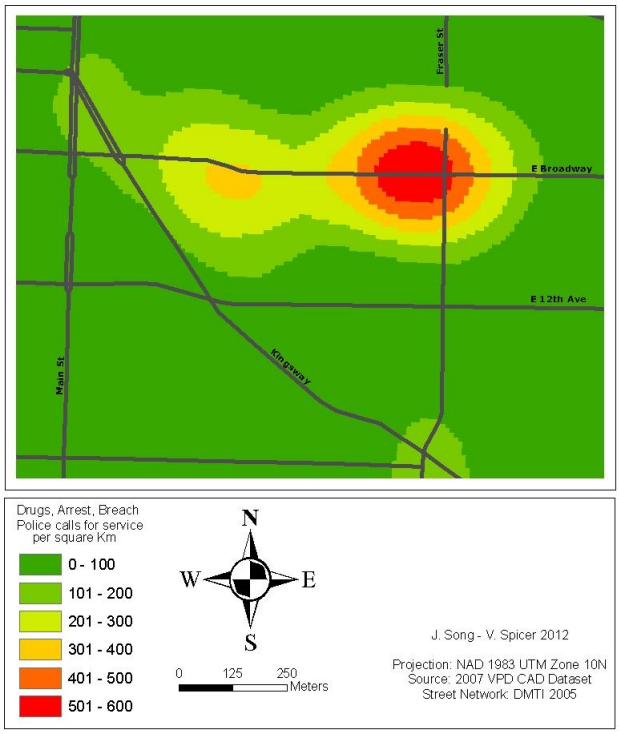
2007 Forecasted Map



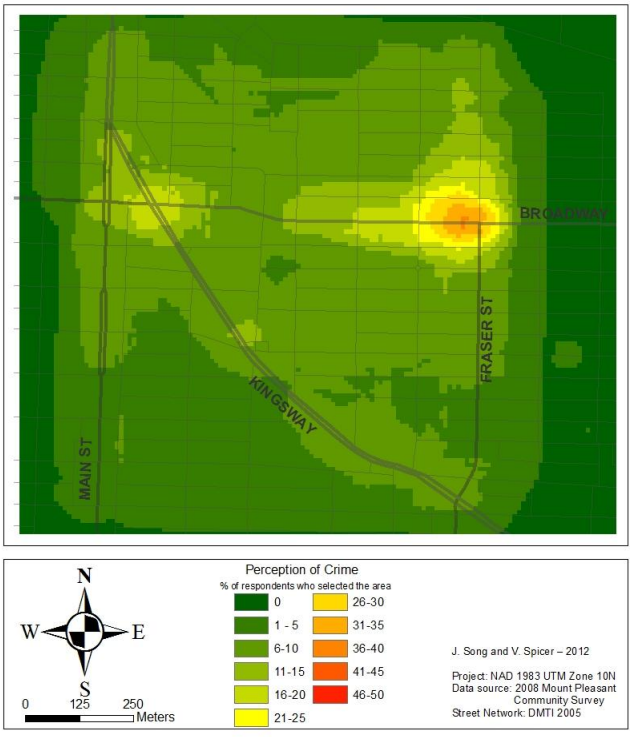
2008 Cognitive Map

Figure 18 contrasts the forecasted map with the cognitive map from the *2008 Mount Pleasant Community Survey*. The forecasted map looks like an abstraction of the actual perception. It reduces the focal point to a defined area. Similarly to the two other examples, perception of crime is centered on a transportation node. The intersection of Broadway and Fraser St. contains two major bus routes one which travels east west and the other north south. These are the feeder routes into the Mount Pleasant neighbourhood. The pedestrian outflow from the intersection reveals itself in this cognitive map as the perception extends from Fraser St. and Broadway, westward toward the central area of Mount Pleasant. This pattern is also found in the forecasted map with a distinct connection between the focal point at Fraser St. and Broadway and the area along Broadway west of this intersection. This cognitive pattern is influenced by the high activity node contained in an intersection and the pathways departing from there. In all these examples, the cognitive maps contain nodes that are central to mass transportation and the lag from the node moves toward the central pedestrian pathway within the study area. This is also reflected in the forecasted maps. Future research should concentrate on pedestrian flow by intersecting perception with social disorder as expressed in calls types such as arrests, breach arrest and drug reports.

Figure 18: Forecast and cognitive map *2008 Mount Pleasant Community Survey*



2008 Forecasted Map



2008 Cognitive Map

The forecasted maps may not replicate the exact desired patterns. However, they do provide an abstraction of the phenomenon which simplifies the area where perception of crime is likely to occur. This simplification is possibly quite useful when targeting this problem because it allows resources to be maximized in defined locations and the cognitive ramifications of such an approach may net significant results. These maps confirm the principles discussed earlier in this dissertation in that people experience heightened perception of crime when they are locked into a specific route choice (public transportation) and where certain crime types are present; especially those that relate to social disorder which are more likely than physical disorder to result in arrests, breach arrests or drug crime reports.

Exploring disorder, perception, and street-level drug crimes

In this dissertation, disorder is analyzed in detail, yet a common criminal link between the behaviours was not established. These cognitive maps reveal that reported drug crimes quite likely influence perception of crime. It should be noted that these reported crimes would largely be associated with the street-level and public display of this activity. Therefore, the visual manifestation of the breaching of norms prevails in perception, just as social disorder ranked more severely that physical disorder. Drug crimes would often include drug dealing and use of drugs. Both of these activities often occur in public view, resulting in police calls for service. A review of the questions included in the five community surveys relates the following questions directly back to drugs:

- Smoking pot in public
- Drug dealing in public areas
- Injecting drugs or smoking crack cocaine in public areas
- Needles on the ground
- Grow ops
- Health care workers picking up discarded needles

However, some of the other behaviours can be linked to using drugs, as they are a means to obtain cash. For instance, many of the squeegee people in the Commercial Drive area were known through the Grandview-Woodland Community Police Office to also be injection drug users. Similarly, some panhandlers and sex trade workers engage in these activities as a means to support a drug habit. As well, street vendors are sometimes selling wares, either stolen or recovered from dumpsters, as a means to obtain cash for drugs. It is not the assertion here that all the individuals engaged in these activities do so for drugs, but rather that some may use these activities to generate this revenue. With this in mind, there are a number of other problems identified in the surveys related to drug use:

- Street vending on city streets or in parks without a permit
- Sex trade workers working in industrial areas, on Commercial Drive, in Commercial areas, or in residential areas or near schools
- Aggressive or passive panhandlers
- Squeegee people cleaning car windows
- Condoms on the ground
- People loitering in public places or near Skytrain
- People going through dumpsters

In order to verify this link between drug crimes and the perception of crime, perception of crime would need to be tested in various community contexts as there may be a unique relationship between these factors in the City of Vancouver. However, it is important to note that most studies which look at the

relationship between disorder, fear and the perception of crime involve some measures about drug use or drug dealing.

Street level drug crimes are acts carried out at the street level and, unlike many other forms of criminal activity, these are repetitive crimes. Indeed, drug dealing on the street involves a single person, or a group of people, loitering in the same place, with customers coming to and from this dealer or group. This form of drug dealing involves the appropriation of public space to visibly commit multiple, successive crimes. Other crimes, such as assault or robbery, occur very quickly and are not usually repeated crimes and individuals who use the public space where these crimes occur are less likely to see these offenses, and if they do, this would not be a daily occurrence. Street level drug trafficking on the other hand can become a permanent activity with certain dealers appropriating specific areas who are there regularly to conduct their business. As people in the community conduct their routine activities they come to notice these individuals and their permanence which signals a lack of capable guardianship over the area where these dealers are operating. Fear and the perception of crime become elevated in areas where these activities are occurring because these crimes are a visible cue to the erosions of social norms in a particular area. Controlling the locations where these activities take place is important in the maintenance of neighbourhood vitality. As social retreat is a potential reaction to fear and the perception of crime, it is important to ensure that such activities do not take over the activity nodes or pathway connections that ensure the movement of people through cities.

Human movement, disorder and fear and the perception of crime

The review of disorder reveals that although numerous studies associate disorder with fear and the perception of crime, a single matrix transferable from one study to the next does not exist. Furthermore, disorder tends to be described in fixed terms, referring more to a stable state, as opposed to a problem containing both a temporal and spatial dimension. Within the urban space, disorder can be interpreted both spatially and temporally, and from this perspective, associated with the movement of people through space. Public urban space is shared by many people who often do not know each other (Wikström, 1995; and Valentine, 2008). As such, social protocols allowing for the proper use of this space are referred to as civility, and breaches of these protocols result in what can be referred to as incivility (Valentine, 2008). Smith et al. (2010) explore incivility within the context of everyday living thus find that the research in this area needs to be re-directed away from geostatic spaces (e.g.: neighbourhoods) towards a spatial movement theory which accounts for urban spatial dynamics. From this theoretical perspective, incivility is an everyday experience linked to human movement through the urban space (Smith et al., 2010). Phillip and Smith (2006) introduce their research project entitled the *Everyday Life Incivilities Australian Study* (ELIAS). This is a study based on cross-sectional data where respondents engaged in their routine activities were asked questions pertaining to their interaction with incivility by strangers (Phillip and Smith, 2006). In this study, several new incivility measures are identified including those which can be linked to human movement in urban space:

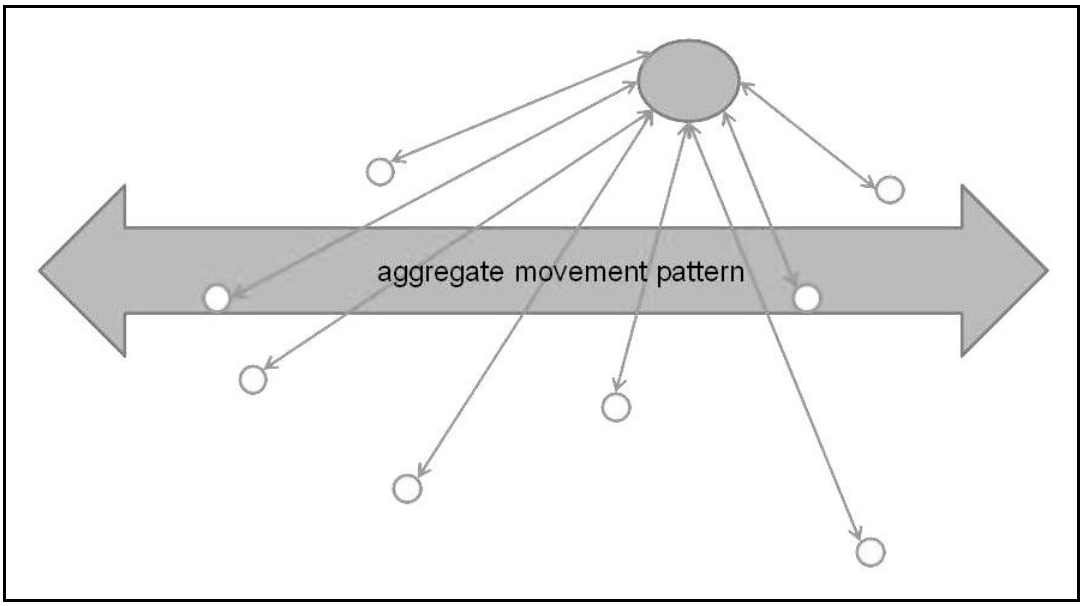
- “bumped into me”
- “blocked my way”
- “pushed in front of me (cut me off)”
- “tailed”
- “stopped abruptly in front of me”
- “took up too much personal space (seating)”
- “invaded my personal space”
- “swerved in front of me (child)”
- “sat or stood in front of me (cinema)” (Smith and Phillips, 2006: 890).

Although there are several other measures revealed in this study, the researchers find that the above mentioned behaviours were most often cited and directly linked to movement. More specifically, being “pushed in front of” or “cut off” were most often cited; 25.3% of the time (Smith and Phillips, 2006: 890).

Although it is not the purpose of this dissertation to fully explore social and physical disorder within the context of movement, some examples are presented here to illustrate this important dimension in the study of disorder. The previous section identified police calls for service falling within the category of drugs as potentially forecasting perception of crime. The following example, figure 19, illustrates how street level drug trafficking can interfere with the aggregate movement of humans within the urban space. In the diagram presented in figure 19, the larger dot represents a static drug trafficker awaiting clients. The smaller dots represent potential clients travelling from different directions to access the trafficker. The small arrows display the movement patterns of drug purchasers. The large arrow represents the aggregate movement of people who are for instance, walking on a sidewalk to and from a transit station. This diagram shows how the movement of the clients consistently bisects the aggregate movement pattern, thus raising the potential of people being bumped, pushed or cut off. As

such, this street activity may elucidate a higher perception of crime because of the interruption of physical movement.

Figure 19: Street-level drug trafficking scenario

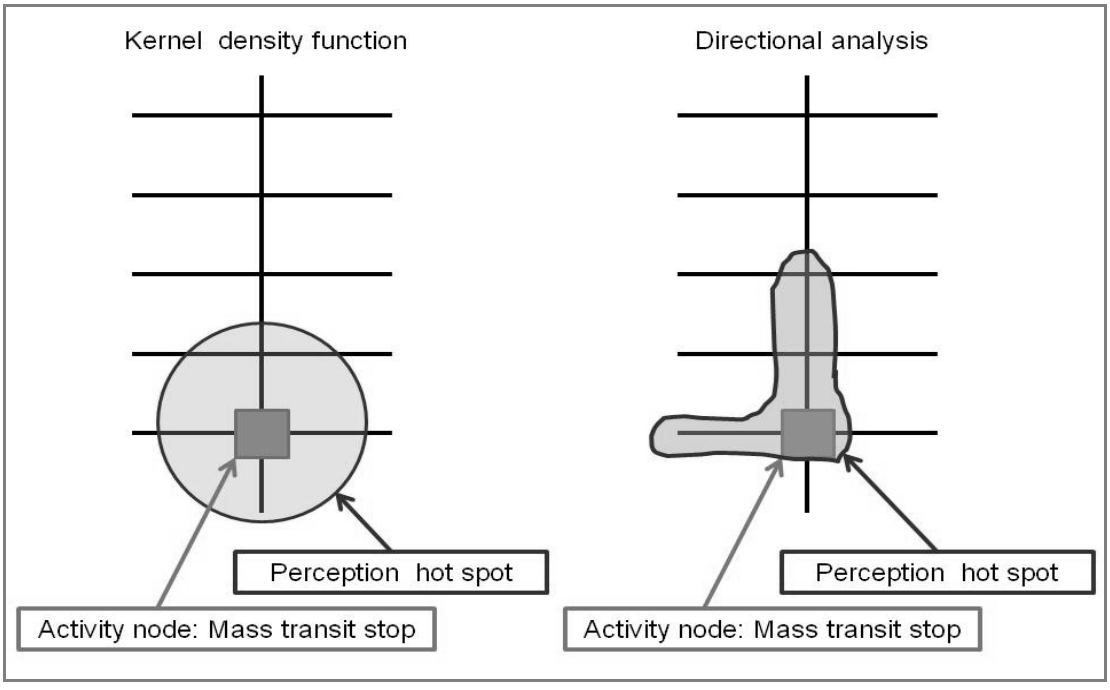


Applying movement to the study of fear and the perception of crime would greatly expand the field as the preliminary research presented here shows an aggregation of perception near major transit stops. These are high activity nodes and as such, high attractors of human movement through the urban space (Brantingham and Brantingham, 1993b).

Future forecasting methodologies should account for the aggregate movement of people throughout the urban environment, including pedestrian and vehicular flow through major pathways. The intersection of these major pathways with street level crimes potentially interrupting generalized human movement could be revealed as highly focused areas for fear and the perception of crime. The visual analysis method used here builds on the kernel density function which is isotropic. However, human movement is not uniform, but rather, directional and

affected by such things as land use, path design (roads – sidewalks), public transit and so forth. Since perception follows routine activities, it would likely also show this aggregated directionality. The two diagrams presented in figure 20compare the kernel density function, to an analytical method that would account for the uneven distribution of human movement. Figure 20 shows the difference in pattern that these two approaches produce. A directional analysis would allow the integration of movement patterns and land use in order to show more precisely the pattern of perception. This type of analysis would most likely lend itself better to comparisons with crime data.

Figure 20: Direction and perception



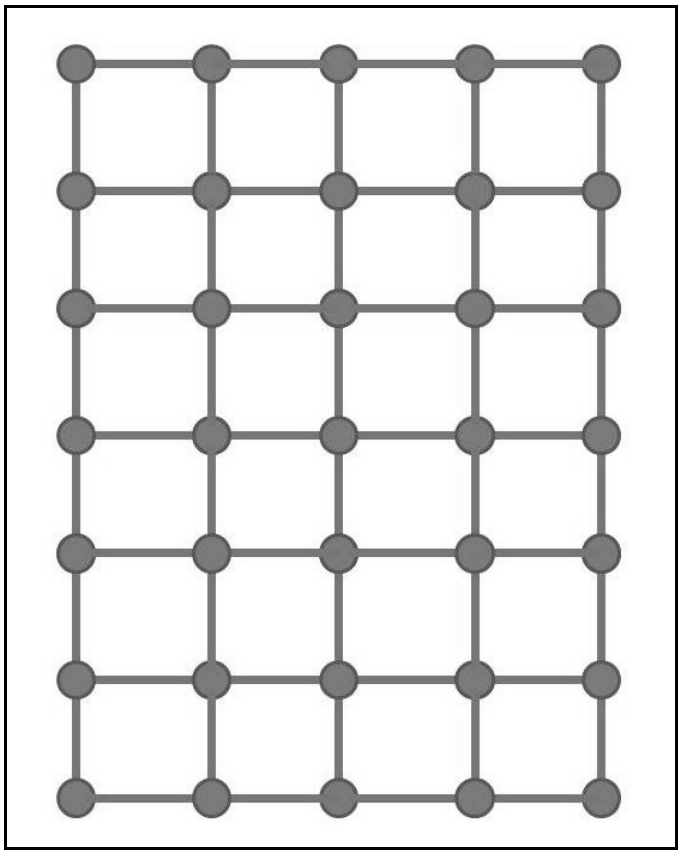
In the *2007 Commercial Drive Community Survey,* the *2008 Mount Pleasant Community Survey*, and the *2008 Collingwood Renfrew Community Survey*, intersections were identified as places where there was heightened perception of

crime. In two of these surveys, a Skytrain station was the major focus. These types of places are critical to the sustenance of healthy urban living because intersections are the crossing of pathways and mass transit systems are funnels for higher volume of human movement. The danger occurs when these places become overrun by activities that negatively impede this movement and create either fear or avoidance.

Modelling the temporal progression of fear of crime

The research presented in this dissertation shows how the introduction of central activity nodes in the meso environment alters both the patterns of perception and police incidents. These findings could be incorporated into a model and the thresholds discovered. Then the analysis conducted on these community surveys used to calibrate the model. Both the cognitive maps and the police calls for service could be converted into a network of pathways and nodes then interfaced with routine activity movements. The permutation of these movements over time would demonstrate how patterns are altered by these aggregate human movements. The following figure is an abstract representation of what the basis of this network would look like.

Figure 21: Nodes and paths



Each node would represent an intersection and the segments streets. The nodes would grow larger to represent increased volume and the segments would reflect the amount of flow occurring in each one. Movement within this network would be altered at every time step and the outcomes represented by the police calls for service and the cognitive ramifications. High activity nodes and the changes within the nodes would be introduced and the impact on the system recorded.

The VPD calls for service data could be converted to this matrix by using the street segment and intersection function[18]. This means that the points within a 100 block are aggregated to that block thus showing the relative density of crime

[18] The street segment technique used to represent police data was first conceptualized by Dr. James LeBeau. This technique was recently expanded upon by Dr. LeBeau, Dr. P.L. Brantingham and J. Song in the ICURS lab by introducing intersections.

through graduated symbolization on individual street segments. Calls for service that fall within an intersection are also represented with their unique attributes. This method surpasses previous visual representations of calls for service, such as the kernel density function, because it highlights crime more specifically to street segments and intersections. Thus this technique can show how crime evolves and changes over the course of several years within the Grandview-Woodland neighbourhood and also how crime patterns are affected by the directionality of human movement. The cognitive maps could also be abstracted to this network with each raster assigned to a particular street segment or intersection.

The changes found in the VPD data over a period of ten years could confirm how perception is altered within the network as nodes would have varying levels of attraction. Mass transportation data and land use could be integrated into this network so that each intersection is appropriately calibrated. Furthermore, this modelling approach combines the micro dynamics occurring in the node and adjacent pathway with the macro aspects of the system. The simulation would run utilizing time steps and changes in police calls for service recorded in the size of the node and width of the path. The perceptual pattern transformation could be confirmed with the 1997 and 2007 survey maps. Once this model is validated with these data, it could be used in other environmental situations to show how high activity nodes transform the perception of the urban domain and assist planners in implementing appropriate measures to mitigate the negative ramifications associated to these locations.

Research highlights

The research presented here is rich in potential on several different levels. The information uncovered in this dissertation can be highlighted under four distinct categories. First, the theoretical matrix presented in chapter 3 is a valuable tool which illustrates the physical and social interface creating the situational dynamics for fear of crime at the micro, meso and macro level. Second, the value of the community survey instrument and the street-intercept methodology extends beyond a community development perspective to include a research component rich in potential theoretical development. Third, the breadth and depth of the disorder variables presented in these community surveys allows for the exploration of community variance thus furthering the manner in which police and civic agencies can deal with these problems. Lastly, the cognitive maps once analyzed against the police calls for service reveal the prospect of predicting fear of crime through a very small and identifiable subset of police calls for service.

Fear of crime theoretical matrix

This dissertation sets a foundation for research on the fear of crime through a theoretical matrix which encompasses the social and human ecological traditions. This is a clear model which is useful for future academic research, and can also assist practitioners in understanding the various dynamics at play. The research on fear and the perception of crime is both broad and interdisciplinary, yet a model that melds these two distinct realms – the physical and the social – appears to be lacking. Many studies on fear of crime overemphasize one aspect

of the system without acknowledging the impact or existence of the other elements. A comprehensive grasp of the micro, meso and macro elements in the matrix can help guide future research to uncover additional elements while supplementing those already explained.

Community survey instrument and street-intercept methodology

The community survey instrument and the street-intercept methodology presented here were conceived in 1997 as a community development tool. This retrospective analysis demonstrates the utility of this instrument and approach. The data collected are unique and have opened new avenues for research on fear and the perception of crime. The detailed examination of the three levels of data (survey comments – survey responses to disorder issues – cognitive maps) has established the value of this methodology, while providing option for further research.

Disorder - community variance – action research

This research shows that disorder varies over time and also across communities. As well, this is a complex product of urban life with some communities appreciating what might bother residents in other neighbourhoods. The unilateral application of disorder maintenance programs might hamper the unique character of some communities while alienating service providers who may be perceived as out of synch with community standards. The application of an action research method can help to improve disorder maintenance while also serving as a community development approach.

Predicting fear of crime

In this dissertation, a method for forecasting fear of crime is developed, tested and presented. The police calls for service from the Mount Pleasant area are explored and three call types are used to effectively forecast the perception of crime in two other neighbourhoods. In the Mount Pleasant example, 2.56% of police calls for service (breach – arrest – drugs) effectively replicate the perceptual pattern created with the cognitive maps. This finding has significant future repercussions in the field of fear crime and especially within the practice of policing. As there is a growing disconnect between increased fear in the community and decreased crime rates, this forecasting technique can uncover crimes, locations, and police incidents most likely to trigger such feelings in the community. This maximizes valuable resources by providing police and civic agencies with the necessary information to effectively target fear of crime in very specific areas.

CONCLUSION

The questions investigated in this dissertation are multifaceted because disorder is complex, as is its relationship to fear and the perception of crime. Practitioners and policy makers use the term *public disorder* as though it is commonly understood to mean the same thing and expressed in a similar manner. Moreover, public disorder is generally linked, or at the very least, associated with fear and the perception of crime, again with assumed definitions. The activities deployed to deal with this problem are equally diffused and lacking in clarity. Solutions are implemented in various forms. However, without proper problem definition, one is left to wonder how something can be effectively managed if it is improperly defined.

After the review of fear of crime research presented in chapter 1, the relationship between perception and the environment is contextualized within the micro urban setting. During daily routines, pedestrian navigation is mediated through a series of decision making processes which are related to the micro and meso environment. However, despite the abundant research on the effect of disorder on these mechanisms, a consistent disorder matrix which has been replicated over numerous studies has yet to be established or used consistently from one study to the next.

Then in chapter 2 fear of crime is re-framed within the purview of social and human ecology. More specifically, this phenomenon is linked to the patterns of general human behaviours and interactions that occur in an urban setting. Environmental criminology theories which are derived from these general

behaviours and most often used to explain criminal behaviours are inversely applied to fear and the perception of crime. This new interpretation of fear of crime leads to the theoretical framework presented in chapter 3 which articulates how people react to the environment in the micro (city block ↔ individual), meso (neighbourhood ↔ community), and macro (city ↔ collective) urban spaces. The three levels described in the model are both social and physical spaces where perception and human activity interface.

Chapter 4 demonstrates how the survey instrument, originally developed in 1997 through the GWCPC, became the basis for the research presented in this dissertation. While this survey was originally conceptualized as a means to discover local standards, the value of the information collected through these surveys is uncovered and its worth within academic research highlighted. Specifically, these data allow for temporal analysis occurring within a single neighbourhood, but also for the study of inter-neighbourhood differences. The results are presented in chapter 5 and 6. In a first instance, the content analysis conducted on the *1997-2007-2010 Commercial Drive Community Survey* comments reveals three predominant themes on disorder which provide nuance to disorder and introduces environmental features into perception of crime. Levels of tolerance are shown to vary less significantly within one community then from one community to the next. The cognitive maps from the three surveys conducted in the Grandview-Woodland neighbourhood provide a spatial analysis of perception and how this is connected to police calls for service. Heightened perception of crime overlaps areas where there is a higher density of police calls

for service and in particular calls involving public disorder. Furthermore, perception is significantly impacted by the introduction of a new environmental feature which is a high public transportation activity node.

These results illustrate how the cumulative overlay of location, disorder, aggregate human activity generates perception and fear of crime. The police practices used to manage fear of crime do not fully address this problem because most often the dynamics of fear and the perception of crime are reduced to the static signs in the environment. Chapter 7 describes how these policing tactics lack the necessary focus to effectively encourage the legitimate use of disordered areas and thus reduce fear of crime. The community survey instrument is proposed as an alternate means to direct community activity in the form of coordinated community stakeholder action. This research tool is linked to future research opportunities which are presented in chapter 8. A forecasting methodology shows how a very small subset of police calls for service can be effectively used to forecast perception with the main finding linking it to the aggregate human movement in the urban domain and to environmental features contained in these high activity nodes.

This dissertation traced the aetiology of disorder by going to the root theories which underline the study of this phenomenon in the field of criminology. The social and human ecological antecedents were deconstructed to expose the environmental and sociological processes involved in the production of disorder and the consequential effect defined as fear and the perception of crime. Disorder is a multifaceted product varied in its definitions and expressions and

the common theme exposed is that disorder is context and location dependant and that the perception and reaction to it can vary significantly from one community to the next. Even the naming of the problem varied from disorder, to incivility, to antisocial behaviour. Disorder means many things and could involve several different social processes most of which had little, if anything, to do with criminal activity or what may be considered the responsibility of the police. For example, being bumped by people was shown by Bahn (1974) to deeply impact civility and more recently, proven to be one of the primary markers of incivility by Smith et al. (2010). Furthermore, these incivilities produce fear and the perception of crime because civil ties point to pro-social networks, whereas incivility reveals the antisocial nature of society. These micro social and physical human interactions may actually have a stronger influence on perceived feelings of civility, and therefore safety, than traditionally accepted forms of social and physical disorder.

Regardless, whether the problem is referred to as fear of crime, incivility, disorder, perceived risk, or heightened perception of crime, the social ramifications remain serious and the effect on urban vitality is significant. The human reaction to these social encounters is of primary concern to police and civic agencies because if left unmanaged, it can deteriorate the social urban environment by triggering the retreat of people from public spaces. When certain behaviours and traces of these antisocial actions overwhelm communities, collective efficacy begins to decline due to the erosion of social ties. Although

very few studies actually show how this collective and social process occurs, it remains a consistent concern for researchers involved in the study of disorder.

There are however, markers of disorder which are found to be linked to fear and the perception of crime. These signs seem fairly consistent across many studies and are echoed in the community surveys conducted in Vancouver. For instance, social disorder, such as aggressive panhandling, public use of drugs, drug dealing and sex trade (especially when near schools or residential areas) generated the highest concern. And physical disorder closely linked to actual criminal behaviour, such as graffiti, discarded needles and condoms, also caused significant community concern. When some of these markers are contrasted to human movement, both highly visible static signs of disorder and repetitive antisocial acts come to the forefront because these activities occur daily, are permanent fixtures in the environment and interrupt the normal flow of human activity. For instance, street-level drug trafficking has a considerable effect on the environment, especially when this activity is occurring on major human pathways such as sidewalks leading to mass transit systems. Therefore, location plus the aggregation of certain behaviours, combined with the flow of human movement are found to generate fear and perception hotspots.

The analysis of the cognitive maps assumes that certain behaviours and their traces correlate with police calls for service. The visualization of these maps shows how some calls match hotspots of perception and the incidents identified can be typically attributed to activities that are connected to visible social disorder. In particular, drug crimes found to follow perception hotspots, especially

when these offences matched community locations where human movement occurred at a higher rate (e.g.: mass transit stops). Therefore, disorder is both action based as it pertains to human activity, but also location specific, as certain locations when matched with disorder generate community concern. Thus, targeting both the places and the behaviours would only serve to ameliorate the general perception of those areas (Braga, 2005 and Braga and Bond, 2008).

The community survey instrument presented here goes beyond previous work on disorder because many of the questions pertain to positive aspects of the community which can be considered as visual displays of collective efficacy, social control mechanisms and human activity. For instance, some questions focused on community murals and graffiti, two contrasting behaviours: the first is organized and the other, illegal. Since the majority of respondents appreciate murals and disapprove of graffiti, applying murals to walls damaged by graffiti is a means to provide the community with direct feedback to the survey process. Furthermore, this survey methodology was developed with specific community action in mind, which would follow community standards. This approach goes back to the core of Kelling's work which has, in many ways, been misunderstood to mean the categorical elimination of disorder. Rather, Kelling suggests that police should foster community standards, so establishing a baseline for these standards is essential to the effective delivery of police services. The analysis of police practice reveals that the responsibility for managing disorder problems should be shouldered by a multitude of agencies. As with other social problems, the police have taken a primary lead in dealing with fear of crime, again without a

comprehensive understanding of the total problem. In fact, this dissertation shows that many disorder problems fall outside the purview of police action.

Furthermore, the research presented here shows that incivility, which is often a non-criminally labelled social interaction, is strongly related to fear and the perception of crime. For this reason, fear of crime, and the various aspects of urban living that influence these feelings including incivility, can be better managed using an action research approach because this process includes a problem definition phase. Then, this research method brings various stakeholders together and assigns proper responsibility. Once police and civic agencies are properly organized to deal with disorder issues at the community level, the feedback into the social system becomes positive, as individuals will recognize that collective forces are working in harmony towards maintaining civility. This enhances the physical structures in the built environment designed to encourage the effective movement of people through urban spaces. Thus, it is both the environmental and social factors that create feelings of safety and prevent urban communities from deteriorating. Therefore, precise problem definition and proper management of the issues through all levels of the social and physical urban system (micro – meso – macro) leads to reducing and potentially eliminating fear and the perception of crime. This approach ensures that all communities in a city are properly integrated while maintaining their diverse and unique character.

A recent study conducted by Keizer et al. (2008) exemplifies the potential of this type of research. They focused on various forms of disorder such as graffiti

and litter, to see if the presence of such visible displays further perpetuated unlawful acts (Keizer et al., 2008). This research, completed in a cyclical manner, utilizing the urban environment, and espousing the principles of action research, revealed that disorder begets further disorder. However, one of the more interesting findings was that perception of disorder and its maintenance was significantly impacted by the presence of actors in the environment who were visibly attempting to eradicate the disorder (Keizer et al., 2008). The sole presence of a person sweeping the sidewalk, although most subjects did not recall seeing this individual, altered their perception of cleanliness while improving their opinion of the city's activity in this area (Keizer et al., 2008). This shows that it is not so much the absence of the problem, but more so the visible act of cleaning which supports the perception of order maintenance. Thus, disorder ties into fear and the perception of crime both positively and negatively as its presence a sign of potentially dangerous human activity, and its visible removal as an enactment of social control mechanisms working effectively as a symbol of physical and social management of an area.

APPENDIX A: *1997 Commercial Drive Community Survey* – 30 Questions on Neighbourhood Conditions

1. Do you think street vendors selling without a city permit are:
2. Do you think graffiti on private property is:
3. Do you think graffiti on public property is:
4. Do you think sex trade workers working on Commercial Drive are:
5. Do you think sex trade workers working in residential areas or near schools are:
6. Do you think sex trade workers working in industrial areas are:
7. Do you think street musicians soliciting donations are:
8. Do you think unleashed dogs in parks are:
9. Do you think unleashed dogs on residential streets are:
10. Do you think drummers playing in Grandview Park are:
11. Do you think passive panhandlers are:
12. Do you think aggressive panhandlers are:
13. Do you think skateboarding on city streets is:
14. Do you think promotional posters on Commercial Drive and surrounding streets are:
15. Do you think drinking alcohol in public is:
16. Do you think smoking pot in public is:
17. Do you think current levels of vehicle traffic is:
18. Do you think outside café seating is:
19. Do you think organized public art (like murals) is:
20. Do you think litter is:
21. Do you think run-down and boarded up commercial stores are:
22. Do you think run-down and messy residential premises are:
23. Do you think organized festivals such as Public Dreams, Fringe Festival or Stonewall are:
24. Do you think people using Grandview Park as a camping site are:
25. Do you think squeegee people cleaning car windows are:
26. Do you think film locations in the neighbourhood are:
27. Do you think liquor stores open on Sundays are:
28. Do you think the needle exchange making scheduled stops in the neighbourhood is:
29. Do you think condoms on the ground are:
30. Do you think needles on the ground are:

APPENDIX B: *1997 Commercial Drive Community Survey* – Other Questions

Gender: Male ❑ Female ❑

Age: under 19 ❑ 20-29 ❑ 30-39 ❑ 40-49 ❑ 50-59 ❑ 60-69 ❑ 70-79 ❑ 80 and up ❑

SECTION 1

- Do you live in the Grandview-Woodland area? Yes ❑ No ❑ (if no, go to section
- Do you rent ❑ or own ❑. Are you homeless ❑.
- On which street and 100 block do you live? _____
- How long have you lived in the neighbourhood? Under 5 months ❑, 6 months to 11 months ❑, 1 to 3 years ❑, 4 to 6 years ❑ , 7 to 10 years ❑, over 10 years ❑.
- On a scale of 1 to 5 (1 being not very much and 5 being very much) how enjoyable is it to live in the area? 1 2 3 4 5

SECTION 2

- Are you employed in the Grandview-Woodland area? Yes ❑ No ❑
- On which street and 100 block are you employed?_____
- On a scale of 1 to 5 (1 being not very much and 5 being very much) how enjoyable is it to work in the area? 1 2 3 4 5

SECTION 3

- Do you own a business in the Grandview-Woodland area? Yes ❑ No ❑
- On which street and 100 block do you own a business?_____
- On a scale of 1 to 5 (1 being not very much and 5 being very much) how enjoyable is it to own a business in the area? 1 2 3 4 5

SECTION 4

- Are you a visitor in the Grandview-Woodland area? Yes ❑ No ❑
- Are you here shopping ❑, sightseeing ❑, going to a restaurant ❑, seeing a friend ❑, other ❑?
- How often are you a visitor of this area? Daily ❑, more than once a week ❑, weekly ❑, monthly ❑, yearly ❑?

SECTION 5

- Do you know where the Grandview-Woodland Community Policing Centre is located? Yes ❑ No ❑

SECTION 6

- Have you been a victim of property crime in the Grandview-Woodland area? Yes ❑ No ❑
- Have you been a victim of personal crime (i.e. purse snatching, assault) in the Grandview-Woodland area? Yes ❑ No ❑

APPENDIX C: *1997 Commercial Drive Community Survey* – Survey Locations

1. Street intercept surveys along Commercial Drive
2. Locations where food was provided to homeless people
3. Tables set up at local banks
4. Community centre clients
5. Surveyors approached clients at cafes
6. Surveys were dropped off to local businesses
7. Local Church groups
8. Organizations which delivered services to mental health patients
9. Community festivals
10. Community centre staff
11. Street intercept surveys on adjacent streets to Commercial Drive
12. Block Watch members
13. Local school students
14. Senior centres in the neighbourhood
15. Local parks
16. Local community organizations

APPENDIX D: *2010 Commercial Drive Community Survey* – 30 Questions on Neighbourhood Conditions

1. Do you think street vendors selling without a city permit are:
2. **Do you think graffiti is**[19]:
3. **Do you think drug dealing in public areas is**:
4. **Do you think police walking the beat on Commercial Drive are**:
5. Do you think sex trade workers working in residential areas or near schools are:
6. Do you think sex trade workers working in industrial areas are:
7. **Do you think street musicians are**:
8. **Do you think unleashed dogs in public spaces are**:
9. **Do you think people riding bicycles on sidewalks is**:
10. Do you think organized art (like murals) is:
11. Do you think passive panhandlers are:
12. Do you think aggressive panhandlers are:
13. **Do you think posters in public areas are**:
14. Do you think needles on the ground are:
15. **Do you think Community Police Centre volunteers picking up litter are**:
16. Do you think drinking alcohol in public is:
17. Do you think smoking pot is public is:
18. Do you think outside café seating is:
19. **Do you think injecting drugs or smoking crack cocaine in public areas is**:
20. **Do you think people loitering in small groups around SkyTrain stations is**:
21. **Do you think litter on Commercial Drive is**:
22. **Do you think litter in lane is**:
23. Do you think organized public events and festivals are:
24. **Do you think illegal garbage dumping is**:
25. **Do you think run-down and neglected houses, stores or vacant lots are**:
26. **Do you think government liquor stores open on Sundays are**:
27. **Do you think having merchandise from stores on sidewalk is**:
28. **Do you think health workers picking up discarded needles in the area are**:
29. Do you think condoms on the ground are:
30. **Do you think car free festivals on Commercial Drive are**:

[19] Bolded questions were changed in the 2010 survey, either in the wording of the question or the behaviour discussed, from those included in the 1997 and 2007 surveys.

APPENDIX E: *2010 Commercial Drive Community Survey* – Other Questions

Gender: Male ❑ Female ❑

Age: under 19 ❑ 20-29 ❑ 30-39 ❑ 40-49 ❑ 50-59 ❑ 60-69 ❑ 70-79 ❑ 80 and up ❑

SECTION 1

- Do you live in the Grandview-Woodland area? Yes ❑ No ❑ (if no, go to section 2)
- Do you rent ❑ or own ❑. Are you homeless ❑.
- **Name the closest intersection where you live (ie: Commercial and 1st)?** [20]
  _____
- How long have you lived in the neighbourhood? Under 5 months ❑, 6 months to 11 months ❑, 1 to 3 years ❑, 4 to 6 years ❑ , 7 to 10 years ❑, over 10 years ❑.
- On a scale of 1 to 5 (1 being not very much and 5 being very much) how enjoyable is it to live in the area? 1 2 3 4 5
- **Is there a place you particularly enjoy in your neighbourhood? Yes ❑ No ❑ Where** [21]
  ___

SECTION 2

- Are you employed in the Grandview-Woodland area? Yes ❑ No ❑
- **Name the closest intersection where you work (ie: Commercial and 1st)?**_____
- On a scale of 1 to 5 (1 being not very much and 5 being very much) how enjoyable is it to work in the area? 1 2 3 4 5

SECTION 3

- Do you own a business in the Grandview-Woodland area? Yes ❑ No ❑
- **Name the closest intersection where you own a business (ie: Commercial and 1st) ?**__
- On a scale of 1 to 5 (1 being not very much and 5 being very much) how enjoyable is it to own a business in the area? 1 2 3 4 5

SECTION 4

- Are you a visitor in the Grandview-Woodland area? Yes ❑ No ❑
- Are you here shopping ❑, sightseeing ❑, going to a restaurant ❑, seeing a friend ❑, other ❑?
- How often are you a visitor of this area? Daily ❑, more than once a week ❑, weekly ❑, monthly ❑, yearly ❑?

[20] Bolded questions were changed in the 2010 survey from those included in the 1997 and 2007 surveys. In previous surveys respondents were asked to name the 100 block where they lived. However, many respondents did not answer this question and it was altered in 2010 to discover if better information could be garnered from this wording change.

[21] This question was added to the Mount Pleasant and Collingwood Renfrew surveys and then retained in the 2010 Commercial Drive version.

SECTION 5

- Have you been a victim of property crime in the study area? Yes ❑ No ❑ When _____
- Have you been a victim of personal crime (i.e. purse snatching, assault) in the study area? Yes ❑ No ❑ When _____
- **Have you had to call 911 for a problem in the study area? Yes ❑ No ❑ When** _____
- **Have you witnessed a crime in the study area? Yes ❑ No ❑ When** _____
- **Do you know who to call about discarded needles? Yes ❑ No ❑**
- **Do you know who to call about problem premises, graffiti or litter? Yes ❑ No ❑**
- **Do you know who to call about drug dealing? Yes ❑ No ❑**
- **Do you know who to call about aggressive panhandlers? Yes ❑ No ❑**
- **Name the place you feel has the highest level of crime in the study area?** _____

APPENDIX F: *2008 Collingwood Renfrew Community Survey* and *2008 Mount Pleasant Community Survey* – 30 Questions on Neighbourhood Conditions

1. Do you think yard sales are
2. Do you think graffiti on private property is:
3. Do you think graffiti on public property is:
4. Do you think drug dealing in public areas is:
5. Do you think sex trade workers working in residential areas or near schools are:
6. Do you think sex trade workers working in commercial areas are:
7. Do you think street musicians are:
8. Do you think unleashed dogs in parks:
9. Do you think people riding bicycles on sidewalks are:
10. Do you think organized public art (like murals) is:
11. Do you think passive panhandlers are:
12. Do you think aggressive panhandlers are:
13. Do you think skateboarding on sidewalks is:
14. Do you think grow ops are:
15. Do you think posters in public areas are:
16. Do you think drinking alcohol in public is:
17. Do you think smoking pot in public is:
18. Do you think outside café seating is:
19. Do you think injecting drugs or smoking crack cocaine in public areas is:
20. Do you think people loitering around SkyTrain stations are[22]:
21. Do you think litter is:
22. Do you think run-down and neglected houses, stores or vacant lots are:
23. Do you think organized public events and festivals are
24. Do you think people going through dumpsters are:
25. Do you think giving methadone in clinics and pharmacies is:
26. Do you think government liquor stores open on Sundays are:
27. Do you think having merchandise from stores on the sidewalk is:
28. Do you think the mobile needle exchange making scheduled stops is:
29. Do you think condoms on the ground are:
30. Do you think needles on the ground are:

[22] In the Collingwood Renfrew survey this question referred to a Skytrain because there was one in the study area. However, in the Mount Pleasant survey this question simply referred to loitering in public places

APPENDIX G: *2008 Collingwood Renfrew Community Survey* and *2008 Mount Pleasant Community Survey* – Other Questions

Gender: Male ❑ Female ❑

Age: under 19 ❑ 20-29 ❑ 30-39 ❑ 40-49 ❑ 50-59 ❑ 60-69 ❑ 70-79 ❑ 80 and up ❑

SECTION 1

- Do you live in the study area? Yes ❑ No ❑ (if no, go to section 2)
- Do you rent ❑ or own ❑. Are you homeless ❑.
- On which street and 100 block do you live? _____
- How long have you lived in the neighbourhood? Under 5 months ❑, 6 months to 11 months ❑, 1 to 3 years ❑, 4 to 6 years ❑ , 7 to 10 years ❑, over 10 years ❑.
- On a scale of 1 to 5 (1 being not very much and 5 being very much) how enjoyable is it to live in the study area? 1 2 3 4 5
- Do you feel safe in the study area? Yes ❑ No ❑
- Is there a place you particularly enjoy in your neighbourhood? Yes ❑ No ❑ Where _____

SECTION 2

- Are you employed in the study area? Yes ❑ No ❑
- On which street and 100 block are you employed?_____
- On a scale of 1 to 5 (1 being not very much and 5 being very much) how enjoyable is it to work in the study area? 1 2 3 4 5

SECTION 3

- Do you own a business in the study area? Yes ❑ No ❑
- On which street and 100 block do you own a business ?_____
- On a scale of 1 to 5 (1 being not very much and 5 being very much) how enjoyable is it to own a business in the study area? 1 2 3 4 5

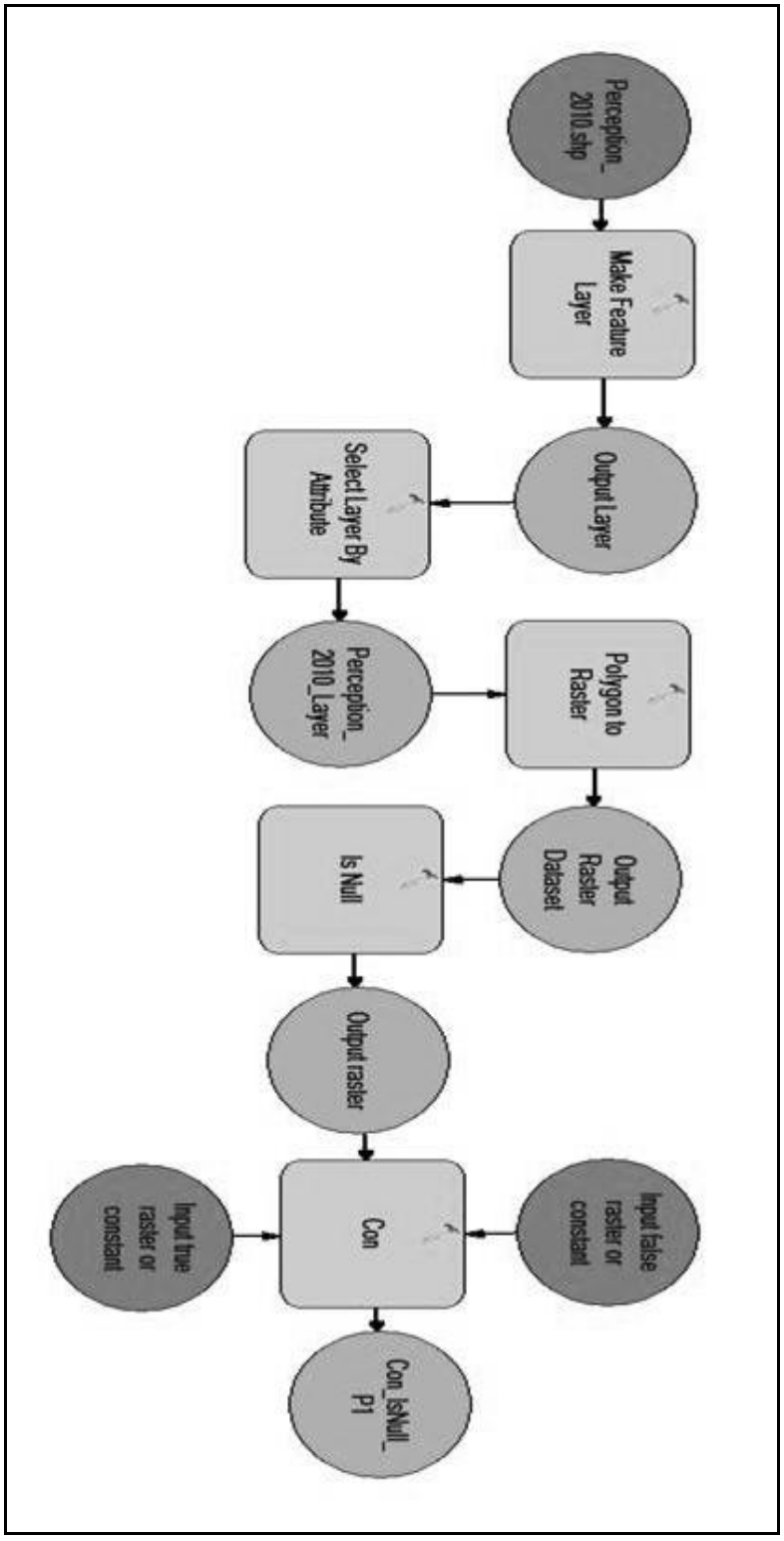
SECTION 4

- Are you a visitor in the study area? Yes ❑ No ❑
- Are you here shopping ❑, sightseeing ❑, going to a restaurant ❑, seeing a friend ❑, other ❑?
- How often are you a visitor of this area? Daily ❑, more than once a week ❑, weekly ❑, monthly ❑, yearly ❑?

SECTION 5

- Have you been a victim of property crime in the study area? Yes ❑ No ❑ When _____
- Have you been a victim of personal crime (i.e. purse snatching, assault) in the study area? Yes ❑ No ❑ When _____
- Have you had to call 911 for a problem in the study area? Yes ❑ No ❑ When _____
- Have you witnessed a crime in the study area? Yes ❑ No ❑ When _____
- Do you have a problem premises on your block? Yes ❑ No ❑ When _____
- Do you know who to call about problem premises, graffiti or litter? Yes ❑ No ❑
- Do you know who to call about prostitution, drug dealing or homeless people? Yes ❑ No ❑
- Do you think you have a responsibility for keeping your neighbourhood safe? Yes ❑ No ❑

APPENDIX H: Program model for the raster function



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