

NEW TOOLS TO ERADICATE CRIME PLACES AND CRIME NICHES

Gregory Saville, MES, MCIP
School of Criminology and Criminal Justice,
Florida State University

*Paper Presented At The Conference Safer Communities: Strategic Directions In Urban Planning
Convened Jointly By The Australian Institute Of Criminology And The Victorian Community
Council Against Violence, Held In Melbourne, 10-11 September 1998*

Sometimes the simplest ideas can have the biggest impact on crime. It has been said that a crowbar can move a mountain if applied in the right places. Such is the case with an idea called crime prevention through environmental design - CPTED (pronounced, sep-ted). CPTED offers urban designers and neighborhood problem-solvers an effective and practical tool for reducing the opportunity for crime.

In recent years modern CPTED has been based on a complex theory called the ecology of crime, which basically calls for thinking about criminal activities as part of a neighbourhood ecosystem. For some years, a small group of criminologists have been attempting to understand crime using the ecology of crime (Brantingham, 1993; Stark, 1987; Taylor and Covington, 1988). This is about how criminal opportunities are created in neighborhoods.

Essentially the ecological, or holistic, view is that a neighbourhood is like an ecosystem. An ecosystem has many parts to it which fit more or less together to give that system some form of balance. The same with safe neighbourhoods. Everything has its own place, just as everyone should feel to some extent that they belong, or are part of, some place. When that ecosystem experiences changes that are too rapid or too extensive, then the system often becomes dysfunctional and out of balance. This might happen when a few extra bars open up that start to create disorder and noise problems in the neighbourhood. It might also occur when large proportions of traditional residents move rapidly out of a neighbourhood and the tenure of local tenancy drops too quickly. Perhaps the number of abandoned buildings in a neighbourhood increased beyond a certain point, a tipping point, and crime begins to climb dramatically. These are all examples of a neighbourhood out of balance. In such neighbourhoods a niche is created for crime opportunities.

These issues, the environmental design of neighbourhoods, the land use, social diversity, and extent of local activities, are of great concern to urban planners, police officers and residents alike. They hearken back to the pioneering work of Jane Jacob's in her book *The Death and Life of Great American Cities* (1961). Jacob's thesis that neighborhood diversity and social mix influences the opportunities for crime was the seminal work that began the work of CPTED pioneers such as Schlomo Angel (1968), C. Ray Jeffery (1971), and Oscar Newman (1972).

The premise of CPTED is simple. Watch those who engage in criminal, or nuisance, behavior in public. If you watch carefully you will see they prefer some areas over others, they choose certain times of the day and week, and they focus on specific targets while ignoring others. Why? Their choices are called environmental preferences. What CPTED does is to modify the physical places to reduce the environmental preference of criminals. And since much crime is based in opportunity, the chance for further criminal acts or illicit behavior can be prevented.

WHAT IS CPTED?

In the 1970s the concept of CPTED was outlined by criminologist C. Ray Jeffery and architect Oscar Newman. Preventing crime by designing it out can save enormous costs and time for police, courts, and prisons. It can reduce the social and psychological impact of crime in

neighbourhoods. Most importantly, CPTED improves the livability and safety of urban places. There is no replacement for proper design.

CPTED is a prevention strategy that deals with the design, planning and structure of our cities and neighbourhoods. It acknowledges the physical environment has a great impact on the types and location of crime problems. CPTED has become a key ingredient for responsible planning of new housing projects, shopping malls, parks, parking lots, commercial areas, and other places throughout the modern city.

CPTED emerged in the 1970s after a series of studies on the effect of the physical environment on crime. The early development of the CPTED concept is generally associated to the work of C. Ray Jeffery in his book *Crime Prevention Through Environmental Design*, (1971) and Oscar Newman's *Defensible Space* (1972). Actually the earliest descriptions can be found in the work of Jane Jacobs, especially *The Death and Life of Great American Cities* (1961). Other early studies included the work of Schlomo Angel who produced a doctoral dissertation on the subject in 1968 (Angel, 1968) and a government sponsored study in 1969 (Luedtke, 1970).

Early CPTED used natural surveillance to make spaces defensible by legitimate users, and it used architectural design to put more "eyes on the street". This is called defensible space. Physical spaces were clearly delineated in a hierarchy from public to semi-private to private. Improved street lighting and landscaping were also used to enhance the territory of a place. In recent years, more sophisticated methods have been added to the repertoire: removing crime targets, effective and proper displacement of problems, reducing crime facilitators, and avoiding neighborhood crime threshold, also call the tipping point, are only a few of these.

HOW DOES CPTED WORK?

CPTED can include short term tactics on problems that already exist. This can include improving lighting outside a store to reduce robberies, trimming the hedges around a townhouse to prevent burglaries, or removing high risk items from easy access to shoplifters in a shopping mall.

CPTED can also include long-term strategies on potential problems before they exist. This might include careful placement of automated bank machines on the street or neighborhood planning that encourages plenty of legitimate downtown activities during evenings. Other newer forms of large-scale planning strategies include the tipping point phenomenon, and how to use displacement effectively. These are types of "second-generation" CPTED which will be discussed at the end of this article.

THE BASIC PRINCIPLES OF CPTED

Territorial reinforcement. This includes creating a sense of turf in a place by using physical design to help residents claim a place as their own. This includes subdividing space into different degrees, public/semi-public/private by using landscaping, architecture, and planning.

Access control. This involves reinforcing turf, but focuses on entry and exits into buildings, parks, parking lots, and neighborhoods. Closing some entranceways, and opening others in strategic locations, is one way of doing this.

Natural surveillance. Placing legitimate eyes on the street can help to make a place unattractive to offenders, thus preventing it from becoming their environmental preference - the place for crime. Placement of windows, lighting, removing obstructions to improve sightlines, are all tactics to achieve this. Notice that placing eyes on the street may be insufficient if they are the “wrong” eyes (say the eyes of local drug dealers), or if those eyes are too afraid to do anything about the problem they are witnessing. Obviously community-building, the creation of a safe neighbourhood ecosystem, involves more than simple design.

Neighborhood image and maintenance. The more dilapidated an area, the more likely it is to attract unwanted activities. The maintenance and the “image” of an area can have a major impact on whether it will become victimized. A regular program of school maintenance or street clean-ups can go a long way to making an area unattractive to offenders.

The environmental land use. The larger environment where crime occurs also has an impact on crime. People may legitimately use a space (teens skateboarding), but may cause problems when they conflict with other user groups (seniors out for a stroll). CPTED aims to reduce the conflicting user groups, thereby reducing problems. For example CPTED strategies are useful to redesign public spaces to better control where different groups conflict with one another thereby allowing all to use the public domain safely. This includes new research in the ecology of crime, such as the impact of abandoned buildings as magnets for crime (Spelman, 1993).

HOW ARE CPTED PRINCIPLES APPLIED?

There are essentially three distinct ways to implement CPTED strategies:

- mechanical devices;
- organizational or management practices;
- natural design.

Mechanical devices include closed circuit television (CCTV) and security locking systems. Electronic point of sale scanners in department stores can reduce shop theft and anti-theft detectors at library entranceways can reduce book thefts. Mechanical devices have the advantage of enhancing security in high risk areas, however they have the disadvantage of requiring constant maintenance. They may also infer safety and security when there is none (CCTV may help identify offenders, but they have rarely been responsible for stopping an actual crime in progress). In addition, they may deter some offenders, but often they merely displace problems to areas just outside of camera range, thereby solving nothing.

Organized, or management, practices include formal police and security patrols, bouncers in late night taverns, and citizen patrols in high risk neighbourhoods. They can put more eyes on the street

and offer a visible deterrent to crime. However, they have the disadvantage of being reliant on person-power which can be very expensive. They can also be of limited use since no community can afford constant organized surveillance. Big brother cannot always be watching! And even if he was, it may be questionable whether this is desirable in a free and democratic society. For example, in recent years there has been an explosion of police CCTV on public streets. This is a mechanical security device that is aimed at enhancing organized police patrols. However many have pointed out that not everyone wishes to be monitored by police while they walk down the street or speak to shopowners, some consider this an invasion of their own privacy.

Natural design encourages the use of space and the design urban places to enhance the social interaction of people in the public domain in a less explicit manner. It may remove potential targets from easy opportunity by proper planning, or it may reduce the potential for conflicting land uses through effective landscaping. Lighting can be used to enhance night-time sightlines, while street clean-ups can help residents take ownership of their own neighbourhood. Natural methods have the advantage of being less intrusive than mechanical devices, and longer lasting than organized surveillance. If people live in a neighbourhood, and care for it and their neighbours, effective design can help them protect themselves.

EARLY OBSTACLES: THE PROBLEM OF DISPLACEMENT

Throughout the 1970s, some large scale evaluations of CPTED criticized the approach (Kaplan et al, 1978; Lavrakas and Kushmuk, 1986). All this was in spite of the fact that CPTED tactics were having significant success on specific projects. One early example was in 7-11 convenience stores. There was a 56% reduction in robberies after physical modifications were employed including improved lighting, redesigning store layout and the outside property, improved surveillance, and enhanced territorial control around 7-11's (Castleman, 1984:21-28).

Yet CPTED saw limited acceptance in the public debate on crime across North America. It has only recently resurfaced. Why the delay? There are three reasons:

1. lack of concern for surrounding context;
2. problems with implementation; and
3. displacement.

1. Ignoring context. Lack of concern for context is the tendency of early studies to focus only on architecture. Newman's early work, for example, considered the design of the Brownstone buildings to the Van Dyke buildings in New York City (Newman, 1972). There was little discussion of the social and demographic factors in the surround neighbourhoods, nor the movement of people and traffic around the two sites. This ignored the broader context of a place, for example where neighbourhood bars and shopping areas were in relation to the site. Although some early approaches to CPTED referred to the need for activity support during preventive measures, these were never really spelled out in clear fashion. To a large measure, this has been corrected by a new array of multi-dimensional techniques called situational crime prevention (Clarke and Mayhew, 1980). It has also been corrected by the development of the risk assessment

- R/A - process (Saville, 1996). Both of these have led to the development of second-generation CPTED, explained below.

Another effort to implement CPTED has actually accomplished the opposite. CPTED design checklists have emerged in some municipalities for new development proposals. In these checklists, planners check off the relevant CPTED principles on each site plan as they are developed. Adequate lighting, proper access control into the site, and trimmed landscaping for good sightlines are all included. Unfortunately checklists ignore the unique contextual nature of crime. No one generic approach will work every time. A particular place may require less lighting, not more. A specific area may need more landscaping, not less. Often, when a municipality adopts a CPTED checklist it considers the matter closed even though many crime opportunities still remain.

2. Implementation delays. Problems with implementation have also surfaced. For example, CPTED training has been limited to only a few places (eg. the National Crime Prevention Center in Kentucky or the RCMP Fairmont Training Academy in British Columbia). It has not been adopted in schools of planning and architecture. Therefore planning professionals remain unsure how to apply CPTED. Even police agencies, who have led the way in implementing CPTED, tend to limit training to a few crime prevention specialists. Recruits are taught little, if anything, about CPTED in basic training. This lack of training, and the subsequent lack of understanding about the potential impact of CPTED, has delayed implementation.

3. Displacement. But the most serious critique of CPTED came from the problem of displacement. Displacement is described as the movement of crime as a result of some preventive action. The study of displacement is a new area in need of further research. However, in this case there has been a number of studies on the topic. A few good ones include the work of Barron (1991), Hesseling (1994), and Clarke, (1995).

In CPTED, practitioners frequently employ preventive efforts in one area only to discover that the problems have been moved to another place. Some critics claim that all CPTED accomplished was the shifting around of crime opportunities (Farrington et al, 1993).

FIVE TYPES OF DISPLACEMENT

It turns out that displacement is far more complicated than original thought. It does not always occur and even when it does, it doesn't necessarily mean there is 100% displacement (Clarke 1994). Furthermore, there are different types of displacement:

- **Place** displacement is when a problem is moved from one place to another.
- **Time** displacement is when a problem is moved from one time to another.
- **Method** displacement is when the problem, or the offender, changes methods. The problem remains. [Tom robs Bill with knife/Tom robs Bill with gun]
- **Target** displacement is when the problem, or the offender, changes targets. The place, timing, and tactics may be the same, but the problem changes to a different target. [Tom robs Bill/Tom robs Sue]

- **Offence** displacement is when the problem, or offence, changes to another type of problem/offence. [Tom robs Bill/Tom kills Bill]

The most common form of displacement is usually place or time displacement. Other forms may also occur. Many of these different forms of displacement can occur together at the same time (Hesseling 1994:198). This means that displacement is highly complex and research is only at the beginning.

Positive and negative displacement. Research on displacement has shown that displacement can be effectively utilized in a positive way. This has been called spillover or diffusion of benefits. Here it is called positive displacement. Obviously, displacement can also be negative. It can create more problems by moving offenders or crime opportunities in such a way that crime worsens. The key for successful CPTED is to think about displacement as a positive tool, rather than a negative side-effect.

The classic case of negative displacement is when police agencies implement a crack-down of street prostitutes in one area and they simply move to another. Enforcement such as this has little long term benefit, unless careful attention is paid to the direction of the displacement. This reflects improper use of an enforcement strategy. The same can occur with CPTED strategies. The key here is how to employ positive displacement.

USING DISPLACEMENT EFFECTIVELY: THE RISK ASSESSMENT

The best way a CPTED practitioners can determine whether displacement is to occur is to conduct a thorough risk assessment, the R/A. A risk assessment means that sufficient data is collected about a particular problem prior to employing CPTED. Depending on the scope and complexity of any given project, this can include crime analyses, safety audits, interviews, local surveys, focus groups, and a CPTED review of the site. The R/A must also consider the evolving empirical research on the ecology of crime, such as the hotspots of predatory crime (Sherman et al, 1989). The effects of the preventive effort can then be monitored to determine what happens. In the case of consultants and researchers this means incorporating post-evaluation research into the project. In the case of police officers and planners, it means that someone will have to monitor the crime patterns for a time afterwards. The R/A might be conducted by crime analysts, planning technicians, community policing volunteers, or residents.

Example #1: One CPTED officer in Port Simpson, British Columbia, Canada analysed break-in and vandalism problems at a local school in a small town. Local kids were hanging out at the rear of the school because there was nothing for them to do in the community. Some were causing the problems at the school. After a site visit, review of the crime statistics and reports, interviews, and a planning meeting with staff and parents, the officer came up with some CPTED recommendations which took displacement into account -- in fact used displacement positively. In this case her R/A consisted of a review of the police reports, a site visit, an interview with the school principal, and a planning meeting with staff and parents.

The officer had the school make some design changes at the school, including turning off the nightlights. She anticipated displacement to a nearby recreation center and so she spoke with youth workers at the center. They prepared evening activities for the youth. The CPTED measures were employed and youths were displaced to the recreation center. Crime at the school dropped off completely.

Afterwards the officer noted, “willful damage to the school was significantly reduced. Most of the youths started hanging out at the recreation center across town which had the facility and programs for them. The community felt this was positive. The parents advisory council was so pleased by the results, they decided to support the students in an additional proposal for a new outdoor arena” (McLea 1995).

Example #2: Another example is the case of golf mowing times in Delta, British Columbia, just south of Vancouver. This is an example of positive time displacement in response to noise complaints coming from homes adjacent to a golf course. Upon speaking to residents and conducting a site visit, a CPTED officer realized the noise was resulting from the mowing times and locations of the golf course gardener.

Interviewing the gardener revealed that he began his mornings by mowing this particular green, the ninth hole, with a large motorized mowing machine. Naturally, at 7 a.m. the machine made excessive noise. The officer surveyed the course and discovered the layout provided another solution to the problem. When he told the gardener that he was committing a noise infraction, the gardener agreed to change his mowing routine to begin at the first hole where there were no nearby residents. By the time the gardener reached the 9th hole, it was 9:30 a.m. and residents were already awake. The noise complaints dropped off to nil. This positive displacement resulted from an R/A that included resident and staff interviews, a CPTED site visit, and a review of the mowing times at the golf course.

Example #3: In a larger scale problem, a planning and consulting firm was asked to assess crime problems at a public housing estate in Vancouver. This was a more extensive R/A that included crime mapping to examine hotspots, local surveys, interviews with housing staff, residents, and local adolescents, a site visit, safety audits, and numerous meetings on site, a variety of factors were discovered. These included poor territoriality on the grounds, no access control, an excessive number of unsupervised adolescents on site, poor lighting and natural surveillance. At heart to this issue was the existence of a half dozen apartments with active drug dealers. It seemed these individuals had taken the estate over for themselves. The legitimate renters on site were unable to exert any control of the premise. This is called the tipping point phenomenon and it is an example of an ecosystem that had become dysfunctional. The number of drug dealers and the amount of activity they generated tipped over the capacity of the residents to effectively take control for themselves (Saville, 1996). Thinking in such an ecological, or holistic, way about the crime niches at this estate allowed the development of strategies to reduce opportunities for crime.

All these issues were addressed through CPTED and proper administration of the estate. Some, but not all, of the drug-dealers were evicted -- just enough to return the control of the site back to the legitimate residents, under the tipping point. This displaced some of the trouble-makers off-

site and allowed legitimate renters to control their own building. Physical design changes were then made to the complex that helped territoriality, access control, and natural surveillance. Within a few months problems decreased. Far fewer police calls are now received at the complex. No increases in police calls was observed to other areas in the neighbourhood. In fact, it has appeared that there is an overall reduction of crime without any significant negative displacement whatsoever.

It is apparent that displacement can, in fact, be used as an effective CPTED tool. If careful consideration is given to the direction of displacement, this may represent a significant new way to reduce crime. If a thorough risk assessment is conducted, displacement can be thought of in positive, versus negative, terms.

SECOND-GENERATION CPTED AND TIPPING POINTS

Renewed interest in CPTED in recent years has led to a more comprehensive, ecological approach for reducing crime niches in neighbourhoods. This approach has been called various names, for example environmental crime prevention, situational crime prevention, and environmental criminology. Here it is called second-generation CPTED, and it represents the next generation of sophisticated strategies for implementing CPTED (Saville and Cleveland, 1997).

Second-generation CPTED requires a risk assessment process, and it considers displacement. It begins with environmental modifications to set the stage for reduced opportunities for crime niches, but it depends on additional social changes to maintain the impact of those modifications. It also incorporates new findings which may offer additional tools to prevent crime. One such finding is the idea of the ecological threshold, or what is also called the neighbourhood tipping point (Saville, 1996).

Tipping points were first used as a planning concept (Famelis, 1970; Kozlowski et al, 1972: 1971; Whyte, 1988). They were then expanded as an ecology of crime concept (Wilson, 1980; Taylor and Covington, 1988). The basic idea was that a neighborhood, just like a natural ecosystem, had the capacity to hold only a certain number of things. Add too many and the system will collapse because it exceeds its carrying capacity. It would overrun the tipping point.

Obviously urban planning and neighborhood design has a major role to play. For example a Vancouver study on neighbourhood bars and taverns discovered tipping point problems suggesting that the raw number of alcohol establishments not a trivial matter. This is true for the victims of crime, the police who respond to alcohol-related calls, and for those control these establishments. The implications are that too many bars in too small an area creates an excessive amount of alcohol related crime. This leads to a drain of municipal services, especially policing. In other words, the tipping point of that neighborhood will have been exceeded. The question left for police and other public officials is how to find that tipping point?

THE VANCOUVER BAR STUDY

To answer this question, the Vancouver Bar Study was developed by Action Assessment Group, a crime prevention and urban planning firm, in conjunction with criminology students from nearby Simon Fraser University. It was coordinated through a combined effort between the City of Vancouver Manager's Office, the Vancouver Police Department, and members of the Vancouver Planning department in the early months of 1993. Data collection, analysis, and further development of a "tipping point model" continued into 1995. The initial goal was to study licensed premises in Vancouver's downtown eastside, a police "hotspot" containing the city's skid row and some of the highest crime rates in the country.

It was not the simple number of bar seats and alcohol availability that mattered most but rather that the number of bar seats located in a neighborhood had a multiplier effect on the police calls for service. At some point police, social service, and city resources become exhausted. This is the neighborhood threshold above which civic politicians, municipal workers, police, and community residents may decide not to tolerate. A neighborhood such as this will have exceeded its tipping point.

The study was expanded to include an analysis of not only the licensed premises in the downtown eastside, but also in four other neighborhoods for comparative purposes. In all, there were a total of 53 licensed establishments with 10,250 bar seats. Calls for service related to alcohol in the five areas were tallied for a one month study period. The "tipping point model," technically called a logarithmically-transformed least square regression model, was developed for computer analysis that calculated threshold in the five neighborhoods.

Numerous factors were examined within these neighborhoods however it was the number of bar seats that emerged from the model as the main variable explaining calls for service. This provided some of the first empirical evidence documenting a specific neighborhood tipping point which planners could begin to use to reduce potential crime niches. A small sample size of only five neighborhoods, and a short one month study period, cannot substantiate this phenomenon. Also tipping point levels will likely be based as much on community consensus, available resources, and politics, as on the model outlined here. Therefore, further research is necessary. But, what this suggests is that there is empirical support for the idea of a neighborhood tipping point.

THE FUTURE

Second-generation CPTED understands the context of crime by using thorough risk assessments. It views displacement as a potential tool to be applied carefully. It uses an ecological framework to view the neighbourhood as an ecosystem; an ecosystem that can tip over if proper land uses and activities are not taken into account.

What the Vancouver Bar Study signals, along with all the emerging research in the ecology of crime, is the re-emergence of a new form for preventing crime niches in neighbourhoods. It shows how the ecological model can explain crime opportunities. It also suggests that second-generation CPTED, with its emphasis first on the physical environment where crime occurs, and then on

social community-building strategies, is the best way to deal with the complex issue of crime in it's many contexts.

REFERENCES

Angel, S. 1968. *Discouraging Crime Through City Planning*. Unpublished Ph.D. Dissertation. U.C. at Berkeley, CA: Institute of Urban and Regional Development.

Barron, J. Michael. 1991. Repulsive and Attractive displacement. Paper presented to the 50th annual meeting of the American Society of Criminology. San Francisco, California.

Brantingham, P.L. and Brantingham, P.J. 1993. Nodes, paths and edges: Considerations on the complexity of crime and the physical environment. *Journal of Environmental Psychology*. 13:3-28.

Castleman, Michael. 1984. *Crime Free*. New York: Simon and Schuster.

Clarke, R.V.G. 1995. Displacement: An Old Problem in New Perspective. In Gregory Saville (ed.). *Crime Problems, Community Solutions: Environmental Criminology as a Developing Prevention Strategy*. Port Moody, British Columbia: AAG Publications.

Clarke, R.V.G., and Mayhew, P. (eds.). *Designing Out Crime*. London: Her Majesty's Stationary Office. 1980.

Famelis, N. 1970. On the validity of urban threshold theory: Further comments. *Journal of the Town Planning Institute*. London: January.

Farrington, D.P., S. Bowen, A. Buckle, T. Burns-Howell, J. Burrows, and M. Speed 1993. An experiment on the prevention of shoplifting. In R.V.G. Clarke (ed.), *Crime Prevention Studies, Vol. 1*. Monsey, NY: Willow Tree Press.

Hesseling, Rene B.P. 1994. Displacement: A review of the empirical literature. In *Crime Prevention Studies, Vol. 3*. R.V.G. Clarke, ed. New York: Criminal Justice Press. pp. 197-229.

Jacobs, Jane. 1961. *The Death and Life of Great American Cities*. New York: Vintage.

Jeffery, C.R. *Crime Prevention Through Environmental Design*. Beverly Hills: Sage. 1971

Kaplan, H.M., K.C. O'Kane, P.J. Lavrakas, and E.J. Pesce. *Crime Prevention Through Environmental Design*. Final report on commercial demonstration in Portland, Oregon. Washington, D.C.: Westinghouse Electric Corporation. 1978.

Kozlowski, J., Hughes, J.T. and Brown, R. 1972. *Threshold Analysis: A Quantitative Planning Method*. London: Architectural Press.

Kozlowski, J. 1971. The place and role of threshold analysis in the "model" planning process. *Ekistics*. November. 32:348-53.

Lavrakas, Paul and J. W. Kushmuk. 1986. Evaluating crime prevention through environmental design: the Portland Commercial Demonstration Project. In D.

Luedtke, Gerald and Associates. *Crime and the Physical City: Neighborhood Design Techniques for Crime Reduction*. Washington, DC: U.S. Department of Justice. 1970.

McLea, R. 1995. Port Simpson Break-ins. In *The Vanguard: The British Columbia Problem-Oriented Policing Newsletter*. 2(1):3-4. New Westminster: Justice Institute of British Columbia.

Newman, Oscar. 1972. *Defensible Space: Crime Prevention Through Urban Design*. New York: Macmillan.

Saville, Gregory. 1996. Searching for a neighborhood's crime threshold. *Subject to Debate*. Washington, DC: Police Executive Research Forum Publication 10(10): 1-6.

Saville, G. 1996. Assessing Risk and Crime Potentials in Neighbourhoods. Paper presented at the *1st Annual International CPTED Association Conference*, Calgary, Alberta, October 30 - November 1.

Saville, Gregory and Gerard Cleveland. 1997. Second-generation CPTED in Schools. A paper presented at the *2nd Annual International CPTED Association Conference*, Orlando, Florida.

Sherman, L.W., Gartin, P.R. and Buerger, M.E. 1989. Hot spots of predatory crime: routine activities and the criminology of place. *Criminology*. 27:27-55.

Spelman, William. 1993. Abandoned buildings: Magnets for crime? *Journal of Criminal Justice*. 21:481-95.

Stark, Rodney. 1987. Deviant places: A theory of the ecology of crime. *Criminology*. 25:893-909.

Taylor, R. and Covington, J. 1988. Neighborhood changes in ecology and violence. *Criminology*. 26(4):553-589.

Whyte, William. 1988. *City: Rediscovering the Center*. New York: Doubleday Books.

Wilson, S. 1980. Vandalism and defensible space on London housing estates. In R.V.G. Clarke and P. Mayhew, *Designing Out Crime*. London: Home Office.