

THE THEORY OF CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

by

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The theory of crime prevention through environmental design is based on one simple idea -- that crime results partly from the opportunities presented by physical environment. This being the case it should be possible to alter the physical environment so that crime is less likely to occur.

Simple, almost obvious as this may be, the idea that crime is partly caused by physical environment has been a controversial one among criminologists. In my presentation I will argue that the controversy is based on a misunderstanding about causes and will review what is now a large body of evidence that the physical environment plays an important part in crime. I will then review current approaches to changing the physical environment and the “opportunity” theories on which these rest. I will also consider the main criticism of environmental crime prevention that it does not reduce crime, but merely displaces it to some other time, place or target. Finally, I will draw out the main lessons from research about successful ways to implement crime prevention through environmental design.

Three approaches to crime prevention through environmental design

There are three distinct approaches or theories that come under the general heading of “crime prevention through environmental design”. The term was coined by the criminologist, C. Ray Jeffery, who published a book in 1971 arguing that sociologists had considerably overstated the social causes of crime, such as relative deprivation and subcultural influences, and had neglected both biological and environmental determinants. He went on to make the general argument that prevention ought to be focused on factors related to the biology of crime, such as exposure to lead which he thought caused brain damage and delinquency in children, and to reducing the environmental opportunities for crime.

His book met with either indifference or considerable hostility from criminologists, who were particularly offended by the biological arguments. The book contained few prescriptions for reducing opportunities, but his followers, in particular, Tim Crowe (1991), have now developed a comprehensive set of guidelines to reducing opportunities for crime in the built environment, intended to guide police, town planners and architects. These guidelines have been promulgated in hundreds of training sessions given by Crowe and others throughout the United States, and the approach is well known by its acronym, CPTED.

The second approach falling under crime prevention through environmental design is the “defensible space” theory of the architect, Oscar Newman (1972), who published his famous critique of American public housing at about the same time as C Ray Jeffery’s book. Newman put much of the blame for the high crime rates of public housing “projects” on their lay-out and design. In particular, he criticized the huge, inhuman scale of the developments, their stark design that made it seem that no-one cared about them, their location in high crime neighborhoods, and the large buildings that made it difficult for residents to know who were other residents and who were intruders. These factors conspired to attract criminal predators who could commit their crimes with little fear of arrest. Newman, and some other enlightened architects such as Richard Gardiner, put forward a wide range of detailed design suggestions to change these conditions and make housing safer. The purpose of Newman’s suggestions was to encourage natural territorial behavior on the part of residents by enabling them to give surveillance to the public areas around their individual residences.

His thesis was savagely criticized by criminologists and other social scientists, who accused him of “environmental determinism” and of making simplistic extrapolations to human behavior from the territorial behavior of animals. Nevertheless, Newman has had an enormous impact on the design of public housing in many parts of the world. The wholesale abandonment of tower block buildings for public housing owes much to his arguments about their criminogenic potential. In recent years, the federal government in the United States has once again begun to pay attention to Newman (Cisneros, 1996), commissioning him to publish a restatement and defense of his views (Newman. 1996).

The third environmental design approach is situational crime prevention, which was developed by the British government’s criminological research

department in the mid-1970's (Mayhew et al., 1976; Clarke and Mayhew, 1980). Unlike CPTED, and "defensible space", this approach is not concerned principally with architectural design and the built environment. Nor is it focused mainly upon predatory offenses of robbery or burglary. Rather, it is a general approach to reducing the opportunities for any kind of crime, occurring in any kind of setting, including airline hijackings, welfare frauds, obscene phone calls, pub violence and domestic violence, as well as the conventional predatory offenses.

Most of the research into the relationship between crime and environmental opportunities has been conducted under the rubric of situational crime prevention and most of the current "opportunity" theories that now underpin crime prevention through environmental design, and that have made this a respectable approach among a large and influential body of "environmental criminologists", has been developed by researchers associated with situational crime prevention.

So if crime prevention through environmental design is now more theoretically respectable, why was it rejected at first by criminologists and what has happened to change this state of affairs? I have already mentioned that Jeffery's and Newman's ideas did not accord with those held by most American criminologists. In America, criminology is principally an offshoot of sociology and, not surprisingly, social factors are generally held to be the most important in causation. Oscar Newman, was not even a social scientist, but an architect! He seemed not only to be ignorant of the findings of criminology, but had also made some basic statistical errors in his research. These criticisms, together with some disappointing results from early crime CPTED experiments made it easy for both Jeffery's and Newman's ideas to be ignored by academics. Even the US federal government lost interest in the ideas for a period of nearly fifteen years between the beginning of the 1980s and the mid-1990s.

Several developments took place during these years which have greatly changed the situation:

1. much more evidence has accumulated of the important role of opportunity in crime;
2. new criminological theories have been developed, including the rational choice approach and routine activity theory, which give a much greater role to environmental determinants of crime;

3. a large number of case studies has been published showing substantial reductions in crime following environmental change;
4. much less displacement of crime has been found as a result of environmental changes than critics claimed.

The role of opportunity in crime

I will review each of these developments in turn, beginning with the role of opportunity in crime which I will illustrate briefly with results from three important studies. The first is not a study of crime but of suicide. I mention it because, like many serious crimes, suicide is usually seen to be a deeply motivated act, only committed by very unhappy or disturbed people. However, a strong and surprising opportunity component appears in suicide trends in England and Wales during the 1960s and 1970s (Clarke and Mayhew, 1988).

From the table (at the end of this article), you should be able to see that in 1958 almost 50 percent of the nearly 5,300 people who killed themselves in England and Wales did so by domestic gas. This gas contained high levels of carbon monoxide and was very poisonous. People would kill themselves by putting their head in the gas oven or by lying down by the gas fire, having blocked up any gaps under doors or around windows.

During the 1960s, domestic gas began to be manufactured from oil rather than from coal. As a result, it became less poisonous and the number of people killing themselves with gas began to decline. In 1968, manufactured gas began to be replaced by natural gas from the recently discovered North Sea fields. Natural gas is free of carbon monoxide and is almost impossible to use for suicide. By the mid-1970s when natural gas had been introduced throughout most of the country, less than one percent of suicides were by domestic gas, compared with about 50 percent at the beginning of the period.

What is deeply surprising is that suicides did not displace wholesale to other methods. Between 1968 and 1975, total suicides dropped by about one third from nearly 5,300 to nearly 3,700. This was during a time of much economic uncertainty when one might have expected suicides to increase and, indeed, was generally increasing in other European countries.

Why did people not turn to other methods instead? Why did they not overdose on sleeping pills, shoot or hang themselves, jump out of high buildings, or put their heads on the railway tracks? The reason is that all these methods have disadvantages not possessed by gas. It is difficult to collect together enough pills to kill oneself and many people who take an overdose have their stomachs pumped and their lives saved. Few people have guns, and in any case these result in blood and disfigurement. Hanging oneself or jumping out of a tall building requires courage and resolution. Lethal domestic gas, on the other hand, used to be piped into most people's homes, required little preparation and involved no pain. It is easy to understand why it was the favored method of suicide in Britain for so long. Nor is it so surprising that when the opportunity to use it was removed, the overall suicide rate declined.

The second study concerns motorcycle theft in Germany during the 1980's (Mayhew et al., 1989). You will see from the first column of the table that thefts of motorbikes had drastically declined from about 150,000 in 1980 to about 50,000 in 1986. If you who do not already know the reason, you will be most surprised to learn it. It was because in 1980 it was made illegal to ride a motorbike in Germany without a helmet. This meant that anyone stealing a motorcycle without a helmet would be readily spotted. The law was gradually enforced more strictly during the period and resulted in the large decline in motorcycle thefts. This suggests a much stronger opportunistic component in motorcycle theft than anyone would have thought.

The second and third columns of the table show the totals for car and bike thefts during the same years. These provide some limited evidence of displacement because thefts of cars went up from about 64,000 to 70,000. Thefts of bicycles also increased between 1980 and 1983, but by the end of the period had declined again below the numbers for 1980. Altogether, it is clear that at best only a small proportion of the 100,000 motorbike thefts saved by the helmet laws were displaced to thefts of other vehicles.

Again, a little thought shows why this may not be surprising. Motorbikes may be particularly attractive to steal. Young men who comprise most of the thieves find them much more fun to ride than bikes. Even if the intention is only to get home late at night, it is much easier to ride a motorbike for a few miles than a bicycle. Motorbikes may also be easier to steal than cars since the latter have to be broken into before they can be started.

The third study comes from the United States and concerns the dramatic increase in residential burglary during the 1960s and 1970s. A careful analysis by Lawrence Cohen and Marcus Felson (1979) showed that this increase could readily be explained by a combination of two changes that had occurred in society during this period. Together these had greatly increased the temptation and opportunity for burglary. Temptation had been increased by the vast increase in light-weight electronic goods such as TV's and VCR's in people's homes that could readily be sold. The opportunity to commit burglary was greatly increased as a result of far more women going out to work. This meant that far more homes were empty during the day and therefore unguarded. The combination of more attractive goods to steal and more unguarded homes easily accounted for the increase of burglary without having to assume any increase in the criminality of the population.

Opportunity theories

Studies like these have helped to bring about a change in criminological theorizing. In particular, it is now more widely recognized that most traditional criminological theories are really theories of criminality or delinquency and not theories of crime. Traditional theories deal in the factors that cause people or groups to be disposed to criminal action. In other words, they deal in behavioral tendencies, not behavior itself.

The point can be clarified by revisiting a truism of psychology, which is that behavior is the product of the interaction between the person and the setting. To put this in the language of criminology is to say that crime (a behavior) is a product of the interaction between a criminal or delinquent propensity and a criminal opportunity. While it is necessary to understand the factors that result in criminal dispositions, this alone does not explain the occurrence of crime. To explain crime, one must also explain the interaction between disposition and opportunity. This is what most traditional criminology has failed to do. Instead, it has assumed that explaining criminal dispositions is the same as explaining crime.

This error is now being corrected. Criminologists are beginning to take an interest in developing, not just theories of criminality or delinquency, but what are called "theories of crime" (or, sometimes, "opportunity" theories). The two best known of these are routine activity theory and the rational choice perspective. Though complimentary, these both deal with somewhat

different questions. Routine activity theory (Cohen and Felson, 1979) seeks to explain how changes in society in the numbers of “suitable targets” for crime, or in the numbers of “capable guardians” against crime results can lead to more or less crime. One example of the application of this theory is Cohen and Felson’s explanation, that I mentioned, for the increased burglary rate in the United States in the 1970s. This was due to the increase of “suitable targets” in homes (VCRs and TVs) and the decline of “capable guardians” (women no longer at home in the day).

The rational choice perspective (Cornish and Clarke, 1986) tries to understand crime from the perspective of the offender. It asks: What is the offender seeking by committing crime? How do offenders decide to commit particular crimes? How do they weigh the risks and rewards involved in these crimes? How do they set about committing them? If prevented from committing them, what other crimes might they choose to commit?

It should be clear from these questions that the rational choice perspective is directly concerned with the thinking processes of offenders, how they evaluate criminal opportunities and why they decide to do one thing rather than another, Indeed, why they choose to obtain their ends by criminal and not legal means.

This perspective has helped to explain why displacement does not always occur (think about the reasons I gave for suicides not switching to other methods and why motorcycle thieves did not begin to steal cars or bicycles). It has also been helpful in thinking about different ways to reduce opportunities for crime. Sixteen different ways to reduce opportunities for crime are described in situational crime prevention falling under four objectives, taken from the rational choice perspective. These are:

1. to increase the perceived difficulty of crime;
2. to increase the perceived risks of crime;
3. to reduce the anticipated rewards of crime;
4. to remove excuses for crime.

More than eighty examples of success using these opportunity-reducing measures have been documented in careful research studies. Twenty three of these studies are reprinted in my book, “Situational crime prevention: Successful case studies” (Clarke, 1997), but I can only list a handful of these now. They are listed in the table under the four principal ways to reduce

opportunities for crime. You will see that some of these measures were devised here in Sweden.

Displacement

I have mentioned “success”, but what about displacement? The gas suicide and motorcycle theft examples have already shown that displacement is not inevitable. But what happened as the result of the measures that I listed in my table? For example, did the check forgers frustrated by the new check cashing rules in Sweden turn to some other kind of fraud or theft? Did the post office robbers thwarted by the anti-bandit screens in London begin to take customers hostage or attack the armored vehicles collecting money from the post offices? Were criminals shifted by the improved street lighting in the council housing estate in Dudley to another nearby estate where the lighting was not improved? And so forth.

In truth, it is difficult to make definitive studies of all these possibilities, but many published evaluations include some investigation of displacement. Four years ago, Rene Hesselting (1994) reviewed the literature on displacement for the Dutch Ministry of Justice. He examined 55 studies in which displacement had been studied. What he found was very revealing. In 22 of the studies, no evidence of displacement was found. In the remaining 33 studies some evidence was found, but the displacement was often relatively small. In no case, did the crime displaced elsewhere equal the crime prevented.

In addition, researchers are now beginning to find evidence of the reverse of displacement so that focused situational prevention projects have produced wider reductions in crime beyond the direct reach of the prevention measures. A clear example comes from a university campus in Southern England where CCTV cameras were introduced to monitor the car parks (Poyner, 1997). Car theft fell not only in the three car parks given surveillance by the cameras, but also in a fourth car park that the cameras could not monitor because the view was obstructed by buildings. It seems that potential car thieves were unsure about the coverage of the cameras and decided to avoid the university altogether. This phenomenon, whereby the preventive benefits spread more widely, has been called the “diffusion of benefits” and is now being found regularly in a variety of studies. It greatly enhances the appeal of crime prevention through environmental design.

Summary and recommendations

Before concluding with some recommendations about applying crime prevention through environmental design, let me summarize my presentation so far. I have argued that the earlier claims made for crime prevention through environmental design were rejected by criminologists who felt that the physical environment plays a relatively unimportant part in crime causation. Much of this criticism was misplaced because criminologists had generally not recognized that their theories were mostly concerned with the development of criminal dispositions, not the occurrence of crime.

Growing evidence about the role of opportunity in crime has encouraged the development of some new “opportunity” theories, including routine activity theory and the rational choice perspective. The latter in particular has provided the theoretical basis for situational crime prevention, which has now accumulated a solid record of crime reductions achieved in many different contexts. Displacement has not proved such a threat as once thought and there is growing evidence of diffusion of benefits from crime prevention projects.

There is no doubt that crime prevention through environmental design will be increasingly be used to help protect society from crime. Indeed, it already is an integral part of crime control policy in several European countries. But what has been learned in the last 25 years about its application to town planning and architectural design, which is of particular interest to many of you at this meeting? Let me conclude with what I believe are the main lessons:

1. Reducing access and enhancing territoriality and surveillance, as advocated by Oscar Newman, and in Tim Crowe’s more recent guidelines, represent a somewhat narrow crime prevention approach. A much wider range of opportunity-reducing techniques has been identified in recent situational crime prevention research.
2. The image of the “predator from outside”, which underlies the original defensible space thesis (and Crowe’s guidelines), ignores the fact that much crime is committed by residents and other legitimate users of the space. Access controls and improved surveillance may be of limited value in preventing crime by residents.

3. Opportunity-reducing measures appropriate to certain offenses may not be appropriate to others. This means that crime prevention through environmental design must be tailored to the specific problems occurring in particular settings. Standard packages of measures will not usually reduce crime significantly.

4. In any setting, there are always choices to be made in the opportunity-reducing measures to be implemented. These choices must consider the practicality and sustainability of the various options, their social acceptability and their economic costs. It is nearly always possible to identify practical, low cost, unobjectionable ways of reducing opportunities for crime.

5. Numerous evaluations have shown that, by themselves, design changes can bring about only rather modest reductions in crime. If substantial reductions are to be achieved, design improvements usually have to be supported by changes in management or policing of the built environment.

6. When crime prevention design changes are being made to existing environments, care must be taken to ensure that residents and other legitimate users are consulted in detail about the proposed improvements. Otherwise, changes might be resisted and prove impossible to implement as planned.

So long as crime prevention through environmental design is applied carefully and intelligently, with due regard to these and other lessons of past practice, there is every reason to believe that it can achieve worthwhile reductions in crime, wherever it is employed.

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TABLE: Selected Examples of Successful Situational Crime Prevention

Increasing the effort of crime

Anti-robbery screens in London post offices in the 1980's (Ekblom, 1992)

Steering locks for all cars in Germany from 1963 (Webb, 1997).

Street closings in London to prevent prostitution in cars (Matthews, 1997).

Identification requirements to prevent check frauds in Sweden (Knutsson and Kuhlhorn, 1997).

Increasing the risks of crime

Electronic tags to reduce shoplifting in American clothes stores (DiLonardo, 1997).

Worldwide airport baggage screening to reduce hijackings (Wilkinson 1977)

Random breath testing in New South Wales (Homel, 1993).

Improved street lighting in a council housing estate in England (Painter and Farrington, 1997)

Reducing the rewards of crime

Safes with time locks to prevent betting shop robberies in Australia (Clarke and McGrath 1990).

Removal of gas and electric coin meters sought by burglars in British council housing (Pease, 1992)

Exact fare systems to eliminate robbery of American bus drivers in 1960s (Stanford Research Institute 1970).

Computer checking of income statements by welfare recipients in Sweden (Kuhlhorn, 1997).

(TABLE continued)

Removing excuses for crime

“Proof of purchase” rules in Australian department stores to eliminate “refund frauds” (Challinger, 1997).

Alcohol “rationing” to reduce Midsummer Eve disturbances at Borgholm (Bjor *et al.*, 1992).

Responsible drinking practices to control intoxication and alcohol-related crime in Australian resorts (Homel *et al.*, 1997).

INCREASING THE DIFFICULTY OF CRIME

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Steering locks for all cars
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Street closings in London to
prevent prostitution in cars

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prevent check frauds in Sweden

INCREASING THE RISKS OF CRIME

Electronic tags to reduce shoplifting in
American clothes stores

Worldwide airport baggage screening
to reduce hijackings

Random breath testing in New South Wales

Improved street lighting in a council housing
estate in England

REDUCING THE REWARDS OF CRIME

Safes with time locks to prevent betting shop robberies in Australia

Removal of gas and electric coin meters from council houses in Britain to prevent burglary

Exact fare systems to eliminate robbery of American bus drivers in 1960s

Computer checking of income statements by welfare recipients in Sweden

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“Proof of purchase” rules in Australian department stores to eliminate “refund frauds”

Alcohol “rationing” to reduce Midsummer Eve disturbances at Borgholm

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INCREASE THE DIFFICULTY OF CRIME

INCREASE THE RISKS OF CRIME

REDUCE THE REWARDS OF CRIME

REMOVE EXCUSES FOR CRIME

PSYCHOLOGY

PERSON X SETTING = **BEHAVIOR**

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CRIMINOLOGY

CRIMINAL DISPOSITION X CRIMINAL OPPORTUNITY = **CRIME**