CHAPTER 27

Crime Prevention through Environmental Design (CPTED): Yes, No, Maybe, Unknowable, and All of the Above

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THE MAIN TITLE of this chapter conveys a simple idea. If we make correct choices in constructing, maintaining, and modifying the physical environments in which we live, work, travel, and recreate, we should be able to prevent some crimes from happening, either to us or to our property. The idea would seem to be supported by the commonsense observation that, to focus on urban neighborhoods as an example, those locations with high reported crime rates physically look very different from those with low reported crime rates. The high rate locales are likely to have denser housing designs, usually being older neighborhoods, and to have streets carrying more traffic and commercial or perhaps even industrial land uses mixed amongst the residences.

A chain of reasoning operates here as follows: There is more crime in some places than in others; physical design is different from place to place; design, therefore, is responsible for these place-to-place differences; consequently, if we change the design in high crime places, crime there will decline. In deference to two of the most popular shows currently on network television, *Who Wants to be a Millionaire* with Regis Philbin and *The Weakest Link* with Anne Robinson (Kellman, 2001), I have organized the bulk of the chapter as a series of multiple choice answers to the question: Is this chain of reasoning correct? Here are your possible responses:

a. No, it is incorrect;
b. Yes, it is correct;
c. Maybe—it is correct depending on certain other conditions;
d. Unknowable; it is something whose truth we are extremely unlikely to know; or
e. All of the above are true.

I will argue in this chapter that e is the best answer. Understanding how each of the first four different answers to the question may be valid highlights different ways the design-crime link has been conceptualized. The chapter starts by briefly noting one public policy area where the crime-design idea has had considerable influence. The material highlights the public relevance of this question about the chain of reasoning and the difficulties of answering it. The next sections review each of the terms in the title, clarifying the scope of each. Defining *prevent* forces us to closely examine the special challenges relevant to this area of work when we wish to establish causality. I then move on to review each of the possible answers to the question, Is the chain of reasoning correct? I close with a brief comment about how we need to know more about design-crime links given the profound transformations currently sweeping urban, suburban, and rural landscapes across the country.

stay level or increase, we can be somewhat more confident, depending on a host of potential threats to internal validity (Taylor, 1994), that the design change is partially causing the crime change. In fact the research on gated communities does suggest that initially crime rates do drop but that these reductions are transient (Blakely & Snyder, 1997).

Causality is difficult to establish generally in design-crime questions not only because cross-sectional rather than longitudinal studies predominate. In addition, if the design change involves a unit of analysis that is a community, or a portion of a community, such as a streetblock, the change needs to be implemented in a number of locations so we can learn how reliable the effects are across a range of contexts.

With design-crime questions, as soon as the unit of analysis extends from the individual or the individual household, to the streetblock or institution or community, study difficulty increases for three reasons. In either a longitudinal or cross-sectional study the researcher needs a large number of units of analysis if his or her quantitative analyses are to have sufficient statistical power. For example, a second-generation defensible space study of public housing communities included over 60 separate buildings, where each building included numerous households (Newman & Franck, 1980). To do a quasi-experimental study of the effects of gating communities, you would ideally like to have about 30 *communities* receiving the treatment and becoming gated and another 30 control communities. If the set of communities studied spans multiple police departments, we now have variations in crime reporting and recording practices that add a further source of variation to the outcome.

Further, with a longitudinal study where the unit of analysis is larger than the individual or the household or the single address, not only are a large number of units of analysis required, but researchers or planners need to implement design changes in a large number of those locations. These initiatives *necessarily* involve local residents and local leaders. Although one early study of a public housing community did overlook resident involvement and householders awoke one morning to find bulldozers tearing into the begonias and front lawns (Kohn et al., 1975), other longitudinal studies involving community-level design changes have actively involved local stakeholders (Donnelly & Majka, 1996, 1998; F. J. Fowler & Mangione, 1986). This is an extraordinarily expensive and time-consuming process. Not surprisingly, many of the longitudinal studies in this area where design changes have been implemented and crime changes tracked, have focused just on one community. Given the apparent contextual dependence of some design-crime connections (see following), such a one-community study makes it extremely difficult to understand those dependencies.

Additionally, with larger units of analysis, selection problems become more challenging, making it extremely difficult to separate physical environment impacts from social or cultural or economic factors. In general, in many communities birds of a feather flock together. This means design features will relate with social and cultural factors such as racial or ethnic composition of a community, stability, family structure, and so on. But it also means, if we are talking for example about urban neighborhoods, that residents are drawn into a location in part because of the people who are living there and other features of the destination. Returning specifically to gated communities, one analysis suggested that houses in gated communities sell for a higher price (Bible & Hsieh, 2001). How can these economic impacts, that might also influence crime, be separated from the physical impacts of the gating per se? Or to take another example, those who are drawn to gated communities might be those who are more fearful of crime than those drawn to economically comparable nongated communities. If we find those in gated communities expressing higher fear rates, is that a cause of the gated features?; or were residents that way before they arrived?

In short, even with a longitudinal study design, causality in design-crime questions can be difficult to establish when the unit of analysis is more than the individual site or address or household because: Large numbers of units of analysis are needed for sufficient statistical power and to better understand how context conditions the design-crime connection; large numbers of sites are difficult to manage because in each site implementing design changes involves lengthy and often contentious local social and political dynamics; and selection problems make it exceedingly difficult to separate qualities of locale from qualities of those drawn to the locale.

The time and space unit of analysis is also crucial because how those units are defined influences whether crime displacement has taken place rather than crime prevention. Crime may be displaced

economic factors. Further, work has shown that design-crime connections (see following) are conditioned by context and highly malleable. In the case of defensible space, for example, undefended defensible spaces have been noted (Merry, 1981).

In short, the chain of reasoning of interest here is incorrect if by CPTED we mean that design is the most powerful determinant of local crime and victimization rates or patterns and that design changes will necessarily result in crime reductions.

(2) WHY THE CHAIN OF REASONING IS CORRECT

There is substantial empirical work on the design-crime link that is grounded in one of three generally rational perspectives about crime and victimization (Taylor, 1998). The rational offender perspective, which undergirds situational crime prevention initiatives, assumes that how potential offenders think about costs and benefits of various crimes or crime sites or crime times determine offending patterns. The behavioral geography perspective assumes that the places closer to where offenders work, recreate, live, and travel, are at higher victimization risk because they are more familiar to the potential offenders. This perspective undergirds initiatives emerging from environmental criminology. The routine activities or lifestyle perspective, although later modified in important ways, initially assumed that victimization is more likely in a location if there are more attractive targets for the offender, if there are more potential offenders close at hand, and if there are fewer or weaker potential guardians of the crime site (Felson, 1994). These three perspectives make claims that are so obvious they must be true. For example:

- If there are more potential burglars living near one neighborhood, all else equal, that neighborhood will have a higher burglary rate than another neighborhood with fewer potential burglars living nearby.
- If there is a neighborhood whose internal street layout makes it harder to get around, potential burglars from outside the locale are less likely to wander in and learn about potential targets.

Work in situational crime prevention focuses on how physical design features influence the costs and benefits perceived by potential offenders of committing crimes (Clarke, 1992; but see also Clarke & Homel, 1997). A steady stream of studies over the past two decades have documented how specific setting features and/or changes in those features can deter offenders (for a review see Clarke, 1995; Clarke & Homel, 1997).

The driving rational offender framework naturally focuses our attention on property crimes or personal crimes for gain, such as robbery. It is when considering these crimes potential offenders are most likely to be motivated by potential benefits considered in the context of likely crime costs and to recognize opportunities for getting away with a crime—whether that crime be vandalizing a telephone, putting slugs in the subway, robbing a pedestrian, or stealing a car.

The situational crime prevention perspective will often recommend that crime can be reduced by making redesigns that "harden" the target and decrease the opportunities for successful crimes for gain in a setting. Some have criticized this perspective because the target hardening process seems obvious, costly, and likely to result in undesirable social consequences (Forrest & Kennett, 1997). But situational crime prevention is more than just target hardening. Although it does include a broad array of physical features (Crowe, 1991), it also has suggestions for those who manage and supervise public locations. Operations as well as design are important. A study of Washington, DC's Metro station designs and operations represents an example of situational crime prevention integrating a number of design, management, and operational features (La Vigne, 1996). Elsewhere I have provided a detailed description of the types of physical factors relevant to potential rational offenders at the site, block, and neighborhood levels (Taylor & Gottfredson, 1986) if we presume they are using a rational framework and focusing on potential costs and benefits.

The relevant costs and benefits imply four types of considerations made by the potential offender: how long it takes to get to the target, how quickly it takes to get away, what he or she can see about the value of the particular target or victim prior to deciding to commit a crime, and what the likelihood is that he or she will be spotted and/or recognized while preparing to commit the offense, actually committing it, or leaving the scene of the crime.*

*Most recently Clarke and Homel (1997) have expanded situational crime prevention to include setting features that may affect psychodynamics and social dynamics relevant to prevention,

both the situational and the geographic frameworks: Change the layout of the neighborhood to make it harder for potential offenders to enter, or less likely that they will enter, or to keep them farther away from potential targets, and crime should go down. Longitudinal research in Hartford (F. J. Fowler & Mangione, 1986; F. Fowler, McCalla, & Mangione, 1979), Akron (Donnelly & Majka, 1998), and Dayton (Donnelly & Majka, 1996) and unpublished and published evaluations in Miami (Atlas & LeBlanc, 1994; Ycaza, 1992) suggest that physical changes to internal circulation patterns and boundaries were followed by lower crime rates. So our chain of reasoning appears to be correct even when applied at the community level. But such a confirmation is less resounding than we might like since the connection may be dependent on the organizational dynamics surrounding the implementation of physical changes.

In the studies involving redesign, local social or organizational dynamics have often accompanied planned changes (Donnelly & Majka, 1996). Although it seems likely that design changes themselves have at least been partially responsible for the impact observed (Donnelly & Majka, 1998), researchers have not yet precisely estimated their independent contribution to lowering crime. It is not known how much of the benefit has been due to the redesign and how much has been due to the social and organizational changes surrounding planning for the change. It seems extremely plausible, however, that design factors are contributing *partially* to the crime reduction.

There are several practical implications of this research at the neighborhood level. (1) Social and organizational conditions are important when changes in layout, traffic, or land use are being considered (Donnelly & Majka, 1998). Community involvement of residents, neighborhood organizations, and local businesspeople is essential for developing a plan free of adverse effects on major interest groups. (2) Local involvement may be an important precondition not only for rational, maximally beneficial change but also for achieving a redesign that will actually reduce crime. One study suggests that changes in layout, under conditions of community mobilization, appear to have been partially responsible for decreases in some crimes (F. J. Fowler & Mangione, 1986). But the crime preventive benefits of changes in layout appear to weaken as community mobilization wanes. (3) An early step in planning redesign to prevent crime is understanding offender location. For some offenses, such as auto theft, offenders may come from other neighborhoods. For other offenses, such as drug dealing, offenders may live in the area. If they come primarily from outside the neighborhood, can residents readily distinguish between these potential predators and individuals who are in the neighborhood for legitimate purposes? If they can make the distinction, physical impediments to entry and circulation may result in less crimes committed by certain types of offenders. Under some conditions, restricting neighborhood entrances and making internal circulation patterns more difficult for outsiders should result in safer neighborhoods.

There are three important further caveats to such a circulation reduction approach. The limits cannot impair the ability of local public agencies to deliver services such as fire suppression, trash collection, and policing. In addition, the distinctions drawn between insiders and potential offenders from outside must have some empirical foundation and not be driven solely by residents' class- or ethnicity-based fears and concerns. Finally, these changes, even if they have an empirical foundation, can exacerbate between-neighborhood conflicts (Taylor, 2000a, chap. 8).

Of course such an implication needs to be tempered by the recognition that crime prevention is just one objective of land use planning. Other agendas such as economic development or equal housing opportunities may conflict at times with crime prevention or fear reduction goals.

Routine activities theory considers the confluence of potential victims or crime sites, potential offenders, and those who might prevent crime—natural guardians or site managers (Felson, 1995; Mazzerolle, Kadleck, & Roehl, 1998). At the site level this suggests the relevance of factors like surveillance opportunities and specific land uses likely to draw either potential offenders or potential victims, or both. So in a residential context, the nature, volume, and distribution of nonresidential land uses and the nature of associated local traffic patterns seem likely, from the routine activities perspective, to influence crime levels. Empirical work confirms this expectation. There are some nonresidential land uses, such as bars and schools, where crime will be higher (Roncek, 1981; Roncek & Bell, 1981; Roncek & Faggiani, 1985; Roncek & Maier, 1991; Roncek & Pravatiner, 1989). Sites like these are likely to be both crime generators and crime attractors. A crime generator generates lots of opportunities for crime as a byproduct of large volumes of pedestrian traffic—the potential victim flow is

the literature has presumed that asking residents "How much of a problem are vacant houses in your neighborhood?" would produce the same results as counting the vacant houses in the community, this presumption appears to be incorrect. A second contingency is the specific crime in question. Although the later incivilities theorists presume that physical incivilities will cause later increases in all violent street crimes, the longitudinal work showed that neither robbery nor rape were affected by earlier physical incivilities.

- Physical modifications to the residential setting suggesting resident involvement, care, or watchfulness can produce a safer setting (Brown, 1985; Brown & Altman, 1978, 1981). But the effectiveness of territorial signage may depend in part on the surrounding threat level; in more disorderly or dangerous settings redundant territorial cues may be needed to assure comparable safety (Brower, Dockett, & Taylor, 1983). One of the most empirically grounded models of territorial functioning explains in detail how connections between territorial functioning, such as physical changes initiated by residents or regular users, and social, psychological, and ecological outcomes are conditioned by the local socioeconomic, cultural, and social context (Taylor, 1988, chap. 5).

More examples could be supplied, but the main point here is that the design-crime linkage is conditioned by context. Elsewhere I have outlined how these contextual variations drive local microecological dynamics, that in turn moderate the design-crime connection (Taylor, 1997). Relevant contextual factors are numerous and include: stability of locale, socioeconomic levels, and dynamics in adjoining locales. But since too little research has been done systematically exploring connections between context and design-crime connections, the contingencies cannot be fully specified. "Substantial gaps still exist in the knowledge of how crime develops in specific contexts. . . . In part such gaps have developed from a lack of basic research examining the context of crime" (Weisburd, 1997, p. 13).

Suggesting the design-crime connections are sometimes contingent may prove troubling for decision makers. Policy planners far prefer the "one size fits all" approach when it comes to crime prevention (Rosenbaum, 1987, 1988). If the relationships are contingent, there is no point initiating design changes until one is assured the changes will have the intended positive impact. In other words, before deciding, from a practical perspective, where to try CPTED ideas, we must fully specify how context affects the design-crime link. We are currently unable to make such specifications because we know so little about which aspects of context influence the link, and why, and how design interacts with other nonphysical features of the setting to influence crime or victimization levels.

(4) ESSENTIALLY UNKNOWABLE

Understanding the design-crime link is essentially impossible if we mean by understanding: an ability to specify which community-level design features will influence which crimes in what situations because of what specific processual dynamics.

The answer is unknowable, if our unit of analysis is larger than the individual address or household, because the requisite number of longitudinal studies at the streetblock or community level would be extremely large and the scope of each study would be substantial; the costs associated with the requisite studies would verge on the astronomical; and the political difficulties surrounding each longitudinal intervention would be substantial and time-consuming.

We would need a large number of studies because we would need to implement each potential design change in a number of locations to obtain variation in surrounding contexts and sufficient statistical power. Even in the case of a simple examination of streetblock closures we would want at least 30 "treatment" sites and 30 "control" sites in each of several cities. Variation across cities is essential since political cultures around citizen involvement vary dramatically from city to city (Ferman, 1996), and these dynamics quite probably intertwine with design impacts (F. J. Fowler & Mangione, 1986).

It may be possible to "cross" different design changes in a single study and thus reduce the total number of studies needed. For example, a streetblock could receive either a closure or an increase in nonresidential landuses or both. But if we start adding different program elements to the study changes, we increase the number of sites needed in the study if we are to clarify the roles of context.

Further, it is not yet known what specific features of context are most likely to influence the design-crime relationship. As a preliminary step to be

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