CRIME PREVENTION REVIEW

Published Quarterly by the Office of the Attorney General—
State of California

EVELLE J. YOUNGER, *Attorney General*

Crime Prevention Unit
3580 Wilshire Blvd., 9th Fl.
Los Angeles, California 90010

MRS. JUNE SHERWOOD, *Director*

STERLING J. BOYER, *Review Coordinator*
MELANIE C. INGRAM, *Assistant Coordinator*

Contents

Vol. 5 July 1978 No. 4

The CRIME PREVENTION REVIEW is a professional forum for the Criminal Justice System in California designed to provide discussion of varied concepts and issues of crime prevention and useful resources for the practitioner in the field.

Evaluating Housing Environments for Crime Prevention

Dennis J. Dingemans

Mr. Dingemans is an Assistant Professor in the Department of Geography at the University of California at Davis. He has conducted research on a number of suburban housing problems. Work on the subject of design for crime prevention was supported by a grant from the Beatrix Farrand Research Fund at the University of California at Berkeley during 1976–1977. Mr. Dingemans holds an A.B. degree in history from the University of Chicago and an M.A. and Ph.D. degrees in geography from the University of California at Berkeley.

The possibility that urban environments can be designed or redesigned to minimize crime has created a great deal of interest during the decade of the 1970s. The federal government, through the Law Enforcement Assistance Administration and through the Department of Housing and Urban Development, has contributed millions of dollars to study the idea of crime prevention through environmental design.[1] The State of California Attorney General's Office has also been among the leaders in pursuing this idea. The winter 1977 symposiums on "Environmental Crime Prevention" illustrate the Attorney General's continuing activity in this exciting new field. Speakers at that conference gave examples of good environmental designs, law enforcement and planning professionals discussed techniques for implementing design improvements, and the symposium participants shared insights with others facing the same crime problems.[2] That symposium is part of a widespread effort, which many are engaged in at this time, to translate the general principles of environmental design for crime prevention into specific actions that will actually reduce crime rates.[3]

The general principles and theories have been stated eloquently in two important book length essays, by Jeffery and by Newman, as well as in numerous articles and research reports by others. Jeffery proposed that an entire theory of crime prevention be based upon the study of relationships between human behavior and the physical environment.[4] According to

[1] The National Institute of Law Enforcement and Criminal Justice, the research arm of the Law Enforcement Assistance Administration, began in 1974 a $4,000,000 program to study crime prevention through environmental design. For a report on some of those programs, see Bell, Larry and O'Kane, Kenneth, "Portland Curbs Crime Through Urban Design," *Planning*, Vol. 32, No. 10 (November 1977), pp. 10–15. See also *Research Briefs*, a summary of the National Institute of Law Enforcement and Criminal Justice research.

[2] The symposium on "Environmental Crime Prevention in Housing and Transportation for Older Persons" was held in Millbrae on January 31, 1978, and on February 2 in Los Angeles. Featured speakers included Richard Gardiner, Powell Lawton, and Bruce Ramm. Participants from law enforcement, planning and academic backgrounds met in workshop groups during the morning and afternoon.

[3] Richard Gardiner has discussed these wide-ranging activities in "Environmental Security Planning and Design," *Crime Prevention Review*, Vol. 5, No. 2 (January 1978), pp. 34–39. Gardiner himself has written, under contract to HUD and LEAA, a technical manual on environmental security planning and design.

[4] See part IV, "The Crime Prevention Model: Biosocial Learning Theory and the Physical Environment," pp. 185–342: C. Ray Jeffery, *Crime Prevention Through Environmental Design* (Beverly Hills: Sage Publications, second edition, 1977).

Jeffery, the influence of poorly-designated and oppressive environments at all territorial scales is seen in high crime rates.[5] Oscar Newman's theoretical ideas will be reviewed later, but they are similar to Jeffery's. Links between urban form and crime are not just a recent development but, as Gold argued in his 1970 article, they extend back to the origins of urbanism.[6] The emergence of a school of thought that links crime to urban design has followed a renewed interest by social scientists in the influence of design on all aspects of human behavior. Robert Sommer, professor of psychology at the University of California at Davis and author of *Personal Space: The Behavioral Basis of Design,* is the acknowledged leader in this field.[7]

Unfortunately, there are many difficulties yet to be surmounted in the application of these general principles to real world situations. The first step, requiring a "design review" process that gives law enforcement personnel the opportunity to review proposed developments for crime control features, is being taken by an increasing number of cities and states. Fremont, California, through the efforts of former Police Chief Fabbri, was among the first to do this.[8] This first step, however, is not as effective as it could be because those who are being asked to evaluate designs are often not able to recognize good and bad design features. What is missing is a set of clear statements about what design features are desirable, and what improvements can be reasonably requested from the builders and designers. Also missing are guidelines that establish crime prevention design standards for housing developments as a whole. Often the need for crime prevention features comes into conflict with design features needed to give privacy or beauty to the urban environment. Participants at the Attorney General's symposium for environmental crime prevention mentioned again and again the need for these specific design guidelines that could be used by design reviewers who lack a design background.[9] The lack of these design guidelines is a reflection of the relative newness of this field. The basic research necessary to establish these guidelines simply has not yet been done.

The rest of this paper is an example of the type of research that is needed in order to bridge the gap between theoretical statements and specific design review decisions. The research focuses on environmental design at the scale of the individual dwelling unit—the townhouse—and clusters of dwelling units within a single housing development. It examines design features of contemporary suburban townhouse developments, leaving for others the equally important task of examining detached homes, garden apartments, or the many non-residential buildings being built today. The perspective that is used as the basis for criticizing and evaluating townhouse

[5] "The Crime Prevention Model: Biosocial Learning Theory and the Physical Environment," pp. 36–41. C. Ray Jeffrey, *Crime Prevention through Environmental Design* (Beverly Hills, Sage Publications, second edition, 1977).

[6] Gold, Robert, "Urban Violence and Contemporary Defensive Cities," *Journal of the American Institute of Planners,* Vol. 36 (May 1970), pp. 146–160.

[7] Sommer, Robert, *Personal Space: The Behavioral Basis of Design* (Englewood Cliffs: Prentice-Hall, 1969). An important center for activity in the environmental design research field is the annual meetings of the Environmental Design Research Association, first held in 1970.

[8] Fabbri, John, "Crime Prevention Through Physical Planning," *Crime Prevention Review,* Vol. 1, No. 3 (April 1974), pp. 1–7.

[9] This author was a workshop discussion facilitator at the Millbrae meetings. The need for easily applicable standards was expressed well by others, including Sergeant Blake Koller of the Sacramento Police Department who himself does design reviews, and who expressed his need for engineering-type standards which could be applied to the projects he must evaluate.

environments is the body of ideas first advanced by Oscar Newman—ideas often summarized as the principles of "defensible space." It is hoped that research of this type will help translate the abstract ideas of Newman's into design guidelines directly usable by design professionals and by non-professionals when they are called upon to evaluate proposed townhouse developments from the point of view of crime prevention.

Defensible Space in Townhouse Design

The defensible space hypothesis of Oscar Newman's seems, at first look, to involve a set of clear and simple propositions that would be relatively easy to apply to real world problems. As set forth in *Defensible Space: Crime Prevention Through Urban Design,* Newman's ideas center on three needed design qualities that should be present in housing environments: territoriality, surveillance, and image and milieu.[10] The "image and milieu" qualities need not be considered here because they refer specifically to aspects of public housing environments and are seldom an issue in new private-market housing. "Territoriality" qualities are those that encourage residents of homes and apartments to assume responsibility for the territory around their individual dwelling units. Newman argues that one cause of crime is the failure of residents to control the surrounding open space where intruders, if unchallenged, can commit or plan criminal acts. Good territoriality design establishes clearly defined areas of private control and encourages residents to assert their dominance against unwelcome persons. "Surveillance" qualities share some similarities to territoriality in that surveillance refers to the ability of residents to see what is going on in the open space around individual dwelling units. Newman argues that too many contemporary housing designs fail to provide surveillance of the space that is crucial for residential security—the nearby open space. Theoretically it should be possible to examine any existing or proposed residential environment and determine whether Newman's defensible space design qualities are being provided.

My research goals were to apply Newman's territoriality and surveillance standards to a sample of contemporary suburban townhouses. I wanted to learn whether defensible space was being provided in few, most, or all townhouses. The first task was to develop a way to measure quantitatively the amount of defensible space present in a particular townhouse development. This was done through the construction of a 36-element environmental survey questionnaire. This survey questionnaire was based upon my own interpretation of Newman's statements and upon my familiarity with the wide range of townhouse designs being built in suburbs today. The full survey form is available from the author for use by anyone wishing to examine or use it, and a shortened version is given here as figure 1.[11] Each element in the survey asks whether a specific design feature is present (or

[10] Newman, Oscar, *Defensible Space: Crime Prevention Through Urban Design* (New York: Macmillan, 1972). For elaboration on the Newman ideas of importance for townhouse design, see Dingemans, Dennis; Garfield, Susanne, and Olson, Tonya, *Defensible Space in Suburban Townhouse Design* (Davis: University of California Institute of Governmental Affairs Research Report No. 33, 1976). On the issue of townhouse designs in general, see Dingemans, Dennis, "A Renaissance for the Row House: Urbanization of Suburbia," *HUD Challenge,* Vol. 8 (September 1977), pp. 4–10.

[11] The full survey form is discussed and presented in Dingemans, Dennis, "Defensible Space Design in the California Townhouse," *California Geographer,* Vol. 18, (1978).

absent or partially present) in a townhouse development. After the person administering the survey has completed all of the questions (based upon an inspection of the plans or of the actual townhouse development), a defensible space score is given. In response to each question a score of one, two, or three is assigned for good, medium, or poor provision of the needed territoriality or surveillance feature. Each development is then given a summary score (from an addition of the scores for each question) that can range from a best possible defensible space score (36) to the worst possible score (108).

FIGURE ONE: Townhouse Evaluation Form

Surveillance Design Features (Results of a survey of 75 townhouse developments are indicated).

1. Do house windows overlook automobile entrances to the development?
   a. yes (26) b. somewhat (26) c. no (23)
2. Do house windows overlook pedestrian entrances to the development?
   a. yes (8) b. somewhat (32) c. no (35)
3. Are house entrances visible to patrolling police on through streets?
   a. most (21) b. some (10) c. few (44)
4. Are major recreation facilities well surveyed from house windows?
   a. yes (26) b. somewhat (18) c. no (31)
5. Are non-cluster open spaces well surveyed from house windows?
   a. yes (31) b. somewhat (34) c. no (10)
6. Are cluster open spaces well surveyed from homes in the cluster?
   a. yes (41) b. somewhat (22) c. no (12)
7. Does each house have surveillance of its surrounding cluster open space?
   a. yes (44) b. some (20) c. few (11)
8. Can children playing in the cluster open space be seen from their homes?
   a. yes (19) b. somewhat (40) c. no (16)
9. Are parking areas or garage entrances surveyed by homes in the cluster?
   a. yes (14) b. somewhat (15) c. No (46)
10. Does each house have surveillance of its own entrance area?
    a. yes (46) b. somewhat (24) c. no (5)
11. Do neighboring homes in the cluster overlook the front entrance area?
    a. yes (24) b. somewhat (24) c. no (36)

Territoriality Design Features

12. Are entrances and internal streets differentiated from public streets?
    a. yes (40) b. somewhat (9) c. no (26)

13. Are entrances limited to one or two per 100 units?
    a. yes (34) b. no (41)
14. Are pedestrian entrances limited to one or two per 100 units?
    a. yes (22) b. no (53)
15. Are homes and open spaces grouped into smaller clusters?
    a. yes (38) b. somewhat (30) c. no (7)
16. Are greenbelt open spaces associated with one of the clusters?
    a. yes (22) b. somewhat (19) c. no (34)
17. Do garages and parking areas belong to one cluster only?
    a. yes (40) b. somewhat (4) c. No (31)
18. Are territorial subdivisions and cluster borders legible to strangers?
    a. yes (40) b. no (35)
19. Are street names and house numbers easy for visitors to find?
    a. yes (42) b. no (33)
20. Is the front door approach defined by a porch, steps, or platform?
    a. yes (68) b. somewhat (1) c. no (6)
21. Is a private or semi-private front yard area demarked from cluster space?
    a. yes (11) b. somewhat (19) c. no (45)
22. Can children play in cluster without intruding on semi-private space?
    a. yes (38) b. somewhat (27) c. no (20)
23. Is the recreation complex clearly part of the development's open space?
    a. yes (37) b. somewhat (29) c. no (2)

The results showed that most of the northern California townhouse developments examined had neither very good nor very poor defensible space characteristics. The average score was exactly half way between the maximum and minimum possible score, and there were very few examples of either excellent or terrible defensible space.[12] My sample of townhouses included 75 different developments, most of them located in the Contra Costa county suburbs of the San Francisco Bay area. The results of my study of this sample of existing townhouses have been published elsewhere, but there are five general characteristics of good townhouse design that deserve to be mentioned here because they illustrate the kinds of design features needed in townhouses.[13] First, it is important that townhouses be grouped into clusters of homes that share a definite subsection of the overall development's open space. Second, it is vital that surveillance be provided (through windows) of the parking spaces and garage entrances. Third, in more cases there should be private yard open space around the front and rear of each house. Fourth, it would be desirable for the lower-floor windows (especially

[12] The scores were normally distributed about the mean score.
[13] Dingemans, Dennis and Schinzel, Robert, "Defensible Space Design of Housing for Crime Prevention," *Police Chief*, Vol. 44 (November 1977), pp. 34–37; Op. Cit., footnote 11.

kitchen windows) to face the open space areas where children might wish to play or where strangers might be seen through casual surveillance. Fifth, it would improve most developments if the larger recreation areas were within the view of more homes. Most developments possessed a number of deviations from these design guidelines, although several developments achieved a nearly perfect score.

Some Problems in Applying Defensible Space Design Principles

Upon detailed examination, the ideas of defensible space can be seen to pose some problems that limit their potential utility. One basic problem is the question of whether good defensible space design actually results in lower crime rates and lowered levels of fear of crime. Newman himself had based his book on research that purported to show that this was true—that good defensible space design results in lower crime rates. Newman's proof was far from convincing, however, and numerous critics have pointed out errors that leave the issue in doubt since "the data and procedures do not support the causal inferences concluded."[14] Other critics have argued that Newman's ideas were difficult to apply to specific situations, and one social scientist who attempted to test them ended up by concluding that "a more rigorous definition" of the concepts was needed before defensible space was to become an operational concept.[15] Another social scientist made an extensive study of the applicability of Newman's theories and concluded that "this concept (of defensible space) has received little empirical validation."[16]

My own work establishes a basis for a direct testing of the effectiveness of defensible space design ideas in the prevention of crime. The defensible space scores that result from the environmental survey can be compared to actually observed crime rates. This was done for six townhouse developments in Sacramento, California. The residential burglary rates for the period January 1975 through March 1977 were determined for each of the developments, based upon an inspection of the Sacramento Police Department's residential burglary logs.[17] A total of 163 burglaries were recorded during the 27-month period in the 2,219 townhouse units. The average burglary rate (burglaries per 100 homes) was 7.3 burglaries, a figure that is lower than the citywide average during this period of 13.4 burglaries per 100 housing units. Burglary rates ranged from 4.5 in the townhouses with the least burglaries to 13.3 reported burglaries in the highest crime rate townhouses. These burglary rates were then correlated with the defensible space scores for the six townhouse developments. A surprising result was obtained from this correlation—there was a moderately strong negative correlation (−.45) between the defensible space score and the burglary rate. The townhouses with the "best" defensible space design scores have

[14] Adams, John, review of book *Defensible Space* in *DMG-DRS Journal: Design Research and Methods,* Vol. 7 (July 1973), pp. 267–268. See Hillier, Bill for other reviews critical of Newman's methods, *Royal Institute of British Architects Journal,* Vol. 27 (November 1973), pp. 538–544. See also Ellis, Russell, *Journal of Architectural Education,* Vol. 27 (February 1974), p. 11–12.

[15] Mawby, R. I., Defensible Space: A Theoretical and Empirical Appraisal," *Urban Studies,* Vol. 14 (1977), pp. 169–179.

[16] Becker, Franklin, "The Effects of Physical and Social Factors on Residents' Sense of Security in Multi-Family Housing Developments," *Journal of Architectural Research,* Vol. 4 (February 1975), pp. 18–24.

[17] This work was done by Jeffry D. Edgar, U.C. Davis undergraduate research assistant, during the spring of 1977 with the kind cooperation of Lieutenant Robert Benton of the Sacramento Police Department.

higher crime rates, on average, than do townhouses with "good" defensible space. This negative correlation remained true when the territoriality subscores (−.71) and the surveillance subscores (−.61) were each correlated separately with crime rates.

This initial test suggests some startling conclusions and it points out the need for further research on this topic. One possible conclusion is that the residents who have good defensible space environments feel more secure and thus are more vulnerable. A more probable conclusion is that there are imperfections in the experimental design. The sample size was quite small, the number of burglaries committed in each townhouse development was quite low, and the burglary rates could fluctuate widely through chance factors. The townhouses were located in quite different parts of town, and the crime rate in the area surrounding three of the townhouses was twice as high as the crime rate in the neighborhoods surrounding two of the other townhouse developments. Further research should select townhouses that have similar surroundings and similar background crime rates. A longer time period of observation would help eliminate errors due to random fluctuations in burglary occurrences. When the larger data base is available it will be possible to provide a more conclusive test of the efficacy of defensible space as a crime preventative. Of course, one other possibility must also be considered—the environmental survey form itself may need to be revised in order to better measure defensible space or in order to become a better predictor of townhouse crime rates. Research in this general area, testing actual housing designs for the crime that takes place in them, is the type of research that Reppetto has called for:

> *Much of what has been done is either impressionistic in nature, or focused on areas so small and/or idiosyncratic as to limit the applicability of the observations to the larger community. Probably the most fruitful directions for future research would lie in some kind of objectivication of design characteristics, which would permit a consistent comparison of crime rates among areas of measured comparability of design.*[18]

Some Problems in Implementing Environmental Design Changes

Even if our measurements were improved and we were able to identify the housing designs that have the lowest crime rates, there would still be the problem of getting the good designs built. Builders often continue to build the same townhouse design as long as they can continue to sell it and as long as there is no strong pressure for them to make security design improvements. A famous example of this builder conservatism is the Sacramento builder who first began to build fourplex condominiums in 1966; the design that he first built was his own creation—despite his total lack of architectural or engineering training—and he continued to build exactly the same fourplex plan for a decade (expanding his market to more than a dozen states) in spite of numerous criticisms of obvious design weaknesses (his homes were not clustered and they provided no private open space.)[19] Another of Sacramento's largest townhouse builders shows the same reluctance to change his design—he continues to sell near-exact replicas of the

[18] Reppetto, Thomas A., *Residential Crime* (Cambridge: Ballinger, 1974), p. 84.
[19] This builder and others were interviewed by the author during the summer of 1976.

townhouse design that he drew up by himself back in 1969 (following his visit to several townhouse developments in Houston). These examples, although extreme, illustrate the difficulties involved in bringing about even minor design changes that will improve crime prevention characteristics.

An encouraging sign is the slow progress toward getting a "design bank" of workable ideas and the somewhat more rapid progress toward requiring "design review" by law enforcement personnel. The design bank idea was strongly recommended in 1968 by the National Commission on Urban Problems as a way of getting architects and designers to create and distribute workable designs for high quality housing for low or moderate income developments.[20] State housing finance agencies, active in states like Michigan and Massachusetts for several years now, have been able to insist that developers of housing use high quality designs and designs that incorporate crime prevention features.[21] The federal government's crime prevention programs have produced a number of design guideline handbooks, including several by Oscar Newman.[22] A growing list of cities such as Minneapolis, New York, Los Angeles and San Francisco have incorporated an insistence upon crime prevention design features as an important part of their housing and urban design plans.[23] A notable departure from this trend can be seen in the failure of the professonal builders' magazines such as *House and Home* and *Professional Builder* to give much consistent attention to residential security design features. It is marketing journals such as these that may have the greatest influence of all upon private builders' decision to build one design (which may be superior as a crime prevention environment) instead of another (which may needlessly subject the residents to an increased vulnerability).

[20] National Commission on Urban Problems, *Building the American City* (Washington, D.C.: House Document No. 91-34, 1968), p. 499.

[21] Michigan State Housing Development Authority, *Security Guidelines* (Lansing: MSHDA, 1975). White, William J., "Mixed Income Housing in Massachusetts: Bucking a National Trend," *Urban Land,* Vol. 34 (March 1975), pp. 3–14. The California State Housing and Community Development Department would be the obvious California agency to take on this function.

[22] Newman, Oscar, *Design Guidelines for Creating Defensible Space,* (Washington, D. C.: Law Enforcement Assistance Administration, 1975). This set of guidelines deals almost exclusively with the issue of whether to build high rise housing or some other housing form. It gives few indications of what to look for in housing that is neither row housing, high rise, nor public housing.

[23] See footnote 13.

END