LAW ENFORCEMENT ASSISTANCE
ADMINISTRATION

Donald E. Santarelli, *Administrator*
Richard W. Velde, *Deputy Administrator*
Charles R. Work, *Deputy Administrator*

NATIONAL INSTITUTE OF LAW ENFORCEMENT
AND CRIMINAL JUSTICE

Gerald M. Caplan, *Director*

RESIDENTIAL SECURITY

Project Staff

ARNOLD SAGALYN, Director

ROBERT L. EMRICH
ANEECE HASSAN
JOHN R. LABOVITZ
PETER C. LABOVITZ
FRANCES PELZMAN
GEORGE VAN DE MARK
JOHN WILLIAMS

This project was supported by Grant No. NI-71-026-C2, awarded by the National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration, U.S. Department of Justice under the Omnibus Crime Control and Safe Streets Act of 1968, as amended. Points of view or opinions stated in this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.

December 1973

U. S. DEPARTMENT OF JUSTICE
Law Enforcement Assistance Administration
National Institute of Law Enforcement and Criminal Justice

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price $1.60
Stock Number 2700-00235

ABSTRACT

The report is a survey of alternative approaches—for governments, institutions, and individuals—to crime prevention in the residential setting.

Security has two distinct meanings—actual protection against a threat and freedom from apprehension or fear about it. The value, or cost-effectiveness, of a security measure is considered from both these perspectives.

A conceptual framework for determining the cost-effectiveness of a security measure in terms of reducing the actual risk of loss from crime is set out, based on two concepts: the crime pressure of the area and the vulnerability of the specific residence to which the security measure is to be applied. Crime pressure is a special type of crime rate, stated in terms of opportunities rather than targets. Vulnerability is defined as the probability that a particular residence will be the target of any randomly selected crime. Approaches available for dealing with residential crime can either reduce crime pressure, which is a collective, public responsibility, or the vulnerability of a residence, which is particularistic and the responsibility of the individual.

Two important conclusions are emphasized: 1) that security devices should be seen as part of the consumer market; and 2) that greater attention must be paid to the displacement effects of any target-hardening approaches.

The report emphasizes the important role of design in crime prevention. Other alternatives are discussed: security devices, citizen action (civilian patrols, tenant patrols, private guards), and public policies concerning residential security (police, incentives and crime insurance, state and local codes).

The report concludes that government's role should primarily be informational and offers several recommendations for providing security information to the various audiences involved, as well as recommendations for further research.

CONTENTS

TABLES AND FIGURES

SUMMARY

The interest in residential security measures, ranging from door hardware to design alterations, citizen patrols, and sophisticated intrusion detection devices, has grown with increasing crime rates. The purpose of this report, with burglary as its focus, is to provide a framework for assessing these security measures and to identify their policy implications for government.

This report places special emphasis on the social, economic, and behavioral factors that influence security decisions by individuals. It does not address residential security in the abstract, as though it were the only goal in a residential environment; instead, it attempts to elucidate what can and should be done when constraints and conflicting objectives are taken into account. Because these necessarily differ from context to context and individual to individual, the report seeks to present general information concerning security measures and to raise the questions that should be addressed in making security decisions, rather than to provide normative prescriptions of the security measures that should be implemented.

PART I. ASSESSING THE COST-EFFECTIVENESS OF SECURITY MEASURES

Security has two distinct meanings—actual protection against a threat and freedom from apprehension or fear about it. The value, or cost-effectiveness, of a security measure may be considered from either of these perspectives. The first would be emphasized by an outside observer attempting to prescribe "rational" security measures for a residence, the second by a resident trying to decide what security devices to buy or procedures to take to optimize his feeling of security within his home. In the first part of the report, we attempt to identify the relationships among the factors involved in either type of cost-effectiveness evaluation.

Chapter 1 describes a conceptual framework—or model—for determining the cost-effectiveness of a security measure in terms of its value in reducing the actual risk of crime. Chapter 2 considers cost-effectiveness in terms of the resident's concerns and the reduction of the fear of residential crime. Both chapters share a central theme: the value of a security measure can only be assessed in terms of the specific residential context in which it is applied, and then only in terms of its incremental contribution to the security of that residence.

The performance of a security measure depends upon the existing level of security of the residence and the existing level of security of other residences in the area. Its incremental contribution to security depends upon the extent to which it upgrades the comparative security of the residence to which it is applied; that is, the extent to which its application reduces the crime threat to the particular residence. Putting better locks on the doors of a home increases its protection to the extent that they reduce the likelihood that the home will be the target of a successful burglary. The locks will probably have only a negligible effect on the overall incidence of crime in the neighborhood; their primary protective function consists in reallocating crime away from the residence to which they are applied to other homes in the neighborhood.

This proposition has important ramifications. For one thing, it means that the impact of applying a security measure to every home will be extremely difficult to assess. The impact of better locks applied to every home in the neighborhood will not simply be the sum of their impact applied to each home. Because security is relative and context-related, the fallacy of composition comes into play: the whole will be less than the sum of its parts, and perhaps appreciably so. If there is no other neighborhood to

which crime may be displaced, the universal application of better locks may have a minimal impact—or even none at all—on the incidence of burglary in the neighborhood.

Chapter 1. Assessing the Protective Capability of Security Measures

Every home is to some extent protected against crime both because it has some security measures and because of numerous attributes of the home and its occupants not normally considered security measures at all. No home, however, is totally secure; each faces some risk of crime.

The crime risk confronting a residence—the probability that it will be the target of a crime over a specified crime period—is determined by two variables: the "crime pressure" in the area and the "vulnerability" of the residence. By "crime pressure," we mean the probability that any randomly selected residence in the area will be the target of a crime during the specified period. By "vulnerability," we mean the probability that the particular residence will be the target of any randomly selected crime.

Crime pressure is the ratio of the number of anticipated crimes to the number of targets or opportunities for it; it is a special type of predicted crime rate, stated in terms of opportunities rather than population. For residential burglaries, it would be the number of anticipated crimes in an area during a given period divided by the number of residences in the area.

Crime pressure is the equivalent of the mean crime risk for the residences in an area. Each of the residences, however, will face a different risk. Vulnerability is the measure of these differences; it expresses the crime-attractiveness of each residence in comparison with all others in the area. A residence that is a less attractive target than the average residence in the area will have a lesser vulnerability, while one that is a more attractive target will have a greater vulnerability. To determine the vulnerability of a residence, one must have information on its crime-attractiveness and that of other residences in the area.

The crime-attractiveness of a residence depends upon a variety of factors. Fundamental to its determination is knowledge about the perceptions and motivations of offenders in the area: Why do they choose to attack one home and not another? Why do they persevere in their attack, once begun, in one instance but not another? Because offenders differ in their mix of skills, preferences, and methods of operation, the identity and relative importance of crime-attracting characteristics will differ from place to place. Area-specific information on crime-attracting characteristics of residences is rarely available, and therefore vulnerability must necessarily be estimated on the basis of general knowledge and intuitions about crime-attractiveness and available testing or experiential information on the performance of the security measures that are in place.

A physical analogue to the relationship between crime pressure and vulnerability in determining crime risk is a leaky fish tank. The higher the water level, the greater the pressure exerted on the sides and bottom of the tank. Some portions of the seam will wear more rapidly than others and as a consequence will be more apt to spring leaks. But, when the tank is empty, there is no pressure, so that the vulnerability of even the weakest point of the seam makes no practical difference.

The crime risk to a residence may be reduced by measures that decrease its vulnerability or measures that reduce the crime pressure in the area. The reduction of crime pressure is largely a social problem and a public policy concern. The vulnerability of a residence, on the other hand, is a particularistic question, to be addressed by its owner or occupants.

Security measures are applied to a residence either to reduce its crime risk by decreasing its vulnerability or to reduce the probable cost of a crime if it should occur. To determine the benefits and cost-effectiveness of a security measure, the crime risk must be measured in dollar terms. This necessitates a measure of the probable cost of a random crime to the particular residence, fully reflecting the anticipated nature of the criminal damages (e.g., theft or personal injury) and the amount of these damages. The risk of loss from crime during a given period is simply the product of crime

SUMMARY TABLE 1—Residential Security Functions and Subfunctions.

I. *To control access by strangers to semi-public, semi-private, and private areas of a residential context.**

A. To control access through formal inquiry procedures at an access point.

B. To control access through informal inquiry procedures resulting from surveillance by residents, guards, police, and building employees.

II. *To control forced entry into semi-private and private areas.* (By definition it is not possible to force entry into a semi-public area.)

A. To provide effective construction barriers to forced entry.

B. To provide effective surveillance designed to detect persons attempting forced entry.

C. To provide fast police response (and private guard response, where appropriate) for apprehending individuals who are detected in the act of forcing entry.

D. To increase the likelihood that a person who perpetrates a forced entry will be accurately identified by witnesses so as to help insure his subsequent arrest and conviction.

III *To increase the likelihood that an individual committing a crime other than forced entry will be detected in the act through surveillance and will be apprehended.*

A. To provide surveillance for detecting persons attempting to commit such crimes.

B. To provide fast police response (and private guard response, where appropriate) to apprehend individuals who are detected in the act of committing crimes.

C. To increase the likelihood that a person who perpetrates a crime will be accurately identified by witnesses so as to help insure his subsequent arrest and conviction.

IV. *To decrease the likelihood that an individual discovered in the act of forcing entry, or committing any other serious crime, will be able to avoid pursuit and subsequent capture while on the premise or grounds in which the crime occurred.*

A. To reduce the opportunities for a fleeing criminal to hide from his pursuers on the premises or grounds.

B. To increase the ease with which the police (and private guard forces, where appropriate) can seal off the perimeter of a residential context, in order to apprehend the perpetrator of a crime committed in that setting.

V. *To decrease the likelihood of a potential criminal deciding to commit a crime on the premises or grounds of a residential context once he has observed the setting.*

A. With regard to criminal acts designed to obtain property in a residential context, to decrease the perceived value of that property.

B. To display precautions that have been taken to decrease the likelihood of a potential criminal gaining undetected access to the semi-public, semi-private, or private areas of a residential context, i.e., to display the precautions taken in support of Function I when such display would increase the deterrence effect more than the ease of circumvention.

C. To display precautions that have been taken to decrease the likelihood of a potential criminal perpetrating a serious crime, undetected, in the semi-public, semi-private, or private areas of a residential context, i.e., in part** to display the precautions taken in support of Functions II and III, when such display would increase the deterrence effect more than the ease of circumvention.

D. To display precautions that have been taken to decrease the likelihood that a perpetrator of a serious crime in a residential context, who has been detected, will be able to successfully escape pursuit and evade capture while still on the premises or grounds, i.e., to display the precautions taken in support of Function IV, when such display would increase the deterrence effect more than the ease of circumvention.

* We divide the continuum of space within a residential complex (that is, a property consisting of one or more buildings containing dwelling units and associated grounds or, more broadly, a neighborhood consisting primarily of residential uses) into four categories:

a. *Public.* Space that, whatever its legal status, is perceived by all members of a residential area or neighborhood as belonging to the public as a whole, which a stranger has as much perceived right to use as a resident.
b. *Semi-public.* Space accessible to all members of the public without passing through a locked or guarded barrier. There is thought to be an implied license for use by the public, and strangers will rarely be challenged. Generally associated with multi-family housing.
c. *Semi-private.* Space restricted for use by residents, guests, and service people on legitimate assignments. In multi-family housing, usually secured by guards (or doormen), locks, or other forms of physical barriers. Strangers can be expected to be challenged as potential trespassers.
d. *Private.* Space restricted for use by residents of a single dwelling unit, their invited guests, and service people, with access generally controlled by locks and other physical barriers. Unauthorized use is always challenged when the opportunity for challenge presents itself.

**"In part" refers to the inclusion under this subsection of steps taken to make a potential criminal think an empty residential unit is occupied, such as the use of timers and photo-electric cells to turn lights on and off.

risk and anticipated cost of a crime. Security measures may reduce vulnerability, thereby reducing crime risk, reduce the anticipated loss per crime, or both. In all cases, their impact on the risk of loss will vary directly with the crime pressure.

Most security measures affect security in more than one way; some of these effects may be positive and others negative. The effectiveness of a security measure depends upon its impact on each of the aspects of security of a residence—or, put differently, on each of the crime-attracting characteristics that contribute to its vulnerability and on its anticipated loss per crime.

In summary tables 1 and 2, we show the major residential security functions and associated subfunctions and the relationship of major categories of physical security measures to these functions.

SUMMARY TABLE 2—The Relationship Between Physical Security Measures and Security Functions.

Security Measures	Security Functions: Access Control	Control of Forced Entry	Control of Other Crime	Reduction of Escape Possibilities	Psychological Deterrence
Door and Window Systems	X	X	X		X
Intrusion Detection Systems		X	X	X	X
Surveillance Equipment	X	X	X		X
Access Control Systems	X				X
Exterior Lighting	X	X	X	X	X
Display of Security Measures					X
Devices to Simulate Occupancy					X

In assessing an added security measure, one must consider not only its negative and positive effects on each security function, but also the relative importance of each function. The utility of a security measure depends not only upon the added effectiveness with which the security functions are performed, but also upon the crime pressure in the area and its impact on the comparative crime-attractiveness of the residence (that is, its vulnerability).

To determine the utility of a given security measure applied to a particular residence, therefore, one must know more than its general or abstract performance characteristics. Its performance must be considered in terms of its complementary and conflicting effects on existing security measures; each security function in the particular residential context must be weighed in terms of the importance of various crime-attracting characteristics in the area. The remaining crime-attractiveness of the residence, with the added security measure in place, must be compared with the crime-attractiveness of other residences in the area to determine the reduction in vulnerability. The vulnerability reduction and any reduction in anticipated loss as a consequence of the security measure must be combined with data on crime pressure in the area to calculate the reduction in the risk of loss—the utility of the added security measure.

The utility of a security measure must be compared with its costs to determine whether it is cost-effective. For this purpose, costs must be stated for the same time period as the risk of loss figure and capital costs must be amortized appropriately.

No added security measure is cost-effective unless it provides a greater reduction of the risk of loss than it costs; the ratio of its utility to its costs (for the same period) must exceed one in any incremental application of the security measure to the residence in question. There is an upper limit on cost-effective expenditures for additional security measures—namely, the risk of loss confronting the residence.

Among the cost-effective levels of added investment for security measures, moreover, there is an optimal amount that should be expended. This amount is where the marginal utility of the last dollar expended is the greatest—that is, the addition of the last dollar of security investment yields the greatest loss reduction.

Chapter 2. The Resident's Assessment of Security Measures

The model described in chapter 1 looks at cost-effectiveness from the perspective of an outside observer seeking to reduce the actual crime risk to a residence in the most economically justified way. It does not take into account the preferences, emotions, or attitudes of residents except insofar as they contribute to the level of vulnerability of the residence or affect the protective capability of a particular security investment.

While the model offers useful guidance to a resident seeking to improve the security of his home, the factors included in it will not be completely determinative for him. He views the problem of crime, and the benefits and costs of security measures, differently from an outside observer. He seeks to reduce the crime threat as he perceives it; and, although there will undoubtedly be a relationship between his perceptions and the objectively described situation, the two will not necessarily be identical.

The Perceived Risk of Loss from Crime

A resident's fear of crime results in a different perception of crime risk from the objectively described risk. A resident is apt to overestimate the level of crime in his neighborhood (pressure) and the comparative likelihood that he will be a victim (the vulnerability of his home) because of his fear of crime and the importance he attaches to his home as a private refuge.

Like the resident's subjective perception of the threat of crime, his estimate of his probable loss from victimization is apt to be greater than the observable situation would appear to warrant. He is apt to overestimate the risk that a residential crime will lead to violent confrontation and to value the loss from injury to themselves or their families at a greater amount than an outside observer. Similarly, he will value his property more highly than most outside appraisers.

Perceived Benefits from Security Measures

Most residents would undoubtedly rate the effectiveness of a security measure in reducing their fear of residential crime in much the same way that an objective expert would assess its protective capability, but this may not be uniformly true. Some devices may offer less protective capability than reassurance to those who buy them, and vice-versa. And, among the security functions, residents may place more emphasis on those providing protection of an occupied residence, and therefore security against violent confrontation, than on others. In addition, a resident may value a security device for important nonsecurity benefits that an outside observer could not necessarily recognize or readily quantify.

Costs

The resident is apt to consider the costs of a security measure in a more inclusive, if less rigorously quantified way, than an outside observer. He will take into account not only cash outlay, but also the compatability of the measure with the lifestyle and living patterns of his household. The extent to which it interferes with his privacy or the normal activities of the family is a very real cost for the resident. Possible malfunctions of a device—a factor relevant primarily to the evaluation of its benefits from an objective standpoint—may also be regarded as costs by the resident. Questions of aesthetic values and preferences enter into the resident's assessment of costs, as well as his evaluation of benefits. Finally, even the direct costs of a device will vary depending upon the characteristics of the resident, and especially his do-it-yourself ability.

The Optimal Security Investment for the Resident

The resident faces an additional constraint that may cause him to spend more or less than marginal utility analysis of security measures (based on costs and benefits as he perceives them) would show to be optimal. He has a limited amount to spend on all household and consumer goods and must seek to make the most cost-effective purchases of all types. He will determine his security investment not only by assessing available security measures, but also by comparing security with other wants. In this respect, security products compete directly with the whole spectrum of non-security consumer goods as well as among themselves.

The Usefulness of the Model to the Resident

A resident will bring his subjective judgments of crime risk, the probable loss from a crime, the benefits and costs of security measures, and the comparative importance of security and other consumer needs to bear in deciding how much to spend on security and what to spend it on. An outsider cannot prescribe his behavior for him but can provide useful assistance to him. The framework of the model can serve as a vehicle for providing important information to help the resident make security investment decisions.

Particularly critical is the emphasis of the model on the specifics of the crime risk to a residence. The model stresses that the resident should make security decisions in light of:

- the crime pressure in his neighborhood or area and
- the existing vulnerability of his home in comparison with others in the neighborhood or area,

as well as the general effectiveness and costs of available security measures. Thus, the household will want to analyze such ques-

tions as whether residential burglaries are rare, or involve a relatively few houses in the area, or seem relatively frequent or widespread. (When crime pressure is low, the benefits from security investments will be correspondingly smaller; when it is high, they will be correspondingly greater.) In practical terms, he will want to assess his vulnerability by asking such questions as the following:

- Will an intruder approaching my home be observable by the neighbors?
- Are the neighbors apt to be around to spot him? Will their presence be apparent?
- Are the accessible doors and windows to my home locked? Are the locks adequate to withstand common techniques of forced entry?
- Are the doors, frames, and hinges resistant to common techniques of forced entry?
- If the burglar gets in, will his presence be detected? If he is detected, what is likely to happen?
- Will a burglar desist when he becomes aware of the security measures that are present? Are there ways to make him more aware of their presence without diminishing their effectiveness?
- Finally, how does my house compare with others in the area in terms of occupancy patterns, observability of entry points, ease of illegal entry through doors and windows, and possible detection of intruders within the premises?

PART II. PHYSICAL SECURITY MEASURES AND DESIGN PRINCIPLES

Chapter 3. Security Devices and Systems

Chapter 3 provides an overview of various types of security hardware available in the residential market or with some applicability to the residential setting. These include door systems, windows and sliding glass doors, lighting, and mechanical, electro-mechanical, and electronic security systems.

Door Systems

Doors. Because of the wide price variations and the virtually infinite combination of materials and styles of doors, one cannot prescribe an optimal door for security purposes. The vulnerability of a door is usually defined in terms of its penetrability, although a greater hazard is posed by a door that fits loosely to its frame and may be readily pried or forced open.

Three types of doors are in common use. (1) *Flush wood doors* are either of hollow-core or solid core construction. Solid core doors provide good strength across the width of the door and add insulation and fire resistance as well as security. Hollow-core flush doors, on the other hand, are easily penetrated but are being used increasingly on exterior entries of new residences, primarily because they are least expensive. (2) *Stile-and-rail doors* differ in their security effectiveness depending on thickness, type of wood, and quality of fit to frame. (3) *Metal doors* are superior in security terms to any wood door, but offer less insulation and are often considered aesthetically unattractive for residential use.

Hinges. Hinges are an important if often overlooked element of a door system, protecting a home or apartment against either a door being forced out of its frame or removal of the whole door after removing the hinge pins. Various methods are available for securing hinge pins when hinges are on the outside.

Locks and Locking Devices. The five major lock categories used in residences are:

- cylindrical (key-in-knob) locks
- mortise locks
- rim locks
- cylinder deadbolt locks
- cylindrical lock sets with deadbolt function

Cylindrical (key-in-knob) locks are most widely used in residential construction but are least desirable from a security viewpoint. Mortise locks require mortising of the door to install; since the introduction of cylindrical locks, their popularity has declined. A satisfactory mortise lock should have a deadbolt with a sufficient throw to fit securely into the frame, but many do not. Rim locks are often installed as an auxiliary lock on the inside of a door. Properly installed, a vertical deadbolt rim lock is an excellent security addition at a cheaper price than a replacement primary lock. Cylindrical deadbolt locks, preferably with a double-cylinder, are

becoming the most popular security lock. The need to find and use a key for egress poses some hazard in case of fire. Cylindrical lock sets combining a deadlatch function with a deadbolt combine the best features of a good security lock.

Miscellaneous. Related to door security are chain locks, door intercoms and peephole viewers. Chain locks provide only limited protection against forced entry. They do serve to aid in visitor identification, although the inexpensive peephole viewer is probably a safer way to provide this function. Door intercoms are most useful in multi-family housing.

Windows and Sliding Glass Doors

Windows constitute a major security problem. They are vulnerable in inverse proportion to the vulnerability of main entry doors—an intruder almost invariably goes for a door first. There are several alternatives for increasing window security—the use of grills or heavy screens, burglar resistant glass laminated with a vinyl layer, and using nails or pins to prevent moveable sashes from being opened.

Lighting

Outdoor lighting can be one of the most effective deterrents against crime. When properly used, it discourages criminal attack, increases natural observability, and reduces fear. Despite the voluminous material available on lighting, however, there are few definitive standards on the optimal level of lighting in terms of crime prevention. For both single and multi-family housing, the most critical problem is not the absolute level of light but the evenness of light. Outdoor lighting coverage should be adequate to eliminate large shadowed areas but not so excessive as to be unpleasant to live with. No general standard applies to all residential areas, although porch, garage and driveway lights should provide observation of visitors and allow police patrols easy identification of a house or apartment number.

High-intensity street lighting, increasingly widespread as a crime deterrent, undoubtedly creates increased usage of city areas and may reduce street crime. To the extent it interferes with the living patterns and comfort of residents, such lighting may prove unsuitable in residential areas. Another concern with high intensity and related public lighting programs is that they may serve only to displace crime—increasing the security of one neighborhood at the expense of contiguous areas. Further research is needed on these displacement effects and other aspects of the relationship of street lighting to crime.

Mechanical, Electro-Mechanical and Electronic Security Equipment

Complex and technological security advances heretofore oriented to commercial, industrial, and military installations have begun to move into the residential market. The fairly widespread use of CCTV to monitor indoor and outdoor areas of apartment complexes is but one example. Although sensors and alarms are being used increasingly, only a negligible number of homes are now equipped with intrusion detection systems. Several problems are evident. The use of intrusion detection devices places certain strictures on family living patterns that are difficult to observe consistently—especially if the household owns a dog or other pet. Inappropriate family behaviors, together with equipment and installation deficiencies, have resulted in excessively high false alarm rates (estimated as high as 95%).

To insure effectiveness, detection and monitoring devices must be more reliable and communicate directly or indirectly to the police. Direct police communication is increasingly rare, as soaring false alarm rates have made police leery of direct communication. While the private central station alarm system offers its client a positive attitude and response, the principal disadvantage to the consumer is cost. A monthly fee for monitoring and service (that begins at roughly $15 and can go substantially higher), in addition to the purchase or lease price plus installation charges, poses a real obstacle to the widespread use of intrusion detection systems in residences.

Chapter 4. Design and Residential Security

Recent findings highlight the importance design plays in improving residential security both in existing communities and in planning new residential communities. Environ-

mental psychologists have pointed out that territoriality is one means of establishing and maintaining a sense of personal identity. If we consider the urban setting in this light, it is apparent that our cities and homes often do not strengthen this sense of self; to the contrary, they often intensify feelings of isolation and unimportance. Planners, builders and architects have not yet made of their profession a "socially responsible art," and the result is design that often increases tendencies toward crime, violence, and social isolation. Realizing this has been an important first step toward relating design to crime prevention.

This relationship has been tellingly documented in *Defensible Space,* the recent work done by Oscar Newman and the Center for Residential Security Design, Inc. Newman and his research team were able to show significant relationships between environment and behavior. Comparing projects almost identical in density, population, income and other characteristics, but with sharply differing crime rates, Newman found the critical differences were the design of buildings and their grounds, and the relationship of the projects to their surrounding environments. Newman, building on the earlier work of planners and behaviorists, has indicated that architecture can create zones of territorial influence that, when combined with created opportunities for surveillance, enable inhabitants to act naturally as their own policing agents. Work done by the New York City Rand Institute, in several California communities, and at Yerba Buena Plaza in San Francisco, support this relationship between design and security.

Design, then, offers a chance to build an open society rather than the "fortress America" that is a possible (if repugnant) alternative; and design for security (even if that design must include some "fortification elements") is a much more cost-effective approach than building without any consideration of what design has to do with security.

Although the general security design guidelines need further testing, they do represent a foundation for a new approach to crime prevention in which security is achieved through design and a natural system of community protection and self-defense. This approach is oriented toward the creation, maintenance, or reinforcement of an open community rather than an atmosphere of mistrust and control. The elements of this approach are basic, simple and general, and include seven important points:

- Opportunities for surveillance
- Differentiation of space
- The assumption of territoriality
- Access control
- Separation of conflicting uses
- Provision of more acceptable outlets for potentially delinquent and criminal energies
- Community aesthetics

These points define residential design considerations that provide a focus for architects, planners and builders as they deal with a specific site or plan.

Obviously, design is not a panacea for crime problems, nor can any single set of solutions answer the needs of all socioeconomic groups or all regions. Enough is now known, however, about design and security to warrant an effort to disseminate existing knowledge to architects, developers, builders, and local planning officials and to include security considerations in site plan review and other flexible aspects of local development control.

PART III. PRIVATE GROUP ACTION TO COMBAT RESIDENTIAL CRIME

The third section of the report discusses private group action to combat residential crime: citizen patrols in residential neighborhoods, tenant patrols in public housing, and private guard forces in the residential setting.

Although most citizens would prefer improved police service to any personal involvement or expenditure of funds for private guards, they are increasingly banding together to provide supplementary protection for their homes and neighborhoods. The decision about what form of protection to seek is dictated primarily by economic considerations. Support for citizen patrols is found "disproportionately among lower-status persons," according to one study, while middle-class people press more effectively for increased police protection or hire private guards.

Most such efforts at self-protection inhabit an anomalous legal position. In our society there is little middle ground between the sworn police officer and the ordinary citizen, and all the activities described in this section represent private citizens undertaking an ancillary police role—an uncomfortable role with many inherent tensions and one fettered by a variety of legal restrictions. These restrictions and the risks they reflect are one of the drawbacks of such self-protection measures. Other important issues concern the relationships of private protection efforts to the police and their impact on the attitudes of a community and its residents, particularly on fear.

Chapter 5. Citizen Patrols

The citizen patrol can be viewed as part of the long historical tradition of vigilantism in this country, with all the ambivalence present in that term. In the present instance, where their numbers are reported to be increasing in a number of suburban communities and cities across the country, they are seen ideally as performing a relatively simple and narrowly defined role: to deter criminal activity by their presence. Their function should be that of a passive guard: to watch for criminal or suspicious activity and to alert the police when they see it.

Drawing on information that exists about citizen groups recently active or current, what are their advantages over other protective measures?

- Patrols are relatively inexpensive.
- Patrols can perform a surveillance function effectively.
- Patrols take advantage of existing behavior patterns.
- Patrols can improve an individual's ability to deal with crime.
- Patrols contribute to other desirable social goals, related to neighborhood cohesiveness and the provision of a desirable alternative to less acceptable activity.

In practice, however, patrols exhibit serious shortcomings:

- The typical patrol process—formation in response to a serious incident or heightened level of fear about crime, increased membership, success in reducing criminal activity at least in a specific area, boredom, decreasing membership, dissolution—means that patrols tend to be short-lived.
- The passive role of a patrol is difficult to maintain.
- The police will be reluctant to cooperate with a patrol and may even oppose it.
- The patrol may aggravate community tensions.

The principal problems of patrols relate to their inability to sustain the narrow, anti-crime role they initially stress. They may be an effective temporary measure to deal with criminal contagion in a particular area. Over the longer term, however, the inherent risks may outweigh the continued benefits.

The proliferation of patrols in recent years is evidence that they fill a felt need, but it should be recognized that patrols are no substitute for adequate police protection.

Chapter 6. Tenant Patrols in Public Housing

While public housing management operates under severe budgetary constraints, it has a special obligation to seek out inexpensive means of providing security for a population that has few economic or social alternatives as far as housing is concerned. It also faces a legal obligation to utilize tenants to provide management services, for the Housing and Urban Development Act of 1970 requires "maximum feasible participation of the tenants" in the development and operation of tenant services, including "services which are directly related to meeting tenant needs and providing a wholesome living environment."

In this context, tenant patrols are an important security measure for public housing, and in a dozen or so cities patrols organized in a variety of ways have been funded by HUD, LEAA, the Department of Labor, state criminal justice agencies and private foundations.

The chapter describes three tenant patrol operations: New York, Hartford and Kansas City, Mo. New York City represents a volunteer operation, the oldest and largest presently in existence. More than 12,000 volunteers provide access control in the lobbies of hundreds of buildings, with some support and direction from the tenant patrol unit of the New York City Housing Authority. They

serve as a complement to the independent Housing Authority Police Department, whose 1500-plus men provide vertical patrol and the full range of police services to the public housing community.

Beyond the guidance offered by the central tenant patrol unit, there is little formal training; the generally sedentary surveillance activities of the tenant patrols, however, are the least complex type of patrol, where an untrained presence may be adequate:

Every security increment carries a price tag. Costs are proportionately lower in New York because only project supervisors are paid. The largest single expense is for telephone services: a phone on a card table in the small lobbies connects the volunteers on duty (frequently women and elderly residents) to police help, and the volunteers do not hesitate to call at the first sign of any problem in the building.

A small patrol working in two housing projects in Hartford, Conn., represents the use of Model Cities funding to support a patrol project. Receiving high marks from residents, the patrol nevertheless suggests the difficulties such projects often go through in becoming operational, as well as problems with training that often beset such groups. The Hartford experience points up the importance of police involvement and the need for clear administrative and organizational guidelines, issues of primary importance to the success of most patrols.

The larger operation in Kansas City, funded heavily through the Emergency Employment Act, is a patrol at the opposite end of the image spectrum from New York City. Quasi-military and armed, the Kansas City patrol is the closest of all patrols to becoming a separate police force and the Kansas City Police Department has been heavily involved in planning and training. The emphasis on the police role has caused some resentment. Admittedly, the balance between a security and community role has not been easy even for established police forces to maintain, but one of the potentials of patrols has been their special relation to their clientele. Their success is vitiated if they aggravate those resentments toward the police that many residents now have.

Although the New York operation is specifically successful in its own setting, its organization may not be valid for other settings. As in so many areas of security, the solution needs to be tailored to fit the specific situation. Certain conclusions about the New York City operation, however, are applicable to other patrols:

1) There generally exists no hard statistical basis for evaluation of a patrol's effectiveness. The variables pose almost insuperable obstacles to relating changes in crime rate to patrol activity.

2) There is a case to be made for the effectiveness of tenant patrols. They produce strong secondary benefits that relate to security: a lessened fear of crime and a strengthened sense of community. Secondary programs can develop from the patrols that add to this community feeling: recreational programs, often youth-oriented; community recognition and beautification programs.

3) With residents given preference, they provide an additional employment avenue for residents of public housing, with the possibility of career ladder development toward housing authority jobs.

4) The patrols affect the relationship of people to place and space and this assumption of territorial responsibility is in itself an important security increment.

The public housing setting may be particularly suited to such resident activity, offering the "clearer boundaries and relatively homogeneous constituency" that one patrol-watcher considers a prerequisite for effectiveness. If this is true, it should also be noted that there is no single, generally acceptable model of a successful patrol operation; again, the concept must be tailored to local perceptions, police structure, physical layout and management. There is, however, a need for an information clearinghouse that local housing authorities could consult about tenant patrols.

Chapter 7. Private Guards and Residential Security

In a residential context, private guards are generally hired by a community, apartment complex, or development to provide access control, preventive patrol, property protection, response capability, or a combination of these functions. The price tag for all or any

of this puts guard services well out of the reach of most households in this country. Contracting for guard services is feasible only when the cost can be shared by many households, either through a neighborhood association or a direct or indirect charge by management.

The quality of the service a community or development obtains when it contracts for a guard is open to serious question. The typical private guard, according to a recent Rand study, is an aging white male, poorly educated, usually untrained, and poorly paid. Personnel problems are aggravated by minimal training, and these inadequacies make the issue of weapons all the more critical. In our view, an armed guard in a residential setting is, quite literally, an example of overkill.

Guards should be trained as watchmen, with a communications capability to the police. A watchman presence of this type may be justified in some residential communities, especially those experiencing a contagion of criminal episodes.

Although industry turnover is high and regulation haphazard, the potential advantage of private guards over citizen patrols is that paid guards presumably will have greater staying power and are at least under the supervision of a business enterprise that could discipline or fire them. In most residential areas, however, private guards are a poor security bargain.

PART IV. PUBLIC POLICY ISSUES CONCERNING RESIDENTIAL SECURITY

Government has three basic approaches to influencing individual or business behavior: through persuasion, the provision of incentives, and compulsion. The final section of the report discusses the major proposals under the last two of these three approaches to "target-hardening" against residential crime—that is, to inducing builders, landlords, homeowners, and tenants to protect residential units against burglary.

Chapter 8. Residential Crime and the Police

Most urban police departments have had a disappointing impact on residential crime because of competing demands for insufficient manpower, higher priorities claimed by commercial areas, and the difficulty of patrolling varied physical layouts of neighborhoods and apartments. The low probability that an officer will actually observe a residential burglary, coupled with average escape times and police response rates, make it unlikely that traditional police tactics—focussed on deterring crime through increasing the likelihood of detection, apprehension and punishment—will have much impact on the incidence of residential crime.

Two promising police innovations are worth mentioning, however. The first, team policing, involves decentralization of responsibility, permanent assignment of officers to a specific area, integration of patrol, traffic and detective functions, and related efforts at achieving increased community involvement. Team policing appears to be increasing police effectiveness and knowledge of the community, and, in turn, bolstering citizen confidence in the police. While no objective measures of long-term effectiveness are available, these results probably justify increased team policing, whether or not the program proves to be a significant deterrent to residential burglary or results in higher apprehension rates.

The second new program is residential security inspections. Aware that burglars seek out visible defects in residences, and that most residents have sparse information available about hardware or procedures that could better protect their homes, police departments in some cities have begun to conduct home security inspections. The report focused on California, where five jurisdictions (Oakland, Los Angeles County, San Diego, Los Angeles and Orange County) conducted inspection programs under the Crime Specific Program, supported with LEAA funds. Common elements of their programs were an extensive publicity campaign, mail or phone or door-to-door solicitations, followed by the inspections. Each inspector went into the field with a checklist of vulnerable points and a set of recommended hardware and procedural standards to discuss.

Some hard lessons were learned from the experience. The inspections proved quite

costly on an individual basis, response on other than door-to-door solicitation was disappointing, and the compliance rate was minimal. It would seem far preferable to limit security inspections to homes that have just been victimized and those whose owners voluntarily request an inspection from the police (not as a consequence of door-to-door canvassing).

Despite the poor compliance experience in the California experiments, residential security inspections provide a means and opportunity for the police to help residents and housing management minimize the opportunities for residential crime. To the extent such private citizens take measures and follow procedures that will strengthen the physical security of their dwellings, the mission of the police in reducing crime will be greatly facilitated.

Chapter 9. Incentives for Residential Security Measures and Crime Insurance

Incentives to encourage citizens to protect their homes could be provided in a number of ways, from something as conceptually simple as subsidizing the purchase and installation of residential protective devices to a tax write-off of one or another form. The proposed program of target-hardening in Impact Cities, outlined in LEAA's guidelines for use of Impact City grants, is a specific subsidy program—that is, its purpose is to diminish the monetary cost of protective devices to such a low level, perhaps zero, that residents will agree to installing them. Another recent example of a large-scale incentive program is New York City's $5 million Block Security Program to encourage and support self-help community programs. The program offers matching grants of up to $10,000 to individual blocks, represented by block associations, organizations representing groups of blocks, and tenants' or merchants' associations. Police involvement is built into the program of training for block security officers.

The most often suggested incentive, however, is the reduction of crime insurance rates for homes where protective devices are installed. We do not believe that this is a realistic proposal, since the incentive effects would be minimal and the insurance industry itself has little reason to promote the incentive.

Some proposals concerning crime insurance shade into the area of compulsion—for example, a requirement in insurance policies that protective devices be installed in order to obtain crime coverage. These proposals, unfortunately, confuse a social objective (greater residential security) with the basic purpose of insurance (loss-spreading) and, in the process, might severely limit the social benefits derived from crime insurance.

Chapter 10. Compulsory Residential Security Measures: State and Local Codes

Our consideration of compulsory measures to improve residential security focuses primarily on state and local residential security codes. There are four different types of "residential security codes": provisions in subdivision and other planning ordinances requiring that security be considered in the design of new residential developments, provisions in building codes, establishing security standards for the construction of new housing; provisions in housing codes, requiring the installation of protective devices in rental housing; and, finally, ordinances requiring the owner-occupants of existing housing to install protective devices. For reasons stated in chapter 4, we favor the inclusion of security among the design standards addressed in subdivision or site plan review. In chapter 10, we consider the three other types of codes.

Our major conclusion is that serious issues about the effectiveness and impact of codes have not been addressed. While it may be appropriate to adopt building and housing code provisions covering security requirements, codes applied to existing owner-occupied housing pose an additional and troubling problem of the appropriate governmental role in regulating individual conduct for his own good.

Chapter 11. Recommendations

To preface our recommendations concerning the role of government at the federal, state, and local level, we reiterate that the crime risk to a given residence is a function of two variables, crime pressure and vulnerability. The most important implications of this are that residential security is contextual

and that the risk of crime to a residence may be reduced through two distinct types of measures, those that reduce overall crime pressure and those that reduce vulnerability.

A variety of government initiatives—ranging from drug abuse programs to improvements in the criminal justice system—may reduce crime pressure. They are beyond the scope of this report, but they necessarily and appropriately command most of government's attention and resources in this field.

Residential security measures affect vulnerability far more than crime pressure. The particularistic quality of security measures makes it very difficult to assess them from the standpoint of public policy. Reductions in vulnerability benefit only some people and impose a greater crime burden on others. This displacement effect has ramifications in terms of equity and fairness that an individual homeowner may ignore but that government cannot.

The distribution of crime, as opposed to its frequency, touches upon aspects of private behavior that may be outside the ken of governmental action. Residential security measures are basically consumer goods; and governmental action to affect the vulnerability of residences should be limited accordingly. This position underlies the following recommendations.

1. Government's most important role is the provision of accurate and useful information to potential consumers of residential security measures. A brief compilation of the type of information that should be conveyed to homeowners and tenants is presented in chapter 11.

There are two recommendations in this area:

a. Local law enforcement agencies should initiate residential security inspection programs. Information should be broadly disseminated; on-site inspections should be provided to residents who request them or have been recent victims of residential burglaries.

b. At the federal level, LEAA should establish a clearinghouse to collect, summarize and disseminate information about residential security.

2. In recognition of the importance of design principles to residential security, it is recommended:

a. One of the prime functions of any LEAA clearinghouse should be to develop information about design approaches to residential security for dissemination to architects, planners, developers, and local planning officials.

b. The federal government should assume a leadership role in efforts to train housing and planning professionals about design and security.

c. The federal government should support further demonstration programs, especially to supplement design modifications in public housing with serious crime problems.

d. At local government levels, security considerations should be included in site planning and subdivision regulation, with increased police involvement in these regulatory processes. In addition, minimum door and lock standards for new housing should be provided through building code provisions.

e. In the light of the special federal obligation to residents of public housing, there should be a central information source so that local housing authorities can more easily obtain information about security hardware, design modifications, tenant patrols and public housing guard forces.

3. The following recommendations relate to possible subjects for federal research and development:

a. Offender studies are sources of insight into improvement in social institutions to deter criminal behavior (measures that will reduce crime pressure) and rehabilitative and correctional processes. There should be further research in this area, with a greater pooling of techniques and experiences among researchers; in particular, a better understanding is needed of the "projective" techniques that have been used to study incarcerated offenders.

b. Having stressed the immediate relevance of physical vulnerability data to the effectiveness of design principles and hardware, further iterations of victimization surveys (including the LEAA-Census National Crime Panel) should include more stress on specific questions relating to physical vulnerability.

c. More research is needed on the nature of fear of crime to give better

direction to assessments of the comparative seriousness of crime and security problems.

d. Further work on the impact of high intensity street lighting on crime patterns, displacement, and non-crime related consequences is still a research priority.

4. The report's final conclusion discusses current LEAA activity on low-cost, reliable intrusion detection devices for residential application. Unfortunately, the low initial cost of such a device may prove to be illusory, since the major outlays for alarms are continuing charges to monitor them. Moreover, market resistance to intrusion detection devices may not be based so much on price as that these devices impose too many constraints on normal living patterns. Further, if the government were to subsidize such a low-cost product, it would be questionable whether benefits would accrue to those at the lower end of the income scale.

If product development in this field is to proceed, two research priorities are obvious:

a. There is a need to estimate what such a low-price system would actually cost consumers over a prolonged period, including installation, monitoring and response costs; and

b. There is a need for sophisticated market research, especially into the low- and moderate-income market, to determine the marketability of residential intrusion detection systems.

SCOPE OF THE REPORT

This report is an assessment of security measures against residential crime, with particular emphasis on crimes that involve illegal entry into residential property. Interest in the problem of residential crime has grown as crime rates have increased; residential security measures, ranging from door hardware to design alterations to sophisticated intrusion detection devices, have attracted increasing attention from government and citizens. The purpose of this report is to provide a framework for assessing these security measures and to identify their policy implications for government.

We have paid special attention to social as well as economic tradeoffs required by security measures and have attempted to identify the range of factors that influence security decisions by individuals. This report does not address residential security in the abstract, as though it were the only goal in a residential environment; rather, it attempts to elucidate what can and should be done when all the constraints and conflicting objectives are taken into account. Our intention throughout is to ask the significant questions, to provide a proper framework for meaningful answers, and to maintain a balanced perspective on the subject.

Neither residential crime nor residential security measures are terms with generally accepted meanings. The definitions we have utilized and some of the subjects we have excluded from consideration are explained in the following paragraphs.

Residential Crime: Focus on Stranger-to-Stranger Crimes and Burglary

Residential crime, for our purposes, does not include every offense that might occur in residential areas. We were specifically asked to confine our study to crimes committed on residential property. We were also asked to focus on "stranger-to-stranger" crimes—those committed by persons unknown to their victims.

Among these residential crimes, burglary—the illegal entry of residential premises with the intent to commit a felony—is the most prevalent. It is also the one crime committed by strangers that, by definition, involves penetration of the spatial boundary (the residential lot line) established for this report. For both reasons, it receives the most emphasis in what follows.

Residential Security Measures: Focus on Deterrence or Prevention Rather Than Apprehension

By residential security measures, we mean those devices, actions or procedures whose function is to protect residential space. Our discussion of security measures covers a diverse range of devices, procedures, and activities that help to protect the residential environment. Included are design principles for building security into new residential developments and enhancing the security of existing ones; lighting and security hardware (including doors and windows and their components, intrusion detection and surveillance equipment, and other miscellaneous devices); citizen and tenant patrols and private guards.

Among residential security measures, we place more stress on those whose function is to deter or foil an offender than on those whose function is to increase the probability of his apprehension by the police. This emphasis is justified by the nature of residential crime and law enforcement capabilities. The traditional law enforcement approach, which emphasizes the deterrence of crime through the apprehension and punishment of offenders, has had only limited success in dealing with residential crime, and especially residential burglary. Police manpower and resources are often inadequate to deter residential crime by preventive patrol, and the response capability of the police is frequently too limited and slow to permit the apprehension of most residential burglars on

the scene, even when the police receive an immediate alert.

It is not surprising, therefore, that only a relatively small fraction of all reported residential burglaries are cleared by arrest. Although some security measures may improve the ability of the police to apprehend offenders, this is usually not their most important function.

Most of the measures that are proposed to improve police capabilities and particularly their response capability, on the other hand, are directed to many law enforcement functions of the police, rather than to residential crimes in particular. Accordingly, we do not attempt to analyze them in detail in this report.

Areas of Exclusion: General Community Initiatives and Weapons

Simiarly, a variety of community initiatives can be identified that would, among other things, contribute to the prevention of residential crime. Community activities might provide alternative outlets for potential offenders; community organization might promote a sense of mutual protectiveness among residents, along with other desirable community improvements. It would be casting our net too wide, however, to attempt to cover the subject of community activities other than those such as community anticrime patrols.

We have not devoted any substantial coverage in this report to personal protective weapons. We have concluded that weapons offer too great a risk of needless violence and injury to warrant their general use to protect a residence. No handgun or less-than-lethal weapon is purely defensive; it has both offensive and defensive capabilities, and which predominates depends upon the user. A handgun kept in the home is often as apt to be stolen by a burglar when the house is unoccupied as it is to be used or brandished against him by a resident protecting himself and his family. Even in a criminal confrontation, the risk is usually greater if an individual attempts to fight back than if he submits. A weapon is less apt to be a source of protection than of tragedy, less likely to be used against a burglar than by one spouse against another, a child against a sibling or playmate, a member of the household against an acquaintance.

The Limited Applicability of Systems Analysis to Security

We should note that we do not frame our discussion in terms of security "systems." The concept of a residential security "system" may be misleading if too narrowly or conventionally conceived.

A system, to use a dictionary definition, is a related or connected set or arrangement of things that form a unity or organic whole. As the definition implies, the relationship between the elements of a system is more than simply additive; each influences the others and all are needed to form the whole. Security, however, is not a unitary concept. There is no end-state, even apart from practical and financial constraints, that can be called absolute or total security; rather, security is added to or detracted from by the presence or absence of security measures, many of which have only tenuous relationships to one another. To force these measures into a security "system" may be an unwarranted application of the term. One may go so far as to say that striving for a "system"—for completeness—conflicts with even the most rudimentary application of cost-effectiveness analysis, which suggests that behavioral, attitudinal, and financial limitations should influence the choice of security measures.

We do, however, adopt as much of the "systems approach" as the circumstances permit and conceive of the appropriate issues in "system" terms. The security of a door, for example, depends not only on its lock, but on the door itself, its frame, the hinges, and the quality of the construction and fit. It is appropriate to think of these components together as a door "system," just as it is proper to speak of intrusion detection "systems," comprising a variety of interrelated mechanical and electronic parts.

Emphasis on the Average Residential Setting

Many of the recent studies of residential crime and security have concentrated primarily on public housing projects and other inner-city neighborhoods with serious crime problems. Some of these studies, and most

notably the work of Oscar Newman, have made major contributions to the field of residential security in general, as well as recommending appropriate security measures for these critical situations.

Our emphasis is necessarily somewhat different. In analyzing the constraints and tradeoffs involved in residential security, we have tended to give appropriate weight to the average residential setting. Statistics from the 1970 Census of Housing indicate that this is a single-family home, outside the central city of a Standard Metropolitan Statistical Area, and owner-occupied. (For data on these points see table 1.) Our assignment, moreover, was to look at crime affecting *all* types of housing, including low-density suburban areas. Accordingly, while the report recognizes and deals with the special security problems of multi-family housing, it places more stress on aspects of residential security that all housing has in common.

TABLE 1.—Characteristics of Occupied Housing Units, 1970.*

Location	Number of Units per structure		Owner-Occupied	Renter-Occupied	Total
	1	2 or more			
Inside SMSA's					
In central cities	18.0	16.4	16.5	17.9	34.4
Outside central cities	*27.6*	*7.8*	*24.7*	*10.7*	*35.4*
Total	45.6	24.2	41.2	28.6	69.8
Outside SMSA's	*26.2*	*4.0*	*21.0*	*9.1*	*30.2*
Total	71.8	28.2	62.2	37.8	100.0

* Excludes mobile homes and trailers.

SOURCE: U.S. Bureau of the Census, Census of Housing 1970, *General Housing Characteristics*, Final Report HC(1)-A1, United States Summary, Table 10.

Part I
ASSESSING THE COST-EFFECTIVENESS OF SECURITY MEASURES

Security has two distinct meanings—actual protection against a threat and freedom from apprehension or fear about it. The value, or cost-effectiveness, of a security measure may be considered from either of these perspectives. The first would be emphasized by an outside observer attempting to prescribe "rational" security measures; the second by a homeowner or resident trying to decide what security devices to buy or procedures to take to optimize his feeling of security within his home. In this part of the report, we attempt to identify the relationships among the factors involved in either type of cost-effectiveness evaluation.

Chapter 1 describes a conceptual framework—a model—for determining the cost-effectiveness of a security measure in terms of its value in reducing the actual risk of crime. Chapter 2 considers cost-effectiveness in terms of the resident's concerns and the reduction of fear of residential crime. Both chapters share a central theme: the value of a security measure can only be assessed in terms of the specific residential context in which it is applied, and then only in terms of its incremental contribution to the security of that residence.

The performance of a security measure depends upon the existing level of security of the residence and the existing level of security of other residences in the area. Its incremental contribution to security depends upon the extent to which it upgrades the comparative security of the residence to which it is applied; that is, the extent to which its application reduces the crime threat to the particular residence. Putting better locks on the doors of a home increases its protection to the extent that they reduce the likelihood that the home will be the target of a successful burglary. The locks will probably have only a negligible effect on the overall incidence of crime in the neighborhood; their primary protective function consists in reallocating crime away from the residence to which they are applied to other homes in the neighborhood.

This proposition has important ramifications. For one thing, it means that the impact of applying a security measure to every home will be extremely difficult to assess. The impact of better locks applied to every home in the neighborhood will not simply be the sum of their impact applied to each home. Because security is relative and context-related, the fallacy of composition comes into play: the whole will be less than the sum of its parts, and perhaps appreciably so. If there is no other neighborhood to which crime may be displaced, the universal application of better locks may have a minimal impact—or even none at all—on the incidence of burglary in the neighborhood.

It is quite appropriate for the owner or occupants of a particular residence to undertake to protect it even if the effect is to increase the crime threat to neighboring residences. This is not, however, necessarily the appropriate approach for government, which should be concerned with the reduction of the overall incidence of crime, not simply its reallocation. We return to this subject in Part Four of the report.

CHAPTER 1. ASSESSING THE PROTECTIVE CAPABILITY OF SECURITY MEASURES

Every home is to some extent protected against crime. Its existing level of security results from numerous attributes of the home and its occupants, many of which are not normally considered security measures at all. A residence is protected against crime because it is built to be sturdy and weathertight, it is located near other homes (or, alternatively, is isolated and difficult to reach), the possessions of the occupants are limited in value, the number of potential offenders is limited, and so on. And every residence has some security measures—doors that close and can be locked, windows through which activities outside the residence can be observed, household behavior patterns designed to safeguard valuable property.

No home, however, is totally secure; every residence faces some risk of crime. The effectiveness of a security measure in providing protection must be assessed in terms of its incremental contribution to the reduction of this risk.

A. Crime Risk

The crime risk to a residence is the probability that it will be the target of a crime during a specified time period. It is readily apparent that the crime risk varies from residence to residence. A house in a high-crime area is more likely to be a target of crime than one in a low-crime area; within the same area, one residence is more likely to be a target than another.

The two variables that determine the crime risk to a residence we call "crime pressure" and "vulnerability." The first is a measure of the likelihood that any randomly selected residence in the area will be the target of a crime during a given period; the second, a measure of the likelihood that the particular residence will be the target of any randomly selected crime. Stated formally, crime risk is a function of crime pressure and vulnerability:

(1) $R = f(P,V)$

where

R = crime risk to a residence
P = crime pressure in the area
V = vulnerability of the residence

B. Crime Pressure

Of the two variables, crime pressure is the easier to define and measure. Conventional crime statistics are generally expressed as a ratio of the number of crimes in a defined geographic area to that area's population, usually as crimes per 100,000 population. These rates are normally derived from police statistics on reported crimes, although there is a growing interest in generating crime rate data from victimization surveys. The principal advantage of the latter technique, when properly executed, is that it reveals a more accurate picture by uncovering crimes that have not been reported to the police.[1]

Even in the best of circumstances, when we have a true crime rate that reflects all reported and unreported crime, we still do not have an appropriate measure of crime for analytical purposes. That measure—what we call crime "pressure"—is the number of crimes expressed as a proportion of the number of *targets of a crime,* or opportunities for it.

Take, for example, the burglary rate for the Washington, D.C. metropolitan area—

[1] The disparity between reported and unreported crimes is known to be very high in some areas. See Urban Systems Research and Engineering, Inc., *Crime and Housing in a Metropolitan Area: A Study of the Patterns of Residential Crime,* NI-71-026-C-1, January 1973, pp. 17-20. See also Philip H. Ennis, *Criminal Victimization in the United States: A Report of a National Survey,* the President's Commission on Law Enforcement and the Administration of Justice, Field Survey II, Washington: GPO, 1967.

1,485 per 100,000 population in 1971. This figure provides nothing more than a crude means of comparing trends for reported burglaries over time within the metropolitan area, or with other metropolitan areas. Useful as this rate may be for some purposes, it does not give us the number of burglaries as a ratio to the number of available targets.

The distinction between crime "rate" and crime "pressure" is especially significant if the ultimate purpose of collecting crime data is to determine the cost-effectiveness of alternative security measures, for these measures are applied to residential units, not individuals. Consider two neighborhoods where the crime rate for burglary is identical. Suppose that in Neighborhood A, there is an average of five persons per household, in contrast with an average of only two persons per household in Neighborhood B. On the basis of their crime rates alone, the normal assumption would be that the seriousness of crime is about the same for both neighborhoods. By taking the average number of residents *per dwelling* into account, however, it becomes clear that the households in Neighborhood A were much more often targets of burglary than are those of Neighborhood B—*two and one-half times more often.* This conclusion is apparent from the fact that the number of burglaries in Neighborhood A was distributed over 60 percent fewer residences than in Neighborhood B.

The concept of crime pressure for residential burglary lends itself to measurement with readily available information. In most cases, crime rates can be translated into historical crime pressure indexes by using conventional police statistics in combination with Census figures and other published data. For example, the Metropolitan Police Department of Washington, D.C. publishes monthly burglary rates for very small subdivisions of the city known as Carney blocks.[2] Combined with Census data, which show the number of housing units on a block-by-block basis, it would be possible to generate historical data on burglary pressure for any Carney block or the entire city. These data, in turn, could be used to predict future burglary pressure.

Crime pressure should be expressed in terms of the number of probable crimes as a proportion of available targets, which, in the case of burglary, is equivalent to the number of households. For street crimes, pressure would be the number of expected crimes expressed as a proportion of the number of manhours spent by potential victims on the streets during a given time period. Admittedly, it is more difficult to measure or estimate the number of manhours spent on the streets of any neighborhood than it is to count the number of residences in the same area. Consequently, the measurement of "pressure" will have a much greater margin of error when applied to street crimes (and more generally, to all crimes involving personal confrontation) than when applied to property crimes like auto theft and burglary.

C. Vulnerability

Crime pressure defines the likelihood that one out of many dwellings (or persons) belonging to a group will be the target of a crime; it is the mean crime risk for the group. The members of the group, however, each face different crime risks. Vulnerability is the measure of these differences; it expresses the relative attractiveness of each member of the group as a target for crime in comparison with all the other members of the group.

In terms of residential crime, a residence that is a less attractive target than the average residence in the area will have a lower vulnerability, while a residence that is a more attractive target will have a higher vulnerability.

If vulnerability is expressed as a weight, equation (1) could be written:

$$(2) \quad R = PV$$

The average vulnerability would be one; homes that are more attractive targets than the average would have a vulnerability greater than one, and homes that are less attractive targets than the average would have a vulnerability of less than one. For example, in an area with a predicted crime pressure of .10 for a given year (that is, ten

[2] This concept was first developed by the St. Louis Police Department for use in detailed crime analysis. Washington, D.C., is divided into several hundred Carney blocks, each composed of between three and 20 city blocks. There may be dozens of Carney blocks in a precinct or district.

residential crimes per one hundred residences), the average home would face a crime risk of .10 (or one chance in ten of being a target), with other homes dispersed around this mean according to their vulnerability.

A prediction of crime pressure requires only aggregate data on the number of crimes and the number of residences in the area. Assessing the vulnerability of a residence, however, requires specific information about its crime-attractiveness and comparative information about the crime-attractiveness of other residences in the area.

The crime-attractiveness of a residence depends upon a variety of factors, including the presence or absence of security measures and their quality, the apparent value of the property contained in the dwelling, the occupancy and behavior patterns of residents and neighbors, and a host of other characteristics. Crime-attractiveness ultimately depends upon the perceptions of potential offenders: Why do they attack one home but not another? Why do they persevere in the attack in one instance but not another? Because offenders differ in their mix of skills, preferences, and methods of operation, the identity and relative importance of crime-attracting characteristics will differ from place to place.

This point may be illustrated with data from the victimization survey conducted by Urban Systems Research and Engineering in Boston. The data, shown in Table 2, indicate that occupancy patterns affected victimization in both high-crime and low-crime areas. Victims were more likely to be away from home a great deal than non-victims, while non-victims were more likely always to be home. This suggests that lack of occupancy is a crime-attracting characteristic and that, within an area, those residences whose occupants are away a great deal are apt to have greater vulnerability, while those whose occupants are always home are apt to have lesser vulnerability. Yet the data also show that the impact of occupancy patterns on victimization was more substantial in low-crime areas than in high-crime areas, suggesting that the importance of lack of occupancy as a crime-attracting characteristic varies from one type of area to the other. Put differently, the weight to be assigned a particular crime-attracting characteristic (in this instance, lack of occupancy) in assessing vulnerability appears to differ significantly between areas.

TABLE 2—Occupancy Patterns and Burglary Victimization, Selected Boston Reporting Areas.

	High-Crime Areas		Low-Crime Areas	
	Victims	Non-Victims	Victims	Non-Victims
Always home	14	27	16	39
Medium occupancy	27	36	33	38
Away a great deal	49	37	51	23
	100%	100%	100%	100%
N =	10	251	85	319

SOURCE: Urban Systems Research and Engineering, victimization survey conducted under Law Enforcement Assistance Administration Contract No. J-LEAA-006-72, unpublished tabulation.

Assessments of the crime-attractiveness of a residence are usually based upon *a priori* reasoning from general knowledge and impressions about residential crime. Most residential burglaries are committed to steal property; most offenders are young and relatively unskilled, take advantage of opportunities, and choose the easiest methods of entry rather than those involving risk of detection or injury (such as breaking glass). Few burglars plan a burglary of a specific home in advance rather than choosing a target within an area casually and opportunistically; perhaps still fewer know how to pick a lock or use other sophisticated techniques.

From these general characteristics of residential offenders and the crimes they commit, conclusions may be drawn about where and how a burglar is likely to enter a residence and the adequacy of existing measures to deter, foil, or detect the entry. It is in conjunction with this generalized assessment of crime-attractiveness that performance testing of security devices, such as that conducted by Underwriters' Laboratories or the National Bureau of Standards, takes on significance. Guidelines for determining, for example, whether or not a door system provides adequate protection against common types of forced entry are relevant for assessing the vulnerability of a home in any area, although the mix of potential types of

forced entry it confronts may differ from those confronting a home in another area.

More refined information on crime-attractiveness—and particularly on the relative importance of various crime-attracting characteristics—requires empirical data that may be difficult to obtain. Studies of offenders, which could provide insights into their perceptions and preferences, face a number of obstacles. Only a small, and probably unrepresentative, sample of offenders (those who have been arrested and convicted) are readily available for interviews, and then only in circumstances that are not very conducive to the achievement of valid results. Field surveys of residences to isolate their crime-attracting characteristics and the relative importance of each would be hard to design and conduct because of the number and complexity of the variables involved, the size of the sample that would be necessary to isolate crime-attractiveness from other factors, and the sensitivity of some of the information required about the household and the physical attributes of homes. The work of Urban Systems Research and Engineering, Inc. (phase I of this project) [3] suggests the limitations on both these types of empirical research.

In the absence of detailed area-by-area information on crime-attractiveness, vulnerability must necessarily be assessed on the basis of general knowledge about crime-attracting characteristics of residences and available testing on experiential information on the performance of the security measures that are in place.

D. The Relationship Between Crime Pressure and Vulnerability

A physical analogue to the relationship between crime pressure and vulnerability is a leaky fish tank. The higher the water level, the greater the pressure exerted on the sides and bottom of the tank. Some portions of the seam will wear more rapidly than other portions, and will therefore be more apt to spring leaks. But, when the tank is empty, there is no pressure, so that the vulnerability of even the weakest point of the seam makes no practical difference.

[3] Urban Systems Research and Engineering, *op. cit.*

There are still small towns in which even the well-to-do never lock their doors. Their homes may be much more vulnerable than those of their less affluent neighbors (because, for example, they contain many more valuable items), but in the virtual absence of burglary pressure in the town, their crime risk is extremely low.[4]

In a high-crime neighborhood, on the other hand, the crime risk facing a particular residence is likely to be high. But some residences will be more secure than others; because their vulnerability is lower, so too will be the crime risk they face. The most secure residence in a high-crime area might face a crime risk equal to or less than that of a home with high vulnerability in a low-crime neighborhood.

E. The Impact of Security Measures on Crime Risk

The crime risk to a residence may be reduced by measures that decrease its vulnerability or measures that reduce the crime pressure in the area. One important distinction between the two ways of reducing crime risk is that reduction of the vulnerability of a residence results in an incremental increase in the vulnerability (and therefore the crime risk) of all other residences in the area, while reductions in crime pressure benefit all residences, the extent of the benefit varying directly with their vulnerability. One minor caveat should be noted: A change in crime pressure may result in a change in the importance of various crime-attracting characteristics, thereby causing a change in the vulnerability ranking of residences in the area. To the extent this occurs, the consequence for a particular residence of a reduction in crime pressure is more difficult to predict.

The reduction of crime pressure is primarily a social problem and a public con-

[4] It should be noted, however, that a substantial reduction in crime pressure may make it more difficult to determine the vulnerability of a particular residence. This is because vulnerability is assessed on the basis of information or assumptions about the relative importance of various security attributes of residences, which are in turn based on information or assumptions about the motivations and methods of operation of potential offenders in the area. In the absence of experiential data from the area—that is, a significant number of actual offenses—the assumptions upon which vulnerability assessments are based become more tenuous.

cern. The vulnerability of a residence, on the other hand, is a particularistic question, to be addressed by its owner or occupants.

Security measures are applied to a residence primarily to reduce the crime risk it confronts by directly decreasing vulnerability or to reduce the probable cost of a crime if it should occur. This second purpose requires further explanation. Thus far we have defined crime risk simply as the probability of being the target of a crime. But crimes impose different costs on victims, and one cannot assess the cost-effectiveness of security measures without some quantitative measure of the cost of crime.

That measure is the probable cost of a random crime to a particular residence. Ideally, it should fully reflect the anticipated nature of the criminal damages—e.g., theft or personal injury—and assess these damages in terms of the property and personal characteristics of the occupants. In practice, it could probably be estimated in terms of the average crime in the area, with upward or downward adjustment for the idiosyncracies of the residence in question.

The risk of loss from crime during a given period is simply the product of crime risk and the anticipated cost of a crime:

(3) $L = RA$

where

L = Risk of loss,
R = Crime risk and
A = Anticipated cost per crime

A reduction in the anticipated loss from a crime is usually associated primarily with target-hardening measures, such as putting valuables in a safe or other specially secure container. Other security measures may also have this consequence, however, to the extent they diminish the likelihood that, for example, a burglar will stay in the home long enough to find all the valuable items or increase the likelihood that stolen property will be recovered and returned.

Reductions in vulnerability, on the other hand, involve a lessening of the probability that a burglar will attempt to gain entry, that he will persevere until he succeeds in doing so, or that, once he has entered, he will commit a theft or other crime inflicting loss or injury. Reducing vulnerability reduces the risk of loss by lowering the crime risk. Assuming that everything else is equal, a given reduction in vulnerability will result in a greater reduction in the risk of loss the higher the crime pressure.

Most security measures affect security in more than one way. A door system (that is, the door, its frame, lock, hinges, and other hardware) is obviously an access barrier, but it may also serve to facilitate surveillance if it includes a pane of glass or a peephole. Its performance of one function may complement or conflict with its performance of the other. The peephole does not interfere with the door's function as an access barrier in any significant way; the pane of glass might. Depending upon the context, moreover, a particular security measure might serve one function positively while detracting from the performance of another. An elaborate intrusion detection system provides surveillance capability, but its presence may also serve to suggest that the residence contains extremely valuable property. In short, one must consider the impact of a security measure on each of the aspects of security relevant to a residence—or, put differently, on each of the crime-attracting characteristics of the residence that contribute to its vulnerability and on its anticipated loss per crime.

In Table 3, we list five major residential security functions, together with subfunctions related to each major function. The functions cover all of the principal dimensions of residential security, with the exception of the use of force by residents to protect themselves, which has been deliberately omitted.[5] The functions and subfunctions are designed to highlight contrasting security objectives and (except for the fifth) are arranged in the sequence in which a crime occurs. The fifth function, which primarily concerns psychological deterrence through the display of measures taken in support of the other functions, logically precedes the crime itself; it is listed last only as a matter of stylistic convenience.

[5] As noted in the introductory comments on the scope of the report, we believe that the use of force by residents or other private citizens is not a justifiable or appropriate security measure.

TABLE 3. Residential Security Functions and Subfunctions

I. *To control access by strangers to semi-public, semi-private, and private areas of a residential context*.*

A. To control access through formal inquiry procedures at an access point.
B. To control access through informal inquiry procedures resulting from surveillance by residents, guards, police, and building employees.

II. *To control forced entry into semi-private and private areas.* (By definition it is not possible to force entry into a semi-public area.)

A. To provide effective construction barriers to forced entry.
B. To provide effective surveillance designed to detect persons attempting forced entry.
C. To provide fast police response (and private guard response, where appropriate) for apprehending individuals who are detected in the act of forcing entry.
D. To increase the likelihood that a person who perpetrates a forced entry will be accurately identified by witnesses so as to help insure his subsequent arrest and conviction.

III. *To increase the likelihood that an individual committing a crime other than forced entry will be detected in the act through surveillance and will be apprehended.*

A. To provide surveillance for detecting persons attempting to commit such crimes.
B. To provide fast police response (and private guard response, where appropriate) to apprehend individuals who are detected in the act of committing crimes.
C. To increase the likelihood that a person who perpetrates a crime will be accurately identified by witnesses so as to help insure his subsequent arrest and conviction.

IV. *To decrease the likelihood that an individual discovered in the act of forcing entry, or committing any other serious crime, will be able to avoid pursuit and subsequent capture while on the premise or grounds in which the crime occurred.*

A. To reduce the opportunities for a fleeing criminal to hide from his pursuers on the premises or grounds.
B. To increase the ease with which the police (and private guard forces, where appropriate) can seal off the perimeter of a residential context, in order to apprehend the perpetrator of a crime committed in that setting.

V. *To decrease the likelihood of a potential criminal deciding to commit a crime on the premises or grounds of a residential context once he has observed the setting.*

A. With regard to criminal acts designed to obtain property in a residential context, to decrease the perceived value of that property.
B. To display precautions that have been taken to decrease the likelihood of a potential criminal gaining undetected access to the semi-public, semi-private, or private areas of a residential context, i.e., to display the precautions taken in support of Function I when such display would increase the deterrence effect more than the ease of circumvention.
C. To display precautions that have been taken to decrease the likelihood of a potential criminal perpetrating a serious crime, undetected, in the semi-public, semi-private, or private areas of a residential context, i.e., in part** to display the precautions taken in support of Functions II and III, when such display would increase the deterrence effect more than the ease of circumvention.
D. To display precautions that have been taken to decrease the likelihood that a perpetrator of a serious crime in a residential context, who has been detected, will be able to successfully escape pursuit and evade capture while still on the premises or grounds, i.e., to display the precautions taken in support of Function IV, when such display would increase the deterrence effect more than the ease of circumvention.

---

*We divide the continuum of space within a residential complex (that is, a property consisting of one or more buildings containing dwelling units and associated grounds or, more broadly, a neighborhood consisting primarily of residential uses) into four categories:

a. *Public.* Space that, whatever its legal status, is perceived by all members of a residential area or neighborhood as belonging to the public as a whole, which a stranger has as much perceived right to use as a resident.
b. *Semi-public.* Space accessible to all members of the public without passing through a locked or guarded barrier. There is thought to be an implied license for use by the public, and strangers will rarely be challenged. Generally associated with multi-family housing.
c. *Semi-private.* Space restricted for use by residents, guests, and service people on legitimate assignments. In multi-family housing, usually secured by guards (or doormen), locks, or other forms of physical barriers. Strangers can be expected to be challenged as potential trespassers.
d. *Private.* Space restricted for use by residents of a single dwelling unit, their invited guests, and service people, with access generally controlled by locks and other physical barriers. Unauthorized use is always challenged when the opportunity for challenge presents itself.

**"In part" refers to the inclusion under this subfunction of steps taken to make a potential criminal think an empty residential unit is occupied, such as the use of timers and photo-electric cells to turn lights on and off.

A particular security measure, as we have indicated, may affect the performance of a number of security functions. In Table 4, we show the relationship between major categories of physical security measures and the security functions.

The effectiveness with which the security functions are performed in a particular residence in comparison with other residences in the area may be thought of as the complement of its vulnerability—that is, it is the probability that a randomly selected crime in the area will not be directed at the residence. This, in turn, suggests a correspondence between the importance of various crime-attracting characteristics and the comparable security functions in any particular area.

In considering an added security measure, therefore, one must consider not only its negative and positive effects on the performance of each security function, but also the relative importance of each function. Stated as a relationship:

$$(4) \quad U_m = f[\sum_{i=1} (a_i \Delta F_{im})]$$

where

U_m = utility of security measure m

a_i = weight attached to security function i

ΔF_{im} = change in the effectiveness with which security function i is performed by the addition of security measure m.

The nature of this functional relationship is central to the model. From what we have previously said, it is apparent that the utility of a security measure can also be stated as the reduction of the risk of loss from its application to the residence, and that this reduction is dependent upon crime pressure (which will not be appreciably changed by the security measure) and the change in vulnerability and anticipated loss.

$$(5) \quad U_m = P\Delta V_m \Delta A_m$$

where

P = crime pressure

ΔV_m = change in vulnerability from adding security measure m

ΔA_m = change in anticipated loss per crime from adding security measure m.

TABLE 4.—The Relationship Between Physical Security Measures and Security Functions.

Security Measures	Security Functions: Access Control	Control of Forced Entry	Control of Other Crime	Reduction of Escape Possibilities	Psychological Deterrence
Door and Window Systems	X	X	X		X
Intrusion Detection Systems		X	X	X	X
Surveillance Equipment	X	X	X		X
Access Control Systems	X				X
Exterior Lighting	X	X	X	X	X
Display of Security Measures					X
Devices to Simulate Occupancy					X

What equation (5) reintroduces that equation (4) did not expressly include is the context-dependency of the utility of a security measure. The lements of the functional relationship that are unstated in equation (4) are the direct relationship between crime pressure in an area and the utility of an added security measure and the relative nature of vulnerability.

Therefore, the utility of a security function cannot be determined simply by considering its abstract performance characteristics, although these are obviously a relevant factor. Its performance must be considered in terms of each security function. The security functions themselves must be appropriately weighted to reflect the importance of various crime-attracting characteristics in the area. The remaining crime-attractiveness of the residence with the added security measure in place must be compared with the crime-attractiveness of other residences in the area to determine the reduction in vulnerability. The vulnerability reduction and any reduction in the anticipated loss from a crime as a consequence of the security measure must be combined with data on the crime pressure in the area to calculate the reduction in the risk of loss—the utility of the added security measure.

F. The Cost-Effectiveness of a Security Measure

The utility of a security measure—that is, its impact on the risk of loss confronting the residence—must be compared to its costs to determine whether it is a cost-effective investment. Costs, for purposes of this comparison, must be stated in terms of the same period as the risk of loss figure, and capital costs must be amortized over the time that the security measure will provide benefits (which, depending on the situation, may be its useful life or the anticipated period of occupancy of the residence).

When is an expenditure for a security measure cost-effective? To begin with, one can immediately place an upper bound on investment in security measures: no expenditure is cost-effective that costs more than the total risk of loss. Thus, if a hypothetical residence faced an annual crime risk of .20 (that is, one chance in five of being a target) and an anticipated loss of $325 per crime (a figure including both property loss, a dollar loss valuation of personal injury, and any indirect or nuisance costs), no added security measures that cost more than $65 per year would be justified.

Within this limit, the question is how much to spend on security and what security measures to buy. Obviously, any security expenditure should reduce the risk of loss more than its cost. An expenditure of $20 per year that will result in an annual probable loss reduction of only $18.75 is not cost-effective. (In our hypothetical example, this would correspond to a reduction in the probability of being the target of a successful crime from once every five years to once every seven years.)

Figure 1 illustrates these relationships graphically. The vertical axis is utility—that is, the amount of reduction in the risk of loss—and the horizontal axis the amount expended on additional security measures. The point of origin corresponds to the existing level of security in the residence.

In this figure the vertical line to the right is the total risk of loss confronting the residence—the upper limit in any circumstances on cost-effective security investments. The diagonal line is the boundary between cost-effective and cost ineffective investments

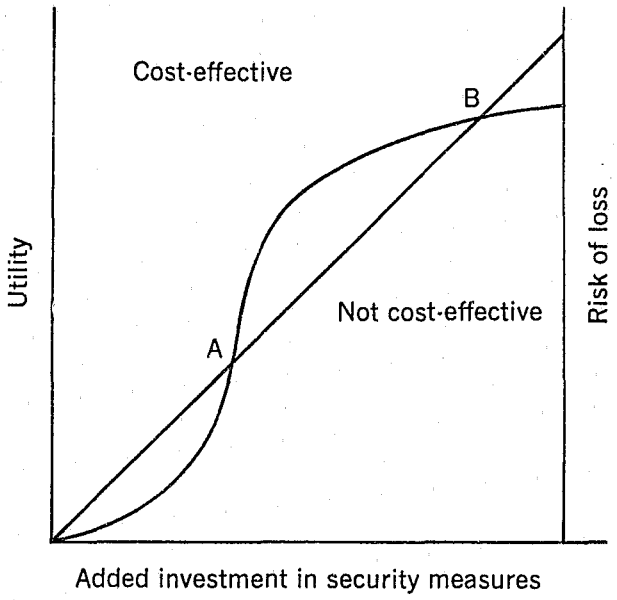


FIGURE 1. Utility and Cost-Effectiveness of Added Security Investments.

of any amount less than the total risk of loss. On the illustrative curve, only investments between A and B are cost-effective. Investing less than the amount A or more than the amount B will yield less than a dollar of loss reduction for each dollar expended.

By looking at the marginal utility of expenditures for added security measures—the incremental loss reduction from the last dollar expended—one can also say something about the optimal level of investment in added security measures.

Figure 2 illustrates a marginal utility curve derived from Figure 1. The curve shows the incremental utility derived from the last dollar spent at any level of added security investment. The hypothetical marginal utility curve shows, as would be expected in any real situation, that the amount of loss reduction obtained from the last dollar of added investment increases to some point (C on the marginal utility curve) and thereafter diminishing returns set in until, ultimately the incremental utility of the last dollar of expenditure is zero. (Indeed, the marginal utility in some circumstances might be negative.)

Marginal utility analysis is instructive in determining the optimal amount of added security investment. As long as marginal utility is increasing, an investor will obtain

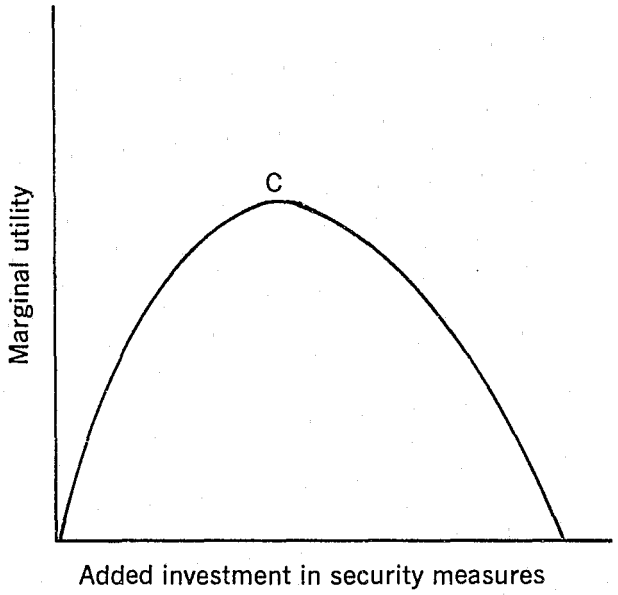


FIGURE 2. Marginal Utility and Optimal Amount of Added Security Investments.

more utility per dollar invested by expending additional resources. Once marginal utility has peaked, added investments may still be cost-effective, but they will provide less utility per dollar invested than at the peak. An investor may wish to spend more than this optimal amount—if, for example, he has no constraint on the amount of resources available for additional security—but, where competing demands on his resources require him to spend most efficiently for security, he should not exceed the optimal level of added expenditure. This is the level where marginal utility is maximized.

The hypothetical utility curve in figure 1 and the equally hypothetical marginal utility curve derived from it in figure 2 portray the optimal combination of security measures for any given cost. For example, an annual security investment of $50 for a particular residence might buy several different combinations of security hardware. The combination shown in figures 1 and 2 would represent the most effective hardware for that residence available for that annual cost. (In practice, because of the costs of units of security hardware, a utility or marginal utility curve might have a number of discontinuities representing levels of expenditure where nothing could be bought for an additional dollar of investment. For simplicity, this practical problem is ignored in the hypothetical figures).

The derivation of these optimal combinations of security measures for each level of outlay requires an iterative process, by which the utility of each security measure that is a feasible element of such a combination is determined in conjunction with each other element. Again, because the utility of a given security measure is context-dependent, no general guidelines may be prescribed concerning the choice of these security measures, which will necessarily vary from one residence to another.

CHAPTER 2. THE RESIDENT'S ASSESSMENT OF SECURITY MEASURES

The model outlined in chapter 1 looks at cost-effectiveness from the perspective of an outside observer attempting to reduce the actual crime risk to a residence in the most economically justified way. In going about this task, he need not take into account the preferences, emotions, or attitudes of the residents except insofar as they contribute to the level of vulnerability of the residence or affect the protective capability of a particular security measure.

No one actually makes decisions about security measures from this perspective, although it is most directly applicable to security investment decisions by public housing authorities. A private builder or developer decides what security measures should be installed in a home on the basis of their impact on the marketability of the home and his profits from it. Among the factors he will want to consider are whether the security measure will enhance sales by reassuring prospective purchasers that they will be secure or discourage sales by suggesting that crime will be a problem, and whether the cost of the security measure can be passed on to the purchaser. The most cost-effective security measures, from his viewpoint, are those that increase his profits the most; this does not necessarily correspond directly or completely to their cost-effectiveness in terms of protection against crime.

Similarly, an apartment owner seeks to minimize his costs while maximizing his return. The losses from crime he is concerned about are increased vacancy rates and repair costs because of damages to his building or its equipment resulting from crime. The benefits from security measures he seeks are marketing advantages, lower operating costs, and higher per-unit net profit after taxes. Again, the cost-effectiveness of a security measure in these terms is measured differently from its protective value.

Nor are the social costs and benefits of security measures calculated by looking at their protective value in terms of each residence. As mentioned earlier, the central thrust of the model is that security is particularistic and relative. From a social policy perspective, therefore, the model offers only limited assistance, although it does suggest the need for careful analysis of the displacement effects of publicly sponsored or supported efforts directed at protecting one housing complex or housing in one area.

The model does offer guidance to the resident seeking to improve the security of his home. Yet the considerations included in the model, even assuming that adequate data were available to enable the resident to apply its analytical framework, will not be completely determinative for him. He views the problem of crime, and the benefits and costs of security measures, differently from an outside observer. The resident seeks to reduce his apprehension or fear about crime—what he perceives to be the crime threat—and not simply the actual crime threat. Although there is undoubtedly a relationship between the resident's perceptions and the objectively described situation, the extent or nature of this relationship will vary from one individual to another.

A. The Perceived Risk of Loss from Crime

Fear and its consequences may be added to the model by casting it in terms of perceptions rather than objectively observed measures. The perceived crime risk, for example, includes a subjective element of apprehension or fear, based upon a reaction to the actual crime risk. The net effect will usually be to inflate the crime pressure and vulnerability—and therefore the crime risk—

over their observed values for the particular residence.[1] In functional terms:

Perceived Crime Risk is a function of Perceived Crime Pressure and Perceived Vulnerability

(6) $R_p = f(P_p, V_p)$

Why do people tend to overestimate the risk that their household will be the victim of a residential crime? There are a number of complex psychological reasons, which we do not profess to understand fully, but which appear to relate to the importance of the home environment as a refuge. The home is the one totally private and personal space a family has; it is where an uninvited outsider is most unwelcome and an illegal intrusion most threatening.

Moreover, because his home is the space most within an individual's personal control, he is most likely to act upon his apprehensions there. To some indeterminate extent, the general fear of violent criminal attack most people have—of street crime, for example—impels them to fear residential crime. Their fear of crime is likely to be a single fear, not a series of discrete fears, one of which ends and another begins at their property line. Their fear of residential crime is partly a transferrance phenomenon—a concern that crime will follow them from the streets to their home.

An inflated perception of the threat of crime is apt to be coupled with a greater estimate of the probable loss from victimization than the observable situation would suggest to an outsider. People are apt to overestimate the risk that a residential crime will lead to a violent confrontation with the intruder—either a thief panicking upon being discovered or a criminal bent upon assault, rape, or murder. Despite its statistical remoteness—the vast majority of burglaries occur when a home is unoccupied and nearly all burglars seek to avoid, not confront their victims—nearly everyone worries about this risk. And people are unlikely to translate the loss from injury or death to themselves or a family member into the actuarial figures an outside observer would apply. Moreover, most people value their property at a greater amount than an outsider would, as anyone who has ever made a property insurance claim is likely to attest. First, their valuation will be based on replacement cost, not depreciated value; second, they are likely to include an element of personal or sentimental worth in the value of many of their own possessions.

Thus, most people's subjective estimate of what we have called anticipated crime loss is likely to be higher than an outsider's estimate, both because they estimate the risk of victimization higher and because they assess the probable loss from victimization at a greater amount.

In these circumstances, one might think residents would spend more for security measures than an objective observer would recommend, and undoubtedly many households do just that. Available data on residential burglary suggest that the average household will be victimized only once every twenty to twenty-five years, assuming no substantial change in current burglary rates.[2] This crime will result, on the average, in the loss of property worth $300–$325 [3]; burglar-

[1] Numerous public opinion polls, since 1966, have charted the upward movement of crime as an issue of increasing national concern (see Margaret Conway, "Public Opinion on Crime and Law Enforcement in the United States," Bureau of Social Science Research, Inc., June 1971). The victimization studies generated for the President's Commission on Law Enforcement and the Administration of Justice showed a central research concern for the public anxiety about crime, and attempted to explore the fear of crime and its realistic relationship to the risk of victimization. While these surveys concluded that fear of crime is a major problem, it was not clear whether that fear was unreasonably high. The survey of fear of crime in Baltimore, done for *Life Magazine* by Louis Harris Associates (see Jack Rosenthal, "The Cage of Fear in Cities Beset by Crime," *Life Magazine*, July 11, 1969, p. 16) found a high level of anxiety; more important, that an unwarranted amount of fear was expressed by those living in the safest areas of the city. Rosenthal's summary concludes ". . . people's fear of crime is exaggerated, and—proportionate to the amount of crime in their areas—the people *least* in danger are *most* afraid." It is this disparity between fear of crime and actual risk of victimization that affects our hypothesis concerning residential security and deserves further research. For a general discussion of studies to date, see Frank F. Furstenberg, Jr., "Fear of Crime and Its Effects on Citizen Behavior," Bureau of Social Science Research, Inc., March 1972.

[2] This estimate is derived from the 1970 FBI Uniform Crime Reports and the 1970 Census of Housing, which indicate that two reported residential burglaries occurred for every one hundred occupied residences. To account for unreported burglaries, this figure has been more than doubled.

[3] This is the FBI figure for 1970 for reported burglaries; one may assume that the average loss from unreported burglaries is less, which makes the following point even more compelling.

ies leading to crimes of violence are exceedingly rare. On an annual basis, therefore, the average household faces a risk of loss from burglary of $12–$17. Since the cost-effective investment on security measures (assuming the cost is sunk and cannot be recouped, as for all practical purposes it is) would be some $60–$80. It should be noted, moreover, that if the family has insurance against theft losses with $100 deductible, the upper limit on the cost-effective security investments per home would be $20–$25.

This figure is the average family's upper limit on *total* expenditures for security measures; expenditures of this amount would be cost-effective only if they reduced the anticipated loss from crime to zero.

Many families confronting an average or below average crime risk spend substantially more than this amount for security measures. The reasons, to reiterate, is that they implicitly place a higher price tag on the probable loss from crime, either in terms of the risk of victimization or the probable loss or (more commonly) both.

B. Perceived Benefits from Security Measures

Most residents would undoubtedly rate the effectiveness of a security measure in reducing their fear of residential crime in much the same way that an outsider would assess its protective capability, but this may not be uniformly true. A measure that has negligible security value from an outsider's perspective may seem valuable to a resident because it reduces his fear by offering visible reassurance of security. Another, with substantial value in reducing the actual risk to the residence, may seem practically worthless to the occupants because it does not reduce their apprehensions. We would expect household perceptions of the worth of security measures to vary from context to context; unfortunately, no one has yet attempted to address this question in a systematic fashion.

Nor has there been much attention to the related question of household assessments of the importance of achieving each of the security functions or the associated subfunctions we outlined in table 3. We would postulate that residents would place the greatest value on measures that protect an *occupied* residence, and therefore provide security against violent confrontation, and that among these measures ones that deter the offender before he attempts to enter or prevent entry would be favored over those that alert the household or others to the presence of the intruder within the home. There is no empirical evidence available on this point, however; and, in practice, household opinions on this subject would be hard to separate from their overall evaluations of particular types of security hardware.

From the perspective of a particular resident, moreover, a particular security measure may offer important non-security benefits, only some of which will be apparent or quantifiable to an outside observer. An intrusion detection system may include fire sensors; a watch-dog may be a welcome family pet; a new door may improve the aesthetics of the home.

C. Costs

In describing the objective form of the model, we noted only that all costs should be stated in terms of the same time period as the benefits. From the viewpoint of an objective observer, it is appropriate to limit the assessment of costs to direct and indirect cash outlays for capital equipment, operation, and maintenance.

The resident, however, is apt to consider costs in a more inclusive, if less rigorously quantified, manner. More than cash outlays will be involved; he will also take into account the compatability of a security measure with the lifestyle and living patterns of his household. The extent, for example, to which a security measure is a threat to his privacy or interferes with the normal activities of the family represents a very real cost for the household. Possible malfunctions of the device—a factor relevant primarily to the evaluation of the benefits of a security measure from an objective standpoint—may also be regarded as costs by the resident. To illustrate, a high false alarm rate from an intrusion detection system is not a cost of the device from an objective perspective. Rather, it may reduce the benefits from the system in one of two ways: the household, irritated by the frequency of false alarms, will turn it

off—and with it, most of the security benefits it could provide—or it will be less apt to produce a response when it sounds a real alarm—on the principle of the Catolinian geese or the boy crying wolf too often, its credibility will be impaired. From the perspective of the household itself, however, false alarms pose costs, as well as negative benefits. They will be a nuisance to household members, and possibly to neighbors (thereby impairing neighborhood relationships having non-security value). To take another example, a major lock company is developing a keyless, electronic lock, conceivably for future residential, as well as commercial and industrial, application. The failure of the electrical supply for the lock would have no security implications; if there was a blackout or the battery ran down, the door simply could not be opened. Obviously, however, being unable to open the door, especially during a fire emergency, might be judged a serious hazard by a resident.

There are a variety of other attributes of any piece of hardware, generally subsumed under the label of consumer preferences or taste, that will influence a resident's decision whether or not to acquire it. In a formal description of his decision processes, these appropriately enter into his determination of the costs of the device, as well as his evaluation of benefits.

Finally, it should be noted that even the direct costs of a device will vary depending upon the characteristics of the resident. A skilled do-it-yourselfer may be able to install a new lock himself (and even derive benefits from his enjoyment of the task); an unskilled resident will have to pay a locksmith or carpenter to have it installed.

D. The Optimal Security Investment for the Resident

In discussing the objective form of the model, we stated that the optimal security investment is the amount for which the last dollar spent yields the greatest marginal utility. The resident, however, faces an additional constraint that may cause him to spend more or less on security than the marginal utility curve for security investments (defined in terms of costs and benefits as he values them) would show to be optimal.

A resident has a limited amount to spend for all household and consumer goods. As a consequence, he must seek to make not only the most cost-effective security investments, but the most cost-effective expenditures of all types. In seeking to optimize all of his expenditures he must compare the marginal utility of the last dollar spent on security measures with the marginal utility of alternative uses of his resources. Security measures costing more than the amount having the greatest cost-effectiveness may still be more efficient than available alternatives, in which case he may spend more than the optimal amount for security taken alone. By contrast, even the most cost-effective amount of security investment may have a lower marginal utility than another combination of uses of the same resources, in which case he should invest the resources for these other purposes.

In short, a resident will determine his security investment not only by assessing available security measures, but also by comparing security with other wants. Actual consumer behavior in the security marketplace reflects this comparison; it is not simply a reflection of whether or not residents consider one or another security measure to be cost-effective in meeting their perceived security needs. As consumers, residents are constantly (if intuitively) ranking security investments against their other consumer demands. In this respect, security products compete directly with the whole spectrum of non-security consumer goods as well as among themselves.

E. The Usefulness of the Model for Residents

Our central point in this chapter has been that a resident will bring his fear of crime and his estimates of the probable loss from a crime, the benefits and costs of security measures, and the comparative importance of security and other consumer needs to bear in deciding how much to spend for security and what to spend it on. As a consequence, an outsider cannot prescribe his behavior for him.

Most people are relatively unimformed about the actual risk of residential crime, the various ways to achieve greater residential security, and the benefits and drawbacks of

the available security measures. Experience has not taught the average person much about the comparative value of one type of lock against another or the advantages and disadvantages of intrusion detection devices. In this regard, security measures differ from many other consumer goods in two significant respects. The first distinctive attribute of security measures is that they are often marketed through emotional appeals playing upon the resident's fears. Second, the protective value of a security measure depends upon how well it prevents something from occurring, not how well it performs a positive function. One locks and unlocks a door with a key frequently; the ease or difficulty of doing so is a directly observable criterion by which the consumer judges the lock. Yet its security performance depends upon something quite different: the reduction in the frequency with which forced entry of the door occurs. This is a "non-event," not directly perceivable by any individual consumer, and is dependent upon the reactions of unknown offenders.

The framework of the model can serve as a vehicle for providing the resident with important information to help him make security investment decisions. Particularly critical is the emphasis of the model on the specifics of the crime risk to a residence. The model emphasizes that the resident should make security decisions in light of:

- the crime pressure in his neighborhood or area and his probable loss if he is the victim of a crime and
- the existing vulnerability of his home in comparison with others in the neighborhood or area,

as well as the general effectiveness and costs of a security measure.

For the resident, crime pressure probably needs to be determined only in gross terms. Most people know whether their neighborhoods have a serious crime problem or not; for security purposes, distinguishing between high and low-crime areas may be sufficient. If known residential burglaries are rare, or involve only a few houses in the neighborhood, residents are proba correct in assuming that crime pressure is relatively low. In this situation, the benefits from security investments to reduce vulnerability will be correspondingly smaller. In the extreme case where crime pressure is virtually nil, expenditures to reduce vulnerability yield negligible benefits.

Vulnerability and security are inversely related: the extent to which security functions are inadequately performed, relative to other residences in the area, is the measure of vulnerability. In assessing the vulnerability of his home, a resident will want to ask such questions as the following:

- Will an intruder approaching my home be observable to the neighbors?
- Are the neighbors apt to be around to spot him? Will their presence be apparent?
- Are the accessible doors and windows to my house locked? Are the locks adequate to withstand common techniques of forced entry? (Effective locks are discussed in chapter 3.)
- Are the doors, the frames, and the hinges resistant to common techniques of forced entry? (This, too, is discussed in chapter 3.)
- If the burglar gets in, will his presence be detected? If he is detected, what is likely to happen?
- Will a burglar desist when he becomes aware of the security measures that are present? Are there ways to make him more aware of their presence without diminishing their effectiveness?
- Finally, how does my house compare with others in the area in terms of the observability of entry points, occupancy patterns, ease of illegal entry through doors and windows, and possible detection of intruders within the premises?

Measures to reduce vulnerability yield benefits in terms of reduced crime risk. These benefits vary directly with the level of crime pressure in the area. They also vary according to the relative crime-attractiveness of the house in comparison with other houses in the area before and after the added measures are taken—the reason for the final question in the preceding list.

F. Conclusion

The cost-effectiveness of a given security device in a particular residence depends

upon a number of factors. Among the most significant are:

- the crime pressure in the area;
- the vulnerability of the particular residence relative to others in the area;
- the anticipated loss should a crime occur;
- the effectiveness of the device in reducing the relative vulnerability of the residence or the anticipated loss;
- the extent to which the device reduces apprehension or fear about crime;
- the synergistic relationship of the device to other security measures in the residence;
- the purchase, installation, and maintenance costs of the device, as well as the cost of associated devices or services; and
- the non-monetary costs of the device, including any necessary adjustments in household behavior, interference with privacy or other values, and nuisances caused by malfunctions.

Though a device is cost-effective for a particular consumer, he may not buy it. His disposable income is limited, and other goods and services may have a greater marginal utility from his perspective. Even apart from the other particularistic and subjective components of a cost-effectiveness determination, it is obviously impossible to prescribe the relative importance that a household ought to assign to security expenditures as opposed to alternative outlays.

In the next chapter, we examine various types of security hardware and devices. We necessarily concentrate on their general effectiveness in providing protection in a residential setting, although we also have something to say about other factors relevant to a determination of their cost-effectiveness.

Part II
PHYSICAL SECURITY MEASURES AND DESIGN PRINCIPLES

CHAPTER 3. SECURITY DEVICES AND SYSTEMS

This chapter provides an overview of various classes of security hardware. It is not a lengthy or exhaustive technical catalogue, but simply an attempt to provide a brief description of the most common categories of security hardware either available in the residential market or with some applicability to the residential setting. We have generally used those broad descriptive terminologies common to most such physical classifications. Specific suggestions concerning security hardware for a typical residence are contained in chapter 11.

A. Door Systems

There has been increasing recognition in recent years that even the best lock cannot afford the protection claimed for it unless it is part of a door or window that satisfies a minimum number of construction and material criteria. Whether the door is constructed of wood or metal, is solid or hollow-core, how well it fits to the frame—these and many other considerations will determine how resistant the door is to forced entry, in addition to how it is secured with locks.

There are scores of different kinds of doors in residential use. The types and qualities of materials used in door construction vary widely from neighborhood to neighborhood, from region to region, and from builder to builder. Prices, as we noted in chapter 2, vary substantially, especially for replacement doors.

Because of the virtually infinite combination of materials and variations in the quality of workmanship that go into the manufacture and installation of doors, it would be misleading to define an "optimal" door for security purposes. Variations in the need for security would alone preclude the development of an optimal security door system.

The vulnerability of a door (as opposed to its frame, hinges or other accessory parts) is usually defined in terms of its penetrability—that is, how easy it is, or how long it takes to break *through* the door itself. In fact, however, breaking through a door is not the most common method employed for defeating a door system. A far more significant hazard is the door that fits loosely to the frame, thereby allowing it to be pried or forced open.

1. *Doors.* There are three major types of doors—flush wood doors, stile-and-rail (panel) wood doors, and metal doors.

a. *Flush doors.* There are two types of flush doors—hollow-core and solid-core. A hollow-core door is literally nothing more than two sheets of a thin substance overlaying hollow cardboard strips. Despite the obvious ease of penetrating hollow-core doors, they are being used increasingly on exterior doors of new residences, primarily because they are less expensive than other types of doors.

Solid-cores have a substantial security advantage over hollow-core doors. Continuous block cores, a common type of solid core construction, are composed of wood blocks bonded together with the end joints staggered and sanded to a smooth, uniform thickness. This type of core provides good strength across the width of the door and has excellent dimensional stability.

Solid-cores add sound insulation and fire resistance, as well as security, to flush doors. Solid-core doors are often used between the house and hazardous fire areas such as garages and heater rooms, where they can provide a fire resistance of approximately one-half hour. Special composition core doors with Underwriters' Laboratories (UL) approved fire ratings of up to one-and-one-half hours are produced for more demanding specifications in apartments, commercial, and institutional buildings.

b. *Stile-and-rail doors.* Stile-and-rail doors, illustrated in Figure 3, vary substantially in their security characteristics. Thickness, the type of wood used, and the quality of fit to the frame are important considerations.

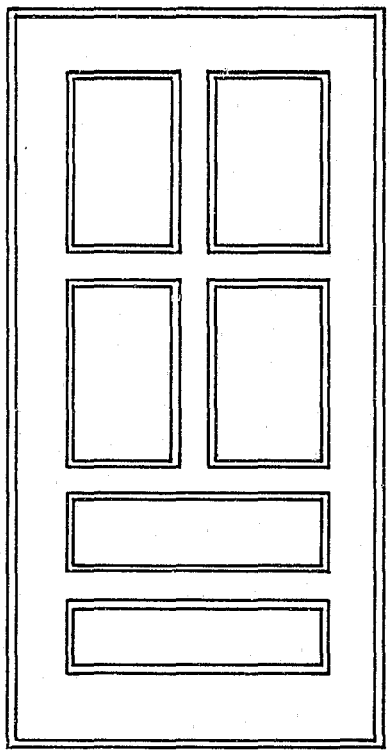


FIGURE 3. Stile-and-Rail Door.

Some panel and louver designs provide more resistance to attack than hollow-core flush doors; sash, storm, and screen designs offer virtually no security at all.

c. *Metal doors.* Strictly from a security perspective, a steel-sheathed door is superior to any type of wood door. A flush metal door comes with a metal frame, usually reinforced by interior formed sections. Metal doors, however, are less attractive and offer less insulation than wood doors.

2. *Hinges.* The security value of the door hinge is often overlooked. A well-secured hinge protects a home or apartment against two types of forced entry: (1) forcing the door out of the frame by applying pressure to its hinged side; or (2) lifting the door out of its frame after removing the hinge pins.

From a security standpoint, the most important features of a hinge are whether it is located on the inside or outside of the door and (if the hinge is on the outside) whether or not its pins are removable. A door opening outward is less vulnerable than one opening inward because it is much more difficult to pull a door outward from its frame than to push it inward.

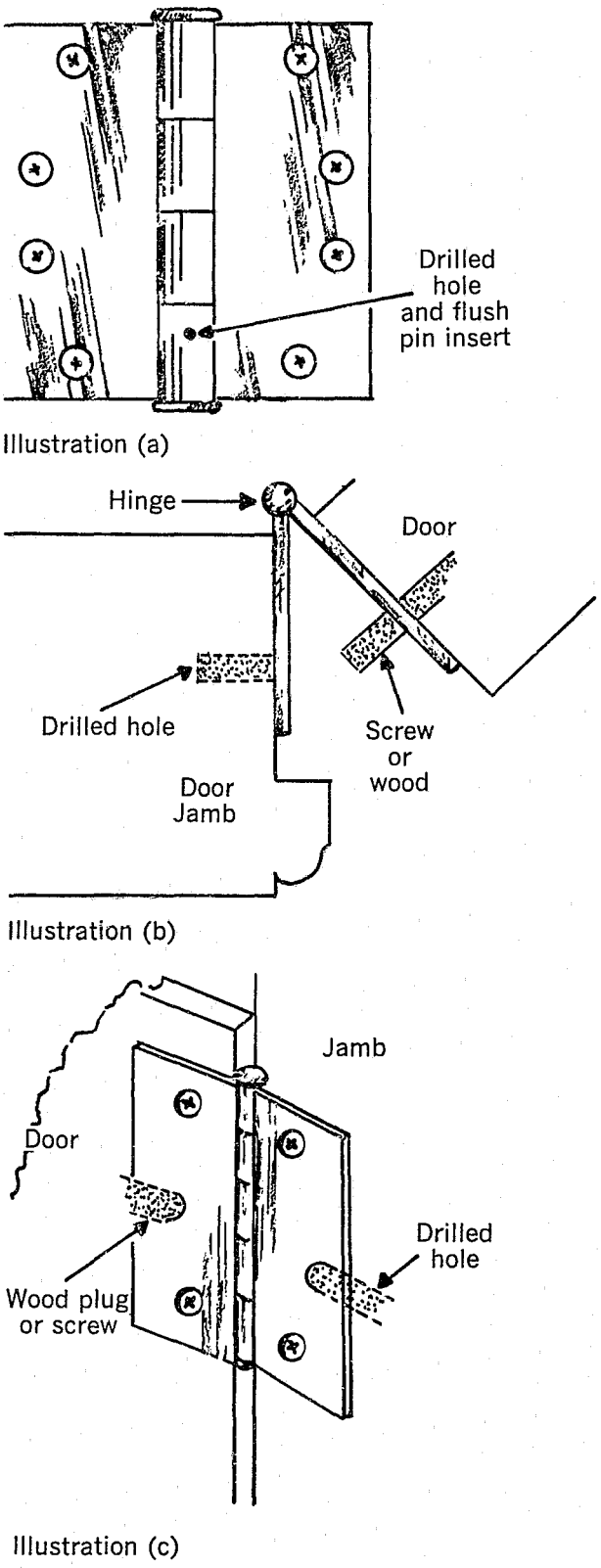


FIGURE 4. Methods of securing hinges.

If a door opens outward, however, the hinge pins will also be on the outside, making it possible to remove the hinge pins and gain entry. There are several easy remedies to this problem. One is to weld the pins to the hinge or between the two ends. Although this method is effective, it is also permanent. Three additional methods of securing hinges or hinge pins are illustrated in Figure 4. One technique—illustration (a)—requires drilling a small hole through the hinge and inside pin and inserting a second pin or small nail flush with the hinge surface. The pin or nail can be made removable or permanent as desired.

Another method—illustration (b)—is to insert two large screws in the door (or jamb), leaving the head exposed about one-half inch. A hole is then drilled on the opposite side so that the exposed screw head fits in it when the door is shut. This prevents removal of the door even if the hinge pins are removed. For best results, this procedure should be used on both the upper and lower hinges. A few experts suggest removing the screw head once it is in place, but in most applications this is unnecessary as long as the hinge is effectively secured when the door is closed. Some experts also suggest using a wooden dowel in place of a screw; the National Bureau of Standards, however, suggests that a dowel is far less adequate for this purpose.

The final technique—illustration (c)—is a minor variation of (b), the difference being that the screw is used in one of the main hinge screw holes in both the upper and lower hinges, where it is left extended about one-half inch so that it slides into a drilled hole on the opposite side when the door is closed. This technique may weaken the door installation to some extent, since it reduces the number of screws holding the hinge to the door.

3. *Locks and locking devices.* Our concern here is with the resistance of locks to forced entry by amateur or relatively unskilled offenders, who constitute the majority of burglars. Accordingly, our brief assessments of the major categories of locks do not deal with their technical intricacies, most relevant to consideration of pick-resistance and key control. Pick-resistance is less significant in most residences than in commercial establishments; key control, while a legitimate concern of apartment management, is of much less consequence to the individual resident.

The five major categories of locks used in residences, illustrated in figure 5, are:

- Cylindrical (key-in-knob) locks,
- Mortise locks,
- Cylinder deadbolt locks,
- Rim locks, and
- Cylindrical locksets with deadbolt functions.

The security aspects of these types of locks as well as miscellaneous auxiliary locks, are discussed below.

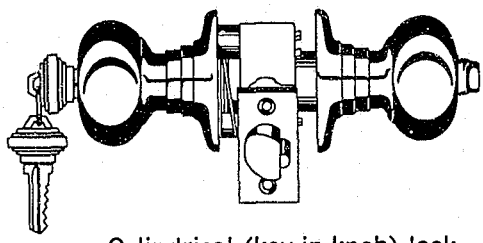
a. *Cylindrical (key-in-knob) locks.* Cylindrical locks, or key-in-knob locks as they are more commonly known, are the most widely used in residential construction, both because they are inexpensive and because—in apartments in particular—they are relatively simple to re-key. They have been in use since 1909, when they were invented by Ernest Schlage. Although the better cylindrical locks have a dead-locking latch in addition to the basic spring latch, they are the least desirable of all lock types from a security viewpoint. Since the cylinder is located inside the knob, there is virtually no way of protecting this kind of lock against simple attack.

The cheaper varieties of cylindrical locks have even more serious shortcomings. Not only are they made of lightweight metals and poorly machined parts, but they may not even have a deadlatch. These locks can be slipped open with a credit card or celluloid strip.

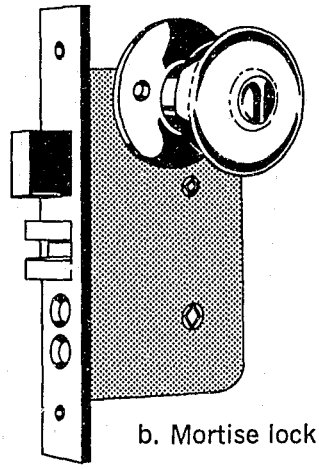
Most cylindrical locks have a button on the inside knob, which can be either turned or pushed to lock the unit. The better-quality cylindrical locks have a "panic-proof" design that permits the inside knob to be turned in either direction to open.

Despite the minimum security protection afforded by this type of lock, it maintains its popularity because of its basic simplicity, relatively low cost, and ease of installation and replacement.

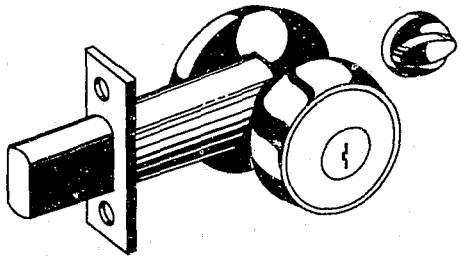
b. *Mortise locks.* Mortise locks fit into a cavity cut into the outer edge of the door. Since the introduction of the cylindrical lock,



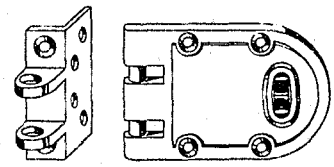
a. Cylindrical (key-in-knob) lock



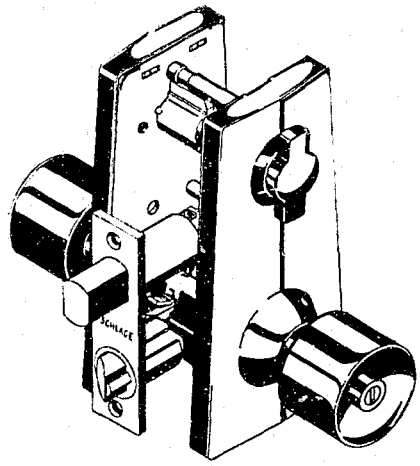
b. Mortise lock



c. Cylinder deadbolt lock



d. Rim lock



e. Cylindrical lock with deadbolt function

FIGURE 5. Types of locks.

mortise locks have declined considerably in popularity. Mortise locks are far more expensive to install than cylindrical locks because large sections of the doors and jamb have to be specially mortised to fit the lock. A satisfactory mortise lock should have a deadbolt with a sufficient throw to fit securely into the door frame (perhaps as much as one inch for a door that loosely fits its frame). Many mortise locks, however, do not meet this criterion.

c. *Cylinder deadbolt locks.* Single-cylinder deadbolt locks are rapidly becoming the most popular security auxiliary lock. They

are usually installed above the primary lock and are available with one-inch throw deadbolts. The best designs of this type have steel cores and cylinder guards designed so that they cannot be twisted, pried, or broken off.

Strictly from a security standpoint, the double-cylinder lock is preferable to a single-cylinder lock, since it effectively offers two locks, the second one being operated from an inside cylinder that is locked separately. Even if someone can reach the inside of the door, by breaking a window for example, he still cannot unlock the door without a key. The double-cylinder principle has come under heavy attack, however, as a potential safety hazard, particularly in the case of fire or other emergency where rapid egress is essential. Fire officials are concerned that the need to find and operate a key will dangerously delay escape in an emergency.[1]

d. *Rim locks.* Rim locks differ from the first two types in that they are not generally used as the primary lock. Rim locks are installed on the inside of the door, usually above a vulnerable primary lock. They are equipped with either horizontal or vertical sliding deadbolts, the latter being preferred because it prevents intruders from spreading the door from the jamb to defeat the lock.

Assuming the striker is properly installed on the jamb and that a vertical deadbolt is used, the rim lock makes an excellent auxiliary lock, which is very difficult to defeat. It is far less expensive to buy and install than a replacement primary lock.

e. *Cylindrical lock sets with deadbolt functions.* Cylindrical lock sets with deadbolts, which are comparative newcomers to the security hardware market, combine all the best features of a good security lock: a deadlatch function with a deadbolt lock. The better designs incorporate a one-inch throw deadbolt, a recessed cylinder to discourage forcible removal, a concealed armor plate to resist drilling, and a cylinder guard that spins freely when the deadbolt is in a locked position. This last feature makes it virtually impossible for an attacker to wrench the cylinder or cylinder guard off the door. Finally, these sets include a panic feature that assures that the knob will turn freely from the inside to permit rapid exit in case of emergency.

f. *Other auxiliary locks.* Several additional types of secondary locks are available on the market. Many of these are simple deadbolt devices that are attached to the door and frame, and can be secured only from the inside. Padlocks, horizontal bar latches and a few other miscellaneous devices are occasionally used for the same purpose. They are useful to the extent that they provide an additional access barrier, but in apartments with only one exterior door they may pose an even more serious fire and safety hazard than double-cylinder deadbolt locks.

4. *Miscellaneous security devices for entryways.* There are a few additional kinds of security hardware that are primarily related to door systems. Most of them are designed to assist occupants in identifying visitors before admitting them to homes or apartments.

The first of these is a door viewer or "peephole," as it is more commonly called. It is nothing more than a small, wide-angle lens installed in the door at eye level that permits the occupant to see a person seeking entry before opening the door. It is cheap and easy to install on any door and serves a valuable visitor-screening function.

The second such device is a door intercom that permits the occupant to carry on a two-way conversation with someone outside the door. These are used in many apartment buildings to permit tenants to identify persons at the main entry door without having to leave their apartments. They are less essential for most single-family homes, although they are sometimes included as part of home intercom systems.

Finally, there is the chain lock, which permits the occupant to open the door a few inches without unlatching it. Chain locks can be used to screen visitors, although peepholes are better for this purpose; in addition, the simpler chain locks that cannot be opened through the partially opened door with a key, may serve a useful deterrent function by suggesting the house is occupied. Chain locks are often used by many people as a standard accessory lock, in the mistaken belief that they provide adequate protection against forced entry. Once the

[1] Double-cylinder deadbolts are prohibited by some municipal codes because of the potential hazard in the event of fire.

door is ajar, however, the chain can either be overcome by brute force, snipped with wire or chain cutters, or removed from its slot by manipulation through the opening from the outside.

B. Windows and Sliding Glass Doors

Windows and sliding glass doors pose more complex security issues than ordinary doors. They come in a much greater variety of styles and sizes and are designed for objectives that have little or nothing to do with security. The choice of window size or type based primarily on ventilation and lighting considerations, with a strong secondary emphasis on aesthetics. Only to the extent that a properly placed window makes vulnerable areas observable does a window have any security value.

In all other respects, windows decrease security. Some types of windows are more vulnerable than others (depending upon size, distance from ground level, whether they are fixed or openable, etc.), but all are subject to breakage unless they are made of burglar-resistant glass. The cost of burglar-resistant glass, and the replacement frames or sashes they generally entail, is prohibitive for most residential installations.[2]

The vulnerability of window areas tends to be inversely related to the vulnerability of main entry doors. Almost any intruder will try to get through the doors before resorting to windows. What little data there are on the subject further suggests that the average burglar will avoid breaking glass. Most burglars are apprehensive about the noise made by shattering glass, and they are concerned about injuring themselves in the process of gaining entry through broken windows.

In many glass doors with moveable sashes, the locks or latching devices are susceptible to manipulation from the outside. Such simple techniques as inserting a coat hanger or other form of twisted wire through a crack between the sashes is sometimes sufficient to release the latching device. Once this is accomplished, it is usually a simple matter to force the window open without breaking the glass.

Several techniques can be employed to upgrade the security of the windows with moveable sashes. The simplest measure, which works equally well with single- or double-hung windows and horizontally sliding windows of all types, is to drill one or more holes through the sash and frame, and insert a pin or nail to prevent the window from being opened. Key-operated locks for windows are also available, but they pose a safety hazard in the event that the window is ever needed for escape in a fire or other emergency.

Louvered windows tend to be particularly vulnerable; there is no practical way to prevent them from being pried open to gain access to a door handle. And any window left in a partially opened position is obviously insecure, since it can easily be forced completely open.

The principal alternative available for protecting vulnerable windows is steel bars, mesh, or grillwork. Although commonly used in high crime areas—sometimes very attractively—window coverings necessarily block the transmission of light, thereby interfering with one of the basic purposes of the window.

Where panes of glass in or near doors are more than 20 square inches and within 40 inches of the nearest inside door knob, security of the door necessitates that the window be covered with protective grillwork, the glazing be replaced with burglar-resistant glass, or a double-cylinder lock be installed in the door.

Tempered glass. Tempered glass is increasingly used because it is more resistant to shattering and safer when it is broken. In some states, its use is now prescribed in sliding glass doors and large windows because of these important safety advantages.

The security value of tempered glass, however, may be relatively low. Tempered glass will resist a brick or a rock, but it will not resist an ice pick or other sharp instrument. When attacked with a sharp instrument, tempered glass tends to crumple easily, leaving no sharp edges. While ordinary plate glass tends to be noisy when shattered, tempered glass crumples away *quietly*, with

[2] The same is true of plastic or other nonbreakable transparent substitutes for glass; in addition, these materials often encounter objections from consumers (whether or not valid) that they are subject to scratching or discoloration.

much less danger to an intruder because of its lack of sharp edges.

C. Lighting

Outdoor lighting can be one of the most effective deterrents against crime. Properly used, it discourages criminal attacks, increases natural observability, and reduces fear. To the extent that we can identify principles of residential lighting, they have primarily been derived from long-accepted standards for commercial, industrial and military security; and, to a lesser extent, from the cumulative experiences with street lighting.

A critical aspect of protective lighting in outdoor applications is coverage—that is, the number of lighting sources used to cover any horizontal or vertical surface. This is especially important in open terrain where landscaping or man-made barriers would cast large, deep shadows if all the light were coming from a single direction.

1. *Single-family housing.* It is difficult to conceive of specific lighting standards that would be widely applicable to residential areas. In many single-family neighborhoods, street lamps cast enough light to provide reasonable observability between the street and front entryways. The adequacy of street lighting will, of course, be influenced by the amount of setback, terrain, foliage, the location of fences and other barriers, and the siting of the house itself. Where street lighting does not provide sufficient illumination of the grounds of a single-family home, porch lights and other exterior lights will usually suffice. Additional lights can be placed over the garage and driveway areas, as needed, to provide adequate observability from inside the house and for walking from the street or garage into the house.

2. *Multi-family housing.* Multi-family housing may, in some cases, pose additional lighting considerations. Outdoor parking areas should be lighted, as should the paths leading between parking areas and main building entrances. If the parking lots receive inadequate light from ambient sources (e.g., from reflection of building exterior lights), then additional lighting sources may be necessary to reduce shadows in parking areas.

In large multi-family housing projects including grounds and play areas, lighting may be used both for security and for making the areas usable at night for other activities. As a general rule, the amount of light required for security is that which will permit most people to feel secure; as a practical matter, this usually means that people will be able to perceive threats from any direction.

In fact, there are some instances in which excessive lighting is more dangerous than too little lighting. For example, a brightly lit exterior area used by youngsters for playing basketball at night can be hazardous because of the impossibility of seeing clearly into the surrounding area. Both children and adults will occasionally wander from a brightly lit area into a relatively dark space where they are highly vulnerable to surprise attack. It is precisely to prevent such occurrences that transitional lights are deployed around stadium perimeters to assist spectators in walking safely from brightly lit surroundings into relatively dark streets.

We point up these examples to illustrate a common fallacy about lighting. The most critical problem in many residential neighborhoods is not the *absolute level* of light in outdoor areas, but rather the *evenness* of light. If lighting is intended to encourage people to use outdoor areas at night, then safeguards must be employed to make certain that such areas are not, in effect, spotlighted. There is no standard method for accomplishing this objective. The amount of lighting, the location and type of luminaires to be used, and the selection of lighting furniture will necessarily depend upon the particular situation.

3. *Neighborhood open spaces.* What is true for lighting of residential grounds also applies to larger neighborhoods. In new communities, a frequent planning consideration is whether or not to provide lighting in neighborhood parks. There can be no pat answer to this question because the pattern of lighting deployed within a park will depend upon the types of activities the park is intended to support. If it is to be used for a variety of nighttime activities, including active sports, then relatively intense lighting will be needed. In such cases, lighting pat-

terns should be designed to provide smooth transitions between well-lit, marginally lit, and dark areas. Alternatively, arrangements can be made to isolate well-lighted areas from other parts of the park with fences and other barriers.

Unfortunately, too many parks and open spaces are planned without sufficient thought to how the park will eventually be used: 1) Does its proposed location make it necessary for people to walk through it at night? 2) Should the area be used at night for any purpose? If it is determined that the park will be used at night for purposes other than walking, provisions for these activities can be planned accordingly, with lighting treated as one of many design factors.

4. *High-intensity street lighting.* A currently popular assumption is that high-intensity street lighting is an effective deterrent against crime. To the extent that high-intensity lights bring more people out of their homes and encourages businesses to stay open later, it is undoubtedly effective in reducing *street* crimes. Common sense suggests that brightly lit streets with a large number of people will be safer than dark, virtually empty streets. It must be understood, however, that high-intensity lights create safety problems primarily because they encourage more street traffic.

Whether high-intensity lights add any measure of safety for homes or apartments is another question altogether. A row of bright sodium vapor lights creates an intensely bright "tunnel" running parallel to most houses on a residential street. If the houses are set back from the street, they will be much harder to observe than under normal lighting conditions. Depending upon a variety of other circumstances, this may or may not make them more vulnerable to night attack.

We should also note that high-intensity street lighting poses yet another problem in areas where apartments and homes are set close to the streets: such lights make it difficult to shut out extraneous light from sleeping areas, and to that extent, interfere with the living patterns—and comfort—of residents.

All crime preventive public lighting programs raise the additional issue of crime displacement. To the extent special street lighting is effective in reducing any type of crime, it may be at the expense of adjoining neighborhoods. The displacement effects of high-intensity street lighting have not received serious empirical evaluation. This subject deserves careful research attention, as does the impact of street lighting on crime within the lighted area and any non-crime-related adverse affects of such lighting.

D. Mechanical, Electro-mechanical and Electronic Security Equipment

Commercial, industrial and military installations—in fact, all premises requiring high security protection—have long depended on a variety of sensors and detectors in addition to fixed barriers and security guards. In recent years, these technologies have begun to be transferred to residential security. Only a negligible number of homes in the United States are now equipped with intrusion detection systems, however; and this tiny fraction is further subdivided into a bewildering array of devices of assorted technical descriptions. Since the Law Enforcement Assistance Administration had commissioned a special study of burglar alarms, our study did not attempt to go into depth on the technical aspects of the subject. Instead, we sought to focus on their important implications for residential security.

One type of electronic security device that is being increasingly used in large apartment developments is closed-circuit television. CCTV is a practical means of monitoring both indoor and outdoor areas in apartment complexes and can be a valuable deterrent to would-be intruders who are aware of its presence.[3] The cost of CCTV per household in residential buildings varies enormously, depending on the number of units deployed, whether they are manned by paid employees or volunteer security patrols, and whether they are used independently or in conjunction with other security equipment. For the

[3] Although its value as a deterrent is attested to by many users of CCTV, there is no statistical data that we are aware of that conclusively proves this. There is some evidence that suggests CCTV has not been a particularly effective deterrent against bank robberies; nor is it certain that it deters robberies of grocery and liquor stores and other retail establishments.

most effective monitoring of CCTV, it should employ a corollary detection device, to call attention of the monitor to a threat occurring in the area covered by the camera. While CCTV cameras are available for use in areas with extremely low light levels, these more expensive cameras are probably unnecessary in a residential context, since it is often possible simply to install brighter lights, which will also have independent security value.

Our concern in the remainder of this chapter is with passive intrusion sensors—electro-mechanical alarms. Our major emphasis is on their application, rather than the precise technical principles on which they operate.

1. *Detectors and sensors.* In essence, virtually all intrusion detection devices are designed to detect presence or motion, or both. Ultrasonic motion detectors are a good example of the latter: they will not detect the presence of a person standing still, but will quickly sense an intruder moving through their range. Passive infra-red detectors, on the other hand, can detect the presence of an intruder simply by reading his infra-red radiation, regardless of whether he is in motion or not. A third class of devices requires the intruder to break a circuit—a treadle switch under a mat, a photo-electric beam, magnetic door switches, etc.—in order to trigger an alarm.[4]

All of these devices are basically designed for an environment in which motion or presence carries with it a strong presumption of unauthorized intrusion. They were originally developed for military and commercial installations where this presumption is an appropriate one and the devices can be activated and deactivated on a regular schedule, following prescribed procedures. One difficulty in transferring these technologies to the residential environment is the difficulty of imposing strictures on the use of most residential space and of insuring that residents follow the required procedures for using the devices. The behavioral modifications required by the devices are impracticable for many households and may be overlooked by others. As we suggested in chapter 2, this is one major cause of false alarms when intrusion detection systems are installed in homes.

2. *Alarms.* All intrusion detection devices are connected to some sort of alarm, either a local siren or bell or else a communicated or "silent" alarm that is linked to a remote monitoring station. Most current systems on the market rely on a combination of the two types, which means that a local alarm is sounded and also transmitted to another source.

The distinction between local and communicated alarms is especially important to the purchaser of a security system. If he opts only for local alarm capacity, it means that in his absence he is relying on neighbors or passers-by to call the police. What usually happens is that whoever hears the alarm ignores it on the assumption (nearly always correct) that the alarm is false. The chances of a police patrol hearing or responding to the alarm within the critical time period are extremely remote.

When the alarm persists, the police may eventually be called because the noise is disturbing neighbors and can be stopped only by disrupting or disconnecting the source. What this means, in effect, is that a local alarm, by itself, offers very little protection to unoccupied dwellings other than its possible ability to deter an intruder from proceeding any further.

If, on the other hand, the purchaser opts for a communicated alarm, he is effectively buying a whole range of services related to the monitoring and response to alarm signals. It is, in fact, the *communication* of alarms, more than the intrusion detection devices that trigger them, that shapes the current structure of the home security industry.

E. Communication

Because so many of the currently available intrusion detection devices are highly unreliable, the manner in which their alarms are sounded and communicated tends to take on great significance.

To have credibility, all detection and monitoring devices must be linked with the

[4] Appendix A is a short glossary on various types of security devices, with a commentary on selected types that are presently in residential use.

police directly or indirectly.[5] Basically, there are four possible types of transmission: 1) leased land lines; 2) commercial telephone lines (usually with automatic dialing); 3) radio frequency (RF); and 4) power lines. Communication can be via direct transmission to the police, or to the police via remote or local central stations. Direct connections with the police are becoming increasingly rare. Except for a few communities like Scarsdale, New York (where the police actually encourage direct hookups from private homes), police departments across the country are increasingly reluctant to accept direct alarm lines from residences. Some also have policies prohibiting automatic telephone-dialing alarms from calling in on the police emergency number.

1. *Direct communication to police.* The principal reason behind negative police attitudes towards direct communications from alarms is the false alarm problem.[6] Some sources have estimated that more than 95 percent of all transmissions turn out to be false alarms. A few cities, like St. Petersburg, Florida, have proposed fines for false alarms, but most departments simply discourage or prohibit direct communications and attempt to persuade the owners to have them transferred to a commercial central station.

2. *Remote central stations.* There are obvious advantages and disadvantages to the remote central station concept. The principal advantage is that the central station is a private business whose customers have to be kept satisfied. This assures a more positive attitude towards the owner of an alarm system, even when some of his alarms are false, than the nearest police station is likely to have.

The principal disadvantage of remote monitoring stations, from the customer's perspective, is cost. The major companies now in the business charge a monthly fee for monitoring and servicing residential systems that begins at roughly $15 and can be substantially higher. This continuing cost, in addition to the purchase (or lease) price of the equipment and installation charges, is an additional obstacle to the installation of intrusion detection systems in residences.

[5] Underwriters' Laboratories will no longer accept for testing any intrusion detection device that does not also transmit a signal to a remote station.

[6] Another objection occasionally raised against direct residential hookups is that they represent, in effect, a special privilege available only to the few citizens wealthy enough to afford alarm systems.

CHAPTER 4. DESIGN AND RESIDENTIAL SECURITY

"Nanny! It's territory. That's what everything's all about. Territory. Territory."[1]

Henry Eliot Howard was a businessman with a passionate interest in the British warbler; his name appears in this report because his small 1920 book called *Territory in Bird Life* was the first book devoted solely to the innate relationship between property and animate behavior. Fifty years later, we are giving serious thought to the validity of his discovery. Territory is the concept that appears repeatedly as we consider the relationships between space and human behavior, relationships whose clarification may have substantial import for the provision of residential security. It is the consideration of territory and its importance to man that brings together much of the current thinking of those concerned with space and environment and behavior.

The "walled subdivisions" much commented on in the popular press accounts of contemporary security are not 20th century innovations. From earliest times of settlement, security has been a major factor in shaping man's choice of location and the design of his habitat.[2] The caves. The villages on stilts. The walled cities. The manors. The early frontier towns near forts or stockades. For thousands of years man has been aware that protection is a function of shelter. But as urban western society developed, security *per se* became less important as a factor influencing the location and organization of cities and the design of dwellings and neighborhoods.

The environmental psychologists have pointed out that territoriality is one means of establishing and maintaining a sense of personal identity. Space is personal and has unique meaning for the individual. House and place are regarded as extensions of one's self.

Home is a subject of highly charged emotional content: a matter of strong feelings. It is the symbol of status, of achievement, of social acceptance. Housing seems to control, in large measure, the way in which individuals and families perceive themselves and are perceived by others. Psychoanalysts reiterate what primitive societies understood instinctively. Searles wrote:

> I believe that the actual importance of the environment to the individual is so great that he dare not recognize it. Unconsciously it is felt, I believe, to be not only an intensely important conglomeration of things *outside* the self, but also a large and integral *part* of the self.[3]

The deep meanings of territory imply that man's home, if not his castle, is at least the place where he exercises control and for which he must accept final responsibility.

Our cities and homes, particularly multifamily dwellings, often do not strengthen this sense of self; they give a resident little sense of control over his own safety; they often make him feel isolated and unimportant. No one has ever deliberately designed buildings or urban areas to foster crime and induce fear. Yet, in a number of respects, the architecture of American cities does both. The design of housing in this country, Ada Louise Huxtable has written, "has demonstrably increased tendencies toward crime, violence, and social isolation," at a social and monetary cost that is "insupportable." [4] Planners, builders, and architects have

---

[1] Henry Eliot Howard, British birdwatcher, to his children's nurse, circa 1904.

[2] See Robert Gold, "Urban Violence and Contemporary Defensive Cities," *Journal of the American Institute of Planners,* May 1970, at 146.

[3] Harold F. Searles, *The Nonhuman Environment in Normal Development and Schizophrenia,* New York: International Universities Press, 1970, p. 335.

[4] "Prescription for Disaster," *The New York Times,* November 5, 1972.

not yet made of their profession a "socially responsible art," in Roger Montgomery's phrase.[5] The design professions have tended to accept as inevitable something that is only partly so: anonymity and isolation in a gross sense may be necessary concomitants of the size and density of modern cities and the mobility of their residents, but neither characteristic need define the relationship of individuals to their immediate surroundings.

This is not to suggest that design is a panacea for the problems of fear and crime. While the physical environment influences behavior, the extent of its influence is largely unstudied outside of specific institutional settings such as schools, libraries, hospitals, and mental institutions. This country made the mistake in the 1950's of assuming that remaking the physical environment would solve social problems; the urban renewal program, based in part on this assumption, proved that social problems were much more intractable and complex than that. Similarly, the impact of design improvements on security may turn out to be smaller than currently imagined. Even if this is the case, however, many security design concepts may contribute to socialization processes within apartment buildings, housing developments, and neighborhoods—a possible behavioral consequence of independent value.

A final argument for the serious consideration of design as a crime preventive measure is two-fold; design offers us a chance to build an open society rather than the "fortress America" that is a possible, if repugnant, alternative; and design for security at the construction stage (even if that design must include some "fortification" elements) is a much more cost-effective approach than building without any consideration of what design has to do with security.

In what follows, it is necessary that we look slightly beyond the defined focus for this study. Design is not simply a question of what happens within the residential lot-line, whether of a single family-home or an apartment complex. We noted earlier that the fear of residential crime—and the interest in home security devices resulting from it—is in part a transferrance phenomenon, a focusing of the apprehension arising from the dangers throughout a person's neighborhood or city on the one space entirely within his own control. As a corollary, it may well be that improved security beyond an individual's home will increase his sense of security within it. Important design concepts for security operate beyond the level of the individual residence and (except for large scale apartment developments and new communities) outside the property line.[6]

A. Planning a New Approach to Security and Design

There has been a quickening of interest in the use of architecture to achieve security. Environmental psychologists, anthropologists and ethologists have begun to relate their findings to the problems of here and now rather than the planning of future Radiant Cities.

1. *The Work of Oscar Newman.* Recently Oscar Newman and his associates, working under contract to LEAA and HUD, have articulated these concepts in architectural terms. In his recently published *Defensible Space,*[7] Newman elaborates on the work of Jane Jacobs, Elizabeth Woods and others to deal with the design and organization of public housing projects in New York City.

Newman and his research team were able to show significant relationships between environment and behavior. Comparing projects almost identical in density, population, income, and other characteristics, but with sharply differing crime rates, Newman found that the critical differences were the design of the buildings and their grounds, and the relationship of the projects to surrounding environs.

The study is the most significant to date in trying to handle the specific problem of crime and vandalism in light of the feedback

[5] Roger Montgomery, "Comment on 'Fear and House-as-Haven,'" *Journal of the American Institute of Planners,* January 1966. The recent decision to raze all of Pruitt-Igoe in St. Louis is suggestive of the problem.

[6] While many of the design principles below are most applicable to new residential development (which add only 2 to 3 percent to the housing stock each year), as Newman's work in public housing projects in New York has shown they can also be applied to the modification and modernization of existing housing.

[7] Oscar Newman, *Defensible Space,* New York: The MacMillan Co., 1972.

from behavioral science to design. Newman shows how certain basic design principles (effective at either the initial design stage, or, as he has done, in modifications to existing housing) can contribute to security. Architecture can create zones of territorial influence that, when combined with created opportunities for surveillance, enable inhabitants to act naturally as their own policing agents.

What were some of Newman's specific findings related to crime?

- Tenants expressed fear of crime as their single most important problem.
- 74.3 percent of most serious crimes occur inside the building; of this indoor crime the majority (61.5 percent) takes place in the interior public spaces (burglaries within apartments account for the remainder).
- The higher the building, the higher the crime rate and the fear of crime.
- While the total serious crime rate was twice as high in tall buildings as in walk-ups, the rate of crime in interior public spaces in the high-rise was seven times higher.

Given the findings from Housing Authority crime statistics, Newman developed three design hypotheses that he used as the basis for modifications of existing public housing:

- that subdivision of projects and buildings can encourage tenants to assume territorial attitudes;
- that design augments natural surveillance; and
- that design critically influences perceptions of a project's isolation, image, stigma and vulnerability.

Throughout the work, the operative terms are territoriality, surveillance, proprietorship, boundaries. While it is not possible yet to discuss long-term results, the architectural modifications carried out by Newman show a sharp initial drop in total number of offenses at Clason Point Houses in the Bronx. More important, the concept of defensible space does seem to strengthen the feeling of belonging to a place that increases residents' sense of safety and responsibility and to reinforce those elements of community that are crime-resistant in the social and psychological sense.

In terms of our report, there are several brief caveats. First, most of Newman's work has been done largely in public housing, and that largely in New York City, whose particular problems may not be totally relevant to other cities. Further work may be needed to relate his findings specifically to more typical single-family housing design and neighborhood planning. Second, the major emphasis of this report is burglary, which receives the least emphasis in Newman's work. In general terms of crime prevention, however, *Defensible Space* must be seen as a significant achievement in its insistence on design as a critical element of crime prevention.

2. *Other studies.* There have been other indications that design can relate to the problems of crime. The New York City Rand Institute has paid specific attention to the relationship between security and design, again focused on work done for the New York City Housing Authority.[8]

A number of localities have also begun to take preventive security measures into account in local planning and building approval procedures. South San Francisco, for example, in the late sixties provided the police department with power to participate in the review and approval of subdivision and building plans for the city. The Southern California Association of Governments sponsored the development of a series of information bulletins to aid localities in incorporating security factors into planning and building land review procedures.[9] The studies done by URSA–BSD for Yerba Buena Plaza, a San Francisco public housing project, also reflect an especial sensitivity to the relationship of design to security.[10]

---

[8] William Fairley and Michael Liechenstein, "Improving Public Safety in Urban Apartment Dwellings: Security Concepts and Experimental Design for New York City Housing Authority Building," The New York City Rand Institute, June 1971.

[9] SUA Division of Dillingham Corp., "A Study of Crime Prevention Through Physical Planning," prepared for the Southern California Association of Governments, September 1971.

[10] Clare Cooper, Noel Day and Beatrice Levine, "Resident Dissatisfaction in Multi-Family Housing," University of California-Berkeley. Working Paper No. 160, March 1972. See also the study, *Community Security in Fort Lincoln,* June 1973, prepared by Security Planning Corporation for the District of Columbia Redevelopment Land Agency for use in planning the new town development of Fort Lincoln.

These observations and the experience to date in communities that have been active in this area represent the beginning of a developed body of knowledge on the incorporation of security principles into the planning and design of public and private buildings and spaces. While general security guidelines may be extrapolated from these specific design studies, their application to a particular situation necessarily depends upon a variety of contextual factors. The specific design solutions Newman used to promote territoriality in a public housing high-rise elevator building in New York are not the solution to security problems (even when territoriality is involved) in a small public housing project in Worcester, Massachusetts, for example. Consideration must be given to the needs, desires, and differing behaviors of a particular resident population in order to make specific, effective design decisions.

While it would seem desirable to subject these guidelines to further demonstration and testing in a neighborhood setting that is not exclusively public housing, they do represent a foundation for a new approach to crime prevention in which security is achieved through design and a natural system of community protection and self-defense. This approach is oriented toward the maintenance or reinforcement of an open community rather than an atmosphere of mistrust and control. The elements of this approach are basic, simple and general.

B. Major Principles of Design and Residential Security

The major principles developed through the above cited investigations of residential security are:

1. *Opportunities for surveillance.* Freedom to survey, supervise and question a stranger is a function of building design. Design obviously promotes or decreases opportunities for surveillance: the kitchen window overlooking the play area or entry; the elevator in a direct sightline with entry doors; a small number of apartments (Newman suggests two to five) opening on a shared landing—all enable residents to be aware of the presence of a neighbor or stranger, to know one from the other.

The considerations of surveillance affect design at every level: the mixture of uses of a city street, the topographic alterations of a site, the layout of streets and walkways, the placement of parking and open spaces, the placement of buildings on a site, the interior layout of a building, the placement of windows and doors. All these decisions should be made with specific concern for the problem of observability, both by neighborhood or area occupants as part of their normal living patterns and by police patrols.[11] Natural barriers, landscaping, and building location should be planned to channel pedestrian and vehicular traffic to promote routine observation.

Walkways and entryways to buildings should be clearly visible to police patrols and neighbors. Adequate protective lighting—and especially controlled pattern lighting—is important for this purpose. Indeed, it may be desirable to provide buildings with an automatic system (as with street lights) that will turn on exterior protective lights when darkness begins and extinguish them in the morning. During the hours of darkness proper protective lighting can constitute an effective crime deterrent as well as provide residents and persons who have business in the community with an important psychological sense of safety and physical security.

Grounds of buildings should be landscaped to minimize obstacles to clear observability and places of concealment for potential assailants. Inside buildings, public spaces should be designed to be visible from areas where observers are likely to be present.

Design can promote natural observation within the community. Neighbors routinely

[11] A distinction should be made between *formal* and *informal* surveillance, although both are obviously influenced by design decisions. Informal surveillance is naturally carried out by residents, guests, employees and passers-by in a residential setting where such persons are engaged in activities unrelated to security and are observing only as a secondary activity. The variety of activities of the city street as described by Jane Jacobs is the almost classic example of informal surveillance, and Newman makes a particularly convincing argument that the effectiveness of informal surveillance depends in large measure on physical design principles that encourage or discourage it. Formal surveillance can be that provided by electronic systems (largely in apartment buildings), by private guards or tenants specifically organized to serve a watchman function, or by public police for whom patrol surveillance is standard operating practice. Again, design can facilitate such surveillance.

looking out for each other is a critical part of a protected environment. It is important, therefore, to facilitate social contacts between neighbors under conditions that encourage friendly and cooperative relations. Residents should be encouraged to feel comfortable in alerting appropriate emergency response forces when they witness or suspect an emergency or a serious threat to person or property.

Facilities for commercial or community services should be physically arranged to provide the presence of natural observers along public walkways and near major access points to residential areas, to make entrants aware that they may be seen and could later be identified.

Natural surveillance, fostering community self-protection, can also be promoted by sensitive design. In apartment complexes, for example, existing studies (including the work of Oscar Newman) have shown that the arrangement of apartments within a development can greatly influence crime rates. Arranging units in clusters, in which residents know their neighbors, decreases anonymity and promotes routine neighbor surveillance, thereby reducing crime. A small number of families sharing an entry and hallway create the same effect in multi-family housing. A small grouping of families sharing a well-defined territory adjacent to their living units will take initiative in assuring its maintenance and safe, productive use. This "territorial concern" may even be extended beyond a single corridor to larger interior areas and the grounds adjacent to the dwelling units through appropriate design. Design can structure opportunities for intensive use of a site, where the development of play areas and other natural sites for loitering and visiting relate as closely as possible to a specific building or group of houses. Space intensely used around a building not only increases natural surveillance but tends to increase residents' feelings of proprietorship about that space. Any design feature that extends the resident's sense of turf beyond his individual living space decreases the crime risk in the whole building.

Opportunities for surveillance relate directly to the level of fear in a particular area. In Newman's surveys of public housing, tenants expressed the fear of crime as their single most important problem.[12] Levels of fear varied, in similar populations, according to aspects of physical design, including the number of entrances, siting, and placement of interior stairwells, elevators, and the number of apartments on a landing. These design factors acted on residents' behavior. The fear people felt about passage to and from the building, fear toward their "neighbors," attitudes toward strangers in the project, and treatment of the buildings and grounds differed sharply between different projects—and an important distinguishing factor influencing fear of risk was the degree of natural surveillance provided by the physical setting.

Studies done in San Francisco[13] found, similarly, that great fear of public spaces, particularly in high-rise buildings, occurred when opportunities for surveillance from the dwelling unit were limited. When the elevator doors are closed, when the doors onto a long internal corridor are closed, when the parking lot is empty of people, a crime could happen and no one in the adjacent dwellings would know. At Hunters View and St. Francis Square, many units face each other across easily surveyed pedestrian courts, and the fear of crime is considerably less. Where these potentially hazardous public spaces also encourage high levels of pedestrian activity, the fear of crime is even further reduced. Thus, at St. Francis Square, with three-story buildings arranged around linked interior courtyards, there is a high level of pedestrian activity, ease of surveillance, a willingness to go out and help neighbors in trouble, and consequently a relatively low fear of crime despite the fact that crime rates are high in the streets around. Only a few blocks away, at Yerba Buena Plaza, the intrusion of criminal elements into the public spaces, corridors, elevators and stairwells where pedestrian activity is limited and surveillance almost nonexistent, results in a fear of crime that goes far beyond actuality.

Effective surveillance also relates to planned use of lighting and landscaping.

---

[12] Newman, *op. cit.*, p. 151.

[13] Cooper, Day, Levine, *op. cit.*, p. 46.

The presence of adequate levels of street lighting as well as lights for access paths, parking areas and entries affects the decision of an offender to act and the likelihood of identification by a witness, as well as the tendency of residents to use streets and outdoor areas intensively. In spite of many street lighting programs in recent years, little hard data defines the relationship between street lighting and the incidence of crime. It is only common sense, however, that people feel less apprehensive about evening activities when areas are well-lit.

Design and planned opportunities for surveillance are critical factors in reducing anonymity in a residential setting. If natural surveillance is an important element of security, it is equally important that the observers be known to one another, that the form of the residential setting encourage neighboring and the casual repeated social interactions that reduce the sense of isolation and anonymity so often present in contemporary communities. The defined entry to an apartment complex, with places for play and loitering related to a specific building, the common court defined by a group of townhouses or shared by several apartment units, a community room or neighborhood center visible to passersby—all create opportunities not only for informal surveillance but also for increased neighboring. This reduces the sense of anonymity and isolation that often keeps people within their own apartments, which they finally see as the only safe and private place available. When this happens, there is a further reduction in the potential for surveillance, and the potential for security is further lessened. Newman found crime rates significantly higher in buildings over six-stories with more than a thousand units. Obviously height alone is not the answer, and he theorizes that such buildings present conditions conducive to crime and vandalism: a large number of people using the same entrances, lobby, and elevator, with widespread anonymity; more hidden interior spaces, with few surveillance opportunities; density to a degree that promotes isolation, again with the individual apartment unit seen as the only safe haven.

2. *Differentiation of space.* What makes for difficulties of casual surveillance in many environments is the ambiguity of space. When amorphous areas belong to no one, they in effect are open to anyone—and even within the residential environment, they assume the fearfulness of the unknown. In such areas, crime and vandalism increase.

Generally speaking, there is a continuum that ranges uninterrupted between the most private and most public spaces in a community. For example, the hidden safe in the wall is perhaps one of the most thoroughly private spaces in a residence or business establishment, whereas the sidewalk along a public street is the most completely public space. In residential neighborhoods dominated by single family homes, most of the grounds and premises beyond the streets and sidewalks tend to be relatively private. In other neighborhoods, largely composed of multi-family housing, the grounds and premises (indeed, the interior of the buildings) fluctuate between public space and private space, with distinctions often undefined or nonexistent. Commercial areas show a similar continuum for public spaces in malls and parking lots to semi-public entryways and lobbies shared by a limited number of establishments to semi-private spaces reserved for employees and store spaces designated for customers.

By differentiating the treatment of these spaces, announcing to the pedestrian his movement from one to another through changed ground or floor treatment, decor, landscaping, portals, steps, or other features, architectural design can be used to communicate the changing level of proprietorship and appropriate forms of behavior that are expected in different spaces. Creating visible boundaries to semi-private and private spaces makes intrusion more obvious and may have a significant deterrent effect.

3. *The assumption of territoriality.* Ethologists have pointed out that relative dominance is seen most clearly in animals that have individual territories. On home grounds, they are able to vanquish an intruder and compel him to retreat, whereas if they are challenged by the same intruder on his home territory, they in turn will admit defeat. Most birds and mammals, including man, exhibit this kind of territorial behavior. As George Carstairs has written, "Not only

football teams, but all of us, tend to perform best on our home ground—and to resist anyone who ventures to challenge us there."[14] The knowledge of the home ground and the reinforcement offered by the "home crowd" promote the natural exercise of territorial behavior.

Design is crucial to the development of proprietary attitudes toward space and the enforcement of attitudes of natural community protection. Questions of siting, the placement of buildings in relation to one another, the juxtaposition of buildings with usable spaces for neighboring and play, and the placement and number of units within a building sharing a common entry or landing all affect the relationship of people to place. These design decisions determine, in part, whether a resident feels the only place that is his own is within the home or apartment (thus fostering withdrawal and anonymity) or that his sense of proprietorship and belonging extends to areas beyond his own front door (thus extending his sense of responsibility and feelings of security outward).

As a number of studies have shown, the neighborhood or sub-area concept, utilizing cluster approaches to design that focus housing or other land use elements in small groups around common open spaces, walkways, or malls or other common facilities, can facilitate effective social organization and help to establish a sense of proprietorship and self-protective attitudes among neighboring families or commercial establishments. Each neighborhood or commercial sub-area can be designed to be an integrated unit.

The validity of the neighborhood concept has long been recognized for other objectives beside security. Although some of the claims for the social, economic, educational and public health advantages of neighborhoods (made in such documents as the classic report by the Regional Plan Association of New York, first published in 1929) have since been subject to considerable debate, the neighborhood unit has been generally accepted as a principle of urban planning.

No valid empirical research has been conducted on the issue of optimal size of the neighborhood unit in terms of security objectives. Although some analysts maintain that the smaller the unit the better, it is likely that there is a minimal threshold level, below which smaller groupings fail to offer a sufficient number of potential observers, and a maximum level above which larger groupings make frequent interaction and recognition of all the household members difficult to achieve. In design terms the optimal scale for townhouse or cluster single-family units appears to be the courtyard or cul-de-sac; for two-to-four-story walk-up garden apartments, a common entryway; for high-rise buildings a single floor or part of a floor, depending on the size of the building.

A series of these individual groupings can be combined to create larger units at the neighborhood or housing project scale. These larger units should share a common identity; common facilities; boundaries created through design treatment, historical or natural barriers or topographic and site conditions; or have other characteristics in common.

4. *Access Control.* It seems obvious to say that builders' choices of locks, doors, frames and windows affect the ease with which a potential intruder can gain access to a residence. Yet even this simple security question is seldom considered in the planning process. Still less attention seemingly is given to broader design considerations that affect access to a community; design considerations affect not only access to an individual dwelling, but also the entrances and exits to a larger neighborhood or development. The concept of entrance is critical to security; as stages of entrance and exit can be defined by design, they make an important announcement of possession and boundaries to resident, visitor, and intruders.

a. *Channeling access.* Access into and out of residential areas should be channeled into a limited number of routes and past activity areas where potential observers are likely to be present and potential offenders can be readily observed. This natural method of access control can be highly effective as a

[14] George M. Carstairs, "Overcrowding and Human Aggression," in *Violence in America,* Vol. 2, Washington: GPO, June 1969, p. 596.

deterrent to criminal activity. Access does not relate, of course, only to the use of public streets and pathways. While there is obvious control of access when one is planning a private residence, more awareness is needed in the planning of multi-family housing, especially low-income and public housing. The large private complex can provide doormen, electronic surveillance, or complex keying systems to control access to a building; many of these may be too expensive for public housing or other low-income apartments. Thus there is a special need for limiting points of access (to whatever degree fire codes make this possible).

b. *Siting or clustering.* The placement of buildings on grounds and in relationship to each other affects ease of access. Where the site plan allows anyone to wander into public areas, as it often does in multi-family developments, criminal opportunities increase. When dwellings are clustered on the site and access points are limited, on the other hand, strangers are less likely to wander through and more likely to be questioned when they do. Siting and clustering limit access naturally and at the same time provide a bounded setting for the casual social contacts that also promote security between neighbors.

c. *Emergency access and patrolling.* It is also important to consider the ease of police patrol and emergency response in the layout of streets and walkways. Easily-read, well-lit street signs and household numbers are an important consideration for quick patrol response. Visible police, patrolling a well-designed series of streets and walkways, can serve as a deterrent to crime as well as reducing community fear by providing a sense of community protection.

5. *Separation of conflicting uses.* Sensitive design can eliminate many sources of problems and conflicts by spatially locating land uses and activities to avoid the juxtaposition of conflicting activities or groups. As an example, it might be possible to place buffers between housing projects with many teenage children and shopping centers that could be focal points for petty crime or vandalism. Separation is useful between housing for the elderly and heavy concentrations of young people, since the elderly often tend to find young strangers potentially fearsome. This is an area where designers and planners need to be particularly aware both of the potential for security involved and the trade-offs required in terms of other, perhaps equal or more important, social values.

6. *Provision of more acceptable outlets for potentially delinquent and criminal energies.* A great deal of the crime that concerns us is committed by those with social and economic hardships—by ghetto residents, drug addicts, and others who see few alternatives to crime as a means of obtaining the money and material goods that are valued in our society. Some may even view criminal conduct (and especially vandalism) as a way of "getting even" with the society or expressing anger and frustration. Dealing with these problems, of course, goes far beyond the scope of this study; it involves a variety of initiatives that should be central in planning community, social and economic institutions and services.

At a more specific level, however, there are preventive measures available to planners and developers that can help achieve a safer community. Most relate to the young. Much youthful property crime and vandalism is a product of boredom or frustration. Some sociologists (Cohen, Tappan, McKay) have commented that in the early stages delinquency is clearly a form of play. Vandalism, shop-lifting, auto-thefts and purse-snatchings may be committed primarily because they are more exciting and seemingly more rewarding than law-abiding activities. It is important to provide facilities for alternative activities: play areas related to living areas that offer real opportunities for delight and play (the adventure playground concept has been surprisingly neglected by American planners); often areas for specific activities are more desirable than yet another fenced asphalt area with a basketball hoop. A neighborhood that offers a varied range of activities is often a richer playground than a segregated play space, and the concept of the street and sidewalk designed to control traffic and encourage play has received im-

aginative treatment by Paul Friedberg, a New York City designer.[15]

The problems are more serious in dealing with 12-20 year olds, those increasingly involved in a large percentage of criminal incidents, and the solutions less easy. Organized teams, sponsored by the police, boys' clubs or other community groups, need places to play; large projects might include tinkering areas for auto repair and other mechanical pursuits; designers should provide, whenever possible, some structure or designated space that this age group can claim as its own. Designers might consider involving young residents in the planning and construction of such facilities. Projects designed in isolated locations removed from shopping and recreational opportunities may pay highly in vandalism costs for the lack of activities available for young adults.

Increasingly those who appear in court on adult criminal charges are those with records of numerous contacts with juvenile authorities; it is imperative that the design necessity in crime prevention provide as many alternatives as possible to the potential young offender, although it is obvious that the design potential here is not suggested as a cure-all for a complex social problem.

7. *Community aesthetics.* Although there is little systematically collected empirical data on which to base their position, some observers claim that community aesthetics—the visual quality of the community's buildings and landscaping and the level of care and maintenance they receive—can have a definite, although subtle and indirect, impact on reducing some of the casual factors that lead to criminal activities. A number of studies of vulnerability have found higher incidences of crime occurring in run down, deteriorating areas or within buildings or facilities that are least attractive and well-maintained.[16] Obviously, this is not the only explanation for crime; the factors that lead to crime may also contribute to the deterioration in the physical surroundings. But the surroundings themselves may also contribute to the incidence of crime.

A number of studies have found that an environment that is institutional in appearance or deteriorating or provided with low levels of repair and maintenance generally tends to cause increased detachment, isolation, hostility and frustration among its inhabitants. In these settings no one feels individually responsible for anything outside his home; residents and management develop negative perceptions of each other and their neglect tends to reinforce the problems, further conveying the indifference to outsiders. When the care of buildings and personal property of others is not valued, it can lead to the weakening of community norms inhibiting theft or vandalism and the expression of individual frustrations through criminal actions. When choices of building materials and lack of maintenance indicate that a place is not important, residents soon get the message and treat space accordingly.

C. Conclusion

These seven points, then, define residential design considerations that produce a natural and open system of community protection, stimulating positive interactions between people and place. They are obviously not all-inclusive. Too, they make no attempt to specificity of detail, rather attempting to focus on the considerations that architects, planners and builders need to keep before them as they deal with a specific site, a specific plan, a particular opportunity for rehabilitation and modernization. As is true with many security prescriptions, any design for security needs to be tailored to specific situations and it would be specious to present detailed design specifications and suggest their applicability on a national level. Regional differences as well as differing needs of various socio-economic groups preclude any neat security shopping list for planners.

In our opinion, enough is known about design and security to warrant an effort to disseminate existing knowledge to architects, developers, builders, and local planning offi-

[15] Lisa Hammel, "Two Playground Designers Who Used to Be 'Rebels,'" *The New York Times*, November 29, 1972.

[16] See Cooper, Day, Levine, *op. cit.*, and Lee Rainwater, "Poverty, Race and Urban Housing," in *The Social Impact of Urban Design*, Center for Policy Study, The University of Chicago, 1971.

cials.[17] We would go even further and argue for the inclusion of the considerations to be addressed in site plan review and other local development controls. The lack of precise criteria is not a substantial obstacle to the inclusion of security among the issues considered in site plan review. Plan approval already involves a number of subjective issues; the process typically involves discretionary judgments arrived at through give-and-take between the developer and the enforcement agency. Including security considerations would not greatly burden or alter the approval process. Especially if information on design and security were available to architects, developers, and planning agencies, security could be addressed on a sensible basis from the inception of planning of a residential development. Experience in cities like South San Francisco, where police review of plans has been instituted, suggests that the effort is feasible. A requirement that security considerations be addressed in site plan review would be sufficiently flexible that it could be adapted to areas with different crime pressure. As increased knowledge is gained about the impact of design on security, the rigor of plan review on this issue could be increased. As our understanding of security and design grows—and research in this area merits support—these additional insights can be incorporated into development planning and the training of planners, architects, engineers, and other professionals.

[17] It should be noted here that the proposed draft of HUD's Manual of Acceptable Practices (which is a companion volume to the mandatory Minimum Property Standards for FHA construction) is attempting to suggest appropriate security considerations for industry, at least at some minimal level of awareness. For example, chapter 3, Site Design, presents 300–7, Security:

> Public areas in site design, especially circulation paths which must be used at night, should be kept well-lighted, and free of obstacles, dark corners, and isolated locations which will aid or encourage nuisance or criminal activities. Arrangement which allows twenty-four surveillance of public areas by local police from the street is an important security consideration.

While these practices are not mandatory, and FHA affects only a small fraction of the new housing built each year, this does represent a new acceptance of security as a design consideration.

Part III
PRIVATE GROUP ACTION TO COMBAT RESIDENTIAL CRIME

In a society where the generally accepted premise is that law and order is a governmental responsibility, citizens are nevertheless increasingly banding together to provide supplementary protection for their homes and neighborhoods. These group activities take a variety of forms: neighborhood citizen patrols in some areas (or variants, such as campus patrols, in special environments), tenant patrols in public housing, the hiring of private guards by neighborhood associations or the developers of subdivisions or planned communities.[1] In the following three chapters, we consider the effectiveness of these supplementary protective activities and their impact on the communities in which they occur.

Most citizens would prefer improved police protection to participation in a citizen patrol or the hiring of guards.[2] Yet, in many areas, police service seems inadequate, and residents seek added protection. Their decision about what to do is guided primarily by their economic situation. One study of citizen patrols, for example, concluded that support and mobilization for patrols "is found disproportionately among lower status persons; middle-class people apparently more often effectively press the government for increased police protection or hire licensed private guards." [3] Families who cannot afford to move from a city neighborhood that is becoming more dangerous may try to provide a level of protection within the neighborhood through voluntary patrols. Upper-income families may do the same, through joining together to hire private guards, or they may move into communities where the developer or a neighborhood association provides guard services, often at a substantial cost.

Both citizen patrols and private guards share an anomalous situation with respect to residential security. Our legal system provides little middle ground between the sworn police officer and the ordinary citizen. In all of the activities described in this chapter, private citizens are undertaking an ancillary police function—often an uncomfortable role in our society and one that is fettered by a variety of legal restrictions. These restrictions—and the risks they reflect—are one of the drawbacks of self-protection measures. Other issues concern the relationship of private protection efforts to the police and their impact on the attitudes of a community and its residents.

The basic question of the effectiveness of patrols or private guards in providing residential security is an especially difficult one to answer in the abstract. Here, as with other security measures discussed in this report, specifics are necessary before an evaluation can be attempted. What we can provide—and what these chapters include—are some general observations and examples illustrating the advantages and disadvantages of this approach to residential security.

[1] Another variant—the auxiliary police force—is of limited relevance to the protection of residential neighborhoods and is not considered in this report. Although auxiliary police forces are apparently growing both in numbers and membership ("The Civilian Cop Helps Fight the Crime Rise, Or Is He 'Plain Nuts'?" *The Wall Street Journal,* Feb. 20, 1973 at 1), their direct usefulness in crime prevention is limited. They may, however, serve to free up regular police officers by providing supervised personnel to perform some police tasks. They may also have a useful role to play in crowd control, at rush hours, and in natural disasters and other emergencies. See Arlington County Police Department, "1969 Reserve Police Study" (Arlington, Va., unpublished); James S. Kakalik and Sorrel Wildhorn, *Private Police in the United States* (The Rand Corporation, R-869/DOJ, 1971).

[2] See, e.g., National Opinion Research Corporation, "Neighborhood Views of New York City Services," New York: The Vera Institute, 1970.

[3] Gary T. Marx and Dane Archer, "Community Police Patrols: An Exploratory Inquiry, "Harvard University-MIT Joint Center for Urban Studies, March 1972, at 75.

Chapter 5. Citizen Patrols In Residential Neighborhoods

America has a long tradition of voluntary group action to meet perceived common needs. The tendency to form voluntary, *ad hoc* organizations was noted by Alexis de Tocqueville in the 1830's and has been repeatedly rediscovered since. One of the common needs to which voluntary groups have responded is protection against crime. Vigilante groups often were the only providers of law-and-order on the frontier, and self-help was also apparent in many of the new cities of the West, most notably San Francisco.

The history of vigilante groups in this country is decidedly mixed. It includes not only homesteaders or townspeople protecting their families from criminal intruders, but also the Ku Klux Klan and others attempting to impose or defend discrimination through extralegal means. Vigilantism and voluntarism, moreover, run counter to another American ideal, never fully achieved—rule by law and the minimal use of coercive violence. Today, most Americans certainly oppose people's "taking the law into their own hands"; they would agree that government should have a monopoly on law enforcement.

Many citizens also believe, however, that the government is failing to provide effective law enforcement. Increasing rates of crime—and increasing fear—have impelled people to band together to protect themselves and their neighborhoods. In the sixties, a number of citizen patrols (the Maccabees in Brooklyn, the North Ward Citizens' Committee in Newark, the Oakland patrol in Hartford, numerous youth patrols) were organized, primarily in lower-middle income neighborhoods. These groups frequently stemmed from racial fears, a crisis situation or incident, or a desire to protect the neighborhood from a criminal element composed of "outsiders." The groups organized escort and ambulance services, patrolled the streets to keep peace, cruised in unmarked cars, and worked generally to "cool it"—to limit confrontations, crime and violence in ghetto and other urban neighborhoods. Many of the groups were evanescent; organized in response to a particular crisis, they quietly disbanded after an initial frenzy of activity. Their members, once the novelty wore off, discovered that self-protection may be dangerous and—more important—that it is exceptionally boring. Patrolling a neighborhood for criminals rarely yields any (indeed, that is one measure of success). It becomes a dull routine, punctuated only occasionally by any action.

When confrontation between a member of a patrol and an apparent criminal does occur, serious problems may follow. The member of a patrol has no more authority to question or detain a suspect than does any other citizen, but by virtue of his role he may be tempted to try. The result may be that he commits a crime himself—assault, battery, kidnapping, and false arrest are a few of the possibilities. He may also commit a tort, making him liable for civil damages. His position, if he intervenes in a dispute, is legally that of a volunteer, whose potential liability is suggested by the law's definition of a volunteer as "an officious intermeddler."

The police generally dislike citizen patrols, in part because of the added problems they create and in part because these groups are often critical of the police. Whether or not their initial role is adversarial (for example) observing police confrontations with citizens to guard against police brutality), citizens' groups at least implicitly suggest that the police are not performing adequately. Even when the police agree, they would prefer that they be given the necessary resources to do a better job, rather than having citizens form supplementary organizations.

Despite these tensions and problems the number of citizen patrols again appears to be on the increase. Newspaper stories in the past year mention such groups functioning in a variety of communities—from the suburbs of Washington, D.C., Los Angeles, and Long Island to the central cities of Chicago, Boston, Baltimore, and Philadelphia; in Houston and Indianapolis, Cincinnati and Cedar Rapids.[1] In New York City, perhaps 150 such groups have been organized in all five boroughs, functioning as tenant patrols, street patrols, or child safety patrols (the last operating around schools to protect children from mugging or harrassment before and after school and at lunch hour).

Our focus in this chapter is on voluntary citizen patrols in neighborhoods. (The next chapter deals with tenant patrols and indigenous guard forces in public housing, which raise other issues.) Such patrols have some clear advantages over other alternatives for providing neighborhood security, but they also pose some potential problems. After identifying the benefits and drawbacks of neighborhood patrols, we will discuss the policy options in dealing with them.

A. The Advantages of Citizen Patrols

In principle, citizen patrols should play a relatively simple and narrowly defined role: to deter criminal activity by their presence. Their functions should be those of a passive guard: to watch for criminal or suspicious conduct and to alert the police when they see it. This function is the same for a stationary patrol (e.g., tenants stationed in the lobby to screen persons entering the building) as for a mobile patrol (tenants checking stairways and elevators or residents cruising the neighborhood streets). One derivative function may also be noted: providing a protective escort for individuals.

It should not be the function of patrols to intervene in criminal incidents, either to attempt to defend the victim or to apprehend the wrongdoer. There are three principal reasons for this. First, intervention vastly increases the risk of injury to the victim or to innocent bystanders, as well as to the patrol member. Second, patrol members are not trained or equipped to intervene effectively and with minimal risk. Third, intervention involves potential legal liability for the consequences to the apparent wrongdoer or others, and thus carries a pecuniary risk for the patrol member.

Although there are no available data to confirm the hypothesis, it seems logical that civilian patrols adequately performing this deterrence function can substantially improve the security of a particular housing project, block, or neighborhood. They have a number of advantages over other protective measures:

1. *Patrols are relatively inexpensive.* The deterrence function of patrols could be performed by the police, but it rarely is. Police manpower is inadequate for preventive patrolling of residential areas, and especially of portions of residential areas not visible from a cruising patrol car. Because the policeman on patrol must respond to calls for police service, the police emphasize mobility and are reluctant to have officers leave their radio cars except in response to a call. If more police were added to the force solely for patrolling (a debatable allocation of scarce police resources), it would add enormously to police costs. In New York, it has been estimated that one added patrolman costs the equivalent of ten times his annual salary;[2] the number of added patrolmen needed to provide saturation preventive patrol would be enormous.

Citizen patrols are inexpensive precisely because they are not professional policemen or guards. Eliminating personnel costs also means eliminating many of the other costs (fringe benefits, personnel administration costs, etc.) of a patrol operation. Again to cite New York City figures, a Rand Institute study there estimated the average cost of security alternatives for public housing apartments.[3] The options cost from $2.65 per apartment per month to $57.39. The tenant patrols in operation in public housing

[1] John Herbers, "Civilian Patrols Spreading to the Suburbs," *The New York Times,* November 5, 1972, at 1.

[2] New York City Criminal Justice Coordinating Committee, 1971 Criminal Justice Plan.

[3] William Fairley and Michael Liechenstein, "Improving Public Safety in Urban Apartment Dwellings: Security Concepts and Experimental Design for New York City Housing Authority Buildings," The New York City Rand Institute, June 1971, p. 55.

in New York City, by contrast, were roughly estimated to have a direct cost of 30 cents per unit per month (this does not include the opportunity cost for tenants who participate in patrols to the exclusion of other possible activities).

2. *Patrols can be effective in performing a surveillance function.* There is no inherent reason for believing that police training is necessary in order to perform a surveillance function. Indeed, policemen are not specially trained in patrolling tactics or methods; their training focuses primarily on intervention and apprehension.

Because patrols can be manpower-intensive, they are much more likely to provide a watchman-presence at a particular place at a particular time.

3. *Patrols take advantage of existing behavior patterns.* As noted earlier, organizational impulses are part of the American character. More generally, people tend to come together to take common action in response to stress situations. Patrols are a realistic group action; they utilize a resource (spare time) that many people have and do not require substantial amounts of other resources (money and sophistication) that most people lack. Patrols also are highly visible and therefore reassuring to those worried about crime.

4. *Patrols indirectly improve the individual's ability to deal with crime.* Experience on a civilian patrol is likely to make an individual more aware of security needs. The individual member of a patrol will gain an enhanced sense of territorial proprietorship and responsibility. He will be more likely to be on the alert for crime or suspicious behavior within his neighborhood or development even when he is not on patrol. He will know how to report a crime and will probably be more willing to do so.

5. *Patrols contribute to other desirable social goals.* Patrol groups are likely to result in greater neighborhood or development cohesiveness, which in turn improves the residents' capability for common action to meet other problems. Where there is no existing neighborhood organization, the patrol may serve as the vehicle for its formation.

Patrols, moreover, provide a useful activity for residents. For some, this will mean new friends and a more fulfilling way to spend leisure time. For others—and perhaps teenagers and young adults, in particular—the patrol is a socially productive alternative to undesirable or destructive activity.

B. The Disadvantages of Citizen Patrols

Despite these very substantial theoretical advantages, patrols have exhibited a number of shortcomings in practice. For the most part, the problems with citizen patrols are a consequence of their origin and the nature of the function they assume:

1. *Patrols tend to be short-lived.* As suggested earlier, patrols are generally organized when concern about crime—and sometimes specific types of crime, whether rape or urban rioting—is particularly intense. This intensity of concern is unlikely to be sustained over a long period; if it is, residents may withdraw from neighborhood activities, including the patrol, rather than assume the risk they entail. Shared concern, then, is both a necessary condition for establishing a patrol and a possible reason for its demise. While the patrol may increase neighborhood cohesion, assuming broad enough participation, continued fear may weaken this cohesion, eventually destroying the patrol itself.

A second, perhaps more typical scenario involves a successful patrol—which may be defined as a patrol in an area where the crime problem diminishes. Patrolling, as noted earlier, becomes duller and duller, its necessity less and less apparent. (Without adopting a meteorological theory of criminal contagion, we should note that crime "crises" tend to occur in warm weather. Winter, however, follows summer, and so to boredom one may add discomfort to the patrol members' complaints, at least in much of the country.)

Another reason why patrols tend to be short-lived involves the normal propensities of citizen organizations. Although we have stressed the relative simplicity of a patrol-member's task, it takes considerable logistical work to keep a patrol functioning. It is a commonplace of volunteer groups that such supporting paperwork is done initially in a burst of enthusiasm and with great diligence, and thereafter deteriorates.

2. *The deterrence function of a patrol is difficult to maintain.* We have indicated our view that the appropriate role of a patrol is to watch for crime or suspicious activity and then report it to the police. For a variety of reasons, this restriction on the patrol's activities is difficult to enforce.

One reason is that it is extremely dull to be a watchman and nothing more. Simply sitting, riding, or walking does not seem to be enough to do; one is not really "combatting crime," with all the action the verb connotes. A patrol member's tendency will be to be more aggressive, especially given the emotionally charged framework in which the patrol was launched (a framework, incidentally, that will often include more than a little xenophobia). Authority, even self-assumed, reinforces aggressive tendencies, especially when a police-like role is involved. The virility of the patrolmember, defending hearth and home, may also be implicitly challenged. Hence, the perhaps insurmountable urge to challenge strangers and to intervene in disputes.

Second, if a patrolmember does happen upon an incident involving a real or apparent threat to somebody, it is contrary to his instincts (again reinforced by his position) merely to report it and stand by. He will be much more likely to intervene. Once intervention is tacitly or explicitly approved—and the approval will be explicit, the patrolmember will become a "hero," if it is successful—it is likely to become an accepted part of the patrol's role. This, in turn, may alter the nature of the patrol profoundly. Members will be attracted because of the potential for conflict, there may be pressure to carry arms; the eyes and ears for the police may want to become their fists.

Third, there is an organizational dynamic at work. Patrols are frequently the brainchild of a charismatic community leader. Even where they are not, they will probably have a hierarchical structure, emphasizing chains of command similar to those of the police (which are, in turn, patterned after the military). Yet they are also voluntary organizations, and in order to maintain his position the leader will have to satisfy the membership. In this context, in order to keep *his* authority, the leader is apt to encourage the members in more aggressive behavior.

Finally, the establishment of the patrol, as also noted earlier, is a consequence of unhappiness with the police coupled perhaps with ethnic or racial concerns. It is unlikely that a stable organization can emerge from this background; as long as emotions run high, the tendency will be to escalate the tactics of the patrol.

3. *The police will be reluctant to cooperate with the patrol and may even oppose it.* Police opposition to citizen patrols is primarily based on legitimate concerns about vigilantism and citizen intermeddling in police work. Both interfere with effective law enforcement, at least in the opinion of the police. The citizen attempting to stop one crime may commit others, especially if he is overzealous and untrained. It may well be true that the least desirable person to have involved in a family quarrel is a neighbor. The neighbor's presence ignites passions that an anonymous policeman, symbol only of governmental authority, does not. From the police perspective, a group that invites the neighbor to pay attention—and even to intervene—only compounds the difficulties of the policeman's job. Better, again from the police perspective, that concerned citizens only call the switchboard.

Moreover, because the citizen patrol is founded on displeasure with the job the police have done—and perhaps even dislike of the police—there is a natural tendency for the police to regard it as an adversary. This may have a variety of implications, including a slowness to respond to its requests for help (in the process reinforcing community displeasure with the police). In a sense, a citizen patrol poses a no-win dilemma for the police. Given the length of the odds against arresting the perpetrator of a crime, the police response will seldom satisfy the citizen patrol.

Police animosity may have another negative consequence. Consciously or not, the police may decrease their level of effort in an area that has a patrol. The residents will have traded official protection, by trained officers, for *ad hoc* self-protection. There will be substantial costs, even if the watchman function is better performed.

4. *The patrol may aggravate community tensions.* A citizen patrol may actually accentuate some community problems, especially where substantial ethnic or class differences exist. Police routinely deal with family and personal crises—precisely those matters one seeks to hide from other community residents, not share with them. A community patrol is, in a sense, an organized squad of nosy neighbors. Some residents may be extremely upset about the intrusion on their privacy and the arrogation of governmental functions that is implied.

The problem of increased community tension or conflict may be particularly critical when the patrol is patterned along political or ethnic lines. Thus, a group like the Panthers in Oakland or a street gang on Chicago's South Side may aggravate divisions in the community, even while providing protection against crime threats from the outside. Whether because of their political stance or because of the selectivity of the protection they offer, such groups may do little to enhance community cohesion. At theother end of the spectrum, groups like the North Ward Citizen's Committee in Newark, New Jersey, may seem to contribute to city-wide racial tensions through inflammatory rhetoric and actions.

In short, the principal problems of patrols relate to their inability to sustain the narrow, anti-crime role they initially stress. It is almost an organizational imperative that they become more adversarial—whether toward the police or the group that threatens them—and more aggressive in the conduct of their protective function. The alternative (and it is not necessarily always an undesirable one) is that the patrol goes out of business after the immediate crisis passes. In fact, it is probably best to evaluate citizen patrols from the perspective of both their short-run and longer-term benefits and drawbacks. In the short run, the advantages almost certainly outweigh the problems. Neighborhood patrols appear to be an effective temporary measure to deal with criminal contagion in a particular area. That the group will have a relatively short life-span is not necessarily a reason not to establish it. Over the longer term, it may well be that the risks inherent in a citizen patrol outweigh the continued benefits, at least in the vast majority of cases. These risks could be reduced, however, through appropriate public policy.

New York City is an example of a jurisdiction where government has been forced to respond to the existence of numerous citizen patrols (as noted earlier, something like 150 patrols are now operating throughout the city). Although the New York Police Department would prefer that members of citizen patrols join the police auxiliary where they would be subject to police supervision, they have accepted the existence of the patrols and are attempting to work with them and therefore exercise some measure of control over them. The NYPD provides patrols with a small, mimeographed rulebook, an identification card, base stations at precincts if desired and the use of at least one radio channel in each borough above the crowded civilian band, permitting the use of walkie-talkies. The New York patrols, which range from 20 to 200 members, wear no uniforms and carry no weapons. The cooperative posture the police have assumed may prevent the patrols from becoming adversaries of the police. In general, successful patrols have been organized with the cooperation of the police, who have been involved from the very beginning in planning, training and operations.

On the other hand, patrols that begin as adversaries to the police (such as the Panthers) or assume too much independence for themselves (such as the North Ward Citizens' Committee) tend to invite a hostile police reaction, increasing the problems of the patrol. The police concern that the patrol will be a hindrance rather than a help in controlling crime may tend to be self-fulfilling. Many police forces, concerned about vigilantism, are absolutely opposed to patrols. In Alexandria, Virginia, for example, the police department refuses to participate in the training of patrols; the reactivation of the Del Ray Capital Patrol there led the City Council to adopt an anti-patrol resoultion.[4] In these circumstances, it is unlikely that the

[4] Diane Brockett, "Anti-Crime Patrolling Hit," *The Washington Star,* January 26, 1972, at 1.

patrol will be a beneficial force in the community.[5]

C. The Potential for Neighborhood Patrols

The most important preconditions for the formation of a neighborhood patrol are substantial apprehension about crime and the lack of an alternative means of surveillance. In middle- and upper-income neighborhoods, private guard forces are a practical option; most residents would probably prefer to pay a monthly fee for guard protection rather than to join a self-help group. Where cost is a minor consideration (or, put differently, the cost can easily be met without a severe financial strain on residents), few would opt for a citizen patrol over hired guards.

Similarly, in private middle-income apartment buildings, it is unlikely that a patrol will be anything other than a transitory phenomenon. For example, one Washington, D.C. management firm, which deals entirely with luxury and middle-income buildings, reports that in one of their buildings tenants did form a patrol-and-escort service following a series of purse-snatchings on the walkway from the parking area and a few break-ins. "We try to respond to what the tenants ask for," an executive of the firm commented, "but of course we wouldn't finance a patrol and it faded out as soon as the problem subsided. Everybody felt better after we changed all the locks on the doors." One should not conclude that the patrol served no purpose in this instance—it did assuage the tenants' fears and may even have helped solve the crime problem—but it does suggest that permanent patrols are unlikely to be organized in this type of residential setting.

Thus, citizen patrols will be largely a lower- and middle-income phenomenon, where other alternatives are not within the financial reach of residents. In these areas, patrols may be a reasonable supplement to police protection. They may lead to a sense of commitment and neighborhood cohesion that will itself contribute to improved security. They may provide reassurance to residents and succeed in deterring crime.

Yet the risks, as we have noted, are substantial. There is the threat of unbridled vigilantism. There is the lack of any defined areas of accountability. There is the danger of exacerbating racial tensions or increasing urban animosities. There is the problem of attracting undesirable members into the patrol; as one observer commented, "The line between dedication and screwballs is very close." [6] The patrols face legal blocks, both criminal and civil; they have no more police power than any private citizen. The danger that they will become an undesirable force in the community is very real.

The dilemma for the police, and for government generally, is whether to encourage patrols and attempt to co-opt them or to be antagonistic and hope to kill them off. Where patrols are being organized and do persist (as in New York), probably cooperation—and possible cooption—is the wiser course. Unfortunately, however, there is no hard-and-fast rule that can be uniformly prescribed.

Nor is it possible to provide any meaningful general guideline for citizens in areas where patrols are being considered. We have stressed the problems of patrols, but their proliferation in recent years is evidence that they fill a felt need, if only for a short period. It is important to recognize that patrols are no substitute for adequate police protection; indeed, one of the most worthwhile activities of a patrol group may be to lobby for more adequate police service. Beyond that, questions must be asked about the particulars of a patrol group: the nature of its leadership, political orientation, the attitudes of potential members, how it will operate, how it will be paid for, and so on. Again, doubt about the ultimate role of a citizen patrol is not necessarily a persuasive argument against its utilization for a limited time to meet a serious problem. Patrols do have potential as a crime deterrent in residential areas that should not be disregarded.

[5] Police opposition, among other things, affects the type of people a patrol is able to recruit. Although it is true that police auxiliaries and police-approved patrols will attract a number of questionable recruits because of the police imprimatur, it is probably also true that police opposition will keep a number of civic-minded recruits from serving and may induce militant opponents of the police to join.

[6] Marx and Archer, *op. cit.*, p. 21.

CHAPTER 6. TENANT PATROLS IN PUBLIC HOUSING

The residents of public housing are in several senses a trapped population. They are trapped because they have little political access to better police protection. The ambivalent feelings of this group toward the police have been expressed over and over in a host of studies and articles. While they desire a more visible police presence and more adequate protection and service, they also distrust the police, fear them, doubt their integrity and question their efficiency and ability to make a difference. Ghetto residents feel their communities cannot influence law enforcement priorities in the local precincts; they do not think their voices are heard. Because so many minority groups are represented in public housing, all the racial stereotypes and animosities are present between the police and their clientele. And while such groups are more vocal and aware of their rights today than ever before, it is ironic that if a public housing resident were to organize a constituency and be elected to some public office, increased income from that responsibility might disqualify him from living in public housing.

Public housing tenants are a trapped residential population in another sense: there is little economic access to better housing. In part, this is an expression of the changing character of public housing over the last generation. Public housing originally was conceived of as a program to help families in temporary economic difficulty. It was seen as a place where such families could live until life improved enough so they could graduate. Now, as James W. Eighmie of the National Capital Housing Authority put it, such housing "is a welfare island with residents beyond the first generation, a collection of people who never graduate." [1] Housing under private management benefits tremendously from social screening that housing authorities do not have, and there is no doubt that such screening reduces the number of multi-problem families so heavily concentrated in public housing.

And when these families come to public housing, they often come to stay. In New York City, where 560,000 people live in 194 projects, about half those admitted to public housing are on welfare, while the current population of welfare families is 80 percent.[2] While housing authorities across the country are staggering under financial burdens and deficits that grow larger each year, they continue to be swamped with applications for what in most cities is still the most available housing bargain. The waiting lists grow each year. In New York City more than 135,000 families are on the waiting lists, despite the fact that only about 2,000 new units have been built annually in recent years. In mid-1970 Chicago had a waiting list of 21,000; Miami, 8,000; Pittsburgh, 5,500; Memphis and Louisville, 4,000 each; Boston, 2,700; Atlanta, 2,000.[3] With the current rate of new housing starts it is not likely that these lists have dwindled. Nor is it likely that these lists would have grown so much if other economic alternatives were available to the families they represent. In a study of public housing costs in 23 cities, 1968 median income for tenants in those cities was found to be $2,444. In Los Angeles, San Francisco, and Oakland, the proportion of families receiving public assistance or other relief payments (not including social security) was more than 50 percent.[4] The

[1] Interview with James W. Eighmie, National Capital Housing Authority, January 17, 1972.

[2] Steven R. Weisman, "Golar Says City Crime Level Exceeds That in Public Housing," *The New York Times,* February 25, 1971, p. 38.

[3] John Herberts, "Inflation and Crime Fuel Public Housing Crisis," *The New York Times,* January 4, 1970, p. 45.

[4] Frank DeLeeuw, "Operating Costs in Public Housing," The Urban Institute n.d., 9.

point could be documented endlessly. It becomes a truism to repeat that the issues of crime and security in housing relate here to a group that cannot escape to greener, more expensive—and safer—pastures.

This is a trapped residential population, finally, because it has little social access to better neighborhoods. The inflammatory reaction to various efforts to provide public housing in suburban neighborhoods, such as the attempt of Mayor Lindsay's administration to build a few units of subsidized public housing and housing for the elderly in Forest Hills, Long Island, is enough to indicate the kind of bitter resentment to such communities that exists. If the option is public housing, the scattering of sites has become a volatile social and political issue that probably will not be resolved in enough instances to make any dent in those waiting lists. And if these "trapped" families should find their economic situation improved enough to leave public housing, what then? Certainly the new housing market is almost pie-in-the-sky. Within the city limits, where there is some supply of older residential stock, there often is even fiercer resistance to change and minority group intrusion. Competition for the least expensive slice of older housing is also fierce. There are not many avenues open, even for the family that thinks it can make it in the private sector.

In attempting to provide security for the residents of public housing, it is important for public housing authorities (or HUD or other federal agencies in providing funds to them) to recognize the special problems of this population. These problems are in part responsible for the high incidence of crime—and accompanying resident fear of crime, often out of proportion to its actual incidence—in public housing. Yet public housing management cannot respond with crime prevention measures available to the private sector. A doorman, a contract guard force, sophisticated electronic devices are likely to be out of financial reach and some may even be illegal "luxuries" that cannot be provided in public housing. Public housing has always faced severe budgetary constraints; now as the impact of the Brooke amendment (limiting a tenant's rent to 25 percent of his income) is felt, operating deficits are increasing while funds to meet them are becoming scarcer.

If public housing management must find relatively inexpensive means of increasing security, it is also under a legal obligation to utilize tenants to provide management services. The Housing and Urban Development Act of 1970 requires "maximum feasible participation of the tenants" in the development and operation of tenant services, including "services which are directly related to meeting tenant needs and providing a wholesome living environment." [5]

In this context, tenant patrols are an important security measure for public housing. The federal government has supported a number of tenant patrol programs for public housing. The Law Enforcement Assistance Administration has funded patrols as a high-rise policing technique in Detroit. LEAA money has supported variations of the patrol model in Boston, Fall River, and Springfield, Massachusetts; LEAA and HUD have invested in patrols in Kansas City, Hartford and St. Louis. Security jobs have been developed in Kansas City, Los Angeles, Waterbury, Connecticut, and Jersey City, through the Public Employment Program of the Department of Labor.

We have studied three tenant patrol programs in public housing in some detail. The three examples range from a volunteer patrol primarily providing access control to apartment buildings (New York), to a paid guard force composed of neighborhood residents (Hartford), to an indigenous paid patrol closely resembling a special public housing police force (Kansas City). Each of these approaches appear to have merit, although it is impossible to construct quantifiable indicators on their effectiveness in reducing crime in public housing projects.

A. The Voluntary Patrol: New York City

The New York City Housing Authority is a world in itself; in size and complexity it hardly can be compared to any other Authority. Its tenant patrol operation is also unique in being almost entirely a volunteer operation. Patrols have been in operation for close to five years, making the Authority the most experienced in the country in this area.

[5] Housing and Urban Development Act of 1970, P.L. 91–609, section 993 (e), 84 Stat. 1770, 1808.

The Authority is responsible for 194 projects housing 560,000 people. Its buildings express every possible architectural solution to housing large numbers of people, from huge towers with more than a thousand residents, to clusters of small walk-up apartments. They reflect all the aesthetic and sociological trends of the last fifty years, as well as changing requirements of fire and building codes. The Authority has its own police force, currently close to 1,600 men. The housing police provides patrols for 2,075 multi-story buildings; through vertical patrol tactics, they cover cellars, roofs, stairwells, and elevators as well as the grounds of these buildings.

Personnel standards, training and starting wages are the same as for regular city patrolmen. The housing police force is 54 percent black as opposed to 7 percent for the city police. Some rivalries and friction exist between the two forces,[6] mostly at the level of the working patrolman; according to housing patrolmen, city police often look on them as second-rate policemen, not "real" police at all. Some confusion and overlap in responsibilities exist. Relations are generally good, officially, between the top levels of both forces. Housing patrolmen, however, can cite instances of lack of communication and cooperation between the two forces, often resulting in the housing officer's getting the short end of the stick: losing a suspect, not getting credit for an apprehension, etc. Such problems will probably exist whenever there are two parallel police organizations in a city.

There is no doubt that residents of public housing benefit. In a sense this is a special service that public housing tenants receive and other citizens do not. While public housing in New York does suffer from high rates of crime and vandalism, recent figures for the city do not show a single project whose crime figures are higher than its surrounding precinct; in many instances they are substantially lower. While the crime rate in many projects is lower than in surrounding precincts, crime and fear of crime are very high in most locations.[7]

[6] See Christopher S. Wren, *"Rivalry in Blue: Housing Police vs. City Police," The New York Times,* February 15, 1973, p. 41.

[7] Excluding intrahousehold incidents, Oscar Newman reports 71,859 criminal incidents reported to NYCHA in 1969.

Tenant patrols supplement and assist the patrols of the housing police in many projects. Although termed tenant-organized, there is no doubt that the patrols are officially encouraged, organized, and to a limited degree, given financial support. Within the Housing Modernization Division, there is a small office responsible for the Tenant Patrol Unit. Employees work with requests from tenants in any project wanting to start a patrol. Their success can be measured by the almost 12,000 volunteers currently working on patrols.

The original patrols were offshoots of a youth patrol project at St. Nicholas Houses, supported with anti-poverty funds. A continuously growing program has followed that initial effort, although its growth has shown that same swinging curve that characterizes many of these groups: high initial interest leads to a growth in membership, a serious crime or disturbance swells activity; then nothing happens for a long time—no crime, no phone calls, no activity—and with boredom the membership curve swings down. The Housing Authority tries to counteract this tendency by involving the patrols in other projects (youth activities, beautification projects) and social events.

Tenants get guidance from the Authority but choose their own supervisor, who must be a resident, works 10–20 hours a week, and makes $2.50 per hour. There are one or two such supervisors for each patrol; many are women. Technically building security is the responsibility of the Housing Authority Police Force, but with one or two men on duty for what may be 30–40 buildings in a project, the usefulness of the patrols is evident. Supervisors help tenants organize the pattern of the patrols, recruit volunteers, hold meetings, keep attendance and activity records, and bring in staff from downtown when enthusiasm wanes. The job is not considered a plum: "It's a lot of damn aggravating details and it takes more hours than you're paid for." Beyond the guidance offered by the central Tenant Patrol Unit, there is little formal training for the patrols in New York; their generally sedentary surveillance activities, however, are the least complex type of patrol, where an untrained presence may be adequate.

The issue of police relationships is complicated in the city by the existence of two separate police forces. Within both the city force and the Housing Authority police there is the ambivalence always occasioned by the resentment of the professional for the amateur, and the criticism implied by the existence of the amateur. But whatever friction or difficulties are admitted to exist, there is at least high-level acceptance of the patrols; difficulties are considered to be on the level of the individual patrolman on the beat. Generally the patrols relate to the Housing Authority police, reporting incidents to them and calling them first for assistance. One or two HAPD patrolmen are on duty on each project. Project residents occasionally prefer to call the city police, as Authority police are required to file incident reports with management, which could mean problems or costs for the resident.

Every security increment carries a price tag. The patrols are no exception. Costs are considerably lower (proportionately) in New York because only project supervisors are paid. The largest single expense is for telephone services. These, in addition to costs for the *Tenant Patrol Observer* (a monthly newsletter), supervisors' salaries, the card tables, the coffee pots, the blue windbreakers with the project name in script over the pocket, the award dinners—all come out of annual operating expenses for a current annual estimated budget in 1972 of $470,000.[8]

The pattern and composition of the patrols varies from project to project. There are two constants: the large number of women involved and the substantial involvement of the elderly. In a housing situation where there are many women heads-of-households it would be expected that 65–70 percent of the patrol volunteers would be women, but Authority officials have been surprised at the interest and commitment of large numbers of senior citizens.

There are very few walking patrols—it would be the "more enthusiastic volunteer" who "doesn't mind taking the risk of walking." [9] Most patrols are a presence in the lobbies; their only responsibility is to try to prevent access if there is reason to do so, and to call the police if there is trouble. A telephone on a card table in the lobby is communications headquarters for contacting the Authority policeman on patrol.

In each project visited, the small lobby had three to five people clustered around the card table, usually located between the entry and the elevator. The patrols try to maintain sightlines through the front door; they recognize those who belong; they ask strangers to sign in. Despite fire regulations, patrols try to keep secondary exits locked to control access.

It is hard to reconcile the hazards and crime pressures involved, and any concern about patrols becoming vigilante groups, with the unstable card tables, frazzled residents, slightly haphazard operation that centers in those lobbies. These volunteers have all the pressures of daily life; many are female heads of households; some sit around those card tables still in slippers.

Where tenants have requested it the Authority is required by law to install intercoms at front entrances. (This involves a rent increase of about $2.80 monthly.) When these are installed in a small enclosure outside a locked door the patrol's responsibility is simplified. Without an intercom patrols either check people in passing, or keep the lobby door locked, and check visitors without a key by contacting the resident with the lobby phone. When concerned about a visitor, several male patrol members said they had ridden up in the elevator with a stranger, taking along a walkie-talkie (very valued but not standard equipment) to keep in touch with the desk.

In New York, patrols operate largely at night, although there are a few daytime patrols where volunteers are available, especially on the first and sixteenth when the monthly welfare checks arrive. A few projects have escort services.

There is no hard statistical basis for evaluation of tenant patrols in New York. The same data gaps arise that afflict criminal

[8] The figure does not include any Housing Authority staff salaries.

[9] The description of the New York patrol operation and any quotes are from a visit to five projects and a series of interviews in May, 1972.

statistics generally. The Housing Authority police keep incident records for all projects and do compile monthly releases of precinct crime figures. Neither police force has done any analytical study of the effectiveness of the patrols; pulling out the statistical data to make a case for the patrols is not possible, according to police sources.

The variables present an almost insuperable obstacle to relating changes in crime rate to patrol activity: If an incident occurred in a project, was it in a building with a patrol? Did it occur at a time when the patrol was functioning? If the crime rate dropped, could weather have been a factor? Too, the HAPD operates a Task Force that moves in and out of areas in response to trouble, and cross-checking would be required to see if the Task Force was operative in an area with a crime drop. None of these records are computerized.

Yet there is a case to be made for the effectiveness of the patrols. Support for the program would have dried up by now if the Authority and tenants did not feel it made a difference. "Most crime is in the buildings so the patrols makes a difference." "When junkies realize there is a patrol they go elsewhere." [10] "The people don't have to give up and run when there is trouble."

The patrols in New York have produced strong secondary benefits that relate to security: a lessened fear of crime and strengthened sense of community. "Before I was afraid all the time." "Before I joined the patrol I didn't know anybody here and I was afraid. Now I know everybody and it's better." Women, elderly residents, blacks, whites, Puerto Ricans—all sit together around those card tables, working four-hour shifts to keep fear and crime out of the building. They know the dangerous places (without having read Oscar Newman's writings): the incinerator inexplicably placed in a dim, dead-end curve at the end of a hallway, the laundry rooms, the elevators. And so they watch, checking on strangers, keeping tabs on children, passing on messages.

Secondary programs developing from the patrols add to this community sense: recreational programs, often youth-oriented; social occasions to present awards; community recognition and beautification programs.[11] The patrols have affected the relationship of people to space and place and this assumption of territorial responsibility is an important security increment.

B. A Public Housing Guard Force: Hartford, Connecticut

Hartford, Connecticut, represents a medium-sized city using tenant patrols in a much more limited context, within a different organizational framework than New York. The city has a population of 160,000. The patrol, known as HASP (Housing Authority Security Patrol), operates in two public housing projects, Dutch Point and Bellevue Square. The census tract where Dutch Point is located is about 22 percent Negro or Spanish-speaking; for Bellevue Square the figure is close to 90 percent. Both projects are located within the Hartford Model Cities area, and the security patrol is funded through HUD under the Model Cities program.

Concern about criminal activities around the projects grew intense around 1969, and after a visit to observe the patrol program in New York City, a Model Cities task force member recommended a similar program for the Hartford Housing Authority. The Model Cities First Year Action Plan included plans for HASP as part of its first year grant application; after a prolonged administrative period, the first patrolmen "complete with new uniforms, handcuffs and flashlights" [12] started to patrol in August 1971.

The patrol is very different from those in New York. It is very small; there are pres-

[10] In statements both from Authority staff and a score of residents there is implicit understanding that the patrols actually may not change the crime picture so much as move it elsewhere. But there is a strong feeling that at least the home place is secure, and that if crime can be pushed to the streets, at least police procedures can function there more effectively and properly.

[11] A "Make Marble Hill Safe" program, in an area with a less serious crime problem, has become "Make Marble Hill Beautiful" and from floor to floor within buildings, residents vie in their efforts to wallpaper, hang sconces, pipe music into hallways, using their own funds for supplies. Only a second glance shows the visitor that the wrought iron chair by the elevator is bolted to the floor, the paintings wired to the walls.

[12] Evaluation Unit, Hartford Model Cities Program and John Carman Associates, "Housing Authority Security Patrol Evaluation Report," October 1972, p. 9.

ently 15 patrolmen employed for both projects. There are great differences in the structural setting; the projects at least avoid the complexities involved in huge, slab towers and elevator buildings. Both projects are about thirty years old. Bellevue Square consists of fifteen three and four-story walk-ups; Dutch Point Colony, 28 buildings, two three-story walk-ups, the rest primarily two-story duplexes.

In this setting the patrolmen are responsible for patrol as well as medical and other emergency assistance. They issue parking tickets, handle routine sick calls, provide crowd control if necessary. Equipped with two-way radios, they tour the grounds, provide escort services and contact the police as needed. The patrol has a definite structural relationship to the Housing Authority; the patrolmen are Authority employees.

The HASP experience to date points up the importance of police involvement and the need for clear organizational and administrative guidelines (issues of primary importance to the success of all patrols). According to the recent HASP evaluation cited above, the police department was to provide a large portion of the proposed ten-week training phase as an in-kind contribution. This was to include training in human relations and in Spanish. The planned training program never materialized. This has meant less effective service. Two of three policemen interviewed who patrol the areas in question, for instance, felt they knew nothing about HASP except what had come through the police grapevine. Another result of inadequate police involvement has been little cross-reporting of incidents. Police officers have also expressed some ex post facto concern about the quality of personnel hired, which might have been avoided with closer police involvement in training and recruitment. The police leadership, on the other hand, has expressed satisfaction with the job HASP is trying to do; HASP has been of help to the force in that police no longer walk the beat on the two projects, going back to motorized patrol. There is some question as to whether this is a positive result of the patrols.

The patrol's effectiveness also may be hampered by the number of administrative relationships involved. It has some lines of contact to the Housing Authority, the HASP Advisory Council, the Hartford Police Department, the fire department, the city's Criminal and Social Justice Coordinating Committee and the Model City Agency.

In Hartford the patrols are paid security jobs; HASP is the single most expensive Model Cities project in Hartford. The budget for its third year of operation (which began in November 1972) is $205,770. In connection with third-year funding the Model Cities Agency carried out an evaluation of the Hartford patrol. It proved impossible to develop a statistical case to support the patrols. As the report states, "The Housing Authority could produce no statistical information relative to any impact HASP might have had in the reduction of vandalism or more serious incidents suffered by the Housing Authority." [13] Although police expressed the opinion that figures were not available for a sufficient period of time to demonstrate noticeable impact, police data do show a "fluctuating but decreasing number of crimes reported" [14] in both project areas. There was also some decrease in the number of police calls from both areas. Again, there are a variety of factors aside from the patrols that could have influenced these figures.

The Model Cities evaluation team also attempted to measure effectiveness in a more subjective way. Personal interviews, in some depth, were held with representatives of all the groups with which the patrols interact. In addition, the evaluation team carried out 67 interviews with residents of the two projects. Although problems and weaknesses were brought out in all the city interviews, the conclusions were generally in favor of the program and its continuance. The interviews in the projects generally corroborated a comment made by the Model Cities Evaluation Chief, who said "The project has picked up the people's imagination; the demand for it on the part of the residents is so strong the Authority couldn't drop it." [15] A sampling of resident response will illustrate:

[13] *Ibid.*, p. 67.
[14] *Ibid.*, pp. 60–62.
[15] Telephone interview, July 1972.

Q. What happens here that you and your family are most afraid of?

R. 70 percent of the interviewees cited fear of breaking and entry to their apartments; 28 percent cited fear of drugs; 2 percent were not afraid.

Q. Since the security patrols have started do you think things are:

R. 30 percent About the same
59 percent Better
3 percent Worse
8 percent Don't know

Q. Have you ever called the security patrol or been around when a security patrolman was called?

R. 60 percent Yes
40 percent No

If yes, were you satisfied with what they did?

89 percent Yes
11 percent No

Q. Do you think that the security patrol normally does a good job in helping people?

R. 84 percent Yes
6 percent No
6 percent Don't know
3 percent Maybe

Q. Do you feel that the security patrol makes this project a better place to live?

R. 71 percent Yes
14 percent No
14 percent No difference
2 percent Don't know

C. A Special Police Force: Kansas City, Missouri

The Kansas City project came into being in 1971 when local law enforcement agencies aided by a contract security agency seemed unable to cope with the increased incidence of vandalism and theft in Housing Authority projects. The patrol was established by the Authority's first Director of Security. It is considered here because of the several ways in which it is unique: it represents an instance of funding from several federal sources; it represents a specific attempt to develop new employment opportunities, and it illustrates the most formal attempt to structure a patrol as a quasi-police operation.

The Kansas City Program operates the most extensive patrol pattern currently in effect. There are 88 patrol members: a director of security, 55 male patrollers, 25 female lobby monitors, four radio dispatchers and three supervisors. They are residents of either the project or the Model Cities area. The patrol is on duty 24 hours a day, including Sundays and holidays. They engage in foot patrols on grounds as well as interior hallways and lobby monitoring and are supported additionally by two area mobile patrols. Wearing military-like uniforms and insignia the patrols carry batons, Mace, handcuffs and walkie-talkies. They are at present the only armed tenant patrol, carrying Smith & Wesson .38's.

The uniforms and weapons emphasize the police-like structure of this patrol. From its inception (and this is one of the major strengths of the patrol) the Kansas City Police Department has been heavily involved in planning and training. Police administer the six-week, 250 hour training course given to all participants, and offer continued in-service training and consultative service. The patrols have continued operational contact with the police through their incident reports. The several police officers involved in early planning admitted having many reservations initially about the program; now they seem highly committed to the patrol, even offering assistance and advice when off-duty.

There are two possible problems to be mentioned here. One is that the patrol may have gone too far in its emphasis on the police role and the police image, although the final goal may indeed be the development of a separate Housing Authority Police Force, such as exists in New York. That was not part of the original goals or objectives, however, and this police image can, and in some instances, has, led to some resentments on the part of residents. Dealing with this specific population, patrols need to work for a difficult balance between a security and a community role. It is admittedly true that the police have not been able to strike this balance satisfactorily, but one of the potentials of the patrols has been the special relation they have to their clientele. Their success is vitiated if they stir up or increase those resentments toward the police that many residents now have. This eventually could weaken their ability to provide security

in this setting. It is important to relate not only to the police (as has been done quite successfully in Kansas City), but to residents and the Housing Authority. Many residents are not aware of the patrols or their Housing Authority role, and the patrols here do not tend to think of themselves as affiliated with the Authority. There is a need to bring the patrols more under the aegis of the Authority, possibly providing opportunities for patrol members to move into housing jobs.

A second problem relates to some tendency for the police to consider that the patrol "will relieve us of some of our duties," according to a comment made by the chief of police in a newspaper interview. It should be reiterated that the patrols should not be seen as a replacement for police services, but as an additional level of security service.

The Kansas City program was developed not only as a security program, but also to provide job opportunities and training for those previously considered unemployable. Support for this aspect of the program came from the Department of Labor through the Emergency Employment Act. For the first year, EEA funds amounted to about $500,000. The Kansas City Model Cities Agency provided $100,000 (largely for patrol cars and radio equipment); $100,000 came from HUD through the Kansas City Housing Authority. Kansas City is faced with the same financial problem that all patrols share: there has been no long-term financial commitment and little planning to identify sources of future funds.

There are various estimates of the patrol's effectiveness. From January through April 1972, the patrols made 28 arrests related to major crimes. Vandalism costs for the first four months of 1972 were $5,116 compared with $6,880 in 1971—but again it is difficult to ascribe these results specifically to the patrol. Project managers and maintenance staff feel the patrol is successful as a deterrent, and maintenance staff say they feel safer on the projects. The Resident Council has expressed approval of the patrols. General approval of the program came not only at the local level but from field reports issued by the HUD team carrying out security evaluations in a number of cities around the country in late 1971-early 1972.

There are, however, very few numbers with which to estimate effectiveness. Perhaps the most telling comment on the effect of the patrols on living patterns and attitudes in the projects appears in a recent evaluation of the Kansas City patrol: An obvious strength of this program is the fact that now, cab drivers, delivery trucks, ice cream vendors, etc., are for the first time in years doing business in the project's area. This kind of change in the daily activities of an area may prove to be one of the very real benefits of the patrols.

D. Concluding Observations

Both special guard forces and volunteer groups to provide access control and preventive patrol appear to be worthwhile security initiatives in public housing projects, especially given the special needs of residents and the lack of suitable alternatives for crime prevention. It is impossible to generalize in this area, however; the level of security that should be provided in an inner-city public housing project facing substantial crime pressure is not the same as that required in a project in a small city. Each security situation is a specific one, and the response should be tailored to the particular setting.

If the level of crime and fear merits the development of a guard force, it is probably advantageous to employ residents. When there are paid jobs available, residents should receive first consideration; they can be most effective in recognizing strangers and controlling access, and patrolling helps develop a sense of territoriality and community among resident patrols that may have a beneficial spillover into the whole community. Problems with emplying residents increase in inverse proportion to the quality and quantity of training and the risks increase the closer the guard forces resemble special police forces (especially if they are armed, as in Kansas City). Unfortunately, in many of the patrol experiments funded by LEAA, follow-ups have revealed that the training (whether grandoise or quite simple in scope) often never got off the printed page. The patrols have often started operations with little of the training that was planned. In St. Louis, where the Security and Order Maintenance Force was to receive

240 hours of training by the University of Missouri-St. Louis in conjunction with the police department and other city agencies, the trainees went through several weeks of classroom sessions before it was discovered that many of them were illiterate.

Training is less critical for access control groups like the volunteer patrols in New York City. The efficiency of "sedentary" patrols stationed in lobbies appears to have received little attention in other cities. This can be an extremely low-cost security measure, since it may often be organized and operated on an unpaid basis. In our opinion, more public housing authorities should consider this approach, either as a supplement or an alternative to paid guard forces. It is perhaps true that you get what you pay for: a voluntary patrol will provide less control, on a more irregular basis. Nevertheless, if the duties of the patrol are carefully delimited and the service provides a socialization experience for residents (as the New York lobby groups do), it does appear possible to achieve sustained participation and adequate levels of performance.

As we have noted, it has proved impossible to evaluate the impact of patrols on crime rates in public housing. A serious evaluation effort should be undertaken in at least one city, preferably where the patrol has been in operation for several years and police data are good enough to provide baseline data for several years before the patrol was started, as well as for the period of the patrol's operation.

In addition, although much is known in HUD, LEAA, NAHRO, and particular housing authorities about tenant patrols, there is currently no central source of information on the subject. An information clearinghouse, which local housing agencies could consult about patrols, is needed.

Two final points about tenant patrols in public housing: First, despite the lack of hard evidence for evaluation, the public housing setting is an especially suitable one for patrol efforts. As Gary Marx noted in his study of self-defense groups, one of the indicators of the potential effectiveness of a patrol is delimitation of operational responsibility. He suggests that patrols focusing on a specific limited situation are more apt to be successful. The prospect for success varies inversely with the size of the turf for which a group assumes responsibility. In this respect, the self-contained universe of a public housing project offers the "clearer boundaries and relatively homogenous constituency" that Marx considers a prerequisite for effectiveness.

The second point to be made is that there is no single, generally applicable model of a successful patrol operation. Each city and each LHA has different problems and priorities, and the patrol concept must be tailored to local perceptions, police structure, physical layout, and management organization. The patrol program that has received high marks in Kansas City is not directly transferable to Newark, and HUD should be wary of over-emphasizing a single approach to tenant patrols in public housing.

Chapter 7. Private Guards and Residential Security

In a residential context, private guards are generally hired by a community, apartment complex, or development to provide access control, preventive patrol, property protection, response capability, or a combination of these functions. In Rossmore Leisure World in Laguna Hills, California, for example, four armed guards, aided by a force of 170 unarmed resident patrols, patrol the streets in radio cars around the clock. This retirement community is surrounded by six-foot high walls, and the guards and patrols also man the eight entry gates.[1] In another Leisure World community outside of Washington, D.C., two uniformed guards man a guardhouse at the gate, while other guards with portable two-way radios patrol the streets on modified golf carts. The cost to the developer is estimated by one observer to be "several thousand a month, easy." [2] In Kenwood Park, Maryland, a citizens' security association (formed by the citizens' association) has contracted with Burns International for guard service, at a cost of $75 per year to each homeowner. In a townhouse subdivision in Virginia, homeowners each pay $8.00 a month for the services of a private patrolman at night, principally to ward-off break-ins and auto theft. The price—and the level of protection—can go considerably higher. In Potomac Falls, Maryland, (where homes cost as much as $600,000) each family pays roughly $100 a month to the homeowners association, which has contracted with the National Detective Agency for round-the-clock protection. Uniformed private police, armed with revolvers and chemical sprays, patrol the streets in marked and unmarked cars.[3]

As these examples suggest, private guards are a relatively expensive security measure, generally within the financial reach of only the wealthy and near-wealthy. Contracting for guard services usually is feasible only when the cost can be shared by many households, either through a neighborhood association or a direct or indirect charge by management. The initiative for instituting guard services has often come from residents themselves, although developers are increasingly providing such services as a sales or rental inducement.

The quality of the service a community or development obtains when it contracts for a guard is open to serious question. The typical private guard, according to a recent Rand study,[4] is an aging white male, poorly educated, usually untrained, and poorly paid. The Rand study found that wage rates range from $1.60 to $2.75 per hour. Another study found that the average contract guard earns $2.70 per hour and is usually ineligible for fringe benefits. A survey of security employees indicated that most were in their present job because they could not get anything better.[5] A recent article in *The Washington Post* reached the same conclusion: most guards are low-paid, low-quality, undereducated, and untrained. The typical guard, according to the article, is "a guy from North Carolina en route to Detroit who stopped here for a few days because he ran out of money." [6]

The personnel problems are aggravated by the minimal training received by private guards. Rand estimated that the majority of private guards receive less than two days of pre-work and on-the-job training. This lack

[1] "Fortress America," *Time*, May 1, 1972.

[2] Richard Heberts, "Is Everybody in Washington Scared?," *Washingtonian Magazine*, April, 1972 at 57.

[3] *Ibid.*

[4] James S. Kakalik and Sorrel Wildhorn, *Private Police in the United States*, R-869/DOJ (1971). While guards serving residential areas are a small proportion of the entire industry, there is no reason to think that they differ from the field as a whole.

[5] Frost and Sullivan, *Industrial, Commercial and Residential Security Market* (New York, 1971) at 30–31.

[6] Donald P. Baker, "Security Guards Outnumber Police," *The Washington Post*, June 13, 1972, at C–1.

of training is a consequence of the cost competition in the industry and the unwillingness of clients to pay higher rates for better-trained personnel. The result, however, is that the average guard is little more than a "uniformed scarecrow," [7] with little capability to respond to an emergency and little comprehension of the legal limitations on his authority or of his (and his employer's) accountability for his actions. The guard may feel like a policeman, complete with badge, uniform and even a handgun, but he is a far less stable or reliable source of protection. Even if, as is possible, an upper-income community or developer usually can obtain an above-average guard because he will be working on a regular basis and they may be willing to pay more for guard services, his training and skill level will probable still be seriously deficient.

The inadequacies of most private guards make the issue of firearms all the more critical. The Rand study shows that roughly half of the private sector security personnel carry firearms fulltime, but that only a very small number receive adequate firearms training and a substantial proportion of the incidents of guard misconduct or abuse of authority involve firearms.[8]

In our view, an armed guard in a residential setting is, quite literally, an example of overkill. The risk of injury to residents and innocent—or for that matter, guilty—strangers is too great to justify giving a lethal weapon to an untrained and often temperamentally immature guard. While the purpose of a guard in a residential area may be to reduce fear of violent crime, the reality is that such crime is infrequent, especially in neighborhoods that can afford guard services. The guard's actual role is to protect against burglary, larceny, and vandalism. Responding to these crime risks with lethal weapons hardly seems necessary or responsible.[9]

We would, indeed, go one step further: We think the appropriate role of a guard in a residential setting when a serious incident occurs is to alert the police, not to intervene on his own. Guards should be trained as *watchmen,* not as policemen. This role is commensurate with the level of skill and judgment most guards have. In addition, it is more realistic to assume that training in this role—stressing its limitations, as well as how to perform it—can and will be given to guards than to assume that private security companies will provide adequate training in police techniques, the use of firearms, and the other tasks now performed by many guards.

As watchmen, it is important that guards be provided with adequate communications capability and that they know how to contact the police and how to obtain and report the information that will be useful to the police. As eyes and ears for the police, private guards will also serve a deterrent function, which can be better performed if their presence is visible through distinctive uniforms and the use of marked rather than unmarked vehicles. Needless to say, guard patrols should be varied in order to prevent potential offenders from determining the patterns or timing of guard surveillance. Guards will also be serving useful public safety and order maintenance functions, without assuming a police role.

A watchman-presence of this type may well be justified in some residential communities, especially those experiencing a contagion of criminal episodes. The potential advantage of private guards over neighborhood patrols is that the guards, who are receiving wages, will presumably have more staying power than a voluntary patrol. As employees of a business enterprise, moreover, they are subject to supervision and may be disciplined or fired for inadequate (or overzealous) performance of their jobs.

Unfortunately, the cost of guard services preclude their use in the neighborhoods where surveillance activities may be needed the most. Moreover, even in those neighborhoods that can afford guard services and believe they need them, the services now available are probably inadequate and may be risky. In our judgment, there are virtually

---

[7] James Norell and John Aquilino, "Scarecrows in Blue," *The Washingtonian Magazine,* August 1971.

[8] Rand, *op. cit.,* at 71.

[9] Many of the same questions could be raised about nonlethal weapons, such as chemical aerosol sprays, in the hands of private guards. While less-than-lethal weapons are preferrable to firearms, they still may be abused, and adequate training, supervision, and accountability are essential.

no circumstances in a residential neighborhood where the hiring of a private guard who conceives of his role as that of a policeman is justified, especially if he is to be armed. In most residential areas, private guards are a poor security bargain. Where fear or a rash of criminal incidents leads a neighborhood or development to contract for guard services, these services should emphasize surveillance, not immediate response to criminal incidents in an attempt to apprehend a suspect. The skills, temperament, and training of most guards make it inadvisable to assign them a police-like role.

Part IV
PUBLIC POLICY ISSUES CONCERNING RESIDENTIAL SECURITY

Government has three basic approaches to influencing individual or business behavior: through persuasion, the provision of incentives, and compulsion. Persuasion has been the major thrust of the preventive policing efforts and especially the residential inspections and information campaigns we describe in chapter 8. Despite the problems these efforts have encountered, we think they merit continuation. In chapters 9 and 10 we focus on the major proposals under the last two of these three approaches to "target-hardening" against residential crime—that is, to inducing builders, landlords, homeowners, and tenants to protect residential units against burglary.

Chapter 9 focuses on incentives to encourage citizens to protect their homes. As that chapter notes, incentives could be provided in a number of ways, from something as conceptually simple as subsidizing the purchase and installation of residential protective devices to a tax write-off of one or another form. The proposed program of target-hardening in Impact Cities, outlined in LEAA's guidelines for use of Impact City grants,[1] is a specific subsidy program—that is, its purpose is to diminish the monetary cost of protective devices to such a low level, perhaps zero, that residents will agree to installing them.

Another recent example of a large-scale incentive program was the announcement by Mayor Lindsay's office in New York City of a $5 million Block Security Program to encourage and support self-help community programs. The program will offer matching grants of up to $10,000 to individual blocks, represented by block associations, organizations representing groups of blocks, and tenants' or merchants' associations. Police involvement is built into the program of training for block security officers.

Any Block Security Plan might include the following:

- Actions of owners or tenants to improve the security of individual apartments or homes by better locks, use of peepholes, access control for doors or windows and alarm systems for homes and businesses.
- Improvement of security in public areas of multiple-family dwellings through improved lighting, use of intercoms, CCTV, tenant patrols or volunteer guards.
- Improvement of security of outdoor public areas either with citizen patrols or escort services, or the purchase of fences, gates or lighting.

City funds are to be available for the following:

- Security improvements that benefit the entire block by increasing protection in outdoor public areas;
- Improved security and access control for public spaces in multi-family dwellings; and
- Alarm systems to protect businesses.

The most often suggested incentive, however, is the reduction of crime insurance rates for homes where protective devices are installed. For reasons outlined in chapter 9, we do not believe that this is a realistic proposal, since the incentive effects would be minimal and the insurance industry itself has little reason to promote the incentive.

Some proposals concerning crime insurance shade into the area of compulsion—for example, a requirement in insurance policies that protective devices be installed in order to obtain crime coverage. The material on insurance discusses the policy questions these proposals raise. Our conclusion is that they are misguided because they confuse a social objective (greater residential security) with the basic purpose of insurance (loss-spreading) and, in the process, might severely limit the social benefits derived from crime insurance.

Our consideration of compulsory measures to improve residential security focuses primarily on state and local residential security codes. There are four different types of "residential security codes": provisions in subdivision and other planning ordinances requiring that security be considered in the design of new residential developments, provision in building codes, establishing security standards for the construction of new housing; provisions in housing codes, requiring the installation of protective devices in rental housing; and, finally, ordinances requiring the owner-occupants of existing housing to install protective devices. For reasons already

[1] National Institute of Law Enforcement and Criminal Justice, "Planning Guidelines and Programs to Reduce Crime," p. II–B–1, no date.

stated in chapter 4, we favor the inclusion of security among the design standards addressed in subdivision or site plan review. In chapter 10, we consider the three other types of codes. Our major conclusion is that serious issues about the effectiveness and impact of codes have not been addressed. While it may be appropriate to adopt building and housing code provisions covering security requirements, codes applied to existing owner-occupied housing pose an additional and troubling problem of the appropriate governmental role in regulating the conduct of an individual for his own good.

Finally, in chapter 11, we draw together conclusions from the entire report and make recommendations concerning the informational, research, and regulatory role of government at the federal, state, and local level.

Chapter 8. Residential Crime and the Police

In this chapter, we briefly review the nature and limitations of traditional police activities as they relate specifically to crime prevention in residential areas. Our emphasis, however, is on team policing and residential inspections, two of the more promising police innovations for reducing residential crime.

Residential crime has been given relatively low priority by most police departments. Burglary squads focus primarily on commercial establishments, where burglaries tend to involve heavier economic losses and victims with more influence at police headquarters and city hall. Commercial areas are more compact and easier to patrol then residential neighborhoods. Commercial establishments are more apt to be observable from a passing squad car; they are more often equipped with interior and exterior illumination, intrusion detection devices, and other security measures. The threat of burglary is more fixed in time; unlike residences, commercial establishments are targets of burglary only when they are closed at night and on Sundays.

Neighborhoods composed of single-family homes are extremely difficult to patrol. Entries are likely to be obscured by building or landscape features. There is no inherent reason for a police officer to be suspicious when he sees a person in or near a residence at virtually any hour of the day or night. High-rise apartments are even more difficult to patrol. Vertical patrols are extremely labor-intensive and costly, and other known methods are apt to be ineffectual.

A study by the Syracuse Police Department showed that only 22 percent of residential burglaries could have been detected by passing police patrols.[1] Given the relationship between the number of residences in a city and the number of police patrols functioning at a particular time, it would be astonishing if anything more than a miniscule fraction of this 22 percent were actually observed. A city of half-a-million population, for example, is likely to have less than one hundred uniformed officers on duty at a time; given the demands on their time to respond to various types of calls, it would be sheer happenstance if they actually observed a burglary at one of, perhaps, 120,000 dwelling units.

Police ability to apprehend residential burglars is also quite limited. The same Syracuse Police Department study showed that, on the average, a residential burglary may be committed and the criminal escape from the area of the crime in two-to-four minutes.[2] Police response time is apt to be much longer, especially in areas with labyrintaian street layouts and illogical street numbering systems. Figures from San Francisco and Santa Clara County, California, indicate that average police response times are well in excess of ten minutes.[3] Yet, once the intruder escapes, FBI data suggests that the probability of apprehension is less than one in five.

It is not surprising, therefore, that a Rand study in New York City showed that arrests were made in only about five percent of major residential crimes.[4] When unreported crimes are taken into account, the figure may be as low as two percent.

Nor is there reason to believe that major

[1] J. F. Elliott and Thomas J. Sardino, "The Time Required to Commit Crime," National Institute of Law Enforcement and Criminal Justice, June 1971, Table I, p. 61.

[2] *Ibid.*, p. 1. A Response time of four-to-seven minutes was reported in apprehension studies done in Los Angeles for the President's Commission on Law Enforcement and Criminal Justice. See *The Challenge of Crime in a Free Society*, p. 248.

[3] T. P. Chledoun and K. M. Duvall, "An Evaluation of Small Business and Residential Alarm Systems," GTE Sylvania, Inc., J-LEAA-003-72, p. 8-55.

[4] Peter W. Greenwood, "An Analysis of the Apprehension Activities of the New York City Police Department," The New York City Rand Institute, September 1970.

changes in police tactics substantially improve the situation. Saturation patrolling, which may reduce crimes visible to the police patrols, have much less impact on non-visible crimes, particularly residential burglary. Special preventive patrol units, which do not respond to service calls, apparently have had little impact on crime, at least according to the preliminary results of such an effort in Kansas City. Most police departments lack the resources for preventive patrolling; even if additional manpower were available, it is questionable whether they would be assigned to patrolling duties of this type.[5]

Some departments have shown promising results with plain-clothes patrolling and bicycle and motor scooter patrolling in areas of relatively high density. Empty-car programs (parking unused marked police cars on the street) and having officers drive police cruisers when off-duty and park them at their homes seem to be relatively inexpensive methods of increasing apparent police presence in an area.

Again, however, more efficient deployment of existing police resources is unlikely to have a significant impact on the incidence of residential crime. Even the infusion of additional resources—through saturation patrols, for example—may lead only to short-term and limited achievements.

In short, traditional police tactics, aimed at deterring crime through increasing the likelihood of detection, apprehension, and punishment, may have little efficacy with respect to residential burglary. Even with improvements in the efficiency of police operations or increases in the intensity of police patrol, residential burglary is extremely difficult to prevent, both because of the nature of the crime and the areas in which it occurs.

A. Team Policing

There are, however, a few promising experiments that may eventually lead to greater success in controlling residential crime. Team policing, currently being tried by (among others) the Los Angeles Police Department as part of its Crime Specific Program, is worth mentioning with regard to residential burglary. Under team policing in Los Angeles—a refinements of the Basic Car Plan initiated by the LAPD in 1969—all police problems within a particular area are handled by the officers *permanently* assigned to that area.

This decentralization, and related efforts at achieving increased community involvement (such as meetings and the designation of block leaders), appears to have increased police awareness of the communities they serve, which, in turn, has bolstered citizen confidence in the police. Although no objective measures of its effectiveness are yet available, officers involved in team policing are enthusiastic both about the flexibility it gives them and about the rapport that is created between officers and residents. Whether or not the program proves to be a significant deterrent to residential burglary or results in higher apprehension rates, its other benefits probably justify its continuation.

While increased police reliance on motorized patrols has greatly enhanced police response capabilities generally, it has also isolated officers from the communities they serve. Team policing appears to be a step in the right direction: Through permanent assignments of police teams to relatively small and homogenous areas, individual officers—because they are much more familiar with their territories—are more likely to recognize suspicious activities and respond more quickly to calls. Through eliminating the functional labels that have tended to create undesirable rivalries between the patrol, traffic and detective divisions, team policing promises to make police work more effective.[6]

B. Residential Inspections

The police have long been aware that burglars are constantly on the lookout for

[5] A preventive patrol is one that does not respond to routine emergency or service calls; its only function is to patrol and maintain a visible presence in the neighborhood. Saturation patrol, on the other hand, is basically what the name implies—an intensified patrol or investigative effort in a given area.

[6] The Police Foundation is involved in consulting, planning and evaluation of team-policing activities in Dallas, Kansas City, and Cincinnati; and reports of those projects should provide more rigorous consideration of the potential within the next eighteen months. For a discussion of Operation Neighborhood, a New York City team policing project, see Peter B. Bloch, "Preliminary Evaluation of 'Operation Neighborhood,'" Washington: The Urban Institute, Working Paper 4000-1, March 16, 1972.

visible defects in a home or apartment, or for certain patterns of household behavior that invite criminal attack. The average homeowner or tenant, the ultimate victim, remains ignorant of his being a high-priority target until after the fact.

Police are also aware that most people have only the most rudimentary knowledge of the kinds of hardware needed to protect their homes and apartments, and that they are poorly informed about other steps that can be taken to make themselves less vulnerable to burglary. As an outgrowth of this awareness, some police departments have taken a cue from fire departments and begun to conduct home security inspections. Although security inspections are being conducted in several cities across the country, most departments are concentrating on commercial rather than residential properties. The emphasis has been reversed in California's Crime Specific Program, upon which most of our observations about residential inspections are based.

In each of the six cities, the initial goal was to inspect as many homes as practical within the constraints imposed by a total budget of approximately $250,000 for each city. Some departments decided to spend more money on home inspections than others; Los Angeles County conducted nearly 10,000, while Oakland conducted fewer than 700. San Francisco was the one juridisiction to decide in advance that inspections were cost-ineffective under any circumstances and to exclude them from the program.[7]

The house inspection procedure was essentially the same in all five cities. It began with a publicity campaign calling attention to the fact that police would soon be contacting homeowners to set up an appointment for a security inspection. The follow-up procedure varied from city to city. In some cases, the next step consisted of a massive mail campaign in the target area requesting citizens to call the police for an inspection appointment. In some cities, this was supplemented by phone solicitations. In other jurisdictions, notably Los Angeles County, an intensive door-to-door canvassing was carried out by reserve officers who, if the resident consented, conducted inspections and made recommendations on the spot.

Mailing out invitations for free security inspections proved about as successful as a plea to all burglars to surrender themselves voluntarily. In Oakland, more than 21,003 letters were sent out to target area residents; seven requests for inspections resulted. The door-to-door approach was much more successful, if the criterion for success is the number of completed inspections as a ratio to contacts made. Most homeowners contacted in person were understandably reluctant to refuse an inspection, although part of this willingness to cooperate may stem from a built-in respect for and fear of police authority.

The main objective of the inspection was to persuade the homeowner to take whatever steps necessary to bring his premises up to minimum security standards. In the Crime Specific Program there was an explicit minimum standard; each inspector went into the field with a checklist of vulnerable points to look for and a set of idealized security standards (hardware and procedures) to discuss with the homeowner. He had a certain amount of latitude for making on-the-scene judgments about the seriousness of security deficiencies and the urgency of correcting them. Because individual circumstances vary from house to house, the inspecting officer had to use discretion in urging specific improvements on the homeowner. For example, certain kinds of shrubbery or trees may conceal entryways to the house from the view of neighbors and passers-by on the street, but the extent to which such concealment represents a serious crime hazard is a matter of subjective judgment. The inspecting officer had to be able to make decisions that took aesthetic considerations into account, as well as the basic attitude of the homeowner towards security. It does little

[7] The San Francisco target area is a useful illustration of why residential security inspections may be a poor strategy in certain types of neighborhoods. San Francisco has an unusually high percentage of renter-occupied housing units. It does little good to make security recommendations to a tenant who, in the best of circumstances, is likely to receive only a polite hearing from the owner or manager. The San Francisco Police also point out that a large percentage of the apartments are absentee-owned, and that most such owners have little interest in improving security. Part of the reason for this, apparently, is that apartment owners in San Francisco are constantly harassed by fire inspectors who require them to spend more and more money to satisfy increasingly restrictive fire codes. In such an environment, the police are pessimistic about convincing apartment owners to spend even more money on security.

good to urge a man to cut down a tree he planted 20 years ago and has carefully nurtured ever since, regardless of the security risks involved.

The point to be made by this illustration is that the proper exercise of discretion and judgment may be the critical determinant of success or failure for a large-scale inspection program. Although most experienced police officers have an intuitive sense about what constitutes good security, it is not sufficient to send them off armed with checklists and their own intuitions to make security inspections. This is a specialized police function that calls for specialized training. Inspecting officers must be sensitive to a complex set of variables, such as the nature and seriousness of crime in the area being inspected, attitudes of local residents towards the police, financial ability of homeowners in the area to comply with recommended purchases of security hardware, the extent to which fear is an important factor in the average citizen's attitude towards security, and a host of socio-economic variables that indicate the level of social cohesiveness within the neighborhood.

The types of recommendations made in each of the five cities varied according to local conditions and police attitudes, but the general format followed in all cases is spelled out in a special pamphlet produced by the California Council on Criminal Justice as a guideline for police departments in California conducting home inspections. The booklet is written in a style that suggests it is also intended for distribution to the public, although relatively few had actually been made available for general consumption by the end of 1972.[8]

All five cities and counties adapted the CCCJ guidelines to suit their own needs, although there was little substantive variation in the types of recommendations made to the average homeowner in any of the target areas.

The Crime Specific Program placed most emphasis on the strengthening of doors, windows, and locks. In not one of the five cities were intrusion detection devices of any kind recommended, except in extreme cases where the home was a repository for art objects, jewelry, furs or other valuables in unusual amounts or where the homeowner specifically requested advice on the subject. San Diego employs police specialists in intrusion hardware who are available to advise homeowners.

With few exceptions, all recommendations made to homeowners were easy to implement and were very much along the lines suggested in Chapter 11 of this report.

Perhaps the most disappointing aspect of the Crime Specific residential security inspections was the compliance rate, which is the real measure of effectiveness for security inspections. The few departments that have instituted formal checks have discovered that a five percent full compliance rate (carrying out all the recommendations) is the best that can be expected. Partial compliance may account for another percent or two, but the inescapable fact is that inspection achieved nothing in more than ninety percent of the homes covered in the Crime Specific effort. There is no valid reason for believing that compliance would be any better in cities outside California.

A compliance rate this low suggests that the entire effort is cost-ineffective. While there are no precise figures available to show how much residential inspections cost, the Oakland experience is at least indicative of the magnitudes involved. Oakland allocated about 1500 man-hours to the residential inspections, of which about 250 hours were spent for training, with the remaining 1250 devoted to field inspections.[9] By the end of 1972, only 700 inspections had been completed, and the budget was nearly exhausted. This works out to about two man-hours per inspection, a figure that probably understates the true cost of the program since it fails to reflect time expended for planning, travel, record-keeping and administration.

If Oakland experienced a compliance rate of five percent (an optimistic estimate), it would mean that between 40 and 60 police manhours were expended for every homeowner who agreed to change the locks on his

[8] California Council on Criminal Justice, "Residential Burglary and What To Do About It," Sacramento, 1972.

[9] Oakland was unique among the five cities in deciding to hire and train civilians to conduct the inspections.

doors and perhaps trim a few shrubs. From a strict cost-effectiveness standpoint, it would be much cheaper for the police themselves to buy and install security devices on a comparable number of homes rather than try to persuade the owners to do it themselves.

Some hard lessons have been learned during the course of these inspections that should lead to much less wasted effort in future home inspection programs. Considering the low rate of compliance in all five cities, we would have to conclude that much greater care has to be taken in selecting homes for inspection. There appear to be only two instances in which it makes good administrative sense to conduct a security inspection: (1) when the home has just been victimized by burglary, or (2) when the homeowner requests an inspection from the police (not as a consequence of a door-to-door canvassing operation). In the first instance, investigating patrolmen or detectives could be trained to conduct on-site inspections as part of their routine follow-up investigations, thereby eliminating the expense involved in sending inspectors out on separate trips. In the case of a homeowner who specifically requests an inspection, he is likely to comply with the recommendations if he was interested enough to make the request in the first place.

C. Other Observations

The Crime Specific experience revealed other obstacles to the successful conduct of residential security programs. The most important of these concerns the attitudes of most police officials toward crime prevention programs generally. Many think that such efforts detract from the primary mission of their departments—to enforce the law and to protect citizens and their property. In such an atmosphere, crime prevention efforts are often relegated to a secondary role. The participating officers labor under less than ideal conditions, which usually means understaffing and lack of top-level support.

In order for these negative attitudes to be overcome, police will have to stop thinking of crime prevention as a diversion of their manpower and resources. Only when they recognize that crime prevention programs can make a positive contribution to their primary objectives will they devote the necessary interest and resources to security inspections and other crime prevention efforts.

Some of the negative attitudes towards crime prevention can be traced to traditional police perceptions of their fellow citizens. According to many experts, the average police officer tends to disparage ordinary citizens. It is not difficult to comprehend why police develop this outlook. The nature of their work rarely permits them to have any contact with the public under calm and "ordinary" circumstances. The average patrolman spends the better part of his working day listening to complaints, arresting drunks, breaking up family fights, and chasing juvenile delinquents.

There can be little doubt that negative police attitudes towards the public will continue as long as police have to do what they do. At the same time, however, every police officer we interviewed in California said that his own experience in the Crime Specific Program broadened his outlook and softened his negative image of ordinary citizens. Conducting a home inspection afforded many police officers their first opportunity (while on duty) to deal with the public in a calm, reasoned atmosphere—or, more simply, to deal with ordinary people in an ordinary, businesslike way.

An unrelated, but nevertheless significant problem is the inherent conflict between certain crime prevention and fire safety objectives. This was best illustrated in Los Angeles County where the Sheriff's Office experimented with team inspections involving both fire and law enforcement officials. The most obvious conflict was over the use of double-cylinder deadbolt locks, which the police consider indispensible in high-crime areas for protecting homes against skilled or semi-skilled intruders. Fire officials are just as vehemently opposed to the use of such devices for the reasons that are discussed in Chapter 3.

The important point is that substantial cost savings can be effected by conducting fire and security inspections at the same time, preferably with personnel trained to do both. In order for this to work effectively, however, numerous conflicts over fun-

damental objectives and administrative procedures will have to be worked out.

Some experts question the wisdom of having police conduct security inspections at all. Why not, they ask, assign this function to another agency of city government? It is beyond the scope of our present assignment to provide a definitive answer to this question, but we can offer two observations that may shed some light on the issue. First, there can be no question that experienced police officers have a better intuitive grasp of security deficiencies than could be transferred to another agency whose function would be to inspect homes without the concurrent benefit of ongoing experience with residential crime. The patterns of burglary change rapidly enough that it makes little sense to separate the power of investigating crime from the power to inform the public about what precautions to take against crime.

Moreover, the police have an inherent advantage over all other existing or potential government agencies; notwithstanding the anxieties average citizens have about the ability (and, in some cases, the willingness) of their local police to combat crime, they still give the police a high credibility rating. Despite occasional police scandals and rumors about police corruption, the average citizen is not about to believe that the officer at his door offering to inspect his home is there for anything but the most sincere of purposes. Citizens, in the last analysis, *have* to trust the police.

There are, of course, legitimate concerns about the inspection procedure that might be raised by strict civil libertarians. For example, it is conceivable that police might use the guise of security inspections as a means of gaining entry to a home or apartment for the purpose of searching for illegal drugs or other contraband. This concern can be eliminated, however, by simply requiring that all inspections be conducted on a strictly voluntary basis.

There is also some danger that checklists or other highly personal data collected during the course of a home inspection could fall into the wrong hands, the worst possible case being a burglary ring that could use such information to excellent advantage.

The confidentiality issue of security inspection reports is tricky because it raises conflicting objectives. On the one hand, it would be desirable for the inspecting officer to leave the only copy of the inspection report with the homeowner; this would assure confidentiality. On the other hand, this would not give the police a statistical record which, if properly used, could be very helpful in modifying the inspection program and in learning a great deal more about which particular security deficiencies pose the most serious hazards.

It is our belief that the confidentiality problem can be overcome by coding police copies of inspection reports in a manner that would preclude associating the report with a particular address.

Finally, we have to consider an issue that has been raised in several other contexts in this report. We refer to the equity of government-sponsored security measures. Here we are concerned primarily with matters of degree rather than principle. If, for example, the police were to conduct an extensive inspection program in one part of a city resulting in a substantial number of homes being "hardened" against burglary, then the issue of even-handedness would be a legitimate one.[10] It would be perfectly reasonable for citizens in adjoining neighborhoods to argue that their vulnerability to crime had been increased by selective target hardening.

However, the police can justify an inspection policy if it is *city-wide* and inspections are purely voluntary. It is difficult to imagine any measurable shift in residential crime patterns resulting from such a practice. It is a perfectly legitimate function of government to provide assistance to those persons who request it, as long as that assistance is made available without discrimination to all citizens.

[10] We are assuming here that a "hard sell" approach would lead to a substantially higher rate of compliance than resulted from the Crime Specific effort.

CHAPTER 9. INCENTIVES FOR RESIDENTIAL SECURITY MEASURES AND CRIME INSURANCE

Our concern in this chapter is the provision of incentives for homeowners, landlords, and tenants to improve the security of their residences. Through persuasion, government is attempting to convince households that protection is worth the cost of effective crime prevention measures. Incentives go one step further: they seek to alter the household's calculation of the cost of protective measures against the benefits they provide. Incentives affect the cost side of the equation, by directly or indirectly reducing the expense involved in installing more security hardware or taking other protective measures. (Compulsion, through government prescription of minimum security requirements, might also affect the cost side of the equation, but that is not its major objective. In fact, under a compulsory framework, the individual household's equation of cost and benefits is irrelevant.)

There are a number of ways, at least in theory, in which incentives could be offered to households. All are essentially a variant of cost-sharing by the government or another third party. For example, government might match the household's investment in security hardware, in whole or in part, whether by direct or indirect cash payments[1] or by intervention in the market to reduce the cost of hardware to households. The critical questions in designing such a government program would be how much of an incentive was required and minimization of surplus, or wasted, government subsidy.

Experience in other fields where consumers, employers, or businesses have been offered an incentive to engage in one or another type of socially useful activity, generally through the tax system, suggests that the device is inherently inefficient and costly in terms of the social benefits that are derived. Whether direct payments or tax benefits are utilized, it is virtually impossible to limit the subvention to instances where it induces behavior. Some citizens or taxpayers will always be rewarded for conduct they would have pursued without the incentive; even in cases where the incentive was critical, the amount of the subsidy may be greater than was required. Moreover, subsidies of this type generally favor the knowledgeable, who in turn are apt to be those who need them least. And, when government subvention is offered for conduct that primarily benefits the individual and only secondarily has a social benefit, the inefficiencies and inequity of subsidy systems are likely to be even more apparent (as, for example, in various conservation cost-sharing programs for farm ponds and the like). Political practicality and fiscal constraints aside, there are numerous policy arguments against government subvention in this area.[2]

[1] The government incentive need not be in the form of a transfer payment; a tax deduction or credit might be offered instead.

[2] In quite a convoluted way, the Federal government currently provides an incentive for improved residential security, although it has never been described or defended as such. Under section 165 of the Internal Revenue Code, a taxpayer may deduct losses from theft exceeding $100, provided that they are not compensated for by insurance or otherwise. The incentive aspects of this provision include the deductible and the fact that it provides "reimbursement" (in the form of a tax deduction) measured by the taxpayer's marginal income tax rate. The complement of the marginal tax rate—the amount that is not reimbursed–must be borne by the taxpayer himself. As an insurance system, given progressive tax rates, this provision favors upper-income individuals. As an incentive system to reduce losses from burglary and theft, it provides the greatest inducement to lower-income taxpayers, who may have to bear 86 percent (or more, given the $100 deductible) of any loss themselves. (In actuality, the impact is somewhat more complex, because the standard deduction makes it improbable that a taxpayer will use the theft deduction except in the event of a relatively large loss, and then he also loses some of the benefits of the standard deduction. For truly low-income taxpayers, who do not pay Federal income tax at all, the provision is utterly irrelevant.)

The coinsurance feature of providing a form of Federal crime insurance through the income tax law is severely weighted against lower-income families. Coinsurance, however, is an incentive: to the extent one must bear a loss himself, he is more likely to take steps to prevent it. Most of the other incentives that are commonly proposed—including those incorporated in Federal crime insurance policies—are also negative in character.

If governmental subvention is improbable and perhaps unwise, we are left with only one other party who is directly interested in the reduction of losses from burglary and theft: the insurance industry. Could, or should, insurance companies offer rate reductions or provide more liberal policy provisions to households that adopt reasonable security measures? Would the availability of these benefits induce more households to improve the security of their residences?

It seems highly unlikely that the insurance industry would voluntarily offer such positive incentives for residential security. Broad form personal theft insurance is a relatively low-volume policy, and most theft insurance is included in comprehensive homeowner's or tenant's policies that also provide coverage against losses from fire, hail and windstorms, water damage, other property damage, and personal liability. In 1971, the latest year for which data are available, premiums written for burglary and theft insurance totalled $135 million, while premiums written for homeowners' multiple peril insurance totalled $2.8 billion. Premiums written on multiple peril policies have been increasing rapidly, as package policies replace separate fire, liability, and theft coverage.[3]

It is virtually impossible to determine how much of the premium for multiple peril insurance is attributable to burglary and theft coverage; but one informed guess, by an official of the District of Columbia Insurance Commission, is about 5 percent—or $5 of a typical $100 premium. Fully 85 percent of the premium is allocated to fire coverage and related property losses and 10 percent to personal liability. In these circumstances, there seems to be little room for meaningful rate reductions for individuals who improve the security of their homes.

On the other hand, losses from theft may be a more substantial component of the losses on homeowner's comprehensive insurance than this allocation would indicate. In 1970, according to the Insurance Services Office (which has data for roughly half of all insurance companies), about 20 percent of the losses on homeowner's policies were attributable to theft. On tenants' policies, where structural damage from fire or other causes is not insured, theft was responsible for 51 percent of all losses in 1970. To the extent that loss experience is different from the allocation of premiums (that is to say, the loss ratio from the theft portion of the policy is disproportionately high), insurers may be interested in rectifying the situation.

Until now, their efforts to do so have been by reducing the amount of claims paid—by cancelling insurance after a claim, refusing claim coverage in high-crime areas, and imposing deductibles—or by increases in insurance rates. It is highly improbable that they would attempt to reduce the loss ratio through rate reductions where crime prevention measures were adopted, although this is a theoretical possibility. Even assuming that there was room for as much as a 10 percent premium reduction for the average household if it installed security hardware (a dubious assumption), there still would be little incentive for the homeowner to purchase and install the hardware or for his insurance agent to encourage him to do so. For the agent, whose commission is based on a percentage of the premium, there is, in theory at least, an incentive to *dissuade* the homeowner from qualifying for the reduced rate.

Unlike fire and property damage insurance, which a mortgagee will require as a condition of lending money to finance the purchase of a home, no third party is particularly interested in whether or not a homeowner has theft insurance. The interest of the bank or other mortgagee is extremely attenuated, and relates only to the possible impact of substantial losses from theft on the creditworthiness of the homeowner, not on the value of its security for the loan. In this respect, the bank might just as logically focus on the adequacy of the homeowner's automobile liability insurance or other protection against financial catastrophe. Loss from theft is far less likely to impose a financial strain on the homeowner, since it is apt to be relatively limited in amount.

Because theft insurance is not critical to the purchase or rental of a home, insurance companies are under little pressure to make policies available or keep them in force

[3] Insurance Information Institute, *Insurance Facts 1972*, pp. 12 and 16.

rather than cancel them. Unlike red-lining or cancellation of auto or property damage insurance, there is little outcry against the insurance companies for refusals to issue theft insurance for households. Even the program of Federal residential crime insurance is predicated less on criticism of the insurance industry than on a business-like presumption that, with the proper protective device requirements and other conditions, such insurance can be written on a break-even basis. No one has made the argument that the homeowner or tenant has a basic right to crime insurance and that, if private industry does not or cannot meet its obligations to provide it, the Federal government must become insurer of last resort. The Congressional determination behind Federal residential crime insurance—to the extent that such insurance is not simply a politically inevitable complement to Federal commercial crime insurance—is far less emotion-laden than that. Indeed, the desultory pace of the program—less than 10,000 policies in force in 11 states and the District of Columbia in November 1972, more than a year after they became available—suggests, among other things, that there is no pressing demand for residential crime insurance coverage.

Other factors also make it doubtful that the insurance industry will focus on the prevention of residential crime or reduce premiums to encourage the installation of protective devices. The costs of administering a rate structure of this kind, given existing premium levels for residential theft coverage, seem excessive. At the minimum, inspections of homes would be required after the filing of a claim by an insured who paid the reduced rate. In a fragmented and highly competitive industry, it is unlikely that one company or group of companies would want to institute such a change, especially if brokers and agents might simply shift their business to other companies. Moreover, because insurance companies have never focused on problems of residential crime in the past, they have little knowledge about appropriate protective devices or the impact of their installation on losses from residential crime. (Unlike government or households themselves, insurers are presumably less interested in the impact of protective devices on the successful perpetration of burglary than in their impact on the total dollar costs of attempted burglary, whether successful or not. A requirement that results in more physical damage to homes, even if it reduces the volume of property theft incident to burglary, does not necessarily reduce insurance claims.)

Thus far we have focused on *positive* incentives—rewards—for the installation of protective devices. It is also possible to fashion *negative* incentives—penalties for failing to install protective devices. The most extreme negative incentive under an insurance system is simply to refuse to write crime coverage, leaving the household to bear its own losses (even then, except for lower-income families, with some degree of reimbursement from the Federal government through the tax deduction for losses from theft). In the past, however, this refusal has seldom been explicitly tied to the household's failure to take self-protective measures. Single persons, couples who both work, or inner-city residents may be unable to obtain private policies no matter what protective devices they have in their homes. Those who experience loss may find their policy cancelled even though they had taken precautions. Uninsurability, under private policies, has not been directly related to residential security measures, and therefore it is questionable, especially in the absence of adequate public information programs, that its impact has been to encourage self-protection. It may have even discouraged greater self-protection by reinforcing fatalism about becoming the victim of a theft.

Features of some private crime insurance policies also serve as negative inducements for self-protection. The most prominent of these is a deductible amount and a limitation on coverage for cash, securities, jewelry, and other valuables. The deductible, although adopted primarily to hold down the number of small claims that are inefficient to process, also has the effect of making the insured bear some of the risk of theft. Limitations on coverage encourage him to take appropriate measures to safeguard the items they cover, although their primary purpose is to avoid valuation controversies and excessive claims.

The policy conditions most directly relevant to protective measures taken by the household itself are found in the Federal residential crime insurance policy. Unlike most private policies, and particularly comprehensive policies, which generally cover mysterious losses of property as well as theft, the Federal insurance is explicitly conditioned upon visible evidence of forced entry into the premises.[4] This is a strong incentive to lock doors and windows through which entry is likely to occur. It is primarily a behavioral incentive, however, since it does not necessarily induce the installation of effective barriers to entry, but only the use of some barriers that will require physical damage to circumvent.

The Federal policy, however, is also explicitly conditioned on the installation of appropriate protective devices—specifically, dead locks using either an interlocking vertical bolt and striker or a minimum 1/2" throw deadbolt or self-locking dead latch on all doors (other than sliding doors) in exterior doorways or other doorways leading to areas affording easy access to the premises; and locking devices on all sliding doors, first floor and basement windows, and windows opening onto areas affording easy access to the premises. (This standard is more liberal than that initially adopted for the program, which called for a baffle-protected self-locking latch in addition to a dead bolt or dead latch on every exterior door and for a dead lock device on each sliding door. The liberalization was designed to increase the marketability of the insurance in states where it was available.)

The purpose of this requirement—enforced by inspection of the premises when a claim is made—is primarily to ensure the financial soundness, at reasonable premium rates, of the Federal residential crime insurance policies. It is almost certainly a necessary corollary of a legislative and contractual commitment to keep policies in force despite the claim experience of the insured or the crime pressure in his area. No data are yet available on the loss record under Federal policies, but it is probable that the Federal record (adjusted for the crime rates where policies are in force) will be better than that of private insurers.

This is not an argument, however, for the inclusion of similar provisions in private policies. Conditioning coverage on the installation of protective devices would seem justifiable only where the only alternative is not writing the insurance policy at all, which is presumptively the case with Federal policies. Where coverage is now available without such conditions, it would seem to make little sense to require the installation of protective devices in order to continue it. The cost to the insured may be substantial, while the gains would primarily accrue to the insurance companies, although they would be partially offset by increased administrative costs. Underwriting profit, in fact, might decline, as policyholders cancel their theft coverage rather than incur the added costs of protective devices. For a homeowner who considers crime loss a remote contingency, the choice between cancelling his theft coverage and spending $100 or more on locking devices may be a relatively easy one. For a household that faces a greater crime threat, the effect of the requirement may nonetheless be to price insurance coverage beyond their ability to pay. The net result, in both cases, is to reduce the extent to which financial protection is provided against loss from theft. This obviously has little appeal to insurance companies—provided they are making a profit on existing insurance—and has little to recommend it from a policy perspective.

There are two conflicting objectives at play here: spreading the losses resulting from theft and reducing its incidence. On balance, spreading the loss from theft seems to be more important and more easily achievable. To the extent it is financially feasible, insurance against burglary and theft from residences should be made as widely available as possible. Imposing unnecessarily expensive or apparently excessive conditions on coverage conflicts with this goal.

In summary, we are not sanguine about the provision of incentives, either through

[4] While the policy does cover observed theft, it is basically limited to losses resulting from "the felonious abstraction of insured property from within the premises by a person making felonious entry therein by actual force and violence, evidenced by visible marks upon, or physical damage to, the exterior of the premises at the place of such entry."

government or through private insurance, for the installation of appropriate residential protective devices. The private insurance industry seems to be uninterested, and we see no practical or desirable way to pique their interest. For government to provide financial incentives seems both inefficient and inequitable. Conditioning crime insurance on self-protection—except where it is financially necessary, as it appears to be in the Federal programs—is, in our view, a retrogressive step, for it will discourage the purchase of insurance, thereby increasing the costs of residential crime to innocent victims.

CHAPTER 10. COMPULSORY RESIDENTIAL SECURITY MEASURES: STATE AND LOCAL CODES

Compulsory measures to upgrade residential security are eliciting increasing attention.[1] These measures would impose minimum requirements governing locks, the resistance of doors to forced entry, and locking devices for windows and other potential points of illegal entry. They would be adopted by state or local governments and would apply to each or all of three types of housing:

- New housing units, as building code provisions;[2]
- Existing rental units as housing code requirements; and
- Existing owner-occupied units, through a new ordinance or statute.

The theory behind these measures is that most builders, landlords, and homeowners will not take residential security measures without some legal prod. While this is undoubtedly true, the proponents do not appear to have analyzed either the legal or policy justification for their proposed legislation to any substantial extent. The purpose of this brief chapter is to raise the issues that should be considered with respect to legislation requiring the installation of physical security measures in the home.

A. The Impact of Residential Security Codes

The first question about residential security codes is what they would cost and who would bear these costs. If codes applied only to new housing, the cost of the security measures themselves might not be substantial, since what is involved are incremental costs for better doors and locks rather than replacement costs. This cost would probably be borne largely by the resident, either in the form of a slightly higher mortgage payment or a slightly greater rent, although part of it might be absorbed by the builder, developer, or apartment owner.

Other possible costs of the security measures on new homes would be a consequence of any displacement of crime from areas of new housing to older housing and, perhaps, the increased cost to the owner of a new home when illegal entry was still attempted because of greater physical damage caused by an offender. Displacement would occur to the extent that offenders were deterred from breaking into new housing but not from committing all residential burglaries. Some offenders might well ignore subdivisions consisting of new homes meeting the code requirements, and instead focus on older subdivisions nearby. Others, whether because they would rather operate in the area with new housing or because they are not deterred by the security measures, would attempt to break into the new homes. In doing so, they might well use methods causing greater physical damage to the house, such as breaking windows or using tools to attempt to force doors.

These possible impacts, along with the fact that new units are a small proportion of the housing stock, are the major arguments for extending code requirements to all housing, including owner-occupied residences. The impact of universal protection is even more conjectural, but it is conceivable that adding security hardware to every home might not have a substantial impact on the extent of residential burglary.

Assume that a security code is adopted that in effect or explicitly requires effective deadbolt locks on all doors, doors that cannot be penetrated by brute force, and

[1] See e.g., Building Security Commission of the Attorney General of California, "Building Security Standards," Sacramento, January 1973.

[2] Federal standards for new housing, through FHA guidelines or other means, have also been suggested.

adequate locking devices on all windows. Assume, too, that the code applies to all residential units and compliance is universal. Finally, assume that an even more stringent security code applies to retail and commercial establishments. The question is: What will happen to the residential burglary rate?

The assumption behind proposals for residential security codes is that it will decline appreciably. The reason is that if illegal entry through doors and unlocked windows is much more difficult, it will not be attempted. A residential burglar, the argument runs, engages in the crime because it is easy to accomplish and the risk of apprehension is low. Making entry by the usual means harder will dissuade him from making the attempt.

Of course, it might alternatively be argued that the rate will not change significantly. If residential burglary is always more difficult—and at the same time there is no easy substitute crime (the reason for the assumption about a commercial code)—potential residential burglars may simply try harder or change their method of operation. In the hypothetical example, many more burglaries might be committed by breaking through windows. Making entry through doors and unlocked windows more difficult does not necessarily change the burglar's calculation of potential risk and reward (that is to say, of opportunity)—*at least when the target-hardening is universal.* The vulnerability of a residence to crime—or, from the burglar's perspective, the opportunity for illegal entry—is a relative concept.

We do not mean to suggest that universal application of security codes would necessarily have little impact on the incidence or costs of residential crime. Our point is that the question needs much more serious consideration than it has so far received, as does the issue of displacement of crime if codes are limited only to new housing or new housing and rental units.

B. The Theoretical Justification for Imposing a Duty on Homeowners to Take Protective Measures

The imposition of a duty on builders of new housing or landlords of rental housing to meet security standards raises no serious theoretical or legal problem. The application of codes in these instances is closely akin to other types of consumer protection legislation. The parties to a sale of new, tract housing or a rental of an apartment are in an inherently unequal position in terms of knowledge, bargaining strength, and ability to make decisions about building design, material standards, and construction. In a variety of ways, government tries to redress this balance through building and housing codes; security would appear to be another appropriate area for such intervention. In a sense, security codes are a method of preventing sellers (developers or landlords) from making false claims about the quality of their products. By putting locks on doors, sellers are implicitly warranting that the doors will serve as reasonably effective barriers to undesired entry. Security codes may be viewed as a method of ensuring that this promise is kept.

This is not the case with a duty imposed directly on the owner-occupant of a residence. Here the issue of the state's justification for intervention immediately arises, for the practical import of the duty is to impose a cost on the owner for his own good. He is required to spend money—perhaps as much as several hundred dollars—to protect himself from becoming a victim of burglary.

This situation is readily distinguishable from situations where an individual's conduct affects others adversely. For example, a state can require a car-owner to install emission control equipment on his car because the pollution he creates when he drives degrades the quality of the environment for the public generally. It can limit what he builds or keeps on his property in order to protect the interests of his neighbors and the community at large against health and fire hazards or neighborhood blight and deterioration. In both these cases, an individual's actions are detrimental to others.

An individual who has an inadequate lock on his door, however, is not endangering others. It might conceivably be argued that he is attracting potential offenders to the neighborhood, but that is a far-fetched proposition. On the contrary, the greater vulnerability of his home may actually con-

tribute to the security of his neighbors through a reverse process of displacement. Nor does a bootstrap rationale for government regulation—that a duty must be imposed on individuals to improve the effectiveness of public services or as a condition for receiving such services—apply in this instance. Neither public outlays for the police and the criminal justice system nor their effectiveness will necessarily be affected by the installation of residential security measures, even if they should achieve a reduction in the number of successful residential burglaries.

Finally, it would be illogical to argue that, unless a security code is imposed on owners of existing houses, codes applied to new and rental housing will not be effective in reducing the incidence of residential burglary. While this may be true, one can hardly justify imposing a duty on two-thirds of the households, which own their homes, in order to protect them from the displacement effects of regulating the residences of the other one-third.

Our purpose here is not to suggest that security codes imposed on owner-occupied housing face constitutional obstacles. While the current tendency is to restrict the power of the state to regulate individual conduct that has negligible, or only extremely attenuated, consequences for others or for society as a whole, the law is far from clear in this area, especially where the conduct does not involve fundamental liberties.[3] Again, we seek only to raise the issue for consideration as a policy matter when compulsatory residential security measures are being proposed.

C. Conclusion

In our view, the effectiveness and advisability of residential security codes are too often assumed as an article of faith. We think that much more careful analysis is needed of their costs and benefits and, especially for existing owner-occupied housing, the appropriateness of government action in this area.

On a descending level of enthusiasm, we would rank codes for new housing above codes for rental housing because the costs are higher in the latter case, where replacement of doors and hardware would be required. We rank both these types of codes, which impose an obligation on the party marketing housing and involve costs that are easily amortized, far above ordinances or statutes imposing a duty on owner-occupants to take protective measures. Owner-occupants cannot so readily amortize the cost of protective measures. Beyond that, we have doubts about the wisdom of government's

[3] The basic precept upon which this doctrine is based was stated by John Stuart Mill in *On Liberty* (1859): "[T]he individual is not accountable to society for his actions, in so far as these concern the interests of no person but himself." It is difficult to point to cases in which this doctrine has been invoked: usually, either the challenged regulation operates indirectly on an individual whose actions do concern the interest of others, albeit with their consent (for example, on the purveyor of obscenity rather than the purchaser) or the challenged regulation involves fundamental rights—free expression, marital privacy, etc.—and therefore much more powerful constitutional standards come into play, such as the need to show a compelling state interest and the lack of alternative means of accomplishing it.

Perhaps the clearest instance where Mill's maxim has been urged as a basis for a determination of unconstitutionality involves motorcycle helmet laws. The trend among state courts has been to uphold compulsory helmet laws—not by rejecting Mills, however, but by finding a social interest beyond protection of the individual motorcycle rider. (The concern of others using the streets and highways that he may cause an accident because lack of a helmet causes him to lose control when struck by a stone thrown up from the pavement or an object falling from another vehicle; the added cost to the state of providing emergency care because of the more serious injury resulting from lack of a helmet; the interests of those dependent upon him in assuring that he will be less likely to be killed or disabled in the event he is in an accident.) These are fairly remote state interests; the last two, in particular come close to an implicit rejection of the Mill's concept and an acceptance of the notion that the state may regulate any conduct at all where "fundamental" liberties are not affected.

The issue is again being raised—this time hypothetically—with respect to laws compelling motorists to wear seat belts. For the driver, a control argument may again be made; for passengers, the case is more difficult. One approach is to argue that riding in an automobile on public roads is a privilege and the government may impose reasonable conditions on that privilege.

The case of residential security codes is far more difficult than the seat belt case. First, there is no governmentally provided privilege involved; it strains our concept of government to argue that living in a residence is a privilege granted by the state. Second, there is no substantial interest of those dependent upon the homeowner in protecting him against property loss from burglary. Insofar as the personal protection of family members results from the imposition of the duty on the homeowner—by diminishing the probability of an illegal entry to commit a violent crime—their personal safety from fire may be decreased (even when there is no conflict with fire codes) by an equal or greater amount. Third, unlike the seat belt case where belts are in place (as a result of a duty imposed on manufacturers), the security codes would require direct expenditure by the homeowner, perhaps running as high as several hundred dollars.

forcing individuals to be free—both of residential burglary in particular and in more general terms.

D. An Afterword on the Form and Stringency of Security Codes

Notwithstanding the issues we have raised about the imposition of security requirements for housing, some jurisdictions may decide to adopt security requirements applicable to some or all housing. If they do, the form of the requirements and their stringency should be carefully considered.

1. *The form of security requirements: performance criteria vs. design standards.* One of the perennial arguments about building codes generally is whether they should be cast in terms of performance criteria or design standards. This issue has also been raised with respect to security requirements. The Attorney General's Building Security Commission in California, for example, is a staunch advocate of performance, rather than design, codes. It argues that "independent of performance specifications, design requirements are of little value, and only serve to confuse the issue." In seeking to establish a California state code, the Commission is focusing on performance standards for barrier systems, which will express the physical resistance of a barrier to attack by specified means or to knowledgeable attack using specified equipment and techniques in terms of time, energy, or a combination of these factors. Only where resistance measures are necessarily subjective (e.g., how long it takes a particular "expert" to pick a lock) does the Commission recognize that design principles (e.g., various clearances in the lock) may be preferable.[4]

While we agree in theory with the California Commission and believe that code requirements should be based on performance testing, we consider it preferable to translate performance standards into design criteria for purposes of actually drafting the security provisions of building codes. Design criteria are more apt to be intelligible to a contractor or a building inspector. Performance standards, which cannot be applied in the field through visual inspection, may invite noncompliance. In dealing with highly fragmented industries like the manufacture of doors and windows, where job-by-job fabrication is prevalent, testing and certification of products would be extremely difficult. It may be more feasible to engage in brand-name certification of locks and other hardware, but in this area the California Commission itself recognizes that performance standards may be undesirable. On a practical level, therefore, there seems to be no alternative to design standards.

These standards should be based on performance criteria, but this is different from adopting a code framed solely in terms of performance standards. Rather, the design standards should describe the characteristics of typical installations used by builders, with simple performance testing criteria for use in circumstances where no design standards apply. Every effort should be made to reduce the number of instances in which such job-by-job testing will be needed. This is not as difficult as it may seem: while there is little product uniformity, the same design principles are used in nearly all doors and windows.

2. *The stringency of security requirements: tradeoffs with fire safety, consumer preferences, and effectiveness.* One serious constraint in devising code standards is household safety against fire. Where security against residential crime requires restrictions on access, safety against fire necessitates easy and quick egress. The two are inevitably in conflict, as evidenced by the objection of fire safety officials to proposals for grilles or bars on windows and double cylinder deadbolt locks. The conflicts can be compromised, but most of the compromises will lead to significant reductions in the resistance of homes to illegal entry. This is not an undesirable outcome, for fire safety, unlike security against residential crime, primarily involves the personal safety of residents, not the protection of their property. In balancing these two interests, preferences must obviously be given to the protection of persons. Their ability to escape a serious fire should not be traded away in order to protect their television set and jewelry.

Three factors in addition to potential conflicts with fire safety are important in determining how rigorous security code pro-

[4] *Op cit.*, P. 12.

visions should be. The first is political and economic: some judgments must be made about the costs that will initially be imposed on builders and perhaps passed on by them to homeowners. Some practical and political limits exist as to the stringency of code provisions that can be required.

The second factor is related to consumer preferences and product availability. Security requirements should not run counter to consumer tastes, if a reasonable compromise is possible. Prescribing metal exterior doors, for example, would probably run counter to the aesthetic interests of consumers; if solid-core wood doors offer nearly as much resistance to illegal entry (and offer better noise and heat insulating qualities), they may be an appropriate compromise solution. Similarly, the codes should not set unreasonable standards in terms of products available on the market; it is hardly appropriate to proscribe the installation of this or that kind of door if no reasonable substitutes exist.

The third factor is effectiveness. If unattainable or impractical standards should not be established, neither should standards that are too weak to have any impact on the incidence of burglary. Here we confront a substantial information gap; although we are beginning to know much more about the means by which illegal entry is made, we still have much to learn. More important, we know almost nothing about what measures will dissuade potential offenders. In this area, our information is almost all episodic or anecdotal, and opinions tend to be based on guesswork rather than empirical data. Until additional and more precise information is obtained—a process that will be extremely difficult—the establishment of standards will be preceeding virtually in a vacuum. Commonsense answers may be better than none at all, but we must avoid an over-emphasis on physical testing at the expense of motivational and behavioral research.

CHAPTER 11. RECOMMENDATIONS

If there is a central theme to this report, it is suggested by the first relationship stated in chapter 2. We posited there that the crime risk to a given residence—the probability that it will be a target of an illegal entry—is a function of two variables, crime pressure and vulnerability. Crime pressure is the probability that any residence in the area will be the target of a burglary, the ratio of the number of anticipated burglaries over a particular period to the number of residences in the area. Vulnerability is a measure of the relative likelihood that a given residence will be the target of a burglary in comparison with all others.

The most important implications of this relationship are that residential security is contextual and that the risk of crime to a residence may be reduced through two distinct types of measures, those that reduce overall crime pressure and those that reduce its vulnerability. The first type of measures—to reduce crime pressure—primarily involve collective, public action. A variety of governmental initiatives—from programs to reduce drug dependency, provide summer jobs for youth, or improve economic conditions in low-income neighborhoods to improvements in the law enforcement and criminal justice systems—may result in reductions in crime pressure. These initiatives are beyond the scope of this report, but they necessarily and appropriately command most of the government attention and resources in this field.

The subject of this report is residential security measures, which affect vulnerability far more than crime pressure. Security measures may suppress crime to some extent—if, for example, potential offenders are not merely deterred from attacking residences where the measures have been implemented but, from engaging in residential crime at all—but that is not their primary purpose. They are applied to an individual home or area, and their main objective is to reduce its vulnerability.

This particularistic quality of security measures makes it very difficult to assess them from the standpoint of public policy. Unlike reductions in crime pressure, which benefit everyone in an area, reductions in vulnerability benefit only some people and may impose a greater crime burden on others. This displacement effect has ramifications in terms of equity and fairness, ramifications that an individual homeowner may justifiably ignore, but government cannot.

Most residential security measures must necessarily be implemented by residents or management. Even if the government were to give each household security devices, their effectiveness would ultimately depend on the extent to which households were willing to use them. It is not enough to have more secure doors with better locks—the locks must be used. It is not enough to have an intrusion detection device—it must be turned on. People's behavior both contributes to the vulnerability of their homes and influences the effectiveness of steps to reduce it.

Moreover, the decision to take security measures is fundamentally a consumer decision; at least within our system, it should not be made for households by government. Whether to invest in security and how much is ultimately determined by consumer preferences, including not only the importance attached to greater security, but also the alternative demands on household resources. While government can influence these preferences, it must not dictate them.

One might even ask to what degree is the physical security of individual residences the business of government. Government, to be sure, has a legitimate and substantial interest

in the level of crime, including residential burglary, but it is questionable whether that interest extends to the question of which homes are targets and how the victims could have diverted the offenders to other targets. The distribution of crime, as opposed to its frequency, touches upon aspects of private behavior that may be outside the ken of governmental action.

We have not seen a reasoned case supporting governmental intervention in household decisions about security measures any more than in a number of other areas where private conduct touches upon public problems. In the absence of an articulated justification, we consider it appropriate to regard residential security measures as consumer goods and to define the limits of governmental action to affect the vulnerability of residences accordingly.

This position, which underlies much of what we have said previously in this report, has a number of implications for what we conclude and recommend.

A. The Informational Needs of Individual Households

We begin with the area where government undoubtedly has a most important role to play: the provision of accurate and useful information to potential consumers of residential security measures. While there are a number of sources of information available to the consumer currently, few are objective and most tend to be alarmist. For most people in most of the country, corrective information would be helpful. As it does in so many other areas (nutrition, health, homemaking, agriculture, to name only a few), government—and particularly the Federal government—can provide valuable informational aid.

This report is not the best forum for addressing information directly to citizens. The following, however, represents the type of information that should be conveyed to homeowners and tenants of existing housing through the most effective media:

1. *The likelihood of your being the victim of violent crime by a stranger in your own home has been greatly exaggerated.* The probability of being physically attacked by relatives and acquaintances is much greater than that of being assaulted by strangers in your home. Most crimes of violence by strangers occur on the street or in public places.

2. *In the overwhelming number of cases, burglars will go out of their way to avoid a confrontation with a resident.* They are likely to attack your home *only* when they believe it is unoccupied. Burglars are generally unarmed, young (relatively few of them are over 25 and many are under 18), and have little motive for harming anyone if they can avoid it. The principal danger, in the exceedingly unlikely event you confront an intruder in your house, is that he will become violent if you attempt to prevent his escape. Minimize the risk by cooperating with him, not fighting back or attempting to hold him until the police can be summoned.

3. *Guns, "less-than-lethal" weapons, and similar measures taken for self-protection may end in tragedy—for you.* Any weapon you keep in the house for self-protection is more likely to be used against yourself, your children or your acquaintances. The odds are probably as great that the weapons will eventually be stolen from you as that you will get the opportunity to confront an intruder with it.

4. *Most burglars are not professionals in any sense of the word.* They can be effectively deterred by good doors and windows, with suitable locks. In general, a high-quality exterior door offers adequate protection if it is of solid-core construction, about one and three-quarters inches thick; is hung on a well-fitted, rabbetted jamb; and is secured by a good single-or double-cylinder deadbolt lock. The frame may be of wood or steel, the quality of fit being more important than the material used in the frame or jamb. Heavy, non-removable hinges should be used to secure the door, preferably three hinges for a normal-sized door.

5. *If your doors do not meet this standard—and those in most homes do not—it does not necessarily mean that you should replace them.* Before committing yourself to the replacement of doors, which can be quite expensive, you should consider the following:

a. *Is burglary known to be a problem in your neighborhood?* Are burglars in the area known to use special techniques or tools? Call the police for advice on these questions. If they

have a home inspection program, take advantage of it.

b. *Is there any reason that you can think of why your home may be especially prone to burglary in* comparison *with those of your neighbors?* (Unusually valuable or conspicuous items, periods when it is unoccupied, etc.). If your answer is negative, then it is likely that most burglars would not consider your home a high-priority target.

c. *Are the main entrances to your home and garage clearly visible from the street?* From the homes of neighbors? If visibility is obscured, is it because of a tree, shrub, wall, or other barrier that could easily be removed or relocated? If the answer is yes, removing such barriers might be considered along with your other security hardware options.

6. *If you do think a stronger door is needed, first consider the addition of sheet metal to one side of the door.* It will reduce the penetrability of the door to practically zero, although it may not be particularly good-looking. It will probably cost less than a new door. If door replacement is the final decision, consult a local hardware store or lumber yard whose advice you respect and trust. Alternatively, seek the help of a knowledgeable friend when shopping for replacement doors. But do *not* walk into an unfamiliar store to discuss the purchase of a door without any other information to guide you; ignorance could easily cost you substantially more than you should have to pay. And remember that doors are not easy to install.

7. *Generally, the same precautions about buying doors apply equally to locks.* The amounts of money involved are usually less, but the choice of good locks is an important consideration that should not be left to chance. If you have any doubt about the type of lock to buy, check with the police. Do not hesitate to be specific with them in terms of the type of lock you are considering, and even the brands. If they cannot help, look at the February 1971 *Consumer Reports* ratings of locks, and especially rim-locks and deadbolt locks, available at your public library. Unless you are apt to loan your key to workmen or others you do not completely trust, you probably need not purchase locks for which duplicate keys can only be made at the factory or by a few locksmiths. Unless you have unusually valuable property or "pick-men" are known to operate in your area, you need not spend extra amounts for special pick-resistant locks.

8. *If your primary lock is inadequate—especially if it is a key-in-knob lock—you should add one good auxiliary lock on each of your exterior doors, if you have not already done so.* A vertical rim deadbolt, lockable from the outside with a key, is the least expensive to buy and install. Contrary to what some people believe, having more than one adequate auxiliary lock on a door adds little or nothing to security. Indeed, too many locking devices can create a fire hazard by interfering with a resident's escape in an emergency.

9. *Burglars are attracted to residential areas and particular residences with inadequate lighting, although most residential burglaries occur during the day.* If your area has poor street lighting, either because the standards are set too far apart or because trees and other barriers are blocking the light, you should get together with your neighbors and ask your local highway or public works department to improve the situation. In any event, you should make certain that all entryways to your home have sufficient illumination to make prowlers readily visible from inside, as well as from the street and neighboring residences.

10. *Windows are the second most frequent point of entry to homes and apartments.* If windows or glass panes are located within forty inches of a door handle or knob, it is possible for a prowler to break the glass and open the door from the inside. You should consider putting a grill over the glass or buying a deadbolt that can be unlocked from the inside *only with a key.* (This is not advisable in apartments with only one entrance because of the safety hazard posed by a door locked from the inside in the event of fire or other emergency. Even in other cases, it is desirable to have a key readily available near the door, but outside the reach of anyone who breaks the window.)

11. *First-floor, basement and any other easily accessible windows should be well-secured against being forced open from the outside.* On single or double-hung windows, a simple pin or nail inserted through the window sash and adjoining frame will prevent the window from

being forced up or down. Similar methods can be used to secure sliding glass doors in the closed position. (Your police department may have literature available illustrating the various ways of securing windows and sliding glass doors.) The surest method of protecting windows is to cover them with heavy mesh or grillwork. (Note: Any window that may have to be used as an emergency exit in the event of fire should never be secured with an inside key lock or protected by an outside barrier. Fire is a far more serious hazard to most homeowners than burglary.)

12. *You may decide that you would like to have an intrusion detection system for your home.* Before you purchase one, first consider the possibility of a dog, preferably one whose bark is loud and reasonably reliable when someone approaches the house. Dogs are more loveable than burglar alarms; they may also be more menacing to burglars, many of whom go out of their way to avoid them. Be wary of buying a specially trained police dog, however; those dogs pose many of the same dangers as guns and other weapons.

13. *If a dog is impractical or you want an intrusion detection system in addition, you should know that many intrusion detection systems are prone to false alarms, and you may have to change your living patterns—as well as those of your children, pets, and neighbors—to minimize the nuisance.* And you should be particularly careful about the firm with which you deal and the product you are buying. Check to see if the equipment is approved by Underwriters' Laboratories. This is not an assurance that the system will safeguard your home, but it does confirm the accuracy of the manufacturer's claims about materials, quality of construction, and resistance to breakage and damage under specified conditions. Find out how many installations the particular supplier has made in residences. Ask for the names of a number of customers, and check out their experience by calling them. Do not deal with door-to-door salesmen of such devices, or attempt to buy them by mail and install them yourself unless you are confident of your ability to install them properly.

14. *Finally, you should recognize that whatever doors, locks, and protective systems you have will not protect you against burglars unless you use them.* Most burglars do not have to use force to break into homes and apartments; they can usually find residences that are unlocked or otherwise carelessly secured against illegal entry.

15. *Most burglars will not try to break in if they think someone is at home, so try to create an appearance of occupancy by leaving on a television or radio and lights when you go out in the evening.* When you are going on vacation, arrange with a neighbor to keep an eye on your house while you are gone. Give him a key and ask him to change the position of blinds and curtains occasionally and to turn interior and exterior lights on at night. Or, buy some timers that will turn lights on and off at preselected hours, as well as rotate them automatically, and perhaps photoelectric cells for outside lights. Cancel newspapers, milk deliveries, and other services that might signal your absence.

Obviously, general information such as this, while pertinent to most residential situations, needs to be supplemented in various ways for apartment-dwellers and more particularly apartment managers, who must be concerned about protective measures in common areas. Security information must be geared to particular strata of housing, in terms both of the income level of the residents and the crime pressure in the area. There are no prescriptive security standards for housing generally, and the preceding points are not to be construed as rules.

We would recommend a number of supportive actions by government, at every level, to insure that relevant information on security is available to homeowners and tenants. Specifically:

16. *Local law enforcement agencies should initiate residential security inspection programs.* While these agencies may wish to disseminate information to broad groups of residents, on-site inspections should probably be limited to residents who request them and recent victims of residential burglaries unless future demonstrations show them to be cost-effective on another basis. (See chapter 8).

17. *At the federal level, LEAA should establish a clearinghouse to abstract, summarize, and disseminate information about residential security.* It may be appropriate for LEAA to have each

state designate a liaison office within its criminal justice planning agency to communicate informational needs to LEAA, transmit the findings of studies and demonstrations within the state to LEAA, and to prepare specialized information packages for distribution within its jurisdiction.

B. The Planning and Design of Residences

In chapter 4 we described a number of design principles, growing out of the work of Oscar Newman and others, that can foster security in a residential development. The principles include:

- Promoting opportunities for surveillance.
- Strengthening the differentiation of private from public space.
- Fostering territoriality.
- Controlling access.
- Separating incompatible activities
- Providing alternative outlets for potentially delinquent and criminal energies.
- Reinforcing community norms by providing an esthetic environment.

Government has an important role to play in further developing, testing, and disseminating information about these design principles. At the federal level, we recommend:

- One of the major functions of the LEAA clearinghouse should be to develop information about design approaches to residential security for dissemination to architects, planners, developers, and local planning officials.
- The federal government should assume a leadership role in efforts to train housing and planning professionals about design and security.
- Demonstration programs, especially to implement design modifications in public housing with serious crime problems, should receive federal support.

At the local level, government regulates new developments in a variety of ways. We advocate the inclusion of security considerations in this regulation. Specifically, we believe security should be considered in site planning and subdivision regulation. These processes are sufficiently flexible to accomodate new information as it becomes available. No precise standards or mandated guidelines are required for this purpose. Police involvement in these regulatory processes is also desirable. Although we have some concern about the possible displacement effects, we also endorse the application of minimum door and lock standards to new housing through building code provisions. We do not favor the application of similar standards to owner-occupied housing, however, for the reasons stated in chapter 10.

C. Public Housing

Government, as landlord, has a special obligation to improve security in public housing. The Department of Housing and Urban Development should continue to encourage local housing authorities to meet their responsibilities in this area and provide whatever assistance is possible. In addition to sponsoring pilot or demonstration programs, the Federal Government should serve a clearinghouse function so that local housing authorities can obtain useful information about security hardware, design modifications, tenant patrols, and public housing guard forces.

D. Federal Research and Development

1. *Offender surveys.* Offender surveys help improve our understanding of criminal behavior. Unfortunately, the conditions under which offender studies must be conducted introduce too many artificialities to make them very persuasive sources of information about which security measures are most effective. It is unlikely that the offender populations currently available for study are representative of the entire universe of offenders, many of whom have not been apprehended and convicted.

Offender surveys are obviously useful, however, as sources of insights into improvements in social institutions to deter criminal behavior (measures that will reduce crime pressure) and rehabilitative and correctional processes. We therefore urge further research into this area. We also recommend that those who have conducted offender surveys be encouraged to share their techniques and experiences with other researchers. In particular, a better understanding of the "projective" techniques that have been

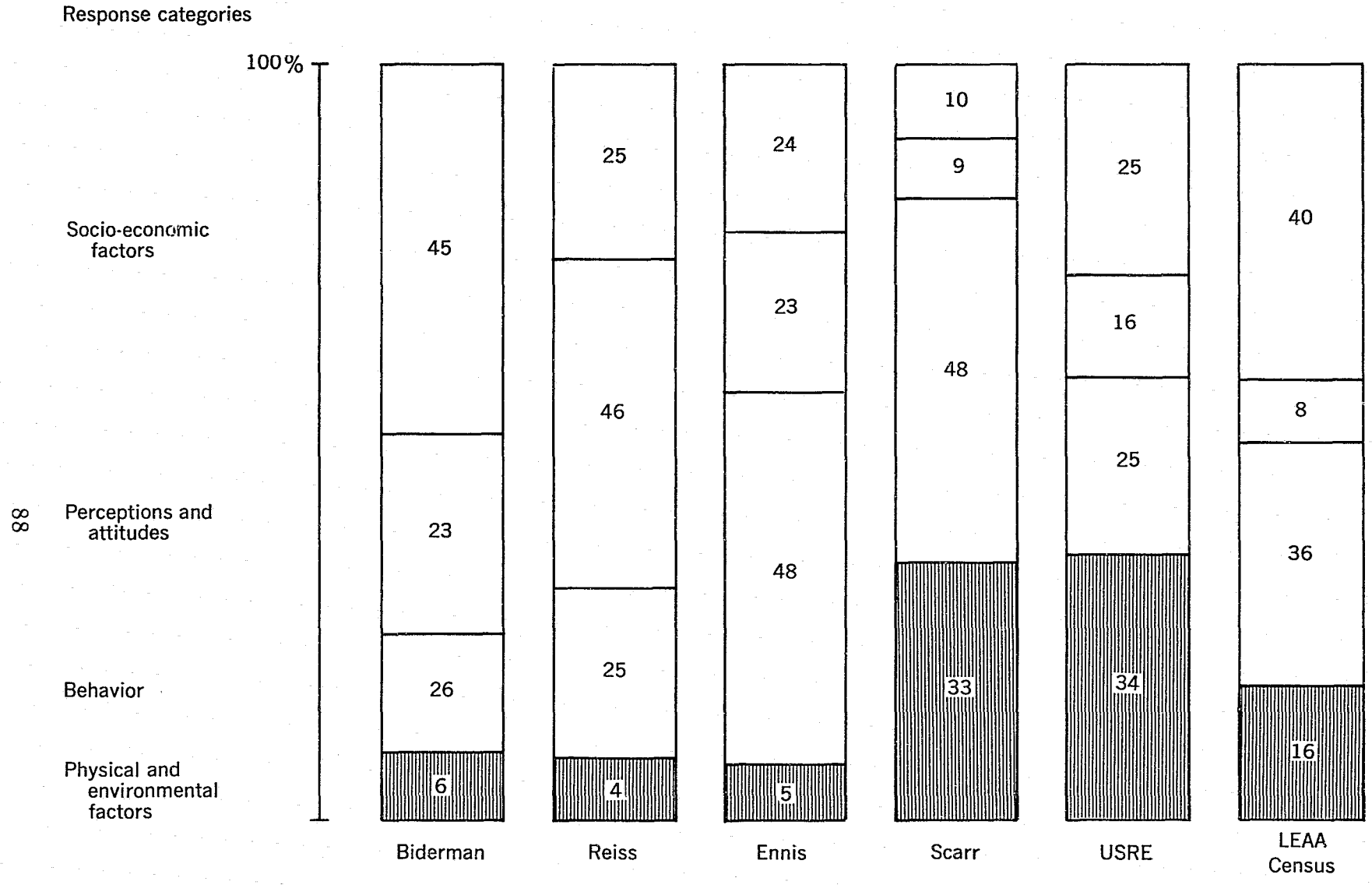


FIGURE 6. Comparison of victimization surveys.

used to study incarcerated offenders is needed.[1]

2. *Victimization surveys.* Victimization surveys are being used increasingly to identify crime patterns, determine true crime rates, and uncover other relevant data. In chapter 2, we stressed the immediate relevance of physical vulnerability data as a source of empirical evidence on the relative effectiveness of design principles and types of hardware. Unfortunately, this subject has been given low priority in most of the recent victimization studies and even when physical factors are included, the questions are often too general to be useful. (Figure 6 shows the proportional emphasis given various subjects in a sample of victimization studies.)

The LEAA-Census nationwide victimization surveys now underway also fail to include specific questions on physical vulnerability. We recommend that future iterations of these surveys include more stress on this subject.

3. *Research on fear and its effects.* We also believe special research studies should be commissioned to learn more about the nature of fear of crime, especially as it influences behavior in residential neighborhoods and the purchase of security hardware and services. Research into fear specificity would be useful in support of market inquiries concerning the potential for low-cost intrusion detection devices. More important, such research would give better direction to future assessments of the comparative seriousness of crime and security problems.

4. *Research on the effects of protective lighting.* Substantial sums are now being expended by government for high-intensity street lighting as a crime prevention strategy. Unfortunately, there have so far been no properly designed evaluations of the impact of such lighting on crime in the lighted areas, any displacement effects, and any adverse, non-crime-related consequences. In addition, very little work has been done to determine the appropriate level of lighting for crime prevention. This subject deserves research priority.

5. *Research and development of low-cost intrusion detection systems.* LEAA is currently sponsoring research and development work on low-cost, reliable intrusion detection systems for residential application. This effort is apparently directed at developing a reliable device that can be made available to low- and moderate-income households through commercial manufacturers at a purchase price of under $100. The justification for government sponsorship rests on the unwillingness or inability of private firms to undertake product development in this field.

Unfortunately, the low purchase price of such a device is likely to be illusory, since the major outlays for alarms are continuing charges for monitoring them. If the device is to be monitored by a commercial service, it will involve a periodic service charge, perhaps putting the total cost beyond the reach of those households that theoretically could use it most.

Moreover, although the requisite market research has not been done, we believe that market resistance to residential intrusion detection systems is not based primarily on their price. The blunt fact about such systems is that they may themselves be considered an intrusion. They may require changes in household behavior that are unrealistic for a family with children or pets. They are technological gadgets that do an unseen task, primarily when no one is home. And the presence of a system and the behavior patterns it requires are an additional reminder of the everpresent threat of crime. In sum, there seems to be no hard evidence that demand for intrusion detection devices would be highly price-elastic and an intuitive basis for arguing that it probably would not be.

There are two obvious research priorities if product development in this field is to proceed. The first is for some firm estimates of what a low-price system would actually cost consumers over a prolonged period, such as five years, including all installation, monitoring, and response costs. In making these estimates, the current pricing practices of the security industry should be taken into account.

The second priority, already suggested, is for sophisticated market research, especially

[1] See, for example, Urban Systems Research and Engineering, Inc., "Crime and Housing in a Metropolitan Area: A Study of the Patterns of Residential Crime," NI-71-026-C-1, January 1973, chapter 4.

into the low- and moderate-income market. The projected cost figures should be given to consumers in determining whether they would be interested in such a device.

Appendix
CLASSIFICATION OF MECHANICAL, ELECTRO-MECHANICAL, AND ELECTRONIC SECURITY EQUIPMENT

There are many ways of categorizing security devices, although most classification schemes have borrowed heavily from military and industrial terminology. As others have done before us, we will stay with the general scheme currently in use, although it is less than ideal when applied to residential situations where it often leads to confusion. For each device category, we have included brief comments on its general applicability to residential environments, if appropriate.

1. *Perimeter Guarding Devices (Grounds).* These devices are intended to sense movement across a boundary. They range in price from moderate to extremely costly. Their primary disadvantage for residential use is the requirement that portions of the outside perimeter of a residence must be closed to traffic for extended periods during each day. Multiple-family units in high crime areas, and housing for the elderly are special cases where tenants may be willing to restrict their movements to a single, well-supervised door during late evening and early morning hours (e.g., 11 p.m. to 6 a.m.).

a. *Seismic intrusion detectors.* These are designed to pick up ground disturbances and are buried underground. Except for the supervised door, the remainder of the perimeter could be electronically protected by a seismic device.

b. *Balanced transmission line fences.* These sense electrical disturbances caused by the approach of a human being. They are probably even less useful than seismic devices, since the fence is unsightly and further restricts movement when its surveillance properties are not being utilized.

2. *Building Perimeter Guarding Devices.* These are probably the cheapest and most widely-used devices for detecting "non-normal" tampering with windows, doors and walls. They are ideally suited for the protection of a commercial premise that is not used during a constant (and significant) portion of each 24-hour period. They would be suitable for residential complexes if residents were willing to tolerate limited restrictions on their freedom of movement each day.

The nature of restricted movement would depend entirely on the type of residential setting. For households with small children or pets, most such devices would be out of the question. Wind, general climatic conditions, and other factors influence the relative value of these devices as noted below:

a. *Door and window switches, magnetic contacts.* These are rugged, generally dependable, and inexpensive devices. Their greatest mechanical problem comes from poorly-mounted doors or windows with too much play; a high wind can cause them to deviate beyond the "tolerable" distance when these switches or contacts are in the closed position.

b. *Mechanical blade contacts.* These are similar to magnetic contacts, but are more prone to wearing. As a class, they are somewhat easier to foil than magnetic contacts.

c. *Foil tape on windows and on glass portions of doors.* Since the foil must be weak enough to break when the glass breaks, it has a tendency to wear and crack. Use of this material requires constant attention and maintenance. It is also quite visible to intruders, and many homeowners would also find it unattractive.

d. *Vibration detection systems on walls.* Wall materials with good sound transmission characteristics can be protected against penetration by vibration detectors mounted on the wall surfaces. Unfortunately, cheap and easily penetrable wall structures, such as the sprayed stucco common throughout most of California, do not have good sound transmission characteristics. Also, at least at the present time, intrusions through walls of residences are comparatively rare. These devices are far more useful for commercial and industrial buildings.

e. *Audio monitoring devices.* Although normally thought of as area protection devices, audio monitoring devices can detect sounds associated with any type of forced entry. If entry is delayed, the monitoring device can trigger the alarm before the entry is accomplished.

These devices are probably most useful for residences that are left unattended for long periods of time. They may also be useful for laundry rooms, storage rooms and other areas in multi-family dwellings if the residents agree not to use these semi-public facilities during late evening and early morning hours.

f. *Active and passive infra-red devices.* These detect normal infra-red radiation of the human body. These devices are not generally applicable to residential situations at the present time.

g. *Photo-electric beams.* These are useful devices in multi-family dwellings for announcing the presence of persons in supervised or unsupervised areas. They do not, of course, distinguish between authorized (normal) or unauthorized (non-normal) activities.

h. *Entry-way treadle switches.* A mechanically operated treadle switch functions in the same manner as a photo-electric beam.

3. *Area Guarding Devices (Environmental Change).* The only environment monitoring device for residential areas is the audio monitor described above. This is a relatively low-cost device, especially if not too many precautions have to be taken against naturally occurring changes in ambiant noise. The precautions themselves are

not technically difficult, but each one adds significantly to the cost of the system. As discussed above, its use would be restricted to areas that are left unused and unattended for either regular periods during the day or night or for long irregular periods of time.

4. *Area Guarding Devices (Motion Detection).* All of the following devices are designed to detect the motion of a human being and discriminate it from animal motion, falling objects, wind, etc. They are useful only in portions of multi- or single-family residential space to be left unused for regular periods or for long irregular intervals. All represent moderately expensive to expensive systems, except for treadles and trip wires (which are also the easiest to defeat). Because of their high initial costs and the necessary restrictions on freedom of movement, it is unlikely that motion detectors will find widespread use in residential buildings.

One special use of motion detectors is in conjunction with CCTV monitoring of corridors, stairwells and elevators. CCTV monitoring is most effective when some kind of sensing device is used to determine *when* there is motion on the TV screen. Although the CCTV camera itself can sense motion and then begin to monitor it, this technique involves the use of costly electronic logic circuits. A cheaper means to the same end is to install an appropriate motion detector to work in parallel with the camera.

The individual responsible for viewing the image will be alerted (by the motion detector) to look at the camera image generated from the area in which the motion occurred. This is expecially valuable for cameras having movable, operator-controlled mounts, since the detector would provide full-area coverage extending well beyond what the camera could see from any set position.

a. *Sonic audio range motion detection.* Motion produces a change in energy levels returned from audio-range sound signals radiated by several different transceivers (loudspeakers that simultaneously radiate the tone and pick up the reflected sound). Special circuitry can be incorporated to discriminate non-significant motions, such as from wind or household pets.

b. *Supersonic motion detectors.* These devices transmit on a steady frequency and continuously compare the transmitted signal with the returned signal. A moving human being causes a doppler shift in frequency, depending on the speed of movement. These devices are not sensitive to air currents and can be aimed above the paths used by house pets. The device covers a much smaller area than an audio-range detector; its range is more than adequate for a normal room in any residence. On the other hand, the audio range detectors would probably be much superior for supervising a long corridor network or a stairwell running for several flights of stairs.

c. *Capacitance detector devices.* These are good area detectors for spaces or rooms in which ferrous or large non-ferrous metallic objects are not regularly being moved about. They have very little potential in residential environments.

d. *TV and optical scanning motion detectors.* These are two systems that have been developed for detecting motion in the visible light spectrums. Closed-circuit television scanners (CCTV) produce normal television-type images, while the optical scanner operates on a different principle of pattern recognition. CCTV is presently in widespread use, with multi-family apartment systems ranging in initial cost from $1,500 upwards. Unlike other types of motion detectors, CCTV units cover a highly specific area. Its range depends on the type of unit and whether it is fixed or adjustable. Some, as noted earlier, are used in conjunction with other types of motion detectors that alert the human monitor to watch activities on particular screens.

e. *Modulated light motion detection devices.* This approach employs a beam of light (usually infrared) with modulated intensity. The modulation overcomes changes in ambiant illumination and is impervious to smoke and atmospheric conditions within a broad range of translucency. The device is triggered by an opaque object, including an animal, that interrupts its path. Since the beam can be several hundred feet long, these devices can be used to monitor very large areas. Mirrors can be used to angle the beam along irregular paths. Modulated light is relatively less expensive than other technologies available for supervising large areas in multi-family housing which are not used in late evening and early morning hours. They also can work in conjunction with TV monitors.

f. *Radio frequency (RF) pulsed-doppler or simple doppler systems.* Both systems work on the transmission and reception of a high-frequency signal.

The movement of a human being causes a doppler shift in the frequency of the signal. The pulsed-doppler system measures the time-delay from the transmission of the signal to its reception so as to discriminate signals coming from beyond the boundary of the area being supervised. This is a costly improvement over the simple doppler system; it suffers not only from having poorly-defined boundaries, but also from having boundaries of responsiveness that vary with atmospheric and other environmental conditions. It has very limited residential applicability at the present time.

g. *Treadles and trip wires.* This is a class of mechanically-activated electric switches that are placed unobtrusively in an area and are set off by human movements. These are probably the least expensive and the least reliable (in that the perpetrator can easily avoid them) form of area supervision.

5. *Channel Guard Detection Systems.* These are systems based on an open channel that continually transmits a "non-significant" signal. A human must continually monitor this signal (audio or visual or both) looking for occasional indications of non-normal human activity or of non-normal human presence. These systems have the advantage over binary systems in that they transmit full information on activity in the environment (to the extent that the medium and range of coverage permits) so that the monitor has a fairly good idea of what is taking place. The task of monitoring these systems is a difficult one, however, and the human monitor becomes fatigued easily. As he tires, his reactions and ability to discriminate non-normal behavior declines sharply.

a. *Audio monitoring.* This kind of monitoring can be coupled with binary audio area surveillance of a number of rooms in a building. When the audio alarm signals the presence of an intruder, the person monitoring the annunciator switches to audio monitoring capability in the room from which the alarm originated; he then monitors sounds coming from that area.

Perhaps the most useful feature of this arrangement is that it enables the monitor to pick up a resident's yelling or screaming. There would be little difficulty picking up such a distinctive sound, which could be quickly localized to the pickup or receiver nearest the source.

A continually rerecorded, multi-channel tape record could hold the sound for from one to five minutes, giving the monitor enough time to determine exactly which channel carried the strongest version of the cry.

The audio technique is objected to by many residents on the grounds that it reduces privacy in public and semi-public areas. Residents of a high crime building, or of a complex designed for the elderly probably would not object as strongly if they felt the procedure was contributing to their safety. (This same response with regard to privacy would probably apply equally to video monitoring, discussed in the next section.)

Audio monitoring would be provided as an option for individual apartments, providing the residents were able to activate or deactivate the system as they wished. The monitor would know, of course, which apartments were activated.

Audio monitoring might also be pre-set for two distinct volume thresholds. At the more sensitive (lower) threshold, one would be listening for intruders in an area that would be presumed to be empty of normal human or animal traffic. At the higher threshold, one would be listening for a sharp rise in sound level, such as would be generated by a scream or by sounds of a violent struggle. The two thresholds could be used simultaneously on different pickups. An electronic monitor could turn on a signal lamp above the speaker of a channel that has passed the threshold. A human monitor would then attend to the current sounds from that channel.

The use of the two thresholds would permit an apartment owner to turn the system off when the entire family was home; or set the system for loud noise (the higher threshold) when, say, his wife was alone in the apartment, or set it for all sounds (the lower threshold) when the apartment was unoccupied. Obviously, if the system were set inappropriately, e.g. at the lower threshold, when the family was home and going about its business, the monitor would have to call the apartment (after first determining that his signal was resulting from an error) and ask them to shut the system off. (It is precisely this tendency to occasionally break the rules of intrusion detection systems that results in so many false alarms.)

b. *Video monitoring (CCTV).* CCTV was first discussed as a motion detection system, although it is more commonly used for continuous area monitoring. Video monitoring is subject to most of the same general limitations of audio monitoring. Recording devices are available for playbacks and for alerting the monitor to significant movements in a particular camera field.

The essential difference between audio and visual monitoring is that the latter is not applicable to individual apartments with quite the flexibility afforded by audio monitoring. A simple on-off system could be used inside apartments, permitting them to be monitored when they are unoccupied.

A possible variation of video monitoring, which could also apply to audio, or to a combination of video/audio monitoring, would involve a set of buildings, each of which is too small to justify its own full-time monitor. A number of buildings could be linked to a single monitoring station. This might be practical in developments where buildings are clustered in relatively small groups.

Another solution, more appropriate for older apartment buildings aligned on a single block, would be to have a curb outlet that a monitor-equipped partrol car could connect to. The officer would scan all the camera signals in

rotation for a period, and then move on to the next station. This would permit preventive patrol of public and semi-public areas in rows of multiple-family apartment buildings.

c. *Combined video/audio monitoring.* This combination makes possible enhanced area coverage, since the audio is more omnidirectional than the video. Experience may eventually prove that the audio/video combination, or even the audio version alone, are both more objectionable to residents than video monitoring by itself. It is quite likely that residents will be more concerned about being overheard than about being seen in semi-public areas. Research into this question can at least be initiated, since many buildings are already covered by video monitors.

BIBLIOGRAPHY

Adequacy of Federal response to housing needs of older Americans. Hearings before the Subcommittee on housing for the elderly of the Special Committee on Aging. Part five. U.S. Senate, first session. Washington, D.C. GPO, October 29, 1971.

Allocation of Patrol Manpower Resources in the Saint Louis Police Department. A Supplementary Report. St. Louis: January 1969.

"A model code to help tenants." *Business Week,* March 4, 1972, p. 79.

Anderson, Harry. City Editor, *Newark News.* Phone interview, February 11, 1972.

Angel, Shlomo. "Discouraging Crime Through City Planning." Berkeley: Institute of Urban and Regional Development, University of California. Working Paper No. 75, February 1968.

Annual Report of the Department of Housing and Urban Development. Washington, D.C.: GPO, 1972.

Ardrey, Robert. *The Territorial Imperative.* New York: Atheneum, 1966.

Baker, Donald P. "Security Guards Outnumber Police." *The Washington Post,* June 13, 1972, p. C–1.

Barkan, Robert. "War Toys for Adults." *The New Republic,* December 11, 1971, p. 7.

Berg, Dorothy F. "A Study of Citizens' Reaction To Crime in the District of Columbia and Adjacent Suburbs." Washington, D.C.: Office of Crime Analysis, Government of the District of Columbia, 1972.

Biderman, Albert, *et al. Report on a Pilot Study in the District of Columbia on Victimization and Attitudes Toward Law Enforcement.* The President's Commission on Law Enforcement and the Administration of Justice. Field Survey No. 1. Washington, D.C.: GPO, 1967.

Biderman, Albert. "Surveys of Population Samples for Estimating Crime Incidence." *The Annals of the American Academy of Political and Social Science.* Vol. 374, November 1967.

———. "Time Distortions of Victimization Data and Mnemonic Effects;" Washington, D.C.: Bureau of Social Science Research, Inc. July 1970.

———. "Uses of Surveys for Estimating Crime Incidence." Washington, D.C.: The American Statistical Association. 1968.

Bittner, Egon. "The Function of the Police in Modern Society." DHEW Publication No. (HSM) 72–9103. Washington, D.C.: National Institute of Mental Health, 1972.

Black, Susan. "Burglary." *The New Yorker,* December 7, 14, 1963.

Bloch, Peter B., and Ulberg, Cyrus. "The Beat Commander Concept." Washington: The Urban Institute, September 1972.

Bloch, Peter B. "Preliminary Evaluation of 'Operation Neighborhood." Washington: The Urban Institute, Working Paper 4000–1, March 16, 1972.

Blumenfeld, A. Manager, Dyckman Houses, New York City Public Housing Authority. Interview. May 23, 1972.

Boggs, Sarah L. "Formal and Informal Crime Control: An Exploratory Study of Urban, Suburban and Rural Orientations." *The Sociological Quarterly* 12 (Summer 1971): 319–327.

Brill, William H. "Innovation in the Design and Management of Public Housing: A Case Study of Applied Research." Paper presented at the Environmental Design Research Conference sponsored by the American Institute of Architects and the Environmental Design Research Association. The University of California at Los Angeles, January 24, 1972.

Brockett, Dian . "Anti-Crime Patrolling Hit." *The Washington Evening Star.* January 26, 1972, p. 1.

Brown, Richard Maxwell. "The American Vigilante Tradition" in *Violence in America: Historical and Comparative Perspectives. A Staff Report to the National Commission on the Causes and Prevention of Violence.* Washington, D.C.: GPO, June 1969.

Building Security Commission of the Attorney General of California. "Building Security Standards." Sacramento, January 1973.

Caden, Harold. "Guidelines for Security in Public Housing." Draft. Department of Housing and Urban Development. August 1972.

———. Office of Housing Management, Department of Housing and Urban Development. Interviews, Spring 1972.

Carman and Associates. "Evaluation Report of the Kansas City Vertical Policing Project." Cleveland: May 1972.

Carman, John. "Safety and Security in Multi-Family Housing Complexes." *Journal of Housing,* June 1971.

Cedar Rapids, Iowa, Police Department. "Installation, Test and Evaluation of a Large-scale Burglar Alarm System for a Municipal Police Department." NI–70–009. Washington: GPO, December 1970.

Chleboun, T.P., and K.M. Duvall. "An Evaluation of Small Business and Residential Alarm Systems." GTE Sylvania, Inc., Security Systems Department. LEAA No. J–LEAA 003–72. Vol. I, June 1972.

Conway, M. Margaret. "Public Opinion on Crime and Law Enforcement in the United States." Washington, D.C.: Bureau of Scoial Science Research, Inc. June 1971.

Cooper, Clare, Day, Noel, and Levine, Beatrice. "Resident Dissatisfaction in Multi-Family Housing. Berkeley: The University of California, Working Paper No. 160, March 1972.

Crime Against Small Business. A Report of the Small Business Administration and the Select Committee on Small Business. U.S. Senate, Washington: GPO, April 1969.

Crosby, Robert, and Snyder, David. "Crime Victimization in the Black Community." Bethesda, Maryland: RD–026, Research Management Corporation, October 1969.

de Leeuw, Frank. *Operating Costs in Public Housing.* Washington D.C.: The Urban Institute. n.d.

Department of Housing and Urban Development, Office of Housing Management. Security Evaluations: St. Louis; Kansas City, Missouri; Boston, and Providence, R.I. Spring 1972.

Dimond, Stuart J. *The Social Behavior of Animals.* New York: Harper & Row, 1970.

Doleschal, Eugene. "Criminal Statistics." Crime and Delinquency Topics, National Institute of Mental Health. Washington, D.C. 1972.

Eighmie, James. National Capital Housing Authority. Interview, January 17, 1972.

Elliott, J.F., and Thomas J. Sardino. "The Time Required To Commit Crime." Syracuse, New York: Electronics Laboratory, General Electric Co., June 1971.

Elliott, J.F. "Crime Control Team." LEAA No. NI–0046. Final Report. Syracuse: Syracuse Police Department and the Electronics Laboratory, General Electric Co., June 1970.

Ennis, Philip H. *Criminal Victimization in the United States: A Report of a National Survey.* The President's Commission on Law Enforcement and the Administration of Justice. Field Surveys II. Washington, D.C.: GPO, 1967.

Fialkin, Harry. Director of Research, New York City Housing Authority. Interview, May 1972.

Furstenberg, Frank F., Jr. "Fear of Crime and Its Effects on Citizen Behavior." Presented at the Symposium on Studies of Public Experience, Knowledge and Opinion of Crime and Justice. Washington: The Bureau of Social Science Research, Inc., March 1972.

Glaser, Daniel, ed. *Crime in the City.* New York: Harper & Row, 1970.

Goffman, Irving. *Relations in Public.* New York: Basic Books, Inc., 1971.

Gold, Robert. "Urban Violence and Contemporary Defensive Action." *Journal of the American Institute of Planners,* May 1970.

Graham, Fred. "A Contemporary History of American Crime." Chapter 13 in Vol. II of *Violence in America.* Washington, D.C.: GPO, 1969.

Greenbie, Barrie B. "What Can We Learn From the Animals? Behavioral Biology and the Ecology of Cities." *Journal of the American Institute* of Planners, May 1971.

Greenwood, Peter W. "An Analysis of the Apprehension Activities of the New York City Police Department." The New York City Rand Institute. R-529-NYC, September 1970.

Griffin, Robert M., Jr. "Ethological Concepts for Planning." *Journal of the American Institute of Planners,* January 1969.

Guilford, Dorothy. Community Youth Services, Housing Management, Department of Housing and Urban Development. Interviews, May 5 and October 27, 1972.

Gulinello, Leo. "What Is the Responsibility of Local Housing Authorities for the Safety and Security of Their Residents?" *Journal of Housing,* February 1972.

Hall, Edward T. *The Hidden Dimension.* Garden City, Long Island: Doubleday & Co., 1966.

Hammell, Lisa. "Two Playground Designers Who Used To Be Rebels." *The New York Times.* November 29, 1972, p. 38.

Hapgood, Fred. "Boston's Neighborhood Police." Source unknown.

Hartford, Conn., Model Cities Program, Evaluation Unit. "Housing Authority Security Patrol: Evaluation Report." October 1972.

Hartman, Chester W., and Carr, Gregg. "Housing Authorities Reconsidered." *Journal of the American Institute of Planners,* January 1969.

Healy, Richard J. *Design for Security.* New York: John Wiley and Sons, Inc Inc., 1968.

Hebert, Richard. "Is Everybody in Washington Scared?" *Washingtonian,* April 1972.

Herbers, John. "Inflation and crime fuel public housing crisis." *The New York Times,* June 4, 1970, p. 45.

———. "Federal housing abandonment blights inner cities." *The New York Times,* January 13, 1972, p. 1.

———. "Civilian Patrols Spreading to Suburbs." *The New York Times,* November 5, 1972, p. 1.

"Housing Abandonment." *Architectural Forum,* April 1971.

Howells, Joan. Specialized Housing Division, Shannon & Luchs Realty Corporation, Washington, D.C. Interview, February 1, 1972.

Hunt, Lieutenant Marvin. New York City Housing Authority Police Department. Interview, May 24, 1972.

Hustable, Ada Louise. "Prescription for Disaster." *The New York Times,* November 5, 1972.

Insurance Information Institute. *Insurance Facts.* Washington, 1972.

Interviews with police officers and Systems Development Corp. concerning the Crime Specific Program in California. January 1973.

Jabzanka, Walter. Program coordinator, Mayor's Safe Streets Act Advisory Committee, Boston, Massachusetts. Interview, March 1972.

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

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

Jenkins, Mrs. Margaret. Upper Park Avenue Citizens' Association. Interview, May 24, 1972.

Joseph, Raymond A. "The Civilian Cop Helps Fight the Crime Rise, Or Is He 'Plain Nuts'?" *The Wall Street Journal,* February 20, 1973, p. 1.

Kakalik, James S., and Wildhorn, Sorrell. "Private Police in the United States: Findings and Recommendations." Volume I;R-869/DOJ. Santa Monica, California: The Rand Corporation, February 1972.

———. "Private Police in the United States: Special Purpose Public Police. Volume V; R-873/DOJ. Santa Monica, California: The Rand Corp., February 1972.

Klotter, John C. and Cusick, Robert I., Jr. *Burglary: Prevention, Investigation and Prosecution.* Louisville, Kentucky: Southern Police Institute, University of Louisville. n.d.

Knopf, Terry Ann. *Youth Patrols: An Experiment in Community Participation.* Brandeis University: The Lemberg Center for the Study of Violence, 1969.

Lalli, Michael, and Savitz, Leonard. "Delinquency and City Life." Interim Report NI-70-027. National Institute of Law Enforcement and Criminal Justice. Philadelphia: Temple University, January 1972.

Lander, Clifton P., Jr. "Status of Public Housing Authorities Currently Involved in the Emergency Employment Program." Community Services Division, Department of Housing and Urban Development. April 1972.

Law Enforcement Assistance Administration. Tenant patrol project summaries for Providence, R.I.; Fall River and Springfield, Mass.; Detroit, Mich., and Hartford, Conn.

Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice. *Planning Guidelines and Programs To Reduce Crime.* Washington, D.C.: n.d.

Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice. Statistics Division. "San Jose Methods Test of Known Crime Victims." Statistics Technical Report No. 1, Washington, D.C. June 1972.

Luedtke, Gerald and Associates. *Crime and The Physical City: Neighborhood Design Techniques for Crime Reduction.* NI-078. June 1970.

Malt, Harold Lewis and Associates. *Tactical Analysis of Street Crime.* Progress report, NI-71-091-G. January 1973.

Mandell, Mel. *Being Safe.* New York: Saturday Review Press, 1972.

———. "Tenant Action Strengthens Building Security." *The New York Times.*

Mann, Lawrence and Hagevik, George. "The 'New' Environmentalism: Behaviorism and Design." *Journal of the American Institute of Planners,* September 1971.

Marx, Gary T. and Archer, Dane. "Citizen Involvement in the Law Enforcement Process." *American Behavioral Scientist,* September 1971.

———. "Community Patrols: An Exploratory Inquiry." Harvard University and Harvard-MIT Joint Center for Urban Studies. July 1972.

Miranda, Irma. Regional office, New York City, Department of Housing and Urban Development. Interview, May 24, 1972.

Misner, Gordon E. "Security Services for Public Housing in St. Louis." St. Louis Civic Alliance for Housing, May 1970.

Montgomery, Roger. "Comment on 'Fear and House-As-Haven'." *Journal of the American Institute of Planners,* January 1966.

Morris, Norval, and Hawkins, Gordon. *The Honest Politician's Guide to Crime Control.* Chicago: The University of Chicago Press, 1970.

Morrissey, Anne. Chief of evaluation, Hartford, Conn., Model Cities Agency. Interview, July 11, 1972.

National Conference on Criminal Justice. Working Papers of the National Advisory Commission on Criminal Justice Standards and Goals. Washington, D.C.: January 23-26, 1973.

Newman, Oscar. *Defensible Space.* New York: The Macmillan Co., 1972.

Newman, Oscar, and Hersh, Barry. "Immediate Measures for Improving Security in Existing Residential Areas." New York: The Center for Residential Security Design, 1972.
Norell, James, and Acquilino, John. "Scarecrows In Blue." *Washingtonian,* August 1971.
Office of the Deputy Commissioner of Community Affairs, New York City Police Department. "The Civilian Patrol Program." mimeographed. June 1972.
Owens, Charles. Supervisor, Tenant Patrol Unit, New York City Housing Authority. Interview, May 23, 1972.
Phelps, Lourn. "Environmental Security, Services and Risk Management: A Police Perspective." Menlo Park, California: paper presented at a Stanford Research Institute workshop, April 13, 1972.
Proshansky, Harold M., Ittelson, William H., and Rivlin, Leanne G., eds. *Environmental Psychology.* New York: Holt, Rinehart, and Winston, Inc., 1270.
Rainwater, Lee. *Behind Ghetto Walls.* Chicago: Aldine Publishing Co., 1970.
———. "Fear and the House-As-Haven in the Lower Class." *Journal of the American Institute of Planners,* January 1966.
Reiss, Albert J., Jr. *Studies in Crime and Law Enforcement in Major Metropolitan Areas.* The President's Commission on Law Enforcement and the Administration of Justice. Vol. I. Field Survey III. Washington, D.C.: GPO, 1967.
Report of the National Commission on Urban Problems (The Douglas Commission.) *Building the American City.* Washington, D.C.: GPO, December 1968.
Report of The President's Committee on Urban Housing (the Kaiser Committee). *A Decent Home.* Washington, D.C.: GPO, 1968.
Research Analysis Corp. "Standards for Burglary Prevention." NI–70–088. McLean, Va., September 1971.
Rogin, Richard. "Citizen Self-Defense Groups." Unpublished, 1970.
Roselius, Ted, and Benton, Doug. "Marketing Theory and the Fencing of Stolen Goods." NI 70–065–PG–10. Fort Collins, Colorado: College of Business, Colorado State University, August, 1971.
Rosenthal, Jack. "The Cage of Fear in Cities Beset by Crime." *Life Magazine,* July 11, 1969, p. 16.
Rudofsky, Bernard. *Streets for People.* Garden City, Long Island: Doubleday & Co., 1969.
SUA Division of Dillingham Corp. "A Study of Crime Prevention Through Physical Planning." Report for the Southern California Association of Governments, September 1971.
Scarr, Harry, Pinsky, Joan L., and Zambianco, Deborah S. "Patterns of Burglary." Human Sciences Research, Inc. PR–72–10. Washington, D.C.: GPO, February 1972.
Searles, Harold F. *The Nonhuman Environment in Normal Development and in Schizophrenia.* New York: International Universities Press, 1960.
Shover, Neal E. "Burglary as an Occupation." Ph.D. thesis, University of Illinois. Ann Arbor: University Microfilms, 1971.
Simons, Earl. Office of Housing Management, Department of Housing and Urban Development. Interviews, April-December 1972.
Sommers, Robert. *Personal Space.* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969.
"Special Analyses of the U.S. Government." Fiscal Year 1973. Washington, D.C.: GPO, 1972.
The Challenge of Crime in a Free Society. A Report by the President's Commission on Law Enforcement and the Administration of Justice. Washington, D.C.: GPO, 1967.
Tiffany, Willard D., *et al.* "The Control of Crimes Around Armory Rooms." Menlo Park, California: Stanford Research Institute, February 1972.
Tobias, Marc Weber. *Locks, Safes, and Security: A Handbook for Law Enforcement Personnel.* Springfield: Charles C. Thomas Co., 1971.
Urban Systems Research & Engineering, Inc. "Crime and Housing In A Metropolitan Area: A Study of the Patterns of Residential Crime." NI–71–026–C–1. January 1973.
Valdez, Gary. Consultant, Tenant Patrol Unit, New York City Housing Authority. Interview, May 23, 1972.
Vera Institute of Justice. "Neighborhood Views on New York City Services." New York: National Opinion Research Corp., February 1970.
Violence in America: A Staff Report to the National Commission on the Causes and Prevention of Violence. Washington, D.C.: GPO, June 1969.
Walsh, B. Kirk. Special Assistant to the Secretary of Housing and Urban Development. Interview, May 12, 1972.
Weisman, Stephen R. "Golar Says That City Crime Level Exceeds That In Public Housing," The New York Times, February 25, 1971, p. 38.
Williams, Eddie N., ed., *The Social Impact of Urban Design.* The University of Chicago: Center for Policy Study, 1970.
Wilson, O.W., and McLaren, Roy C. *Police Administration.* New York: McGraw-Hill, 1972.
Wren, Christopher S. "Rivalry in Blue: Housing Police vs. the City Police." *The New York Times.* February 15, 1973.
Wright, Jackson. Office of Housing Management, Department of Housing and Urban Development. Interview, May 12, 1972.
Wright, Roger, *et al.* "Study To Determine the Impact of Street Lighting on Street Crime, Phase I Final Report." Ann Arbor: The University of Michigan, n.d.
Young, James Hill. Mayor's Office of Youth Opportunities Service, Washington, D.C. Phone interview.

☆U.S. GOVERNMENT PRINTING OFFICE: 1974 O—530-996