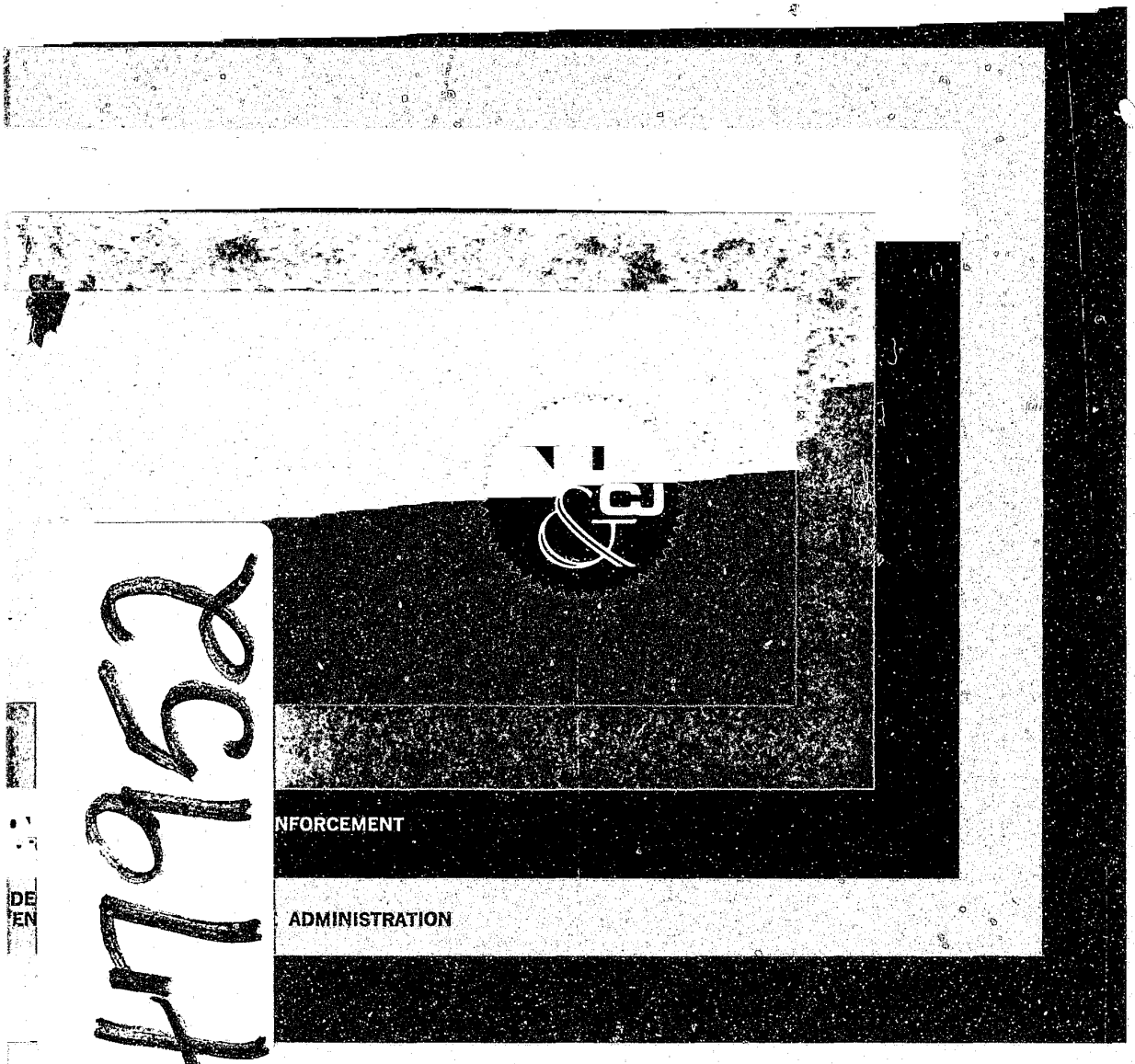
Architectural Design for Crime Prevention



147952

Architectural Design for Crime Prevention

147952

March 1973

By

OSCAR NEWMAN
Architect and City Planner

Institute of Planning and Housing
New York University, New York, N.Y.

The fact that the National Institute of Law Enforcement and Criminal Justice furnished financial support to the activities described in this publication does not necessarily indicate the concurrence of the Institute in the statements or conclusions contained herein.

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 $2.60 domestic postpaid, or $2.25 GPO Bookstore

Stock Number 2700-00161

Contents

List of Illustrations

List of Tables

Foreword

Residential complexes can be designed to deter robbery, vandalism, and other building crime. In this illustrated monograph, Professor Oscar Newman, an architect and city planner from New York University, suggests how the grouping of dwelling units, the definition of grounds, the provision of natural surveillance opportunities, the design of public interior areas, and the positioning of routes can significantly discourage criminal action.

This monograph, which represents a state-of-the-art survey on "defensible space" as practiced throughout the country, is the result of the first phase of a multiphase project funded by the National Institute of Law Enforcement and Criminal Justice. The research team for this phase of the study consisted of collaborating architects, psychologists, sociologists, city planners, and statisticians under Professor Newman's direction. In 1970, as part of their effort to determine effective design techniques which can help reduce crime, the project staff made onsite visits to housing projects in 15 major cities across the country. Questionnaires were also completed by housing authority officials, architects, and law enforcement officials in 150 other cities.

On the basis of information obtained from the site visits and the survey, the author developed the design hypotheses for crime prevention contained in this monograph. The hypotheses were derived from a statistical analysis of factors correlated with crimes in a number of the public housing complexes involved in the study. With private funds and funds from the Department of Housing and Urban Development, approximately 20 new and existing multifamily complexes involving 11,000 housing units in New York City are being modified as a means of testing these hypotheses. In addition, 7,500 units of housing in Boston, Minneapolis, Cleveland, Newark, and Philadelphia are also adopting measures suggested in this monograph.

Professor Newman emphasizes that residential crime can be reduced by designing buildings so that the residents can help survey and control any criminal activity taking place within them. He particularly stresses the way physical design can create potent feelings of territoriality which, in turn, can lead residents to engage in the effective selfpolicing of their buildings, surrounding grounds, and streets.

This work represents a promising approach to the effective deterrence of criminal activity.

MARTIN DANZIGER, *Assistant Administrator, National Institute of Law Enforcement and Criminal Justice.*

Acknowledgements

The project for the security design of urban residential areas was a 3-year study on the effects of the physical layout of residential environments on the criminal vulnerability of inhabitants. The project involved both statistical analyses and extensive modifications to the existing plant and grounds of housing projects to test the efficacy of hypotheses. Funds for the research component of this work, and the preparation of this monograph, were made available by the National Institute of Law Enforcement and Criminal Justice of the U.S. Department of Justice. We are thankful to the Institute Administrators, Jerris Leonard, Clarence M. Coster and Richard W. Velde, for making these funds available and to Martin Danziger, assistant administrator of the Institute, for his support and encouragement.

We are most indebted to John Conrad, Chief of the Center for Crime Prevention and Rehabilitation, the branch of the Institute through which this project was funded, for his professional guidance. He has proven a most welcome mentor.

A significant test of the validity of our concepts involved altering buildings and grounds of existing housing projects for the purpose of performing "before and after" studies. We are thankful to the New York City Housing Authority for its active interest and cooperation in making sites and funds available for this purpose. We are particularly indebted to Simeon Golar, chairman of the authority, and to the members of the board of the housing authority, Aramis Gomes and Walter Fried, for providing portions of the authority's current modernization budget to serve the purpose of allowing us to undertake large scale modifications.

We are thankful to Irving Wise, director of management, for his assistance over the past 3 years of our association with the housing authority —initially for his having arranged our first presentation; for his significant role in the November 1969 conference; and, on a continuing basis, for facilitating our work and coordination of our activities with the authority's.

It is difficult to adequately thank Sam Granville, deputy director of management for tenant relations and formerly director of the authority's modernization program, for his truly tireless efforts on our behalf—first in helping to win support for proposed work and subsequently in teaching us the ropes about the inner workings of the modernization program and the housing authority.

We are indebted to Bernard Moses, director of the modernization program for his warm assistance and good humor and his capacity for turning obstacles into advantages; potential bureaucratic haggles into opportunities for experimenting with new ideas.

Professional praise and thanks are due to Max Schreiber, chief architect of the authority, and Clair Fischer, landscape architectural division chief, for allowing us to share their knowledge and insights into housing design.

Special thanks are due to the New York City Housing Authority Police and their chief, Daniel J. Daly, for acquainting us with their work.

We wish also to express thanks to the following other staff members of the New York City Housing Authority:

- Harry Fialkin, chief of the statistics division, for his having made available housing authority data on tenant profiles and on crime.
- Daniel Balk, chief of the engineering division, and his staff for their technical assistance in the preparation of working drawings involving mechanical hardware.
- The individual housing project managers and their staff and to the many other members of the authority who have been of assistance on a day-to-day basis.

As of November 1970, the criminal justice coordinating council of the office of the mayor of New York City has undertaken co-sponsorship of a portion of our research related to the employment of electronic devices to improve the security of existing urban high-rise projects. These funds were provided by the law enforcement assistance administration, via the New York State Office of Crime Control Planning.

We are indebted to the members of the staff of the criminal justice coordinating council, in particular to Henry S. Ruth, Jr., director of the council, who encouraged us to become involved in the security of existing housing as well as in developing directives for new housing. If one considers that over 4 million people in our Nation today live in public housing, even modest improvements can have great import. We are also grateful to Henry Ruth on another account: for his initial sponsorship of our work while director of the Institute in Washington.

We should also like to express our thanks to Peter Gray of the criminal justice coordinating council for his assistance in the preparation of our electronics proposal and for the skill with which he guided it through the many city and State committees.

We are most appreciative of the efforts of those architects and planners who replied to our questionnaire, in particular to those who made their work available for use in our chapter on current practitioners. Here, I should like to address particular thanks to Bernard Guenther, Thomas R. Vreeland, Jr., and Roger Montgomery for also bringing the work of others to our attention.

In conclusion, I wish to acknowledge the work of the following members of the staff of the project for the improvement of security in urban residential areas:

- Barry Hersh, city planner, for his work in data gathering and his relentless efforts in coordinating the many facets of our activity;
- Stephen Johnston, architect and urban designer, for his work in detailing our proposed modifications for construction, and his assistance in framing tests for our hypotheses;
- Jerry Rosenfeld, architect and graduate student, for his coordination of the graphics and development of the visual component of this monograph;
- Betty Mackintosh, Bonnie Stone, and Barry Wood, graduate students in city planning, for their tireless efforts at interviewing and observation in the development of supporting data;
- Dr. Lucille Nahemow, social psychologist, environmentalist, for her assistance in structuring interviews and the "pre- and post-test" models;
- Stanley Fisher, statistician, for his development of the computer programs employed in the various analyses performed on the data;
- Susan Jacobs for her assistance in editing and structuring of the manuscript;
- Sally Felvey, who during the initial period of getting the project underway, occupied the grueling and, at times, thankless role of project administrator, and in the preparation of this monograph served the additional roles of editor and typist.
- Dr. George Rand, psychologist, co-principal investigator in the first year of our study, for his many insights and significant contributions to chapters 2 and 4.

OSCAR NEWMAN, *Director of the Institute of Planning and Housing, New York University, January 1972.*

Summary

A. The Problem: Crime in Urban Housing

Low- and medium-income housing developments in our Nation's inner cities face a problem so severe it has come to threaten their very existence. Victims of a peculiar mix of social and physical circumstance, housing projects have become those areas of our inner cities most susceptible to crime and vandalism.[1] Crimes against persons and property are so commonplace, police are no longer able to view reports of simple burglary with serious concern. Vandalism is widespread and its impact is to further dishearten residents and to lead them to the abandonment of previously felt concern. The withering of funds for maintenance and repair insure that the effects of vandalism will remain with us a long time, in many instances never to be redressed.

In public housing projects security personnel, always considered a luxury by the Federal Housing Assistance Administration, are becoming increasingly expensive and difficult to support from overextended city and housing authority budgets. In New York it has been demonstrated that because of fringe benefits and allowed time off, making one additional patrolment evident entails an outlay of funds equivalent to the annual salary of 10 policemen.[2] The cost of the security personnel is beginning to rival building maintenance costs, while the added effectiveness of increased manpower is under serious question.

The combination of crime, vandalism, and the unattended decline of facilities has led to growing anxieties and expressions of fear on the part of urban residents. The President's Commission on Law Enforcement and the Administration of Justice[3] in its 1967 interview of tens of thousands of people across the country reported that fear of crime has led over 50 percent of citizens to radically change their life-styles: no longer going out at night, shunning any association with strangers, moving their homes and families to what they believe are safer neighborhoods. The situation is sufficiently grave for a number of communities to have voted overwhelmingly to initiate the use of extensive electronic equipment and heavy surveillance by police and public authorities —this even though many understand that the use of such measures could constitute a serious invasion of their privacy and might serve to introduce a martial-like atmosphere to their community.

An alternative approach to this single-minded strategy is to view the problem as a breakdown in the traditional social restraints once present in our cities. This breakdown is the result of a combination of social and physical changes accumulating since World War II: large scale rural to urban migration; the concentration of the underprivileged in core urban areas; the exodus of the middle class to suburbia; the crowding of population into higher and higher densities; the deterioration and neglect of the physical plant of our cities. Our work over the past 2 years, concentrating on only one of these: the spatial organization of our inner urban residential areas, has led us to conclude that the form of the static components of our living environment is, in and of itself, a factor which significantly affects crime rates.

We are now certain that the physical construct of residential environments can elicit attitudes and behavior on the part of residents which contribute in a major way toward insuring their security; that the form of buildings and their groupings enable inhabitants to undertake a significant policing function, natural to their daily routine and activities. These functions act as important constraints against antisocial behavior. We believe them to be a most effective form of target hardening not prone to the changing modus operandi of criminals and one which unmistakably make evident to prospec-

[1] The New York Times, Oct. 29, 1970.

[2] New York City Criminal Justice Coordinating Council Report, 1971. Page 34.

[3] The President's Commission on Law Enforcement and Administration of Justice, *The Challenge of Crime in a Free Society*, New York: 1968, p. 62.

tive criminals the high degree of probability of their apprehension. How these physical mechanisms operate, how they combine with social pressures and opportunities to create restraints on criminal activity is the subject of our study and this monograph.

Through first-hand and statistical analysis of over a hundred housing projects across the country, both public and private, we have formulated a model for residential environments which incorporates those ingredients of their physical design which have crime-inhibiting qualities. Our selection of design aggregates for this model have had a common goal: to isolate those mechanisms which allow residents themselves to assume responsibility for insuring a safe, productive, and well-maintained living environment; mechanisms which also thwart the criminal's initial recognition of opportunity. We have termed this model defensible space as it best expresses the primary function intended of these physical design aggregates: to release latent attitudes in tenants which allow them to assume behavior necessary to the protection of their rights and property.

It may be disconcerting for some to learn that the form of the physical environment has capacity for not only limiting activity but for evoking behavioral attitudes and responses from inhabitants. Where we are probably all familiar with the restrictive capacities of architecture when employed as a buffer against intrusion, both through the use of high walls and by the clustering of buildings to create fortlike configurations, the evidence we have been compiling over the past 2 years indicates a far more significant capacity: that by grouping dwelling units in a particular way, by delimiting paths of movement, by defining areas of activity and their juxtaposition with other areas, and by providing for visual surveillance, one can create—in inhabitants and strangers—a clear understanding as to the function of a space and who are its intended users. This we have found will lead to the adoption by residents, regardless of income level, of extremely potent territorial attitudes and self-policing measures.

As an example of the crime deterrent capacities of the restrictive aspects of architecture—that is, those which either prevent or create opportunity—is illustrated by our findings on the pattern of burglaries at Van Dyke Houses in Brooklyn. The typical floor plan, shown in figure 5–3, page 101, identifies apartments A to H.

Burglaries in floors 2–14 reveal a very distinct pattern; 39 out of a total of 60 take place in the "A" line of apartments. This is more than five times higher than the theoretically expected number. An examination of the crime reports reveals the probable mode of entry: the bedroom window is usually found broken or tampered with. Note that this window is readily accessible from the window in the rear stairwell adjacent to the apartment. The two windows are in fact at right angles to one another and their ledges separated by only two and a half feet. Also, because of the relative ease of access to ground floor windows, the first floor in the high-rise buildings are more vulnerable to burglaries than all other floors; 17 percent of the burglaries occur on the first floors throughout the high-rise buildings. The expected value would be approximately 7 percent.

The above illustrates most adequately the capacities inherent in architecture to create or delimit opportunity. We expect that these are well known to most people from their day-to-day confrontations with the physical environments they inhabit. This, however, is our point of departure. We hope in fact to reveal another inherent capacity of architecture: its ability to define zones of territorial influence which when combined with created opportunities for surveillance enable inhabitants to naturally act as their own policing agents. Most importantly, the definition of spatial domain by reducing the ambiguity of intended user, enables residents to adopt potent attitudes in the protection of their rights and belongings.

As an example, the area outside a building, by the ingredients of its design and its relation to adjoining buildings and activity areas may come to be understood as being public in nature and so will support a range of ambiguous behavior: inhabitants and intruder alike can roam or loiter freely without having to give account of himself or his pursuits. The same space, redesigned, and reconnected with surrounding buildings and activity areas, both internal and external, can come to take on a definite semiprivate tone. This redefinition may involve both real and symbolic barriers, or the reassociation of areas, but through its transition the range of activity which can occur within it, and by its users, will have been severely limited. The space will no longer tolerate ambiguity: the loitering of a stranger within its confines no longer "fits" and will not go unattested.

This monograph is a discourse on those oper-

ating mechanisms in the physical environment which control people's attitudes and behavior in the spaces they inhabit and use. It is a study of the interaction of the behavioral and the physical and so has involved the combined working efforts of a team of physical planners and social scientists: architects, psychologists, sociologists, city planners, and statisticians. This interdisciplinary effort, probably the first of its kind undertaken at this scale, has proven stimulating to its participants, and, we hope, will prove useful to urban residents, communities, and the housing agencies who serve them.

B. History of the Project

The first phase of our current project, begun in February of 1970, involved a national review of similar on-going work: of housing projects both completed and contemplated which incorporated hypotheses similar to our own. To this end a questionnaire was distributed to housing authorities, planning agencies, architects, developers, police departments, and academic investigators around the country.

The questionnaire was a compendium of papers presented at a conference on Defensible Space sponsored by the National Institute of Law Enforcement and Criminal Justice of the U.S. Department of Justice. The conference was held at Columbia University on November 13 and 14, 1969, and was attended by the directors and representatives of the housing authorities of the cities of New York, Cleveland, and Newark; Federal representatives of the Department of Housing and Urban Development; the Director and representatives of the National Institute of Law Enforcement and Criminal Justice; and nationally prominent professionals in the fields of housing, architecture, psychology and criminology, representing a range of professional and research institutions. The list of participants and the conference agenda are contained in Appendix A.

From the replies to our questionnaire, we found many individual housing professionals and government agencies projecting like hypotheses—some of which had been incorporated in housing project design. Almost universally, we found expressions of concern with the problems of physical design and its possible implications for security and vandalism. The extent of cooperation we have received—the willingness of professionals to impart information—has been most encouraging. Their replies have been particularly useful in enabling us to refine our hypotheses.

The third and longest phase of our project involves the unification of hypotheses through their incorporation as design directives for the actual modifications to the physical plant of various housing projects. These physical modifications are being undertaken within the framework of a series of pre- and post-test studies to be performed over a 3-year period, involving controlled interviews, surveys, and statistical measurement. In preparation for this, interviews of 634 tenants in 10 projects were completed.[4]

Detailed designs for two housing projects, Clason Point Gardens and Bronxdale Houses and schematics for a third were prepared and presented to residents and to the management of the New York City Housing Authority. These plans were approved and funds allocated for their implementation. A full description of these plans, including resident characteristics, site and building conditions, design directives for the modifications, and illustrations of proposals, and photographs of the initial construction are presented in Appendix E.

C. Structure of the Monograph and Summary Conclusions

This text, though not intentionally directed at the general reader, nevertheless refrains from an over-indulgence in technical terminology and side references to work familiar only to other colleagues in research. We have chosen to sketch broadly the full range of our pursuits, rather than discuss any particular portion in full detail; that will have to wait for the conclusion of additional study. Our primary purpose is to familiarize concerned professionals in the fields of housing, city planning, and crime prevention with the scope of our work, the nature of our attack, and some of our findings.

In this monograph we have described the crime problem facing residential areas and discussed its origins and present impact. Chapter 1 documents the alarming rise in crime rates in our urban centers and isolates public housing as the most vulnerable of those residential areas to be struck by this increase. Not only is the crime problem

[4] a. Clason Point, 96 interviews; b. Bronxdale, 87 interviews; c. Gravesend, 40 interviews; d. Hammel, 50 interviews; e. Breukelen, 65 interviews; f. Edenwald, 70 interviews; g. Throggs Neck, 36 interviews; h. Brownsville, 87 interviews; i. Highbridge, 40 interviews; and j. Van Dyke, 63 interviews.

more intense in public housing, but available methods of combatting crime are more severely limited, by both financial resources and legal sanctions. Traditional measures employed in private development—the addition of security personnel and surveillance equipment and placement of severe restrictions on entry to and use of areas —are simply not applicable to public housing.

Although solutions may necessarily differ in the two sectors, the root of the problem is essentially the same: it can largely be attributed to the breakdown of productive social mechanisms, which in turn relate to changes in the spatial configuration of the urban living environment as documented in chapter 2. Our acute, and apparently increasing, inability to control crime in urban areas is due in large measure to the erosion of territorially defined space as an ally in the struggle to achieve a productive social order. The problems faced by residents in maintaining a territorial identification with areas immediately surrounding their homes is accentuated and compounded by the physical design of their dwellings. The scale and density at which our cities are being constructed does not lend itself easily to expressions of territorial unity, but rather serves to enforce a physical isolation and anonymity upon its residents. Certainly it would be unrealistic to speak of transforming, through design, a city of over 1 million into unified social entities. But it is possible, through the physical design of residential groupings, to allow inhabitants to regain proprietary interests and feelings of territorial belonging, thereby creating functional and productive social groups and restoring human scale to city life. The restoration of these territorial prerogatives can be as effective and cogent a means of crime prevention as any security devices now in use. Although our solutions may, in part, have been influenced by financial and legal constraints, in practice they prove to be far more productive in their social implications than do traditional security measures; for this reason they should find equal application in the private sector.

In chapter 3 we have outlined hypotheses which define those ingredients in the physical design of housing projects which influence residents: attitudes and effectiveness in crime prevention. These hypotheses fall into four major categories: (a) how the subdivision of projects and buildings can encourage tenants to assume territorial attitudes and prerogatives; (b) how design augments the capacity of residents to consciously survey their living environment; (c) how, through geographical juxtaposition with "safe" areas, the security of adjacent areas is improved; and (d) how design influences the perception of a project's image, stigma, isolation, and vulnerability. The intent, in each case, is that of constructing a physical environment which will enable residents to assume responsibility for maintaining the security of their residential domain.

In order to assess the extent and nature of fear of crime that exists in public housing, we conducted interviews in eight New York City Housing Authority projects, representing a wide variety of building prototypes. Our preliminary findings, as documented in chapter 4, show that residents identify "fear of crime" as their most pressing problem; their highest priority for expenditures of Federal funds is to reduce crime and criminal opportunity. Public areas of building interiors (stairs, corridors, lobbies, and elevators) were, in general, more feared in high-rise than in low-rise buildings. This may be explained in part by the fact that the large number of persons housed in a high-rise building make it difficult to differentiate stranger from resident. The interior areas of project grounds were found to be more feared by tenants than surrounding public streets, and were consciously avoided as access paths wherever possible. An apparent contradiction arises here between the relative merits of closing streets to maintain the territorial integrity of a project and preserving streets and their accompanying activity to provide the security which comes with intensive use. In general, we have found that proximity of a heavily used artery does not, in and of itself, increase the security of adjacent areas. For such juxtaposition to be beneficial, police or other authorities must include the area in their formal patrol; in addition, the other users of the street must be persons who have a clearly defined interest in preserving the safety of the area and who feel competent to exercise their moral and proprietary rights.

The statistical research we are employing to measure the validity of our hypotheses are discussed in chapter 5 and fundamentally involve two methodologies:

Method one: project comparison on an individual basis

The primary difficulty in determining the effect of the physical design of a project on its crime and

vandalism rate rests in isolating the physical design characteristics from the numerous other variables also affecting crime rates: age of tenants, income level, broken families, crime index of surrounding community, variations in quality of police protection, etc.

On an individual basis, therefore, we attempted to isolate pairs of housing projects which were located adjacent to each other, shared similar tenant characteristics, were in the same urban neighborhoods, and received similar police protection—but which were also decidedly different in physical plan and design.

By so doing, we hoped to be able to hold all of the other enunciated variables affecting crime constant, while looking only at variation in physical layout and its effect on crime, vandalism and tenant satisfaction (as measured by move-out rates).

Method two: conceptual model and regression analysis

By far the more ambitious and laborious of the two efforts for determining statistical correlation of our hypotheses has been our work in regression analysis. This effort involved comparison of almost all of the 167 projects in the New York City Housing Authority. Clearly, the range of variables here is prodigious. It was therefore necessary to first create a conceptual model encompassing all variables required in the prediction of crime rates and then to undertake a step-wise regression analysis to weigh out the nonphysical variables.

The results of these comparisons, as described in chapter 5, have been encouraging and supportive of our hypotheses, in that we have been able to find up to 260 percent variations in crime rate attributable to physical design differences alone.

Well aware that our recognition of the significance of territoriality is not unique to the architectural and urban design professions, we have attempted in chapter 6 to acknowledge those of our predecessors who, in theory or practice, have engaged in similar work. Among the most influential of intellectual predecessors are Elizabeth Wood and Jane Jacobs. Miss Wood's social design theory is the result of her many years of experience with the Chicago Housing Authority. Mrs. Jacobs, a journalist by trade, has been an eloquent spokeswoman for the subtleties of urban life particularly the ambience of city streets and their informal social controls. On a more technical level, Schlomo Angel has formulated design recommendations which rely on maximization of surveillance opportunity as the primary mechanism of crime control, as expressed in his "evening square" plan. Although his approach may seem similar to ours, it becomes clear that his advocacy of urban planning for surveillance intensification is not the result of a comprehensive understanding of the problem.

The monograph concludes with illustrations of 10 recently completed housing projects, both publicly and privately developed, which incorporate "defensible space" design features directed at providing residents with natural means for insuring themselves of a safe living environment. These have been selected as prototypes from all areas of the country, including one from England; they range from high-density, inner city solutions to low-density, suburban examples, and have been designed for very low to upper-middle income oppulations. Illustrations include project site plans, plans of building interiors, photographs, isometrics and cut-aways, all necessary to the understanding of how the many components of built environments interact to provide social opportunity and security.

The 10 housing developments are discussed as illustrative of our findings and formulated hypotheses. Most are virtually devoid of crime and vandalism, although located in high crime, inner city, areas. Their presentation at this point is the first step in our formulation of design directives for new housing for the purpose of improving security.

D. Application of Study Findings and Conclusions

The past few years have witnessed efforts by the Federal Government, in partnership with large corporations, to apply large-scale technological and financial methods to the mass-production of housing: witness the Department of Housing and Urban Development's *Project Breakthrough.* One danger is clear: in our Nation's concern for coming to grips with the problem of providing mass-housing, we may be moving into a period where technological and economic acumen in the provision and construction of buildings have become ends in themselves. A parallel empirical and theoretical breakthrough is necessary in defining the social and psychological constraints with which these new forms will have to reckon. It is our hope that this initial collection of data and our corresponding testing of hypotheses over the next 3 years will be able to tell us whether productive

social energies can be harnessed and made to work more effectively through design.

Ultimately, our goal will be to create and disseminate specific design guidelines, derived from these action experiments, which will increase the intensity of use and productive social functions of residential areas, parks, open spaces, streets and commercial facilities. Guidelines will be created both for redefining existing facilities and for stipulating standards and zoning recommendations concerning new construction. We anticipate the benefits of our program of work to lie:

1. In the specification of design guidelines that will be adopted by housing agencies in assigning funds for publicly assisted housing.
2. In the dissemination of data to the private sector in the form of suggested design innovations to insure the social viability of private as well as public residential environments and improve their security.
3. In the extension of these principles to other urban settings, e.g., business areas, institutional sectors and transportation centers and facilities.

The successful testing of our "defensible space" proposals and the body of guidelines derived from empirical data have immediate implications for the renovation of public housing in New York City, as well as other cities which face similar problems. In the long range, they can: (a) influence the design of new public housing facilities, (b) by their incorporation into mandatory guidelines and standards, govern the design of publicly subsidized middle-income housing and (c) serve as strong recommendations for housing built by the private sector on the basis of persuasive evidence.

Chapter 1. Defensible Space as a Crime Preventive Measure

A. Origins of Defensible Space

The term *defensible space* was born at Washington University in St. Louis, Mo., in the spring of 1964 when a group involved in the study of ghetto life in the now notorious public housing project Pruitt-Igoe, began an inquiry into the possible effects of the architectural setting on the social malaise of the community, and on the crime and vandalism rampant there.

At round table discussions involving two sociologists, Lee Rainwater and Roger Walker; two architects, Oscar Newman and Roger Montgomery; and members of the St. Louis Police Academy, an endeavor was made to isolate those physical features which produced secure residential settings—even in the midst of social disintegration and terror. Plans of isolated, well functioning groupings of apartments, within the Pruitt-Igoe complex, were examined to determine what those physical ingredients were that made them workable.

At first hesitatingly, and then with increased assurance, it was agreed that something in the positioning of these limited number of units encouraged tenants to adopt a protective attitude toward the shared space outside their apartments, and that this attitude led to the upkeep of the area and to its safe use. Everywhere else in the Pruitt-Igoe project, apartments were so positioned along corridors that tenants and intruders alike unmistakably understood that the space outside apartments was public and under nobody's sphere of influence. Privacy began on the inside of a family's apartment door—everything else was just not defendable.

In our subsequent interviews with tenants it became clear that the terms they were using to distinguish those areas they felt they had rights to were in fact evocative of descriptions of besieged encampments. Defensible space became for resident and researcher the term most aptly describing the problem at hand.

Five years later the sickness of Pruitt-Igoe has become a national malaise and inner city life universally recognized as a risky venture. In response, the President's Safe Streets Act of 1968 created the opportunity for intensive, long term studies of the problem, among which is this analysis of the influence of the physical environment on the occurrence of crime.

Over the past 2 years, an interdisciplinary team of architects and social scientists at New York University have been involved in determining the extent to which the physical design of residential complexes and their disposition in the urban setting affects the frequency of crime and vandalism. How, through the choice of building prototypes, the grouping and positioning of apartment units and buildings, the placement of paths, windows, stairwells, doors and elevators, architects unintentionally produce residential settings which make their inhabitants prone to victimization. By contrast where buildings and ground designs are able to reinforce tenant attitudes, they enable inhabitants to adopt behavior which can lead to safer more productively functioning living environments. All of which can serve to temper the fear and paranoia presently pervading the urban scene.

Fundamentally, the physical mechanisms we have isolated as contributing to the creation of defensible space have the purpose of enabling inhabitants to themselves assume primary authority for insuring safe, well maintained residential areas.

Where the research component of our study predominantly involves public housing projects, the results of our findings are applicable to the residential settings of most income groups. The final chapter of this monograph, "Current Practitioners of Defensible Space," presents examples of housing ranging from the inner city to the suburbs—from the East coast to the West. But in all these instances, the physical mechanisms operating to create safety and improve upkeep fall under the category of "self help." The designs catalyze the natural productive impulses of residents, rather than lead them to surrender these shared social responsibilities to an area of formal authority: police, management, security guards, or doormen.

B. Physical Mechanisms for Achieving Defensible Space

We have isolated four categories of physical design ingredients which, independently and in concert, we see as significantly contributing to the creation of secure environments:

- Those which serve to define spheres of territorial influence by dividing the residential environment into subzones within which occupants can easily adopt proprietary attitudes;
- Those which improve the natural capability of residents and their agents to visually survey the exterior and interior public areas of their residential environment;
- Those which enhance the safety of adjoining areas through the strategic geographic location of intensively used communal facilities;
- And finally, those which through judicious use of building materials, the tools of architectural composition and site planning are able to reduce the perception of peculiarity—the vulnerability, isolation and stigma of housing projects and their residents.

C. Apologies to the Right and Left

There have been many occasions over the past 3 years to discuss our findings with public housing residents, police and community leaders. It would be misleading to suggest that our ideas have always been warmly received. More often than not, they have met with initial skepticism. Residents, living with the hour-to-hour terror of public housing, behind steel-plated doors showing the scars of axe blows, have at times expressed incredulous wonder at our naivete. Police, coping with groups of roving teenagers and with drug addicts, both apparently unconcerned with the risks involved or with the possibility of apprehension, have pointed out the costs of physical modifications when compared with police reinforcements. Ghetto community leaders and social scientists involved in antipoverty programs have challenged our fundamental premise, asking if we believe that the crime born of a poverty of means, of opportunity, of education, of representation, could really be answered by the dictates of architectural form. It may be necessary, therefore, to speak to these questions before going into further detail on our work.

We have found that as universal as the skepticism that greets us is the lack of knowledge that a variety of different residential building prototypes can be employed to do the same job, and usually at the same costs. The 150 families trapped in the isolation of the double-loaded corridors of a high-rise apartment building with a single entry, found it hard to understand that the three- to six-story buildings across the street, where two to three families share a hallway and only six to 12 share an entry, was a building alternate which could accommodate equal densities and could be built at the same cost. Where their building suffered the ravages of crime and vandalism, the other building prototype, different from theirs, succeeded in avoiding many of their problems simply by not having created them in the first place. The full impact of what is possible through architectural design is not commonly known. Architecture design does not deal only with style, image and comfort—it can create and prevent opportunity for encounter within a space, in many instances, simply by not providing that space.

Police were surprised to learn that the attitudes of people toward policemen—people from the same areas of their precincts and sharing identical social characteristics, were radically different in different building types. In comparing the attitudes of tenants in two building prototypes situated adjacent to each other in a high crime area, we found that residents in one felt positively about police and their capacity to come to their assistance while their neighbors expressed skepticism and what appeared to be a fear of police. Interviewed on both projects, police said they experienced greater difficulty in responding to calls in the latter because of tenant indifference and hostility, coupled with the problems involved in actually locating apartments within the labyrinth of the project. Some police also noted that the means of evasion and egress open to the criminal in the latter building prototype were so numerous, in the profusion of corridors, fire-stairs and exits, that pursuit was impossible—and immediate response was unlikely to lead to arrests.

It is important that we emphasize at the outset that our proposals for the modifications of building form to improve security are not intended as an alternate expenditure to police protection, but rather as an alternate to other building forms notorious for the security problems they inherently create.

We feel it important to address ourselves as well to those social scientists who work on a day-to-day basis at trying to alleviate some of the root causes of inner city and ghetto crime. On a national basis, the income level of both criminal and

victim correlates with crime 98 percent. The lack of job opportunities; the prevalence of broken families; inadequate educational and institutional facilities all are significant contributors to crime. We do not see our program as a panacea for these ills or suggest that any funds earmarked for new schools, income supplement or the opening of job opportunities be rechanneled to architectural modifications. We feel as does the President's Crime Commission that:

> Society has not devised ways for insuring that all its members have the ability to assume responsibility. It has let too many of them grow up untaught, unmotivated, unwanted. The criminal justice system has a great potential for dealing with individual instances of crime, but it was not designed to eliminate the conditions in which most crime breeds. It needs help. Warring on poverty, inadequate housing and unemployment is warring on crime. A civil rights law is a law against crime. Money for schools is money against crime * * *. More broadly and most importantly every effort to improve life in America's "inner cities" is an effort against crime. A community's most enduring protection against crime is to right the wrongs and cure the illnesses that tempt men to harm their neighbors.[1]

We see our work as operating at a different and independent level of crime prevention. It should not be seen as a replacement of antipoverty programs or additional police, but rather as an independently operating mechanism. If we thought that public officials involved in the allocation of scarce resources saw our proposals as an alternate to investment in other programs, then a case could indeed be made that we were detracting from more primary efforts at crime prevention. However, the need for low- and middle-income housing will be with us for a long time to come. In fact it is just beginning to be felt; and as long as we are going to provide it, we might as well learn something about the success and failure of what we have been providing in the past. Our study is directed at developing directives for insuring that funds put into new housing result in secure and productive living environments.

Lee Rainwater in his article, "Fear and the House as Haven," about his study of Pruitt-Igoe, defined security as the most important need to be satisfied in a residence for low-income groups.[2] He further demonstrates that feelings of insecurity in one's residential environment can lead to the adoption of a negative and defeatist view of oneself, to ambivalence about job-finding and to expressions of general impotence in the capacity to cope with the outside world. The secure residential environment—understood by a resident as haven and read by outsiders as an expression of his ego—may in fact be a most cogent form of social rehabilitation, significant on the level of antipoverty programs.

D. Defensible Space as a Crime Preventive Measure

> *The prevention of crime covers a wide range of activities: Eliminating social conditions closely associated with crime; improving the ability of the criminal justice system to detect, apprehend, judge, and reintegrate into their communities those who commit crimes; and reducing the situations in which crimes are most likely to be committed.*
>
> The Challenge of Crime in a Free Society. *Report by the President's Commission on Law Enforcement and Administration of Justice.*[3]

From the above one can identify three approaches to crime and delinquency prevention: Corrective prevention, punitive prevention, and mechanical prevention.

Programs of corrective prevention begin with the premise that criminal behavior is the result of various social, psychological, and economic factors. Corrective prevention is therefore directed at understanding and eliminating those causes before their effect on the individual channels him into crime. Factors frequently cited as precipitating criminal behavior include economic instability, a history of family problems, lack of opportunity for participation in the accepted life-style of society, and a personal susceptibility to narcotics addiction.

Punitive prevention, by contrast, involves efforts by authorities at forestalling crime by making more evident the threat of punishment and the likelihood of apprehension. Operationally, this includes the enactment of new and tougher laws; the reduction of the time period between arrest and trial; and the streamlining of the indicting process.

Programs of mechanical prevention are concerned with placing obstacles in the paths of criminals. It is a policy which for the moment accepts

---

[1] The President's Commission on Law Enforcement and the Administration of Justice, "The Challenge of Crime in a Free Society," New York: 1968, p. 69. E. P. Dutton.

[2] Rainwater, Lee. "Fear and the House-as-Haven in the Lower Class," Journal of the American Institute of Planning, XXXII:1, January, 1966.

[3] The President's Commission on Law Enforcement and Administration of Justice, "The Challenge of Crime in a Free Society," p. 40. E. P. Dutton. New York: 1968.

the existence of criminals, their modus operandi, and their victims, and frames a program for hardening criminal targets by making them more inaccessible. This is accomplished by providing more secure barriers in the form of better hardware and personnel. The operating mechanisms involve the hardening of target, increasing the risk of apprehension, and, finally, increasing the criminal's awareness of these risks.

Current local governmental efforts at crime prevention involve all three of the above categories: corrective, punitive, and mechanical. Mechanical prevention is usually advocated as the most immediate panacea, although programs directed at corrective prevention and at improving the judicial and punitive apparatus are under serious study in many cities.

Typical means for improving mechanical prevention include: manpower increases in the form of police, security guards, doormen, tenant patrols, and dogs; and mechanical and electronic devices in the form of more and better locks, alarms, electronic visual and auditory sensors, and motorized vehicles to improve the mobility and surveillance capacities of personnel.

The form of crime prevention we will be describing at length in this monograph, "defensible space," was seen initially as a new form of mechanical prevention. However, as our work in understanding and defining the operating mechanisms of "defensible space" progressed over the course of 2 years of study, it became apparent that a good many of our formulations could, when implemented, act as rather cogent forms of *corrective prevention*: mechanisms which could, perhaps, contribute to the alleviation of some of the root causes of criminal behavior.

As an example, our study of housing projects has revealed that children who live in high-rise buildings have a poorly developed perception of individual privacy and little respect for territory. The extent to which a similar lack of awareness of the personal space and property rights of others, in equivalent-aged middle class children, leads to subsequent criminal behavior remains for later study. What is of immediate importance to us is that there is early evidence that the physical form of the residential environment can in itself play a significant role in shaping the perception of children and in making them cognizant of the existence of zones of influence and therefore of the rights of others.

1. Security in low- versus middle-income housing

The report of the President's Commission on Law Enforcement and Administration of Justice, 1968, in attempting to understand the nature of the current crime problem, was able to isolate the prevalence of crime in inner-city areas:

> . . . of 2,780,015 offenses known to the police in 1965—these were index crimes—some two million occurred in cities, more than half a million occurred in suburbs, and about 170,000 occurred in rural areas.[4]
>
> * * * Crime rates in American cities tend to be highest in the city center and decrease in relationship to the distance from the center. This typical distribution of crime rates is found even in medium sized cities such as the city of Grand Rapids, Michigan.[5] (See fig. 1–1, page 5).

Although the President's Commission identifies the consistency with which serious crime occurs in low-income deteriorated areas, it is difficult to properly assign the causes of this increasing concentration of criminal behavior in our core urban residential areas over the past decade. Contributory factors are probably both social and physical in nature, and may involve the increasing concentration of the disadvantaged in our older urban areas; the mix of contrasting income groups in cities not normally present in our economically homogeneous suburbs; and possibly, the peculiar susceptibility of the form of our currently evolving inner urban areas to criminal behavior. A further factor may be concentration of criminal elements in what they have come to recognize as an easy target area; one in which their anonymity is assured and the evasion of pursuit and arrest simplified.

In any case, society's capacity for coping with these problems does not appear to have been able to keep pace with their rate of increase. Those members of the community who are in a position to exercise choice in the housing market-place are moving their families to suburban areas. Many realize that the problems they are trying to escape may end up following them, but they hope at a much slower pace.

Our concern, within the framework of this study, lies in determining means for improving the livability and security of residential environments within the urban setting, particularly for low- and low-middle-income groups. There are approximately 4 million people living in public housing across the Nation today and a comparable figure

[4] Ibid., pp. 66–67.

[5] Ibid., pp. 130–132.

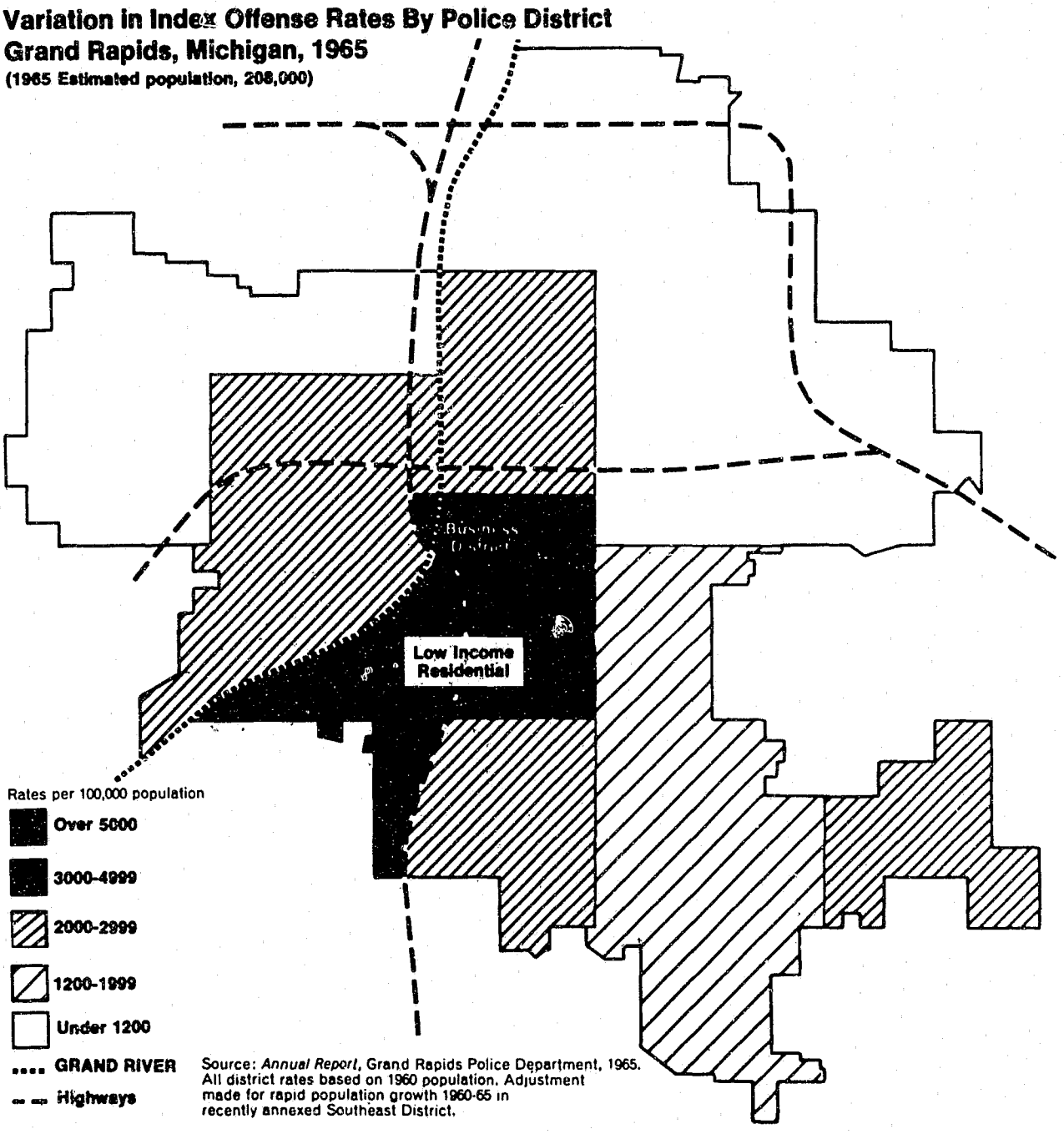


FIGURE 1–1. Variation in Index Offense Rates By Police District, Grand Rapids, Mich., 1965 (1965 Estimated population, 208,000).

living in federally subsidized low-middle-income housing. These are people for whom housing choice in a free-market economy is severely limited. By the nature of their residential location and social associations they tend to be the most continually victimized. Victimization is also a more totally devastating experience to their life structure than it is for upper-income inhabitants. The provision of doormen and security personnel and the maintenance of costly security equipment have been the traditional means employed by upper-income groups for coping with crime problems in housing. These means are not possible within the budget allowance of public housing or federally assisted low-middle income housing.

We feel that the present response of upper-income residents to the increasing crime problem is one which is introverted and withdrawn, and

involves intentional isolation, restricting, and hardening of their private dwelling at the expense of immediately adjacent surroundings. This is coupled with their relegation to others of the traditional responsibilities adopted by citizenry for insuring the continuance of a viable, functioning living environment for their family and surrounding community.

Over the past year and a half we have been exploring the problem of security in low- and middle-income housing where provision of doormen and expensive security hardware is impossible; we have uncovered residential environments which by the nature of their physical layout are able to provide security and continue to function in even high-crime areas. In some instances we have been able to find these environments in immediate juxtaposition to others of different design which suffer the worst agonies of crime.

An illustration will perhaps serve to point up the fundamental differences in security design for low- versus middle- and upper-income housing. The use of a doorman usually requires that entry be restricted to one point in a large complex. To accomplish this it is usually necessary to wall-off a two- to ten-acre housing project. This can result in thousands of feet of street being removed from all forms of social and visual contact. A natural mechanism for providing for the safety of streets has therefore been sacrificed to insure the security of the residents only when within the confines of the complex.

In developments where the use of doormen is not possible due to prohibitive costs, successful designs have been those with as few units as possible sharing a common entry off the street. The designers of these projects have so positioned units, their windows and entries, and so prescribed paths of movement and activity areas, as to provide continuous natural surveillance to the street as well as the building.

While developments embodying both of the above solutions are directed at providing maximum security to their respective inhabitants, there is a fundamental difference in approach and in the beneficial spin-offs which obtain. The first approach is one in which tenants relegate responsibility for security to a hired individual. A doorman guarding one entry to a building complex serving 200 to 500 families is concerned predominantly with restricting entry into the complex. He cannot, by the definition of his job and within the framework of what is physically possible, also be concerned with the bordering streets on which the project sites. The second approach involves tying residential units to their service streets and requires of their occupants that they assume responsibility for the safety of these streets as an extension of their concern for their own domains. Where in the first instance internal security has been achieved by disavowing concern for the surrounding areas, in the second it has been accomplished by insuring that the surrounding streets be made equally secure. For the nonresident user of the street, the second solution is clearly preferable.

2. Nature of crime and its occurrence in public housing projects

Table 1–1 on page 7, compiled from New York City Housing Authority police data, constitutes a dossier on the nature and location of crime in public housing projects.

The New York City Housing Authority Police Department not only keeps records of crimes but endeavors to pinpoint their place of occurrence within a project. Crimes ranging from serious felonies to minor misdemeanors are equally recorded. Complaints are noted even where they have not lead to apprehensions or arrests. Reports also separate out crimes committed on project grounds from those committed inside buildings and within apartments proper. Because place of occurrence is significant information to the housing authority, we have been able to learn where are the recurring danger areas in housing projects and to measure the extent to which physical design of a project is a statistically significant variable.

Perhaps the most revealing of the figures is that 70 percent of all recorded crime taking place in housing projects occurs within the buildings proper. This includes nearly all serious crime: Robbery, burglary, larceny, rape and felonious assault. It leads us to conclude that the buildings themselves, rather than the grounds, are understood by criminals as being areas where his victim is most vulnerable and where the possibility for his observation or apprehension is most minimal. Much of this may be the result of the policy that public housing projects by law and tradition are open to all members of the community. The interior of the buildings suffers, therefore, from being public in nature and yet hidden from public view and consequently unable to benefit from the

Table 1-1.—LOCATION OF CRIME IN PUBLIC HOUSING PROJECTS

Location	Crime				
	Robbery	Burglary	Larceny	Rape	Felonious Assault
Inside:					
Elevator	1,389	1	153	9	9
Hallway	469	6	178	6	17
Stairway	215	0	48	15	6
Lobby	361	3	430	2	12
Apartment	53	1,628	79	12	87
Basement	9	58	16	1	0
Community, health, child care center	8	214	49	0	2
Commercial establishment, store, etc.	13	41	12	0	0
Roof and roof landing	6	0	11	15	2
Project locations unclassified	74	103	58	1	12
Total inside	2,592	2,054	1,034	61	147
Outside:					
Parking lot	41	2	133	1	1
Project play area	16	0	10	0	2
Public sidewalk contiguous to project	68	0	59	0	7
Project locations unclassified	661	6	667	3	98
Off project, department of parks playground	0	0	0	0	0
Off project, city street	0	0	0	0	0
Off project, unclassified	1	0	0	0	0
Total outside	787	8	869	4	108

Source: New York City Housing Authority Police.

continual surveillance to which the public areas of our cities are normally subject.

The statistics further indicate that the specific areas within buildings which are most vulnerable are the elevators (accounting for about 50 percent of all robberies); the entrance lobbies (accounting for 15 percent of the robberies); and the rear fire stairs and the hallways (accounting for 20 percent of robberies). All four areas are peculiarly public in nature and yet screened from public view. The statistics seem to indicate that those spaces which people must use on a continuing basis to get from the public area outside the project to the safety of the interior of the apartment are particularly dangerous if screened both from unconscious observation and from formal patrol. In this light, the elevator is a space public in nature but totally screened from all observation. For the interval of the ride it fulfills all of the criteria of a crisis area and is so understood by tenants.

Although most reported rapes occur in the fire stairways, apartments, and roof landings, our inquiries have led us to conclude that the initial encounter and threat is in fact made in the elevator, corridor, and lobby areas. The victim is then moved at the threat of force to one of the three places mentioned where observation and traffic are even more minimal.

It is interesting to note that 60 percent of felonious assaults occur in apartments proper and that they usually take place among people familiar with each other. The remainder take place in the hallways outside apartments and in the lobby.

In this monograph we will not deal with crime in the interior of the dwelling unit proper. The apartment unit and its design are accepted as given and are by definition beyond the boundaries of this study. Our involvement is with the design of those spaces outside the privacy of the dwelling unit. We are concerned with the way in which the units themselves, their entry systems and clustering, and their positioning in the existing urban fabric all combine in affecting the safety of the physical environment both inside the building and out.

E. The Secluded Adult Middle-Class Environment

In September of 1970, a 50,000-unit housing development, Co-op City, built privately for coopera-

tive ownership, was completed in an outlying area of the Bronx, N.Y. It was occupied almost overnight, predominantly by an older middle-income class population fleeing their neighborhood in an adjacent area of the Bronx. In a random interview of 50 residents, most found their new environs inferior to the areas they had abandoned: Their apartments were smaller; the commercial facilities were few and goods more costly; there was little to no entertainment available; they had left many friends and institutions behind—and so on. Where many of these deficiencies may be remedied with the completion of the project in future years, the new residents bemoaned their loss only briefly. They all felt that the deficiencies were a small price to be paying for having been provided with what they most craved: security. They had succeeded in escaping from an environment, once friendly, but which now terrified them. The frequency of muggings, robberies, assaults—on an older generation—by new immigrants to "their neighborhood" had made continued life there impossible. Almost all of those interviewed said that in their old neighborhood they had long since given up any thought of going out at night. All knew of or had experienced burglaries first hand.

What is fascinating and fearful is the way the population chose to solve its problem: They had fled en masse and isolated themselves in a new lower middle class ghetto of their own making. Now in Co-op City—they live among their own kind: Middle-aged or older, largely Jewish, Italian, or other ethnic backgrounds, with average incomes about $10,000. Normally, a gregarious, culture seeking involved group, they now make do so that they can breathe more easily.

Interestingly, from the viewpoint of this study, the buildings and residential settings they now occupy are much less defensible than what they left behind. If only a small percentage of the criminals that victimized them was transferred to within striking distance, they could wreak a havoc which would have made their abandoned neighborhood look a haven. In understanding what makes Co-op City safe and workable, if only for the present, there is much to be learned about the problems of securing residential environments and of the limitations of defensible space theory.

The New York City RAND Corp., in a study of crime in public housing to be published shortly, estimated that about half of the people responsible for crime lived in the very projects they victimized. This estimate was difficult to make in that only a small percentage of criminals are apprehended; trial procedures are long, and convictions few. Nevertheless our interviews of hundreds of tenants and Housing Authority police confirm these findings with the following distinctions: That criminals do live a few blocks away but both within projects and surrounding area, and a criminal seldom if ever victimizes his own building except in cases involving interpersonal confrontations.

In this light, if one considers that low income also correlates highly with crime, moving away from an area which was becoming increasingly occupied by low-income families was correctly moving from crime. The question remains how far away is away? How long before the vulnerability of the new development is recognized? How long before the criminal extends his mobility and range of operation?

Distance we recognize is one operating mechanism at Co-op City that insures security—population uniformity is another. So long as all the families in Co-op City are white, middle-class and elderly, any dark-skinned young person, not partial to respectable habit, will stand out and have the police sicced on him. But there is already a small percentage of black and Puerto Rican young families living at Co-op City—equally seeking the good and secure life. This no doubt complicates things and will increasingly do so as the dust of the new development settles.

Segregation of income and age group remains the most potent crime preventive mechanism in operation at Co-op City. The President's Commission found, as did all previous correlations of crime and age group, that males between the ages of 15 and 24 are the most crime-prone group in the population—and for the last 5 years this age group has been the fastest growing in the population. Co-op City has fewer than 5 percent of its population between the ages of 15 and 24, while the 1970 census indicates a national average of 11.3 percent. The questions is how long can Co-op City remain disproportionately populated? Criminologists suggest that high-density urban residential areas like the abandoned Bronx district provide a high degree of anonymity and social isolation which makes the communal control of the criminal difficult.

Interestingly, Co-op City at 50 dwelling units to the acre (including commercial facilities and roads) rivals this density. Strangely, too, the building prototypes employed, and their relative posi-

tioning makes the opportunity for anonymity far greater.

The fundamental premise of our "defensible space" proposals is the subdivision of the residential complex to allow inhabitants to distinguish neighbor from intruder. Where at Co-op City this was achieved by isolating a large, uniform population, it is a tactic not possible in existing, contiguous, diverse urban agglomerations. The scale for creating distinctions must therefore become finer. The very ingredient that prohibits the criminal from hitting his own building—the chance that he may be recognized, is the mechanism we wish to exploit and extend. Through hierarchical subclustering and extension of the areas of territorial domain to the public street, we hypothesize that an equivalent capacity for distinguishing neighbor from intruder can be achieved.

Our work is directed at the reorganization of the existing urban residential fabric to make it effective in today's evolving circumstance. We are committed to working for a low- and middle-income who cannot buy the alternatives of moving out or personal doormen. Our interviews show rather conclusively that most ghetto and inner urban residents are as terrified and as victimized as the Co-op City escapees. The recently published Justice Department survey* reveals that where crime rates in ghetto areas are five times the urban average, most of the victims are ghetto residents. Only a very small percentage of ghetto dwellers are criminals—most are victims. What we are endeavoring is to find a means for strengthening the resistance capacity of the low-income victim.

Subtle difficulties arise in attempting to improve the security of low-income, as compared with middle-income housing; these are mainly a function of the social forces at work on the resident populations. The social characteristics of the middle class greatly facilitate the task of providing them with a secure environment. Middle-class people have developed a refined sense of property and ownership; they have a measure of self-confidence and pride in their personal capabilities. Their everyday experiences reinforce their social competence; they can retain some control over the forces that shape their lives, and they recognize alternatives among which they can choose. These positive social contacts give them a feeling of potency in protecting and enforcing their rights within a defined sphere of influence; for instance, they are well-practiced in their demand for and use of police protection.

In contrast, it is more difficult to improve security for a lower class population, not because of a higher concentration of people with criminal intent, or because of limited financial resources, but because of attendant social problems. The life of the lower class is conducted under duress. For the lower class person, daily social contacts reinforce his feelings of impotence, erode his self-confidence and make remote any possibility of improving the quality of his life. Having been closed out of the game—financially, politically, educationally, psychologically—he responds by changing the rules. It may indeed be unrealistic to expect an individual to assume positive social attitudes and influence in one sphere of his life when he has been told, clearly and consistently, in the other facets of his existence, that he has no such power.

It may appear, in our defensible space proposals, that we are viewing the world from a middle-class perspective; that we are trying to encourage everyone to assimilate middle-class values, and to assert essentially middle-class proprietary attitudes by providing them with a middle-class environment. Are we not forcing an attitude and life style upon people who in fact do not desire it? To the contrary: our interviews with hundreds of public housing residents have revealed that an overwhelming majority of lower class people hold the same goals and aspirations as do the middle class. Their formation of a distinct subculture has been their response to the constraints, both actual and psychological, imposed by the larger society. These findings are similar to those documented by Lee Rainwater in his study of Pruitt-Igoe residents, "Behind Ghetto Walls":

> Lower class people are amply exposed to both of these cultural ideals. They know that some people make it big by the job they have and the money they are able to accumulate, that others do not make it so big but manage to live comfortably in homes in pleasant neighborhoods, surrounded by an increasing measure of material comfort. Most lower class people at some time entertain aspirations in one or both of these directions, and it makes no sense to talk of a lower class culture so divorced from that of the larger society that the validity of these goals is denied. However, many lower class people come to the conclusion that neither of these ways of life are possible for them.[6]

* "The Challenge of Crime in a Free Society" also published by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

[6] Rainwater, Lee. "Behind Ghetto Walls." P. 370. Aldine Publishing Co.: Chicago, 1970.

1. Territorial exclusion and crime displacement

If the territorial reinforcement we are advocating does in fact empower certain groups to control the semipublic space adjacent to their dwelling units to the exclusion of others, are we not by this exclusion placing a further restriction on the already limited resources of our cities? Our early findings tend to give us hope that the opposite may in fact be true. Studies of the use of grounds of seven housing projects, paralleled with tenant interviews, has shown that the grounds of projects which were intentionally left open for public use —as a contribution by the housing authority to the open-space needs of the city—were unused by either group, public housing residents or members of the surrounding community. Each group, by experience, had found their activities easily disrupted by other groups and found that their laying claim to the right to use the space for play was difficult to enforce. By contrast, such space provided within the interior of a project and clearly defined by boundaries was more intensely used by both groups—by project residents first and most frequently and by surrounding neighborhood children and groups secondarily and casually at the invitation of the local group.

Publicly owned and perceived space in city playgrounds was found to be workable with the provision of a playground director who served as definer of the rules of space use, as settler of disputes, policeman, judge and executioner (. . . Out!). Is this perhaps not also the present role of city police in insuring the safe use of public streets?

In the course of our work we have received expressions of concern from members of communities adjacent to the projects we have been working in. Their concern is that our endeavors will only succeed in displacing crime from one area to another. There is some evidence to support their hypotheses. Arnold Berkman, housing authority police captain, who keeps careful tabulations of variations in crime rates in all areas of his jurisdiction, informs us that as a vigorous police effort takes place in one high-crime area, criminals respond by moving into adjacent areas. There is no evidence, however, that this is a 100 percent displacement.

The nature of criminal acts are sometimes distinguished by the intent and motivation of the criminal. Projects which have been made defensible will succeed only in displacing the hardened criminal involved in premeditated crime. Since a sizable percentage of crime is estimated to be crime of opportunity, our work in reducing opportunity may not result in too much displacement.

Our work is primarily concerned with making the residential environment a haven from external crime. The long-term crime prevention implications of a secure home cannot be understated—particularly for low-income groups. In many ways we would be content in achieving only that. But in so doing it may be that through the ensuing displacement of crime we would be making other nonresidential functional areas of our cities more unsafe: shopping, institutional and business areas. For the moment we are content to argue that we feel these areas are served better and inherently benefit more from formal police protection.

Perhaps too, having succeeded in securing the residential environment from crime, and accepting for the sake of argument that displacement is total, it may not be an altogether insignificant accomplishment. If one accepts as a proposition that the total amount of crime cannot be diminished, only displaced, the question arises is it then preferable, to have a pattern of uniformly distributed crime or one of crime concentrated in particular areas and absent in others? We feel the second proposition to be more desirable: the home and its environs must be felt to be secure or we begin to threaten the very fabric of our society. People will, we believe from our interviewing, accept the fact that certain areas of their city are unsafe and that there is risk involved in their use. This will and does limit people's use of them to special or necessary occasions. And too, people will, if very frightened, find collective means for using these areas to add to their safety. But the home is the area on which no restriction of use can be placed. We spend most of our time there; it is where our future generations are raised—where our most susceptible members live. It is the shelter to which we return from our forays. It must be secured, even at the expense of making other areas more dangerous.

There are, however, serious moral implications to the question of displacement and they are not easily dismissed. In the next few years of our study we will be examining the changing patterns of crime in the areas surrounding the projects we have altered just as closely as the projects themselves. The full extent of the displacement prob-

lem must be understood and means for coping with it developed.

2. Conspicuous absence of consideration given to security by architects

Another point must be made: This in the form of an apology for the architectural profession. As it becomes evident from our ensuing discussion that different physical environments can, in fact, so affect behavior as to reduce crime and vandalism rates by over 50 percent, the question must occur, "as to why the architectural profession continues to provide those environments which result in high-crime rates, the destruction of property and the terrorization of inhabitants, and which make the residential population particularly prone to criminal action." The explanation probably does little to enhance the view of the profession held by the public, but we hope that the very act of this research will also temper any critical view we may be responsible for creating.

Little work has been done within the profession to scientifically measure the impact of physical design on the psychological attitudes and social behavior of an environment's users. The number of factors requiring synthesis and resolution in the design of a building is so large, and at times so conflicting, that unsubstantiated insights into the relationship of architecture to behavior often go by the board. In justice, we have encountered many architects who intuitively shared our findings. Many have incorporated them as directives in some building designs, but have excluded them in others, in what may appear as facile inconsistency. Their justification for this apparent ambivalence is their uncertainty as to the real effectiveness of these design considerations. Another set of important pressures are the building and fire codes of each community and the economic restraints on the developer which together conspire to make secondary any consideration of insights into the security implications of design.

Restrictions on the planning freedom of architects

For the most part the planning directives which result from our hypotheses can be incorporated in the design of residential groupings without restricting either the compositional imagination of the architect-planner or restricting his more professional role of providing for the functional needs of residents. The rules governing design for defensibility are not of the nature that they replace other design heuristics, or prevent inclusion of other functions. On the contrary, as should be made plain later, they can ensure that those amenities provided will actually be used.

Our preliminary work has already indicated that some of our design directives will run afoul of building codes and fire regulations in some cities. Other of our innovations indicate the need for revising accepted high-rise housing design practices, presently dictated by and strongly reflecting frugal economic practice. These issues will have to be dealt with in detail and at length in a future component of the study dealing with effectuation. Until we can address ourselves fully to these questions, we have selected for inclusion in this monograph only those examples and proposals which are immediately applicable.

Limitations in causal capacities

Fundamental to this monograph is the proposition that through manipulation of the building and spatial configurations we can create areas for which people will adopt a territorial concern. This may suggest that if our data and design were sophisticated enough, it would be possible to predict and control a wide range of behavior and social relationships through provision of particular architectural settings. Ours is a much smaller thesis: That it is possible through the provision of facilities in certain juxtapositions to allow the release of behavioral attitudes and social relationships which are latent. As an example: The provision of play facilities for infants at each floor level of an apartment building, defined by the doors of the apartments facing it, may bring mothers out to use it and may further result in the development of limited friendships and the cognizance of neighbors; a desire to keep up the facility and make it secure for the children; and a recognition and screening of strangers.

These relationships are understood to be those of mutual assistance to support commonly desired situation. Mutual assistance may in some instances lead to further friendships and the sharing of responsibilities in the care of children, etc., but these are unimportant to the operation of our hypotheses. The recorded instances of a few welfare-supported mothers cooperatively sharing a house is not we feel a byproduct of a shared architectural setting, but of a social and possibly cultural need. No building groupings or architectural setting is

likely to find its reflection in the creation of a particularly structured society, regardless of how preciously this notion may have been held. Isomorphism remains a happy delusion of architects.

We are concerned that some might read in our hypotheses and proposals the implication that architecture can have a direct causal effect on social interactions; ours, rather, is a concern with psychological attitudes and behavior. It is our contention that in instances when architecture appears to affect social relationships, it is in fact only providing opportunity for latent social tendencies to come to the fore. The psychological implications of physical form appear, by contrast, to be much more significant and universal.

Some might conclude that, if for whatever reason it were found desirable, it might be possible to apply our findings in reverse: for authorities to develop environments which would intentionally isolate people and elicit their antagonisms, fears, and paranoia. The rules developed for one end, if valid, could after all be employed to achieve another. Where this might be partially true, our research indicates that even the most disadvantaged of people will not tolerate extreme negativism in their living environment. Pruitt-Igoe, an accidental architectural and administrative atrocity, did, for a while, succeed in creating a subculture of antisocial human beings, victimized by criminals and the deranged and by residents preying on each other. Most residents rebelled by simply moving out; others got together to insist on administrative and physical changes. With a 70-percent vacancy rate, in circumstances where housing for welfare recipients is in very short supply, Pruitt-Igoe suggests there is little to fear in the advent of intentional negative planning to achieve negative results.

Chapter 2. Territoriality

It is our contention that the pervasiveness of crime in the cities may in large measure be due to the erosion of territorially defined space as an ally in the battle to maintain social order. Ethnic and cultural divisions provided previous generations of city residents with a form of solidarity that allowed them to overcome the sordid effects of poor housing environment. The physical format of early industrial cities paralleled cultural subdivisions; cities were internally divided into self-sustaining communities, each operating as a socio-spatial unit and taking on a burden of responsibility for the safety and well-being of their area. As a result, both positive and negative social consequences of housing design were not as evident as they are today. In cities where formal construct did not echo social structure, ethnic and cultural bonds were sufficiently strong to overcome physical barriers.

Interestingly, at a time when strong ethnic and cultural bases existed for forging bonds of solidarity among city dwellers, there was also recognition of the importance of providing a physical setting in which this natural community awareness could be fostered. The early public-housing projects (for example, First Houses in New York) were designed with great sensitivity to social needs, and included walk-up units, interior courts, and symbolic designations dividing the project grounds from the street.

The design of contemporary housing is paradoxical. At a time when ethnic and cultural bonds no longer lead to spontaneous awareness of community identity, there appears to be still less recognition of the potential uses of physical design as a means of promoting positive social outcomes. Physical isolation of family from family, typical of much contemporary high-rise design has, more than ever, come to imply social isolation as well. The creation of large, monolithic projects has come to imply social anonymity.

An important byproduct of this trend has been the abrogation of responsibility for maintaining the security of areas around the home to police and other public authorities. Residents feel they have little right to question the presence of strangers near their home; and, even if they think this within their mandate, they are reluctant to take the chance. High-rise elevators, lobbies, and corridors provide no advance warning of impending danger, no behavioral choices other than direct defense or complete submission to an intruder. There are few opportunities to develop informal interdependencies among neighbors which would directly discourage crime and vandalism.

Street crimes may have reached epidemic proportions because of this lack of concern for the social consequences of residential design. Modern residences have encapsulated man from his neighbors, made improbable the development of local allegiances, relieved the individual of the capacity to defend his own territory and, in short, made police and the courts his only line of defense.

A. Public Housing and Territoriality

In public housing the breakdown of territoriality as a productive social mechanism has been more complete than in other residential environments. Halls, lobbies, and grounds are, by law, considered public facilities. This means that the small penumbra of safety surrounding the home has, by definition, been eliminated. Strangers have a legal right to enter zones which in nonpublic housing are considered restricted areas. Furthermore, residents are incapable of hiring doormen or elevator operators who are a necessary adjunct for achieving definition in high-rise apartment building environments.

Perhaps most important, it has eliminated an outstanding means of crime control and territorial defense—the concept of the intruder or stranger. In modern society, group identity has been detached from its moorings in shared, community-oriented space. With this transformation of the group, the concept of "strangers" and "familiars," so long an active shaping force in animal evolu-

tion, has been given over to social utopian conceptions of man: that to define someone as a stranger dehumanizes the opponent and is the source of racism, social strife and war, This humanistic philosophy would have it that all strangers be treated amiably as members of the "family of man."

The abhorrence of the concept of nationality or local identity is in part based on a misconception of the function of territory and defense in animal evolution. In the animal kingdom there is no monolithic reaction to strangers, or to strange behavior, through which the invader is immediately turned into a ferocious enemy. First there is the mild response to strangeness, equivalent to laughter, to jar the intruder back to normalcy. The greetings and appeasements of human strangers with one another ("excuse me"), accompanied by smiles or slight gestures of submission, are humble versions of these courtesies evolved for the most part in the animal world. At the next level of intensity there is ignoring or looking the other way in a deliberate or obvious fashion. On the human level, Goffman [1] refers to this behavior as "civil inattention." Typically, civil inattention is a means of adjusting the presence of strangers to one another in public places. When it occurs near the home territory it is perceived as an imperative desire for the stranger to leave of his own accord; it communicates patient acceptance of the stranger as long as the behavior in which he is engaged appears to be declining of its own accord, taking him out of range and not accelerating into a still more intense threat. Finally, and only after a sequence of alternatives has been tried, direct hostility and aggression may emerge as the threat increases.

In public housing projects, there is little possible range of reactions to strangers between their benign acceptance, for example, the supplicatory smile given to the housing assistant who inspects the interior recesses of the home, and the overt hostility and aggression with which the stranger is viewed when he comes too close to the home. Because of the lack of differentiation of space surrounding the home:

- There are few barriers, boundaries or divisions in which a resident can begin to employ more gentle means of telling stranger from neighbor,
- No litmus tests that can be performed prior to an actual incident of crime or violation,
- No rules of familiarization to a group or neighborhood during which the stranger becomes known,
- No rules of immigration, deportation and social ostracism.

The result is a loss of the positive functions served by fear of strangers without any of the advantages of social utopianism. Since there are no clear ways to identify or eliminate strangers, all people become somewhat foreboding; this because people have been deprived of a group of "familiars" to which they can turn for support. The problem is compounded by the democratic organization of the larger city. There is really no way to avoid strangers. Every walk down a block means confrontation with strangers and the incumbent ambiguity of such meetings.

In short, we have accepted the notion of a loose society in which all strangers are greeted amiably; it is now this same loose organization which is responsible for the conditions of epidemic fear of victimization.

B. Animal Territory

For the most part, we are resigned, perhaps doomed, to live a deterritorialized existence in contemporary cities. Although an older rural image of the home persists, inspiring widespread nostalgia and sentiment, opportunities are few to achieve the self-sufficient relationship to nature implied by the rural imagination. In modern cities there is no longer any hope of self-sufficiency; every behavior must be shaped and composed to fit into an interdependent urban whole. Biological and mechanical needs have to be met by society acting in a centralized fashion. The person is a part of the larger urban machinery.

In dense modern cities, territorial behaviors are especially limited. Individual and familial relations to a particular place have to be streamlined to accommodate shared proprietary rights on the part of thousands or millions of fellow residents. Perhaps the only place that remains to be defended as territory is the apartment unit itself. Now even this vestige of security is threatened. Given the current crime problem, we are more likely to submit to violation of the home than to defend it as a last bastion of identity, individuality, and security. In some ways, the automobile may be the last reminder of true territorial expansion of man toward a feature of the environment outside the limits of the body.

[1] Goffman, Erving. "Behavior in Public Places." The Free Press. New York: 1966.

If anything, territory in cities has become a mere symbol of status; it is no longer a stage for enacting the drama of life, a focus of existence for the total man.

In the biological study of animal behavior, territoriality is never a mere aggregative impulse. Even though we hear scattered accounts of boundary rivalry or war among animal species over territory, for the most part, attachment to a particular space or habitat operates as a benevolent mechanism allowing animals which might otherwise come into conflict to coexist in close proximity to one another. It provides a system of protocol which carefully avoids discourtesies.

For example, there are species of birds which occupy the same type of tree, some on the upper half and others on the lower half. They cultivate different sources of food. Essentially, they live in the same physical world but have differing biological niches.

Within this biological niche is the territory an animal will defend against invasion by predators or other members of the same species. This territory is usually well defined by means of scents or landmarks around the home or nest. Invasion of territory is not a singular phenomenon. The approach of a strange animal through territorial boundaries is usually greeted by a graded scale of reactions ranging from suspicion, to anxiety, to a weak threat, to stronger threats with some uncertainty, and finally to defense without uncertainty. At each level of response to threat the invader has an opportunity to back away. This provides a built-in kindness in animal's territorial functioning, where the reactions to threat or invasion are not always defending or fighting responses.

Animals frequently assume the best of their adversary, for example, that a navigational error brought them into the territory. An animal may use camouflage or stillness as the first line of defense, hoping the unwelcome guest will just go away. In the actual fighting for the defense of territory, the intent of most nonpredatory species is to frighten the invader away or to force him to submit, rather than to kill the enemy.

While this kindness and equilibrium may exist in the animal world, it is not identical to the human "social contract." Behavior patterns of animals associated with space have evolved over millions of years and were part and parcel of the very shaping of the characteristics of the species, including the definition of their anatomical and physical form, and the selection of a habitat which they now exploit for survival. Because behavior patterns are built in or instinctive, they do not involve a choice; as a result, animals are capable of a great deal of stupidity in response to territorial affronts.

There is a story about a kangaroo and a stag which were placed in the same cage. For the stag, the kangaroo's rearing on the hind legs was a call to battle which he responded to by attacking the kangaroo. The friendly kangaroo could not give the stag enough distance within the cage and was forced to become a hunchback, keeping his front paws uncomfortably on the ground to avoid being attacked as a provocateur.[2]

These tales indicate that territorial functioning in animals is delicately evolved to allow dense and diverse populations to share habitats; but it may be blind to reason.

C. Human Territoriality: The Social Contract

The rules of territoriality in humans are somewhat different in character. Territoriality is regulated both by code and by willingness to enter into, and participate in, a culturally defined social contract. In present times, the rights of the individual against spatial or social invasion are intended as guaranteed by law and do not require individual defense of personal rights. The State gives to the individual or group a wide range of options and means of recourse if his person, his property or even his ideas are violated.

As we are beginning to recognize, it is harder and harder to feel secure about the effectiveness of these nonbiological, legal supports. Court cases drag on for years and rarely provide actual compensation for violations. Police cannot hope to investigate the hundreds of thousands of burglaries and robberies that occur in cities each year. In general, there is little hope of recourse by law for the man on the street.

This breakdown of confidence in law unearths a latent danger for society, especially provoked by crimes of violence committed by strangers. These crimes come perilously close to reevoking a biological instinct to survive. They threaten the ability of the individual victim to sustain his faith in an abstract system of justice; they tend to precipi-

[2] Jane Jacobs, "The Death and Life of Great American Cities." Random House, 1961.

tate a widespread loss of faith in the capacity of the system to provide people with a sense of justice in their day to day lives.

The last frontier on this urban battlefield may be the apartment door. Should this barrier become subject to ready violation, there may be, as a result, less willingness to surrender the individual power of self-defense to the corporate wisdom of society, to the police and the courts.

The human social contract is, then, gravely threatened by the inability of cities to insure basic freedom from anxiety and insecurity for its citizens.

It is our contention that the system of justice in urban areas may have taken an undue burden of responsibility. At present, all cracks and crevices on the urban frontier require supervision and control by police. Without long-range attachments to places, families are merely living in momentarily occupied sites on this abstract urban landscape. Their positive social energies as well as their built-in capacity to defend an area of the city against violation may have been sacrificed in the race to achieve an open society. It is possible, however, that the job of insuring justice is too large and too diverse to be handled by police alone. New mechanisms may be required to give individual citizens more options and opportunities to make their energies felt in the battle against crime.

Just as space operated beneficently in the evolution of animals, it has been friend and ally to man in the history of civilization. Having a space of one's own allowed men to feel invulnerable to violation. The traditional home provided a retreat from the insecurities and anxieties of life; its boundaries were clear and firmly defended against invasion. In a striking analogy to the animal world, the traditional home even had a "penumbra of safety" around it in the form of a lawn or a yard.

In the animal world a similar penumbra around the home territory exists as a strip of land in which no hunting occurs. It evolved as a mechanism for preventing animals from instinctively attacking their own young in the midst of a hunting foray.

In modern cities, the lesson of animal territoriality—of a penumbra around the home—has been repeatedly and carelessly violated.

Perhaps these and other lessons of animal societies state a biologically defined minimum relationship to habitat which has to be understood, addressed, compensated for, or overcome by planners of modern cities. The pendulum has swung to a point where we have come to believe man is free of his biological heritage. On the other hand, while it is well to recognize the unnecessary limitations imposed by the noble savage view—of a romantic bondage to our instincts—it is also time to recognize the positive function of this legacy as a means of reducing conflict and enhancing identity and security.

D. Collective Security

Urban street crimes may be statistically infrequent events, but they raise the spectre of an epidemic because they are often accompanied by irrational use of violence and force.

The odd thing about these street crimes is that they typically take place close to many hundreds of nearby homes with large numbers of people behind closed doors and windows. The elevator stick-up or building lobby mugging takes place just feet away from apartment doors; the escape route of the criminal is in proximity to hundreds of families, especially in public housing projects, where large numbers of families are clustered in high-rise buildings.

Despite the chance of detection, astonishingly few robberies are cleared by arrest. Even if the victim succeeds in alerting neighbors that a robbery has been committed, neighboring tenants would probably not recognize the perpetrator. They can rarely discern any identifiable characteristics through which he might be traced; and if he were identifiable, they might not be willing to provide police with the information, due to fear of retaliation or skepticism concerning police follow-up action. There is little sense of corporate identity in most large buildings. Spatial proximity of a particular apartment to crime prone areas (e.g., the lobby) does not imply any special responsibility for keeping watch over the area in the name of all residents of the building.

Block associations and tenant patrols in public housing have instituted a limited and useful kind of collective security. In these systems, designated individual residents take responsibility for watching over the security of a building during high-crime hours. The person on patrol has to sit in the building lobby, usually at a makeshift desk, with some degree of risk to himself. In this role the tenant patrolman is a paraprofessional police offi-

cer, not a tenant who is concerned about the welfare of his neighbors. He is protecting the building in which he lives in the role of formal monitor, not as a natural extension of other, family-oriented and personally significant activities.

In short, tenant patrolling and block watching have become a job, a form of labor, specialized in nature and deserving of economic compensation. The activity is no longer an integral part of the work of the family where seeing to safety, like throwing out the garbage, is an expected part of the daily life pattern.

Jane Jacobs in "Death and Life of Great American Cities" [2] describes an alternative social system in which the same rewards of enhanced security are achieved but where the watchers are not laboring under the impression that they have a special job to perform. Her street characters who guard the streets, local merchants who convey the community lore, are doing so as an expression of a way of life, and more, because it interests them to engage in this activity. They do not engage in the task as a delegated responsibility. They serve the community coincidentally because of the nature of their individual life patterns and interests.

In dense city areas, much of the space surrounding one's home is public and accessible to intruders; residents are left to their own skills at differentiating strange from ordinary behavior. In functional urban communities, residents develop articulate notions about which families argue loudly, which families have children that make strange noises, which areas or streets frequently attract loud adolescents or noisy drunks. This knowledge is not constructed from detailed personal information on the identity of neighbors, or the frequently encountered street characters, but is accrued through repeated observations.

In this system, "corporate responsibility" is not the labor of a few policemen but results from the tacit participation of a wide base of the population in an informal awareness of which people constitute the "community." It is a community of silently shared values and expectations, without need of explicit organization. Crime control is achieved through acts performed before crimes occur, not after the fact of crime.

First, due to the presence of understood norms concerning public demeanor, community residents become instantly aware of the presence of strangers bent on crime or acting suspiciously. Despite allowable variation, there are clear behavioral and spatial limits beyond which strangers will not be permitted to go.

But this is only one step in crime control. Observers not only note the presence of strangers who look suspicious, but follow them visually until out of their sight line. No explicit communication is necessary among observers to create a network of surveillance. The effect is, however, the same as if they were linked to one another under a central command. The result of this activity is that crimes are discouraged because would-be criminals have the sense that they are being observed by a native population. The observer, because of his alertness to suspicious conduct, has a long time to pick out an identifiable characteristic of a crime perpetrator well in advance of the excitement and confusion of any actual criminal act.

Of course, the success of this tacit surveillance network requires that no significant gaps exist in its operation. People need to visibly experience the concern and involvement of other similar observers. When they open their own window to investigate a strange sound, they must hear the comforting sound of windows opening all around them.

If collective security is to be achieved through these small, incremental activities of a large number of individuals, it requires that a certain critical mass of residents be present. This critical mass will increase or decrease mathematically in inverse proportion to the degree of community lore, culture or identity shared among residents.

It is also likely there is an upper limit, an entropy principle, beyond which the critical mass becomes a collection of homogeneous individuals who bear no relationship to one another, and who do not participate in a sense of collective responsibility.

Clearly, there are still communities in which this balance has been retained; the recipe for community crime control remains to be articulated in exacting, scientific terms. We can no longer proceed by "feel," a pinch of shared values, a dash of aberrant behavior, a touch of police, and a flock of residents.

E. Housing Cartels

In previous generations, the type of house in which one lived, its relationship to neighboring

families, its location in the city network, were always viewed as having a significant influence on the life of the family and the assimilation of the child to the larger social order. In the earliest multi-occupancy dwellings, a maximum of three to four families shared a vestibule on each floor. As if to compensate for residents' being deprived of a single family house, buildings were framed by extensive ceremonial entrances, lobbies and play areas. Although this style was penetrated with some elitist societal values and a brand of elegance unobtainable today, it had other virtues which should be retained and can be achieved with more frugal means.

The style included ornament and beauty as a paramount consideration. This lent individuality to each apartment building even if it was one of many similar buildings and housed 50 or more families. The style also revealed tenderness and protectiveness toward the individual family within the mass. It forced recognition of the family unit, by providing a series of suggestive membranes through which a stranger had to proceed in order to penetrate its intimate domain.

The presence of a stranger in a vestibule shared by two to four apartments was interpreted as penetration of a part of their privacy. In like measure, the family extended part of their energy to personalizing and caring for these shared vestibule areas. This penumbral space also served as the breeding ground for neighborly gestures on the part of adjacent residents. One can speculate that the presence of a small vestibule, in some ways, allowed for the development of a uniquely urban friendship pattern. It was possible to meet one's neighbor in the vestibule, to engage in light social chatter, but to resist the closeness and intimacy necessary to invite a neighbor into one's home.

This level of acquaintance with neighbors has been very important in urban residences. It allowed people to gain the benefits of mutual awareness, the advantages of mutual protective reactions in the face of emergency, without the drawbacks and disadvantages of extensive friendships or enmities among neighbors. Urban dwellers were allowed the advantage of positive social contact without compromising preciously guarded privacy and the impulse to pursue friendships on a wider scale, ranging far beyond the opportunities for social contact provided by immediate neighbors.

These early apartment buildings expressed respect for the family and looked to it as the fundamental means of socializing children. Contemporary society is more skeptical of the power of the family in shaping the thoughts and values of children; schools and other public institutions have taken over the primary tasks of social, moral, occupational, and political education.

As a reflection of this larger social process, apartment buildings have become cartels, gradually eroding away all buffers between the family unit and the public arena. Corridors of high-rise buildings provide no zones of transition between the interior recesses of the family space and the public elevator. Long halls are constructed with apartment doors close to one another, on both sides of the corridor.

Paradoxically, the older apartment buildings provided the self-protective mechanism of a rural community while at the same time giving residents the freedom from local customs, mores and rules involved in land-centered societies. It allowed them to explore a new urban style of life while providing an important haven of security for them to use as a starting point for these urban explorations.

F. Community and Privacy

It is apparent that few urban high-rise buildings have struck the right balance between community and privacy for most of their residents. Many people are personally dissatisfied with the life style induced by their physical setting; because of crowding and economic constraints they cannot express their preference in the open marketplace.

In the recent past, architecture and the building professions provided few alternatives to the stereotype of single concept high-rise buildings for the central city, and the humdum routine of single-family homes for suburban subdivisions. However, there is clearly a new need to develop more humane designs for housing people at high densities in the central city. Some newer buildings have been designed to incorporate social objectives in their layout and exist as experimental prototypes for a new form of consciousness in the architectural profession (see ch. 7).

Distressingly, the most prevalent of contemporary design approaches moves in the opposite direction. The urban environment is being increasingly fortified against crime. The private building market is responding to the demand for crime control by sacrificing more wholesome objectives in the effort to insure complete safety for

residents. Where a free-housing market still exists in large cities, people select an apartment based on its security features, at times provided at the expense of surrounding stock. Some developers have already built large "compounds," guarded by electronic alarms, surveyed by closed-circuit television, surrounded by miles of fencing, with entrances monitored by sentries who demand special identification.

It is most important to recognize that achieving increased security and the provision of social benefits through housing design can and should go hand in hand. Increased security is an immediate outcome of well-functioning communities. Where building design provides opportunity for tenants to observe and maintain surveillance over their living areas, security will be enhanced; where design allows tenants to feel the presence and shared concerns of their neighbors, security will be preserved; and where buildings relate adequately to streets and other surrounding zones, large public areas of the city can profit as a byproduct of local community concern.

The challenge is to find new ways of achieving this synthesis of objectives at a time in history when the need for quick and direct solutions is pressing.

Chapter 3. Defensible Space Hypotheses

In this chapter we will be outlining hypotheses which frame the relationship between the physical characteristics of housing projects and variations in crime and vandalism rates. These hypotheses set out to define those physical characteristics of the residential environment which influence the willingness of tenants to assume territorial attitudes and prerogatives; how design augments the capacity of residents to consciously survey their living environment; and how, through geographical juxtaposition with safe zones, the safety of adjoining areas is improved. The hypotheses further describe how these features structure residents' and outsiders' perceptions of a housing project's comparative image, stigma, isolation, and vulnerability. Where some of the physical characteristics in the above operate in tandem, we hypothesize as to the nature of their interactions and interdependencies.

Hypotheses are first formulated in terms describing the attitudes and behavior of project residents and outsiders. These are stated broadly without necessary reference to particular physical designs. The nature of the particular physical settings which might influence and give shape to these attitudes and behavior are then illustrated and described. Finally, we outline alternative physical mechanisms, both micro and macro in scale, for achieving similar behavioral results.

This method was adopted because it is essential to separate hypothetical concepts concerning the behavior and attitudes of people from the physical plant in which they occur and which may have brought us to study them initially. Many of the physical characteristics of housing projects isolated in this chapter as significant accomplishments in defensible space were born of a different historical era. For a variety of reasons—some economic, some social, some relating to building and fire codes—they would be difficult to reproduce today. It is our belief, however, that the same social and psychological benefits could be achieved through the use of contemporary physical and electronic means. This is why it is important to understand the significant behavioral mechanisms operating among people in each case and to distinguish them from the peculiar architectural setting and features which have brought them into play. Adopting this strategy allows us to speculate on new physical forms, learning from history without being bound to older solutions and traditions. This has particular consequence for the next phase of our work in which we will be projecting prototypical solutions for new defensible space environments.

Description of the testing grounds

During the past year and a half we have undertaken initial testing of hypotheses on the 167 public housing projects in the city of New York. The methodologies employed are discussed at length in chapter 5 and have involved analysis of comparative project data, structured on-site observations, interviews with tenants, police and the residents of surrounding communities.

The New York City public housing authority's facilities have proven a very rich resource for this testing. Almost every conceivable housing type and project site plan has been employed by the authority, in one or more of its estates, in the years since 1936 when it first began its building program. Its 169 projects, containing a total of 150,000 units and housing 528,000 people, range in physical characteristics from two-story rowhouses to 30-story elevator apartment buildings.[1] Some of the authority's larger projects house as many as 3,150 families[2] while others, recent in-fill housing schemes, contain as few as 65 apartment units. Nor do the number of units in a project always correlate with its overall size or ground area. Some housing estates, built prior to 1954, composed of walk-up apartments and with limited elevator service, are spread over as many as 65 acres but house only 1,600 families.[3] By contrast,

[1] Polo Grounds; Bronx, New York.

[2] Queensbridge Houses; Queens, New York.

[3] Breukelen Houses; Brooklyn, New York.

some (current) projects, also housing over 1,500 families, can be found located on as few as 15 acres.[4] This range of physical characteristics and sizes, the intentional and accidental juxtaposition of buildings, the use of different architectural elements to achieve similar ends have proven an excellent laboratory for measuring the effects of different physical environments on crime and vandalism.

A further advantage, from a scientific viewpoint, is the limited variation in the social characteristics of the resident population due to public housing admission policies. Had we to examine the effects of physical design on crime rates in the range of housing in the private sector, the extreme variations in social characteristics would have seriously complicated our analysis.

Another fascinating and useful aspect of the New York housing authority's pattern of project development is the nature of the spread of different building prototypes over the greater New York City area: They do not entirely follow the usual pyramidical pattern of high density in the inner core and low density at the urban periphery. Whether in response to different housing policies, economic factors and opportunities over the years, high-rise, high-density groupings at 170 units to the acre can be found as far as 12 miles out from central Manhattan, located in predominantly single-family residential units.[5] Similarly, relatively low-density projects at only 82 units to the acre can be found in the central areas of Manhattan,[6] the result of early liberal housing policies coupled with peculiar land acquisition opportunities. Their continued survival in high-density Manhattan is the result of a well-functioning building maintenance program and a reluctance on the part of the authority to tear down anything it has built.

These contrasting locational criteria have allowed us to examine the effect of the peculiar physical design of a project independent of its location. As an example, low-density housing is predominantly found at the periphery of urban areas, as are low-crime rates. This correlation might lead one to deduce that low density is the critical factor. But as income and other significant social variables also correlate with urban geographical locations, the causal assignment of crime to density might in fact be spurious. Having a range of low-density projects in core urban areas and high-density projects in suburban locations has provided opportunity for a unique comparative analysis. All these factors, coupled with the wealth of data kept by the New York City housing authority on tenant characteristics, the extent of crime and vandalism and the place of its occurrence, have enabled us to undertake initial testing of many of our hypotheses. The hypotheses which follow have all had some initial verification (see ch. 3 and 5). Assessment of their final worth, however, will have to wait for the completion of our tests and studies over the next 2 years.

Because of our location in New York and our work with the 167 projects and their data, it should come as no surprise that most of the examples used to illustrate hypotheses in this chapter are New York City housing authority projects. We beg the indulgence of the New York City Housing Authority, who may find it unfair to be so singled out and scrutinized. The New York City Housing Authority is the largest operating authority in the country. Its record of enlightened policies and management is second to none. It is worth mentioning too that we have found its current design directives to the architects of its projects much in advance of any we have found elsewhere. It should be kept in mind that for every project we have employed to illustrate poor "defensible space" design, there are two we could have presented to illustrate good design.

Density

Prior to the statement of hypotheses, a word must be addressed to the question of density. Our findings tend to indicate that low-density buildings have less crime per capita than those of high density. Density is usually expressed in persons, or dwelling units, per acre; a particular density can also denote a residential building prototype. As an example, individual detached housing in an urban setting usually sits on one-sixth acre and has a corresponding density of six dwelling units to the acre. Row housing (sometimes called townhousing) has a density of from 12 to 18 dwelling units per acre. Walk-up buildings have a density as high as 40 units per acre depending upon the number of floors. Elevator buildings place no

[4] St. Nicholas Houses; Manhattan, New York.

[5] Daniel Webster Houses, E. R. Moore Houses, Morrisania; Bronx, New York.

[6] Washington Houses; Manhattan, New York.

theoretical limit on density and so normally range from 60 units per acre to as high as 400 units per acre. The latter is rare, the former more common. Our multiple regression analysis of housing statistics on 134 projects in the greater New York area has included other variables affecting crime; crime area indices, population characteristics (including income level, age of inhabitants, number of broken families, etc.), quality of police protection, and so on. We have found that there is an increase in crime per capita with every increase in building density, although crime rates do level off at about 150 units per acre.

From these data one may be led to the conclusion that as a solution to crime problems low-density housing is preferable to high-density housing. Our findings, however, also show that small projects with high densities have less crime than large projects of medium density. Unfortunately, density is seldom a question of choice but is usually determined by building economics. Competitive demand for residential space in desirable urban settings will drive up the cost of land in a free-market economy. A correspondingly larger number of units must be placed on a higher priced piece of land in order to keep the land and development cost per unit similar.

High-density solutions, however, may not always be the result of economic dictates. Rather, they may result from the need to rehouse a low-income population from a high-density slum in a city where relocation opportunities are few. High density here is the result of a more enlightened approach to urban renewal, but still requires our having to cope with the range of problems brought on with high-density living.

A uniformly low-density environment should not be seen as a universal solution to crime problems. Instead, an endeavor must be made to isolate those factors that operate to make low-density environments (row housing at 16 units to the acre) crime inhibitors and some high-density environments (100 to 400 units per acre) magnets and breeders of crime. We have found evidence in a comparison of two housing projects composed of radically different building prototypes—one high-rise slabs (Van Dyke Houses), the other densely grouped walk-ups (Brownsville Houses)—sharing identical densities, similar population characteristics, and located across the street from one another, that density in itself may not be the controlling factor (see ch. 6). Other physical variables affecting crime exist as hidden components of high-density structures, presenting the appearance that crime correlates with high density.

What then are the ingredients that make one building prototype effective as a crime inhibitor and the other ineffectual? Is it possible to design high-density environments which answer the needs and patterns of future urban development without making our cities high-crime areas, and without making our population prone to victimization and hysterical with fear?

In the following pages we will define those physical ingredients which we hypothesize significantly affect crime and vandalism rates, in accordance with the outline of the Catalog of Defensible Space Hypotheses tabulated below.

Catalog of Defensible Space Hypotheses

A. The Capacity of the Physical Environment To Define Perceived Zones of Territorial Influence

1. **Mechanisms for the subdivision of housing developments to define the zones of influence of particular buildings.**
2. **Mechanisms for creating boundaries which define a hierarchy of increasingly private zones in the transition from public street to private apartment.**
3. **Mechanisms for the subdivision of building interiors to define the zones of influence of clusters of apartment units.**
4. **The incorporation of amenities and facilities within defined zones of influence which answer to occupant needs.**
5. **The significance of "number" in the subdivision of buildings and projects.**

B. The Capacity of Physical Design To Provide Surveillance Opportunities for Residents and their Agents

1. **The juxtaposition of activity areas in apartment interiors with exterior nonprivate areas to facilitate visual surveillance from within.**

2. The glazing, lighting, and positioning of the nonprivate areas and access paths in projects to facilitate their surveillance by residents and formal authorities.
3. The disposition of entries, access paths, buildings, planting,, corridors, indoor and outdoor lighting to facilitate the prescanning of terrain between origins and destinations along circulation routes.
4. The reduction in ambiguity among the public and private areas and paths in projects so as to provide focus and meaning to surveillance.

C. TheInfluence of Geographical Juxtaposition with "Safe Zones" on the Security of Adjacent Areas
1. Juxtaposition of residential areas with other, "safe," functional facilities: commercial, institutional, industrial, and entertainment.
2. Juxtaposition with safe public streets.
3. The dimensions of juxtaposed areas.

D. The Capacity of Design To Influence the Perception of a Project's Uniqueness, Isolation, and Stigma
1. The distinctiveness of building height.
2. The distinctiveness of number, material, and amenities.
3. The distinctiveness resulting from interruptions in the urban circulation pattern.
4. The distinctiveness of interior finishes and furnishings.
5. Design and life-style symbolization.

A. The Capacity of the Physical Environment To Define Perceived Zones of Territorial Influence

The design of the high-density residential environment can create perceived and restrictive sub-zones which allow occupants to adopt proprietary attitudes and exert territorial prerogatives.

It is possible through exterior site planning and interior building design to subdivide a high-density housing project so that its occupants and outsiders will perceive various portions of it as being under the sphere of influence of particular groups of occupants. It is further possible to structure this subdivision hierarchically. At the lowest level of the hierarchy, two to five apartments share a commonly defined zone; at the next level, three to four such clusters or groupings of apartments share their distinctly defined zone; and so on until finally the buildings themselves have their own defined grounds areas and entries. Should the project be large enough, two to four buildings might share a subdivided portion of the project grounds.

It is our hypothesis that such physical subdivisions, if clearly related to the access paths, activity areas, and entries of the subunits in the hierarchy, encourage occupants to adopt proprietary attitudes and to exert potent territorial prerogatives which serve a natural and significant policing function.

Territoriality and density

The single-family house set on its own piece of land, isolated from its neighbor by as little as 6 feet, has been the traditional expression of arrival—of a stake in the American social system embodied in proprietorship and territorial belonging. To many it represents the achievement of maturity or potency. In certain cities and States in our Nation homeownership brings with it special rights and responsibilities, many of which relate to the upholding of law and the reinforcement of existing societal values. There are also government programs and subsidies which make it advantageous to assume individual homeownership status. In our interviews of tenants, we have found that territorial feelings correspond strongly with a concern for the maintenance of law and expressions of potency in its enforcement.

The industrialization of our cities, with their mass immigrations of unskilled laborers, was accomplished in part by the construction of high-density housing—from the two-story walk-up flat

to the six-story tenement. By the turn of the century, the concentration of population in our urban centers had succeeded in restricting residence in the single-family house largely to the wealthy. This was somewhat abated by our post World War II national highway program, which, in concert with the Federal Housing Act, produced suburban middle-class America on the grand scale. The intervening years have seen the nation's population explode while the new areas of urban development implode. Our population is becoming increasingly concentrated in a few megalopoles at the peripheries of our Nation's geography. In the inner city the single-family house has become an anomaly. All new housing construction in central urban areas is of economic necessity composed of dense multi-family dwellings. High-rise apartments house our rich and poor alike and their presence is increasingly felt in the rarified air of suburbia.

Despite its prevalence, the high-rise elevator apartment building is very much a newcomer in housing types. Most were constructed during the lifetime of our older citizens. They are new and foreign to our culture and values, and it is by no means certain that we quite know how to live with them and within them. For our low-income population, particularly our rural migrants, residence in a high-rise building in a 10- to 30-acre project may require a social and cultural adaptation they are incapable of making in one step. The current and increasing shortage of housing, particularly for low-rent paying tenants has resulted in various Federal, State, and local efforts at remedying the situation. Almost all these programs are geared at developing means for providing more housing; none seem concerned with what housing to provide. The pressure for more housing, the high costs of land and construction, the lack of available housing sites, have all contributed to a program of building large high-density, high-rise apartment projects, usually in ghetto areas. In this rush to provide more buildings, there appears to be no time to look back and examine the effects of what we have been providing, no time to assess its success and failure, no time to question what we are to provide in the future.

High-density housing will be with us for a long time to come; no predictions suggest otherwise. Our problem is to provide it in a way that restores lost values and incentives. Much of our large high-rise housing at present has little more to say for itself than that it is economical. Our analysis indicates that much of it may also be unsafe—devoid of mechanisms which once operated to make our living environments safe and productive.

The single-family detached house is its own statement of territorial integrity. As one moves to denser and denser agglomerations—to rowhouses, walk-up flats and high-rise apartments—opportunity for individual and collective efforts at defining territory become increasingly remote.

The pathetic jerry-built rowhouse grouping illustrated above, for all its anonymity, bears testimony to the depth of the need to pursue the lifestyle and gain the social status of the territorially intact single-family house. But what of the apartment unit embedded somewhere in a 300-family high-rise building on a 30-acre project site? What recourse have its occupants? What avenues exist for self-assertion, or even opportunity for a more limited form of collective identification or territorial association?

At present most families living in an apartment building experience the space outside their apartment unit doors as public; in effect they relegate responsibility for all activity outside the immediate confines of their apartments to public authority. Are there physical mechanisms which can be employed to extend the boundaries of this private realm; to subdivide the public space outside the private apartment unit so that larger dominions come under the sphere of influence and responsibility of the apartment dweller?

We will be exploring various mechanisms by which architects, consciously and unconsciously, have succeeded in breaking down high-density residential agglomerations into territorial subdivided and identifiable sub-units. These mechanisms have succeeded in providing both resident and outsider with a perceptible statement of individual and group concern over areas of buildings and grounds. More importantly, in so doing they have allowed occupants to develop potent attitudes about their living environment; to have a heightened sense of responsibility toward care of the environment and control of its penetration by outsiders.

Physical mechanisms for defining perceived zones of territorial influence:

1. The subdivision of housing developments to define the zones of influence of particular buildings.

2. Creating boundaries which define a hierarchy

of increasingly private zones in the transition from public street to private apartment.

3. The subdivision of building interiors to define the zones of influence of clusters of apartment units.

4. The incorporation of amenities and facilities within defined zones of influence which answer to occupant needs.

5. The significance of "number" in the subdivision of buildings and projects.

These physical mechanisms are discussed below.

1. The subdivision of housing developments to define the zones of influence of particular buildings

The early fifties produced a series of large scale high-rise public housing projects across the country. Born of that period was Pruitt-Igoe in St. Louis, Columbus Homes in Newark, Van Dyke in New York, Prairie Courts in Chicago . . . every city has its own claim to notoriety. It was common practice, in developing the site plan for these projects, for the architects to close off the existing streets in the four to 12 blocks they acquired, thus freeing additional grounds to be turned into either recreation areas or off-street parking. Because of the high-density requirement set by either the renewal or housing agency, and because of the desire to keep as much of the grounds as possible free of buildings, apartment units were usually grouped in high-rise elevator towers. It has been suggested alternatively that the decision of architects to build large high-rise projects such as Pruitt-Igoe was not primarily motivated either by economics or a desire to keep the grounds free, but rather in response to an esthetic gestalt, the formal gestalt of LeCorbusier and other pioneers of the modern architectural movement.[7]

It was common in the site planning of these super-blocks to position the high-rise towers freely with little attempt at assigning particular areas of grounds for the use of any specific building. The Pruitt-Igoe project in St. Louis consists of large high-rise slabs sited on grounds intentionally left open for use by both the resident population and the surrounding community (see fig. 3–1, page 26). Entry to each building is directly from the public grounds, onto which the elevator doors open. As a result, areas which should be recognized as territorially restricted have remained public in nature, as shown in figure 3–2, page 27.

The designers of Columbus homes in Newark have made some effort at differentiating the grounds immediately in front of the entrance areas, but these are of such a large scale that they are in no way suggestive of any limitation on use. The grounds area is not sufficiently defined as falling within the sphere of influence of a particular building and its occupants (see fig. 3–3 and 3–4, pages 28 and 29). Van Dyke Houses in New York City is a similar case in point (refer to plans and photographs in ch. 5).

In all of the above projects one finds a high degree of vandalism of grounds and a prevailing fear among residents in entering their buildings; by extension, their buildings, like the grounds, are open to any and all intruders. In our interviews we found that the residents of these high-rise towers see the grounds immediately below and adjacent to their building as distinctly public in nature and beyond their responsibility or possible concern. By extension, residents appear also to have developed a similar attitude toward much of the lobby, elevators, and stairways in the interior of their building.

It is our hypothesis that high-rise buildings, sited so that the grounds around them are defined and related to particular buildings, serve to delimit a territorially restricted area. These defined areas, outside otherwise anonymous high-rise towers, strongly indicate to residents and strangers alike that the grounds, and hence the building, are for the private use of its residents. This definition of grounds occurs naturally when high-rise apartments are built on vest-pocket sites, that is, small sites surrounded by the medium density fabric of the existing city.

It should be noted that a building itself, as a perceived unit defined by its exterior walls, is a form of subdivision and territorial identification. Reinforced with symbolically defined grounds, and with sufficient space around it to be recognized as an entity, it can become in and of itself, a potent form of territorial expression.

Breukelen houses in New York, a medium density project built in 1952, is an excellent example of such grounds differentiation. The buildings are "L"-shaped and are positioned so as to touch the street at the two extreme points of the "L", as shown in figure 3–5, page 30. The area enclosed by the right angle is defined as a semiprivate ter-

[7] Roger Montgomery, "Comment on 'Fear and House-as-Haven in the Lower Class'" *AIP Journal*, January 1966.

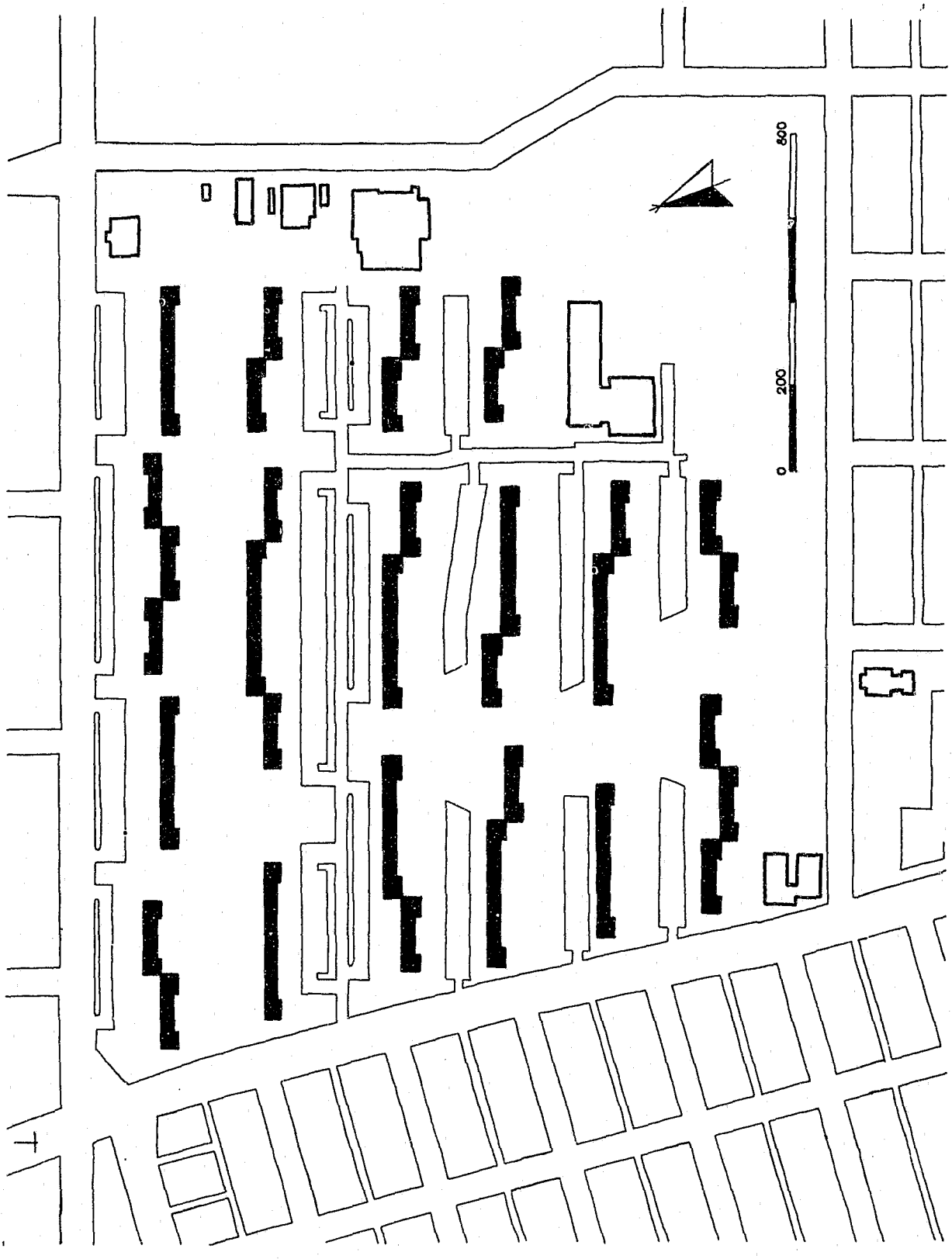


FIGURE 3–1. Pruitt-Igoe, St. Louis, Mo. Site plan.

FIGURE 3–2. Pruitt-Igoe, St. Louis. View along the main interior street. Landscaping here is harsh. Note that sidewalks lead directly from the street to elevator breezeways (and access to residential floors) without a single change in level or even some sort of low wall. Although maximum surveillance opportunities exist, they are of but little use after a potential criminal has walked easily inside the building. The majority of criminal incidents occur in breezeways and stairwells.

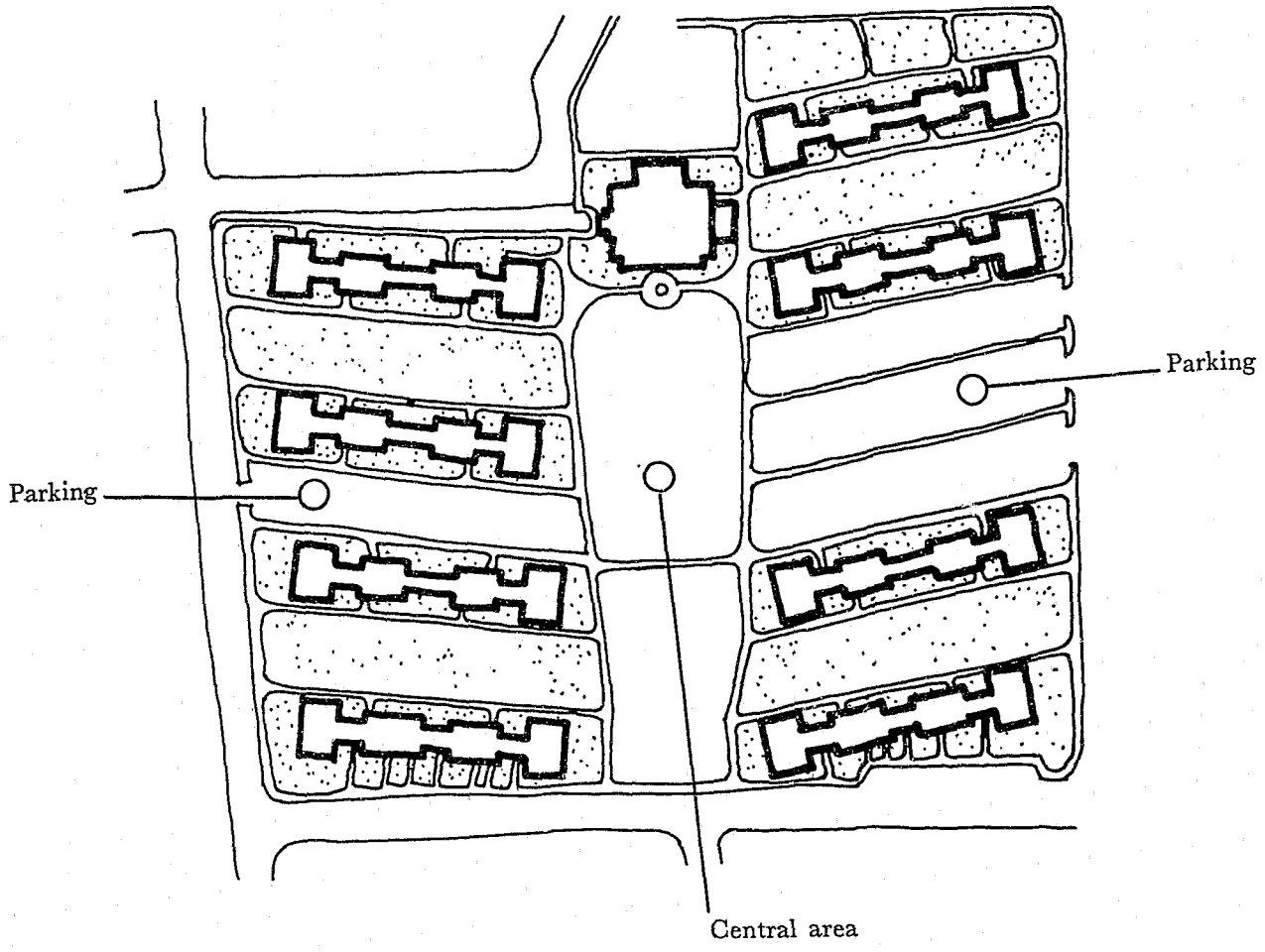


FIGURE 3–3. Columbus Homes, Newark. Site plan.

ritory from which two to four entries to the building open. The use of this area for recreation, through the provision of play equipment for young children and seating areas for adults, reinforces its territorial restriction (fig. 3–6, page 31). The location of such activities in this area facilitates its recognition as an extension of the semiprivate building zone of residents. The fact that children play and adults sit in these areas serves to increase residents' concern with the activity taking place there. Our interviews show that residents are cognizant of most of the people living in the building who share this space with them. Strangers are easily recognized and their activity comes under observation and immediate questioning.

Building residents have no right, under the laws governing public housing, to evict anyone from these grounds; but at Breukelen they do go to great lengths to assure themselves that strangers represent no threat. If not so assured, they call the police.

Entry to all buildings at Breukelen is through these semiprivate zones, which for the most part face directly onto existing city streets (see fig. 3–7, page 32). Although the grouping of these "L"-shaped buildings partially seals off the interior grounds of the project from neighboring streets, this has not been done with conviction sufficient to preserve territorial integrity. The interior grounds at Breukelen remain open and accessible from many directions as shown in figure 3–8, page 33. In interviews, residents have in fact identified these interior grounds as the most dangerous of the project. (See discussion of unsafe and safe areas in ch. 5.) Had the interior grounds been fenced off from all access other than from the buildings proper, their success as grounds for resident use might have been greater. As a means of

FIGURE 3–4. Columbus Houses, Newark. View of courtyard adjacent to building front entries. The wide-open relationship of this space to the street serves to make building entries completely public. Tenants are loathe to make use of the maximum surveillance opportunities because of a decided lack of proprietary interest in the grounds.

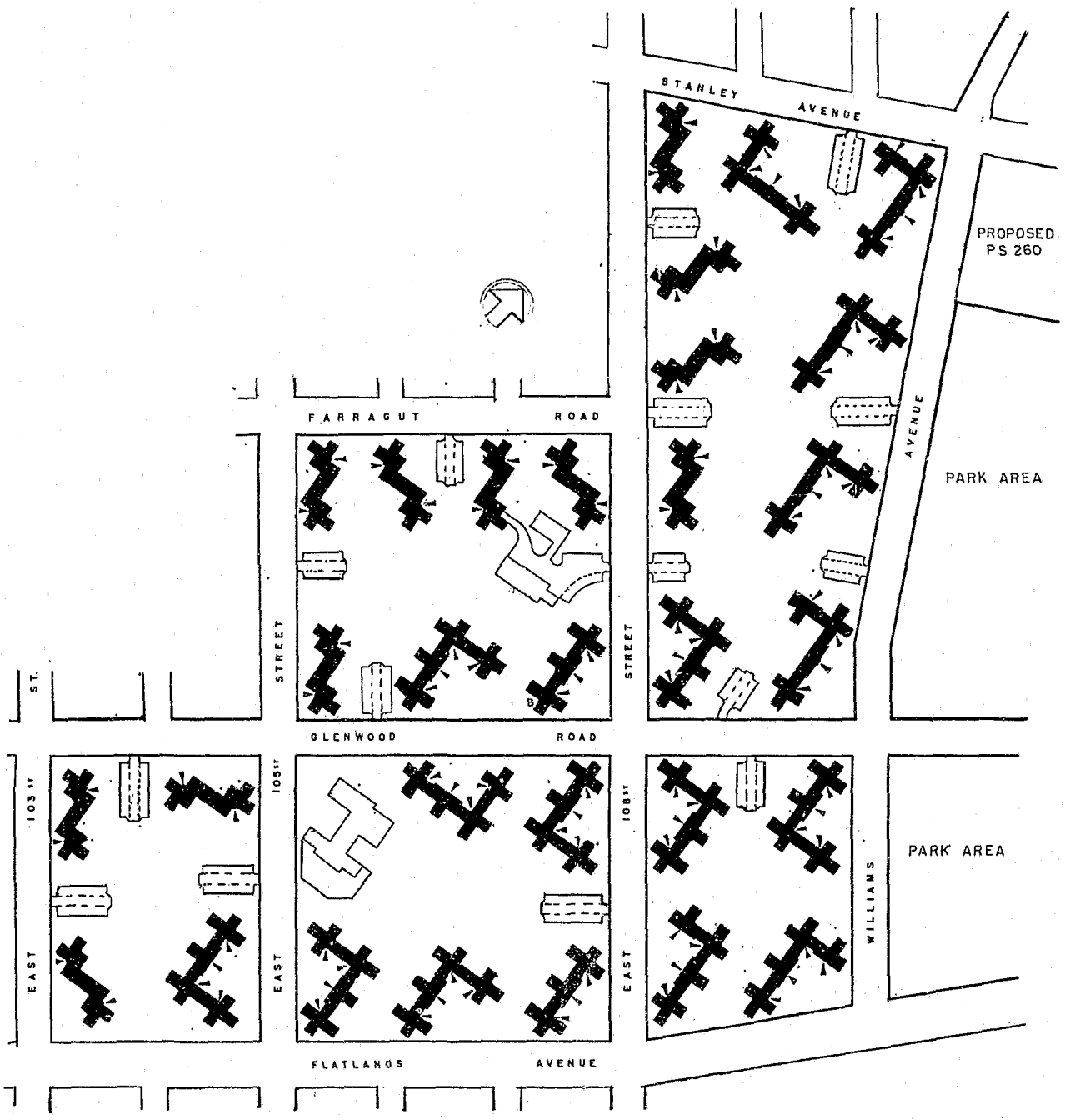


FIGURE 3-5. Breukelen Houses, New York. Site plan.

FIGURE 3–6. Breukelen: View of buffer area for play and sitting as seen from street.

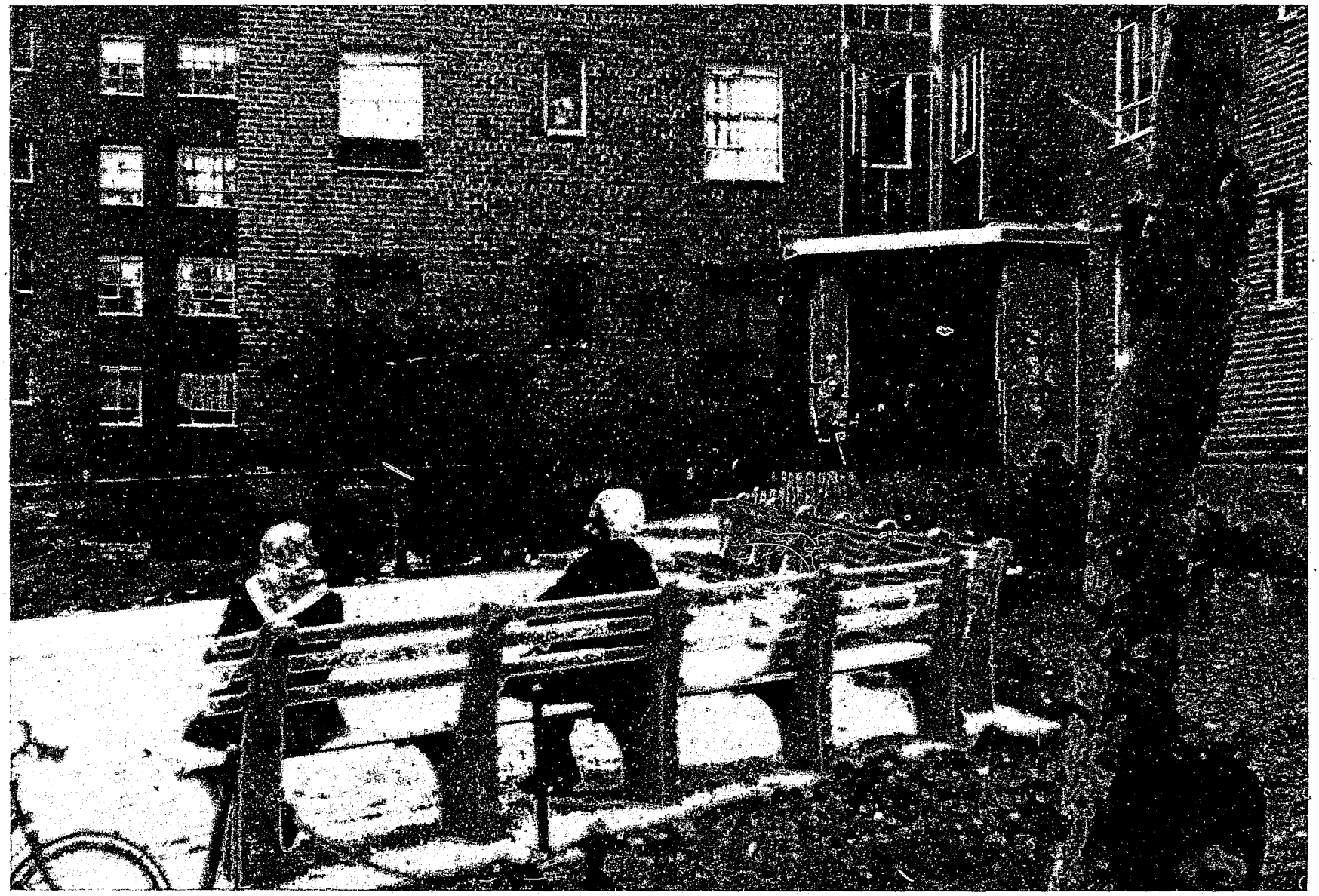


FIGURE 3–7. Breukelen Houses, New York. View of entry to seven-story buildings. Sitting and play area create semiprivate transitional zones, which is further strengthened by sloped walk leading to entry doors.

FIGURE 3–8. Breukelen Houses, New York. The central internal area of the grounds of Breukelen. These are intentionally kept green, fenced off by chain links and free of recreational activity. They are also the areas identified by residents as most dangerous and to be avoided. The NYCHA is now reconsidering its policy or restricting the use of the green areas of all of its projects.

implementing their policy of contributing to the amenity of neighboring communities as well as their own, housing authorities prefer to keep the grounds of their projects open. The result is that these areas are seldom used by either group, residents or surrounding community. The positioning of such joint-use green areas should be at the periphery of the project—outside the confines of the housing.

A remedial solution to the problem of high-rise towers disposed on project grounds in an undifferentiated pattern occurred by chance at Pruitt-Igoe in St. Louis. During one of the many salvaging operations attempted in the series of crises it has faced, an endeavor was made to provide some new play equipment and seating areas adjacent to one building. For the period of construction the area around one building was fenced off, except for a gate opposite the building entry, by a cyclone fence to reduce the pilferage of materials and to prevent accidents (see fig. 3–9, 3–10 and 3–11, pages 35, 36 and 37). Residents of this building subsequently asked that the fence be left in place. They found that incidents of crime and vandalism had been reduced significantly during the 6-month construction period. Two years later, the fence is still there; the crime and vandalism rate in this building is 80 percent below the Pruitt-Igoe norm. This building, like others in Pruitt-Igoe, has no security guard. It is the only building in which residents themselves have begun to show any signs of concern about the maintenance of the interior, picking up litter, sweeping the corridors, replacing light bulbs. The vacancy rate in this building varies from 2 to 5 percent in contrast with the overall vacancy rate for Pruitt-Igoe of 70 percent.

The compositional versus organic approach to design

Upon close examination of the design methodologies employed by architects engaged in high-density housing design, one can distinguish two fundamentally different approaches with accompanying evaluative criteria for successful design. The design approach which produces projects in the Pruitt-Igoe mold has its root in a compositional orientation. The architect is concerned with each building as a complete and separate geometric entity, exclusive of any consideration of the functional use of grounds or the relationship of the building to the ground area it might share with other buildings. It is almost as if the architect assumed the role of sculptor and saw the grounds of the project as nothing more than a surface on which he was endeavoring to arrange a series of vertical elements into a compositionally pleasing whole. Little effort is expended in drawing relationships between buildings and grounds areas; rather, the disposition is accomplished through adherence to compositional dictates. The grounds are then somewhat delineated by the placement of access paths, play equipment and seating areas.

This compositional approach to the form and positioning of buildings has serious repercussions when one confronts the problem of apartment unit design and location (see fig. 3–12, page 38) within the building proper. In this approach the primary concern in the disposition of individual apartment units within the building becomes the effect the individual unit will have in giving form to the building block; the relationship of individual units to one another and the provision of functionally useful shared space at each level become secondary considerations.

The design approach which produces a territorially intact project, as exemplified by Breukelen Houses, begins by viewing buildings and grounds as an organically inter-related whole. A major design concern here is the way in which buildings themselves serve to define and break up the grounds on which they sit. The relationships of building entrances to territorially defined grounds, and of vertical access systems to entry areas, also receive primary consideration in the site plan. The disposition of the apartment units follows organically the results of the initial site plan and is directed at framing relationships between units and creating areas of shared entry, much as the building itself defines the use of the ground on which it sits (see figs. 3–13 and 3–14, pages 39 and 40).

Limiting access to city streets to create territoriality within the existing urban fabric

We have learned of instances in which associations of private homeowners have restricted parts of the city street system for predominant use by residents of a single block. The two instances we will discuss here, the St. Louis private streets and St. Marks Place in Brooklyn, do not totally restrict vehicular access but rather interrupt the

FIGURE 3–9. Pruitt-Igoe, St. Louis. View of fence and breezeway. Note the sitters in the breezeway making use of this now semiprivate space. The gate is locked—only this building's tenants have keys.

FIGURE 3–10. Pruitt-Igoe, St. Louis. View of public gallery. Intended by the architects to be a highly-used public gallery, these corridors are not juxtaposed with apartment units and so are feared by residents and unused. The open doors lead to what were once laundry rooms; the exit sign marks the elevator area.

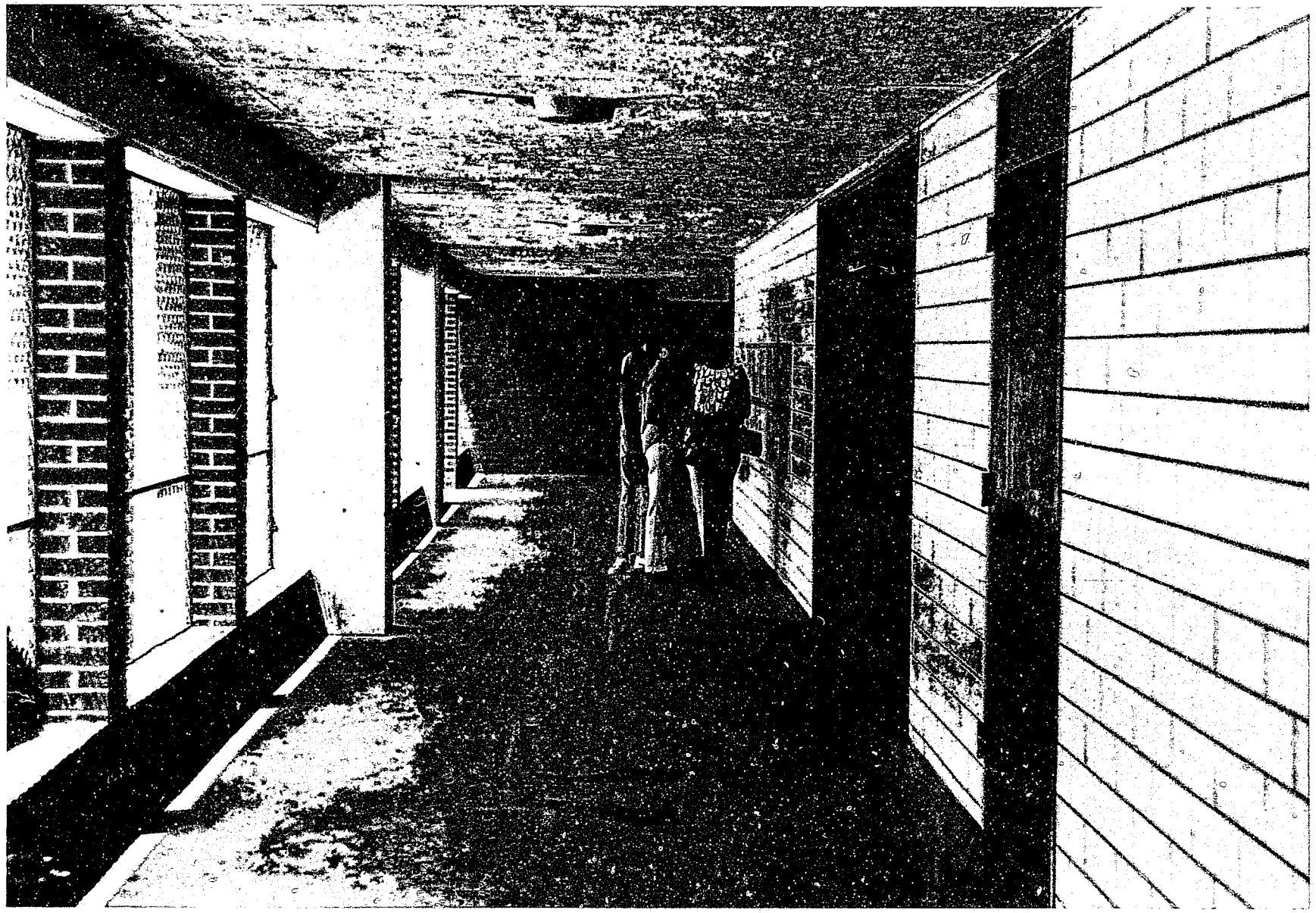


FIGURE 3–11. Pruitt-Igoe, St. Louis, Mo. Typical view of public galleries in fenced-in building. Although vandalism has been curbed by ingress limitation in this building, the galleries, though decorated, are still not used as gathering and sitting areas.

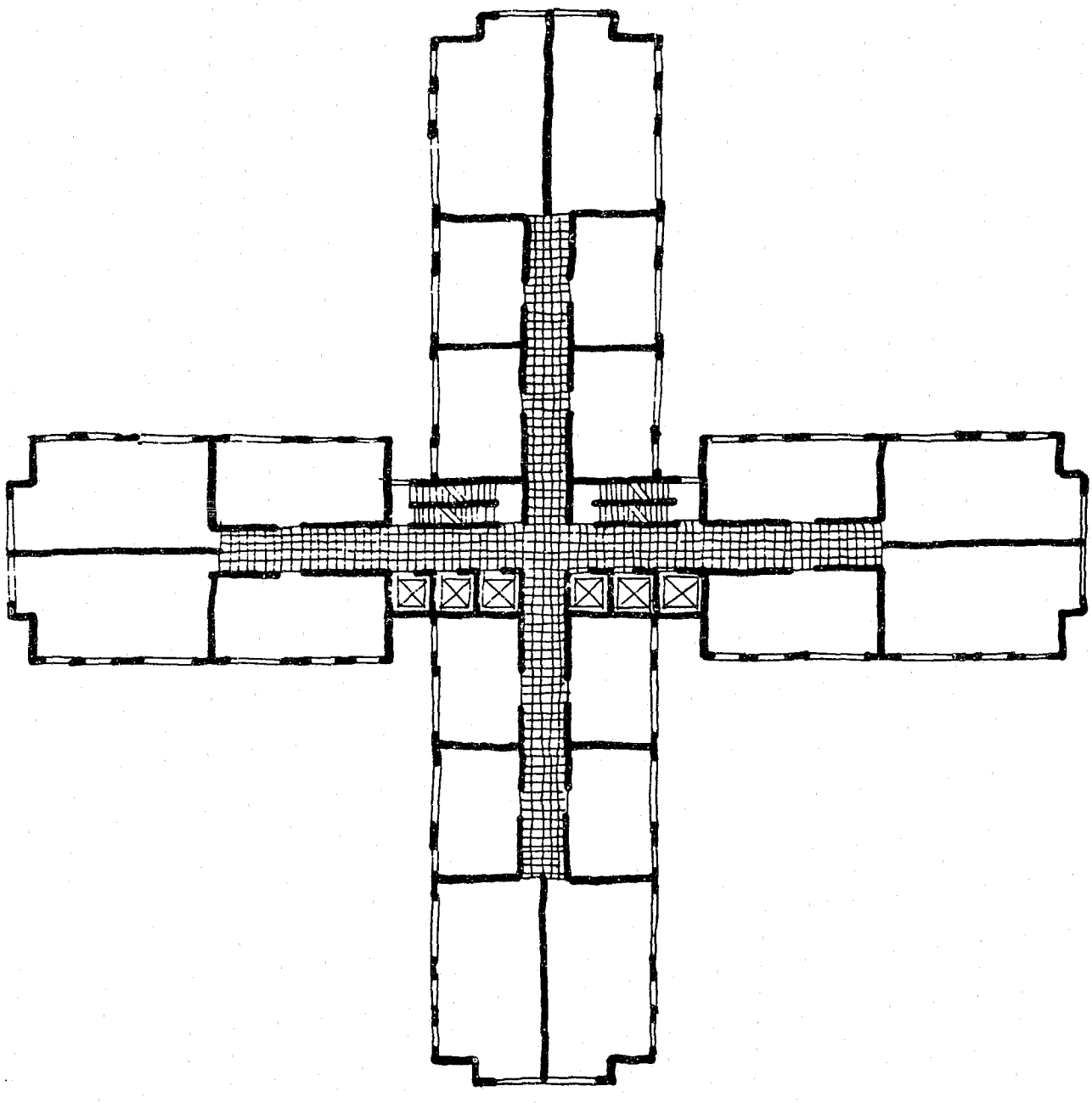


FIGURE 3–12. Compositional design. Apartment design in a compositionally designed building sacrifices the location and design of the individual apartment unit for the form of the building.

existing geometric traffic pattern and so discourage easy vehicular through-access by requiring intentionally circuitous movement.

The St. Louis private street movement was a device initially developed by very wealthy residents occupying large single-family homes at the periphery of municipal St. Louis. The residents agreed to take on the responsibility of road and street-light maintenance for a slight rebate of city taxes. Through this arrangement they gained the right of closing a one- to two-block stretch of street at either end. Access was provided from the central cross streets (see fig. 3–15, page 41).

We have not yet measured the full success of this endeavor in reducing crime, vandalism and maintenance costs; it is a high income area, and the resources available for the upkeep of the street and the insurance of its general welfare makes an

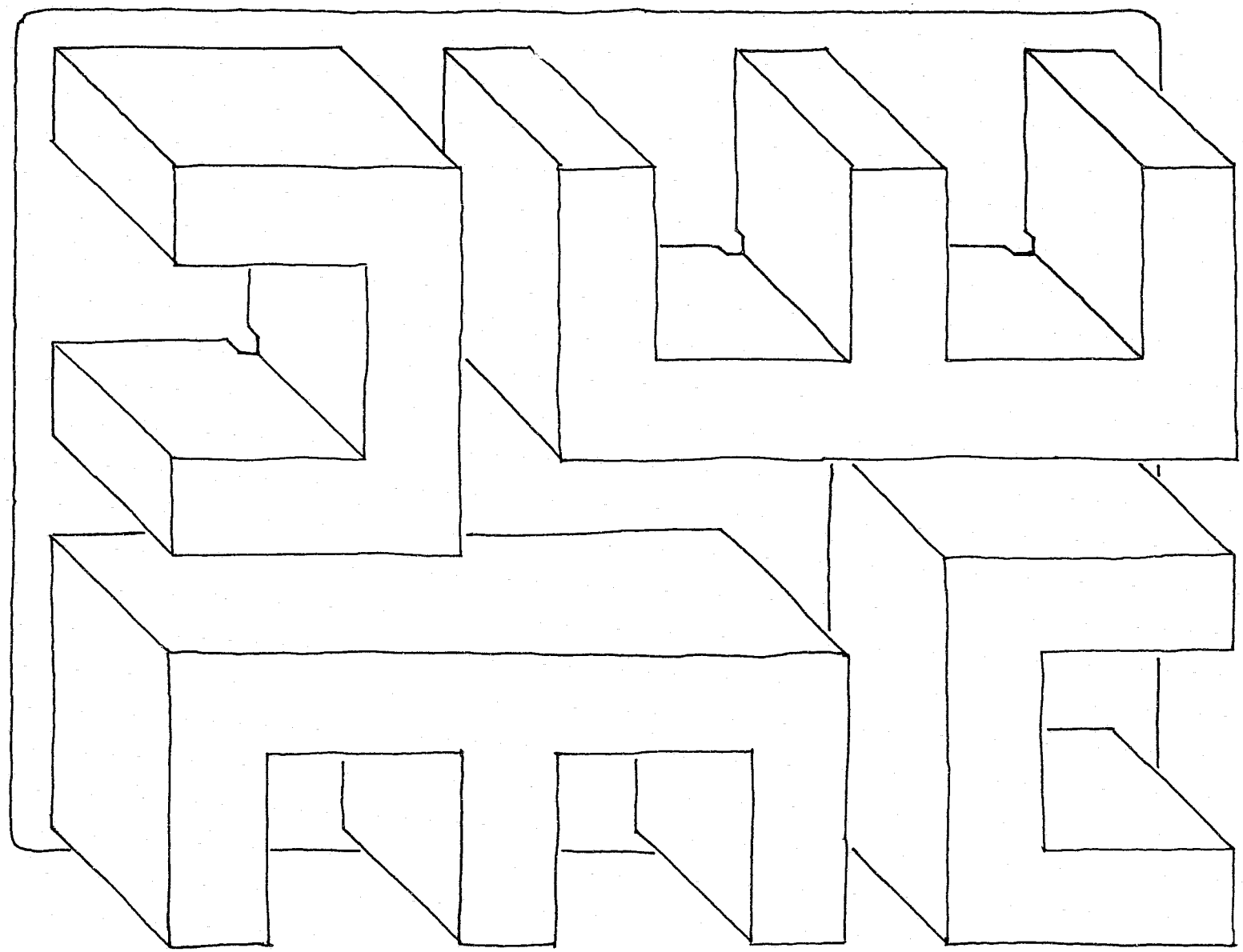


FIGURE 3–13. Organic design. Buildings arranged on a site as an organically interrelated whole. The buildings break up and define the grounds on which they sit.

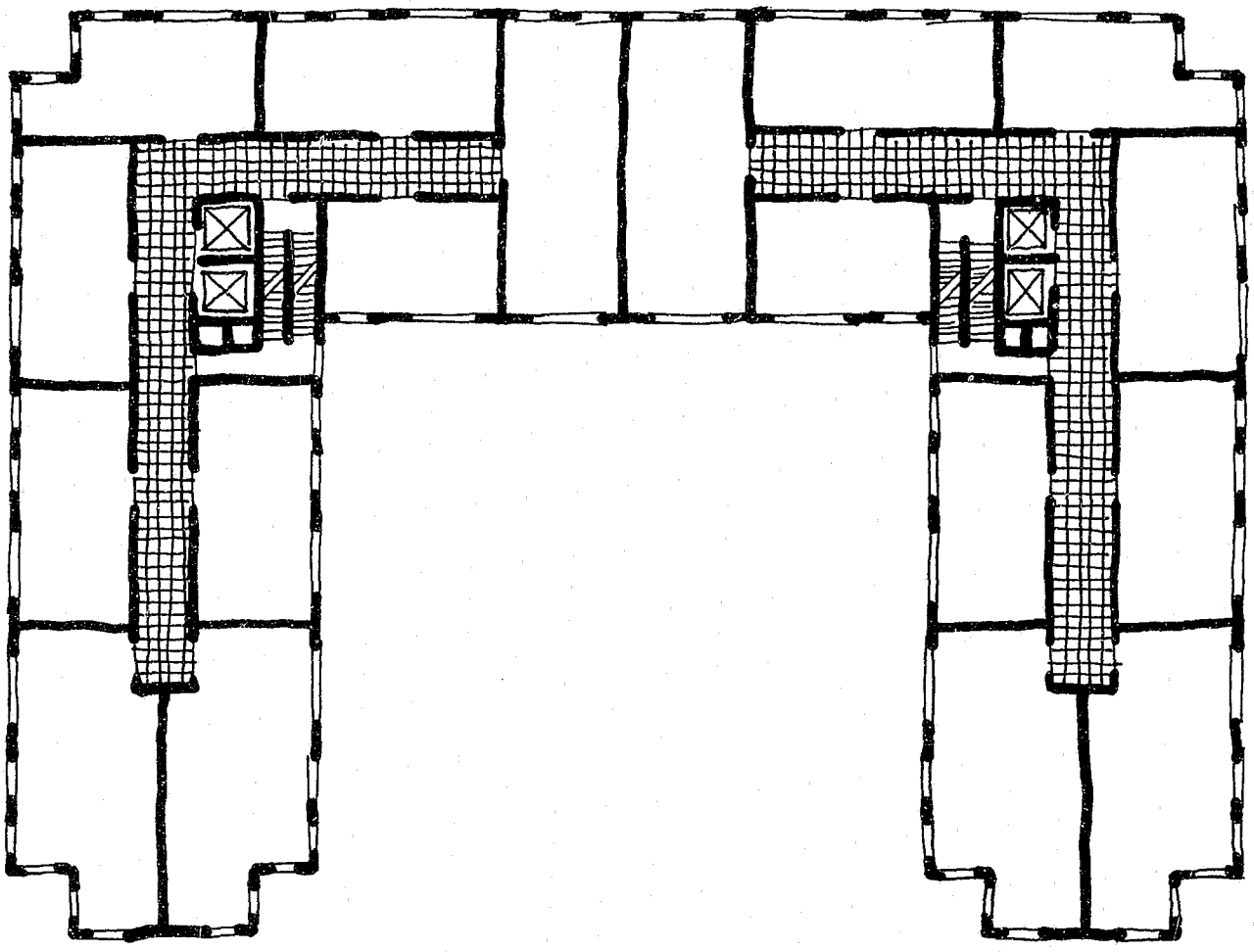


FIGURE 3–14. Organic design. The disposition of apartment units in the organically interrelated site plan is directed at framing relationships between units and creating areas of shared entry.

objective analysis difficult. However, 5 years ago residents of an adjacent middle-income neighborhood formed a street association and closed their streets in the same way. The residents feel that there has been an appreciable reduction in crime. Most importantly, however, the residents claim that the street is now used very differently: Children play in the central roadway; most everyone claims to know, or at least recognize, people up and down the block; strangers to the street are greeted by a cacophony of barking dogs and questioning glances.

Modifications to St. Marks Place in the Bedford Stuyvesant section of Brooklyn, N.Y., completed only 1½ years ago, involve no major street closings. The street has been shaped to slow traffic, and symbolic portals have been located at each end. A portion of the central area of the street has been completely closed to traffic and has been turned into a play and communal area (see figs. 3–16, 3–17 and 3–18, pages 42, 43, and 44). Residents claim that street crime has been almost eliminated; that their residences are burglarized much less frequently, and drug addicts noticeably avoid the area. Residents have, by their own initiative, begun to plant gardens and define the areas immediately adjacent to their houses.

Concern for the maintenance and safety of the street appears universally shared by residents. Every Saturday morning a different group of residents gather to give the street a thorough cleaning.

Interviews with residents and with the president of the block association found expressions of a new cohesiveness among the people living on the street and a parallel active interest in the maintenance of physical surroundings and in social ac-

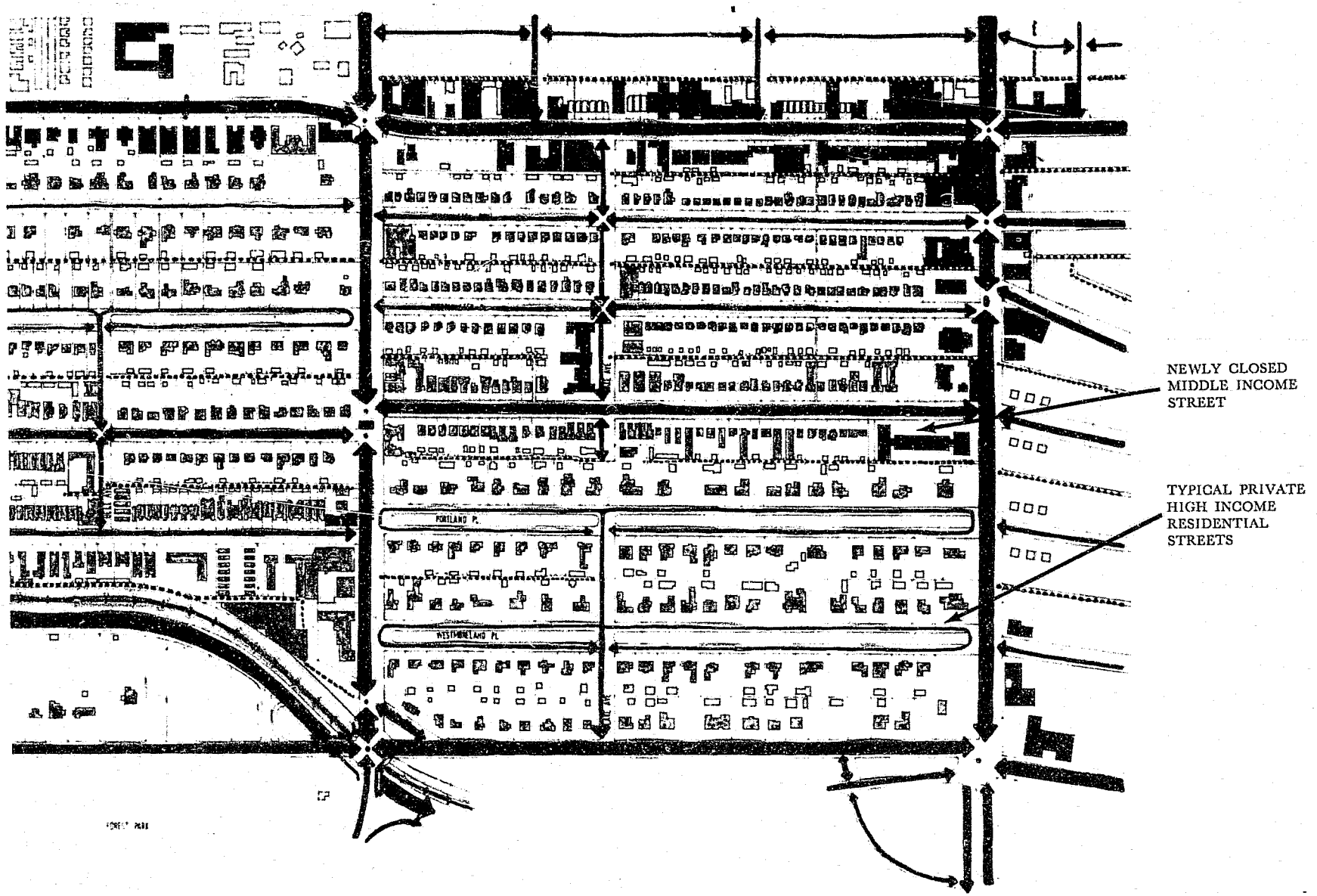


FIGURE 3–15. Private street system, St. Louis. A typical private street, in a high-income residential neighborhood, has been closed at either end of a two-block stretch. Access is provided from a central cross street. This pattern discourages through-traffic by requiring intentionally circuitous movement.

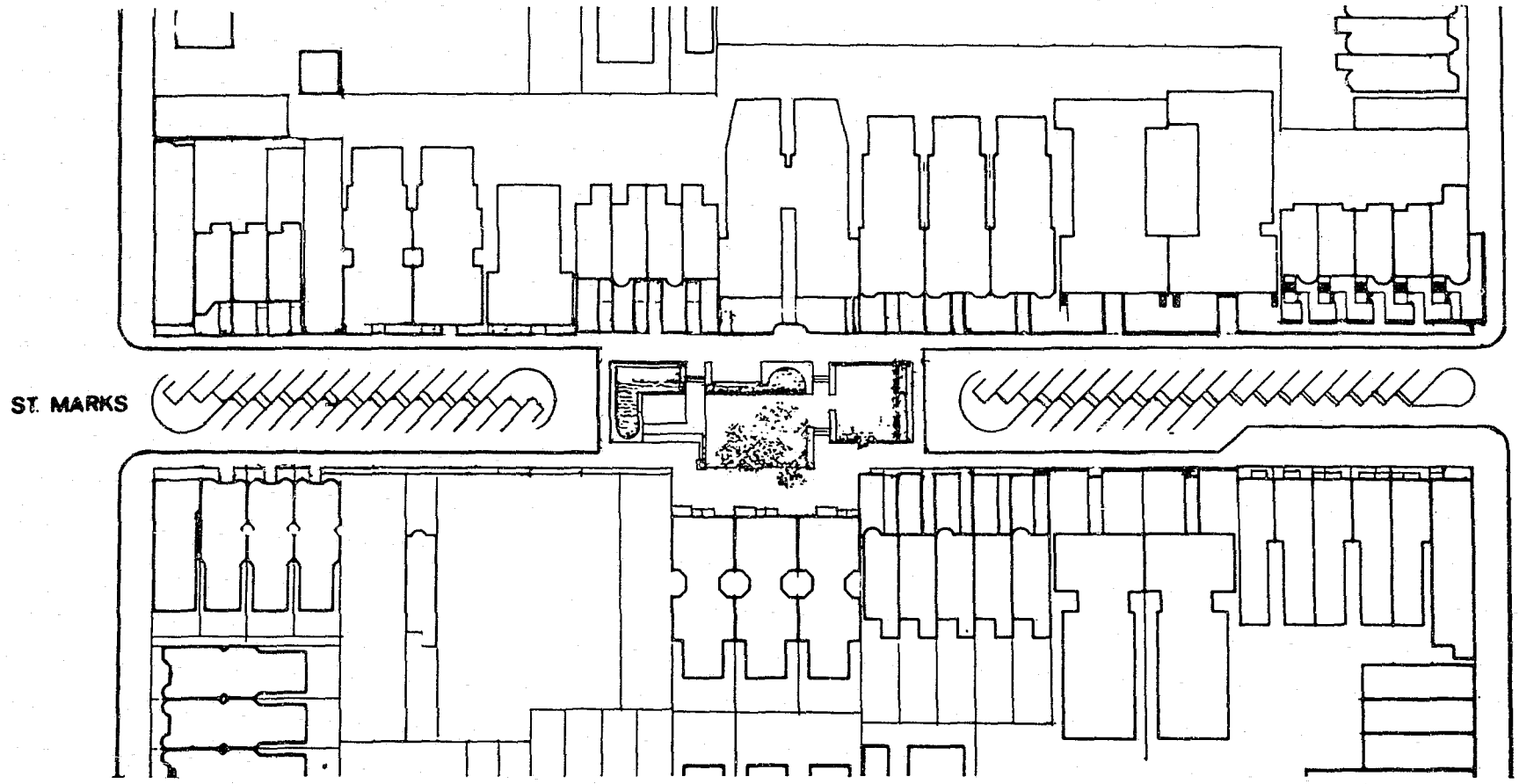


FIGURE 3–16. St. Marks Place, Brooklyn, N.Y. Site plant.

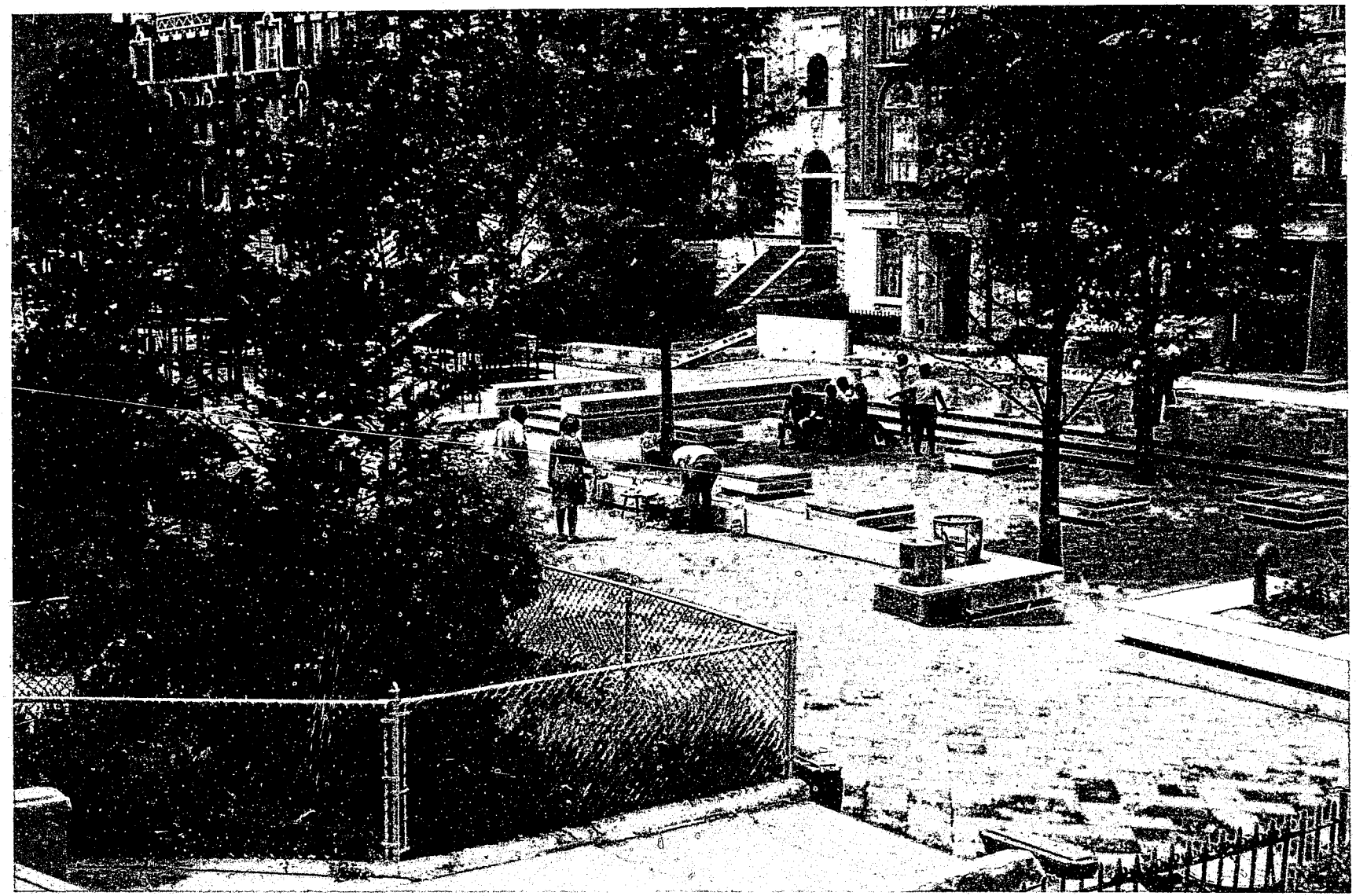


FIGURE 3–17. St. Marks Place, Brooklyn. Private street. The well-shaded and sunken sitting area shown here provides a pleasant place for friendly congregation. Note the almost complete absence of litter

FIGURE 3–18. St. Marks Place, Brooklyn. Private Street. Note the many changes in level and general attractiveness of this street. Residents of the street group together on Saturday morning to do the street cleaning.

tivities. The staying power of these attitudes and activities remains to be measured over a longer period of time.

2. Creating boundaries which define a hierarchy of increasingly private zones in the transition from public street to private apartment

There is a language of symbols which has over time come to be recognized as instrumental in defining boundaries or a claim to territory. These boundary definers are interruptions in the sequence of movement along access paths and serve to create perceptible zones of transition from public to private spaces. Many of these symbols have been mentioned in our previous discussion of the mechanisms for defining territory or zones of influence. Some represent real barriers: "U"-shaped buildings, high walls and fences, locked gates and doors. Others are symbolic barriers only, open gateways, light standards, a short run of steps, planting, changes in texture of the walking surface. Both serve a common purpose: to inform one that he is passing from a space which is public and where one's presence is not questioned, through a barrier to a space which is private and where one's presence requires justification.

These symbolic barriers are also found to be identified by residents as boundary lines in defining areas of comparative safety. Because they require an outsider to perceive that he is intruding on semiprivate domain, symbolic barriers prove very effective in restricting the type of behavior which will be tolerated within the defined space.

Real barriers have the further capacity of requiring that intruders possess a key, a card, or in some other way indicate their belonging prior to entry. That is, access to a residence through a real barrier is by the approval of its occupants only, whether in person, through their agent, or by electronic signal. The success of the symbolic versus real barrier in restricting entry hinges on four conditions: (*a*) The capacity of the intruder to read the symbols for their intended meaning; (*b*) the evident capacity of the inhabitants of the internally defined space, or their agent, to maintain controls and reinforce symbolic space definition through surveillance; (*c*) the capacity of the internally defined space to require of the intruder that he make obvious his intentions—that is, the space must have a low tolerance for ambiguous use; and (*d*) the capacity of the inhabitants or their agent to challenge the presence of the intruder and to take appropriate subsequent action if need be. It is obvious that these conditions work in concert and that a successful symbolic barrier is one that provides the greatest likelihood of all of these components being present. By employing a combination of real and symbolic barriers we have found it possible to indicate that one is crossing a series of boundaries in the transition from public access paths and spaces to sequentially more private areas, without employing literal barriers to define the spaces along the route.

When moving through a sequence of territorially defined areas—from project grounds to dwelling unit cluster—one experiences these symbolic barriers and portals as a matter of course; behavior and expectations are changed accordingly, even without the sharp divisions created by locked gates and doors. These tools for symbolically restricting space usage assume particular importance in the case of projects which simply do not allow themselves to be subdivided into territorially intact zones. Where it is still the intent to make space obey semiprivate rules and to fall under the influence and control of tenants, symbolic elements along paths of access can serve this function without at the same time literally defining boundaries.

The opportunities for the use of real and symbolic barriers to define zones of transition are many; they occur in moving from public street to the semipublic grounds of the project; in the transition from outdoors to indoors; and finally in the transition from the semipublic space of a building lobby to the corridors of each floor. The use of literal barriers, for example, locks, gates, electronic interview systems, must be viewed as one component of a hierarchy of means of defining space which includes as well a wide range of suggestive and persuasive symbolic elements.

It is interesting to note that buildings which have consistently highest crime and vandalism rates: Pruitt-Igoe in St. Louis (see fig. 3–19, page 46), Columbus Houses in Newark, Van Dyke in New York, have little in the way of transitional differentiating elements, be they literal or symbolic. For the most part, public space in these projects flows uninterrupted from the bordering streets onto the project grounds, from the lobby and corridors of a high-rise building right up to the door of the individual apartment unit. The Pruitt-Igoe project in St. Louis is perhaps the most notorious example of this phenomenon and its present state of devas-

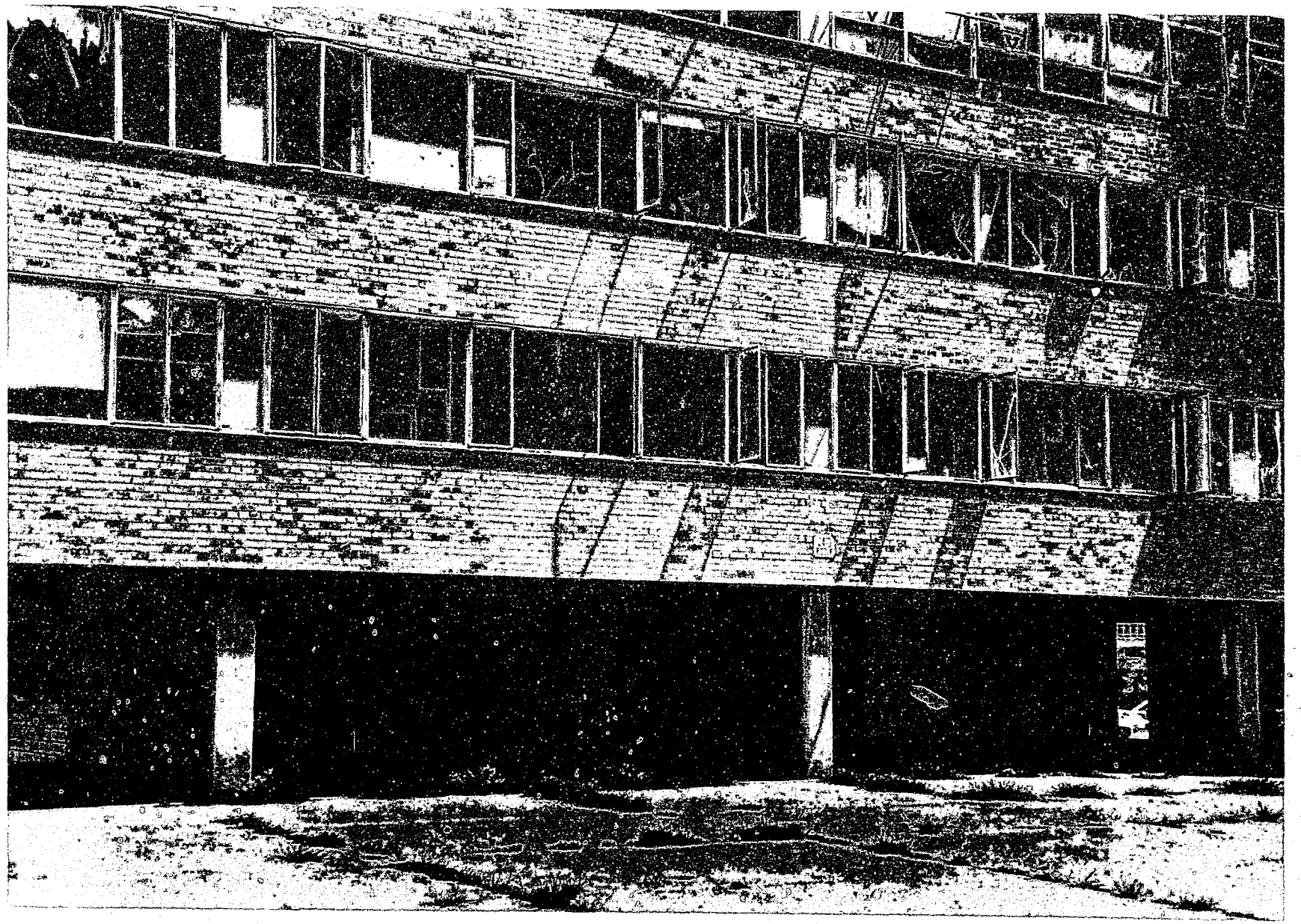


FIGURE 3–19. Pruitt-Igoe, St. Louis. View of vandalism to windows of public access galleries serving upper levels of the apartment buildings.

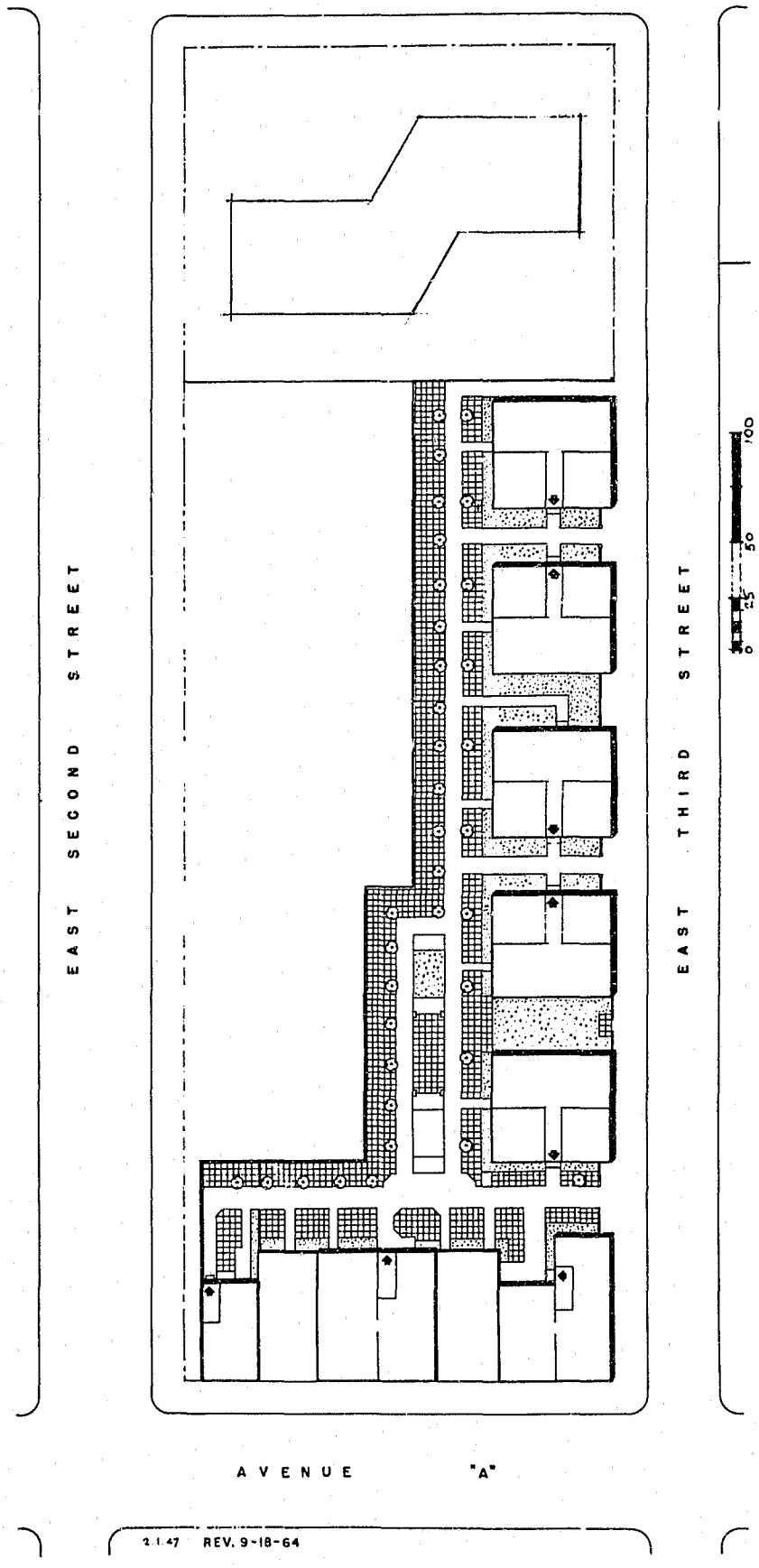


FIGURE 3–20. First Houses, New York. Site plan.

tation bears full witness to the potential seriousness of breakdowns in the social system of space that undergirds high-rise building design.

A good example of a housing project which employs symbols to define boundaries, or zones of transition, but which does not literally delimit specific territorial areas is First Houses in New York City. The project is located in a relatively high-crime area in the Lower East Side.

The site plan of First Houses (fig. 3–20, page 47), shows the low walls and entry portals to the project set 4 feet back from the line of the street. This 4-foot set-back of sidewalk defines the first step in the transition from public to private. The walls and portals then define the semiprivate nature of the project interior. Further territorial restriction is symbolized by the steps and porch shared by both of the five-story buildings. The design of the building interiors continues to reinforce this symbolic system, indicating a progression to more private space through the use of stairs and landings and leading eventually to the apartment proper (see fig. 3–21, page 49).

What ingredients are responsible for making the presence of strangers obvious in a zone which is private? Perhaps the difference can be fixed on the degree of ambiguity which a zone will tolerate. Intensely public streets are places which will tolerate a wide variety of behaviors: people can choose to walk by, stand and chat, sit on the hood of a car, even act frankly psychotic—singing, dancing, screaming and soliloquizing—without being challenged. We have found that the moment they step beyond the symbolic portals of First Houses into a space which is, after all, merely an extension of the public sidewalk, such behavior is perceived by residents as a direct threat and is no longer tolerated. Within this zone, activity must have acceptable purpose or intent; if it is unusual, it is dangerous. Where no attempt will have been made to question the presence of, or to identify, individuals on a public sidewalk, individuals within a territorially restricted zone are required to efficiently pursue a goal or purpose; lingering becomes a privilege available only to residents.

These hypotheses are still in the speculative phase of development. Whether the operational nature of these mechanisms is as we suggest can be determined only after detailed testing and evaluation of behavioral and ecological studies over the next 2 to 3 years of study.

3. The subdivision of building interiors to define the zones of influence of clusters of apartment units

When economic considerations become the paramount criteria in high-rise building design, the result is usually the production of high-rise slab buildings in which many individual apartment units are served by long, double-loaded corridors (see fig. 3–22, p. 50). The physical configuration of this corridor results in an overwhelmingly large and anonymous public space, devoid of opportunities for the assumption of territorial prerogatives which subdivision would provide.

Alternatively, the interiors of high density buildings can be designed so that peculiar grouping of units and shared vertical access stairs provide the opportunity for inhabitants to develop territorial concern for the space immediately outside their dwellings. A good example is the interior stair system and corridor at Breukelen (fig. 3–23, p. 51). The L-shaped buildings at Breukelen are subdivided to allow each building two to five entries, each serving from six to nine families. This subdivision has created an entire network of small social groups whose members cooperate to maintain a mutually beneficial environment. The lobby and stair area of each entry is understood by the families who share it as their corporate responsibility. Our interviews show that they all can recognize one another, although the extent of their relationships varies from barely nodding acquaintances to fast friendship.

At each floor of an entry level two to four families share a common corridor area. The doors to the apartment units are grouped around this common corridor and access to it from the stairwell is screened by a glazed partition to satisfy fire regulations. The net effect is that the residents of the floor have adopted the corridor as a collective extension of their dwelling units. Management informs us that although the tenants are not required to maintain this area, they see that it is kept scrupulously clean and well lighted.

Further subtlety appears in the design of the seven-story units at Breukelen. The entrance lobby is lower by two steps than the corridor serving the ground floor apartments. These steps serve to differentiate the more public lobby from the semiprivate corridor serving two to four families on the ground floor, as shown in figures 3–24, p. 52.

It is probable that neither these steps nor the glass

FIGURE 3–21. First Houses, New York. View of typical corridor showing stairs. Only three apartments are grouped on a single floor, making for intimate group dominion of the corridor space. Open stairwells allow audio surveillance of other floors.

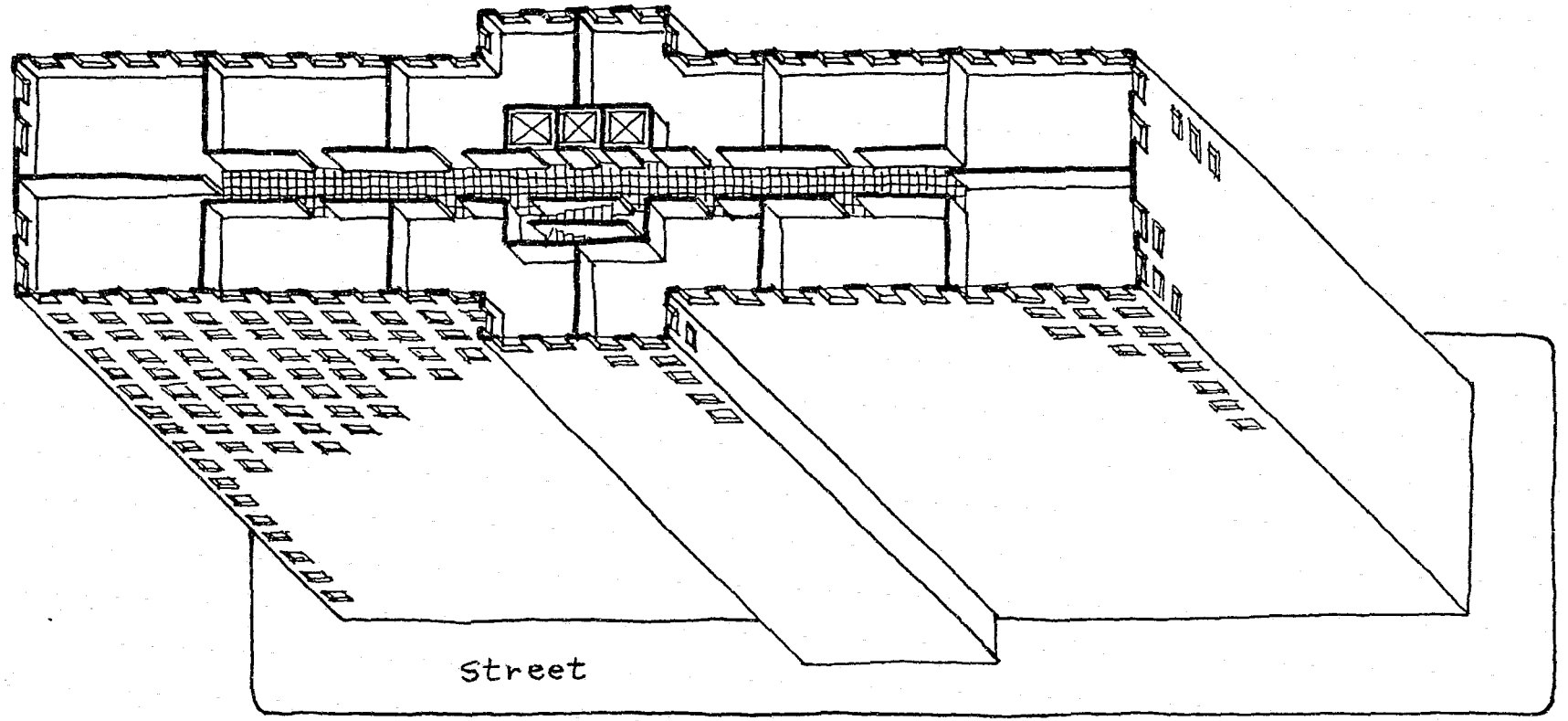


FIGURE 3–22. Double-loaded corridor. The physical configuration of a high-rise slab building is characterized by the long, double-loaded corridor serving many apartments.

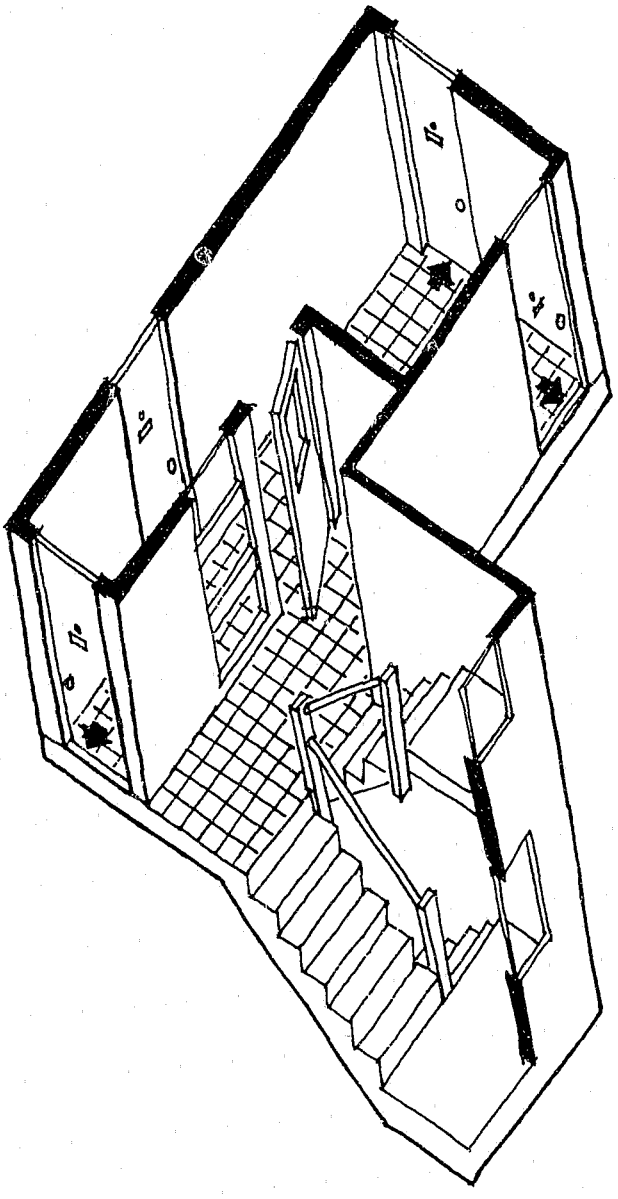


FIGURE 3–23. Breukelen Houses, New York. Common corridor in Breukelen low-rise units.

partitions mentioned previously are the result of a conscious attempt on the part of the architects to define territorial zones within the building. Each was built in response to other demands: the wired glass partition is a form of fire wall, isolating the stair well. The two-step transition from the common lobby area to the ground floor apartments is a device often used to raise the windows of these apartments 8 feet above the outside grounds to discourage burglaries. Both, however, are perceived by tenants as building components which clearly define zones within their building. Very young children are permitted to play in the common corridor and are cautioned not to go beyond the steps or outside the glass wall. The doors to the apartments are usually kept slightly ajar in order to allow the mothers to monitor the activity in these spaces. The screening of strangers in these spaces and, by extension, in the more public lobby and stairwell is a further beneficial spin-off.

A more comprehensive example of accidental design resulting in a well-defined semiprivate area is provided by Brownsville Homes in Brooklyn (see fig. 3–25, p. 53). The building is serviced by an elevator which stops at every other floor. Access to floors above or below an elevator stop is by way of an open free-standing stairwell. This has resulted in the creation of a semiprivate zone defined by the residents' use of the stairs on a continual basis.

Landings and halls at Brownsville were found to be actively used by children and adults as informal gathering places and play areas (fig. 3–26, p. 54). Their presence has provided a natural mechanism for the surveillance of the interior area and for the screening of strangers. The open stair well also allows noises at one level to be monitored at other levels, thus breaking the floor-to-floor seal that normally exists in apartment towers. The open relationship of the stairwell to the entrance lobby further allows some auditory monitoring of lobby activity by residents on other floors.

In preliminary surveys, residents in Brownsville Homes have been found to be very conscious of noises and activity taking place in the stair halls. Because their children play and gather in stair wells and halls, adults seem to be unconsciously alert for loud noises or even interruptions to the din of children at play. A sudden silence in the stair hall can bring mothers to the door as readily as a loud yell or crash. The residents of Brownsville Homes seem to have adopted the stairs, landing areas, and halls as extensions of their dwelling units and are concerned with preserving their safety.

For informal use, in addition, the area immediately in front of the entrance lobby to the apartment building has been adopted as an out-door play and sitting area. Maintenance costs due to vandalism are appreciably lower in Brownsville Homes than in adjoining projects.

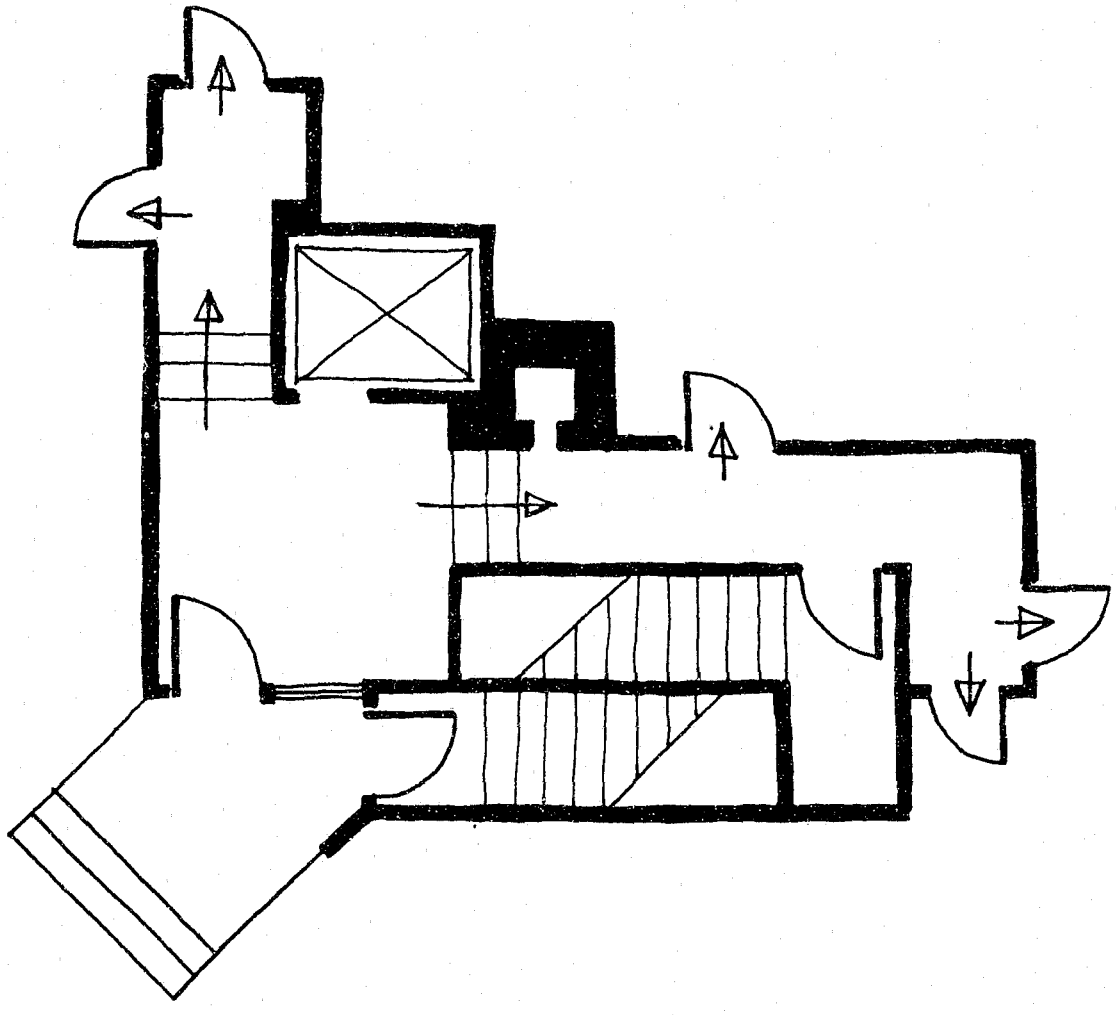


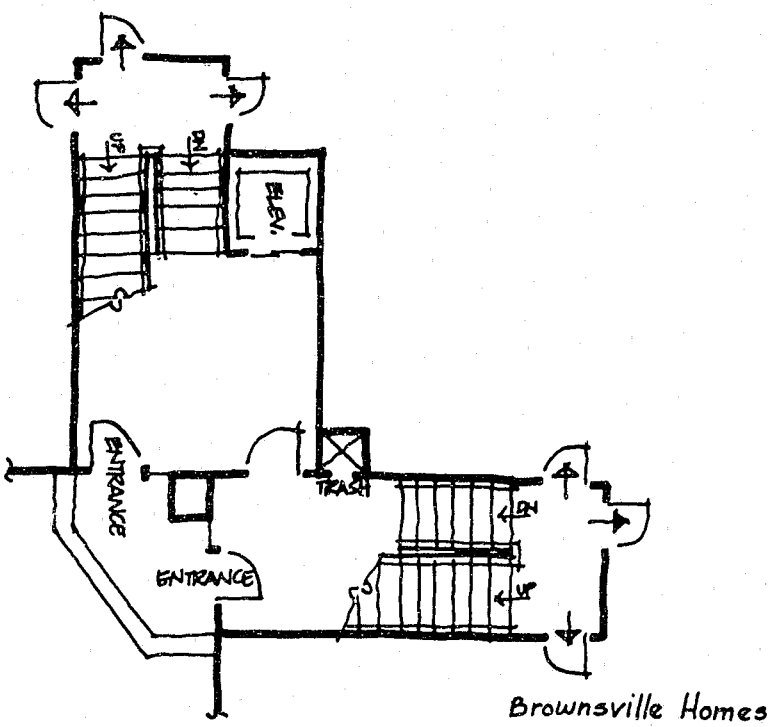
FIGURE 3-24. Breukelen Houses, New York. Sketch of entrance lobby.

4. **The incorporation of amenities and facilities within defined zones of influence which answer to occupants' needs**

The subdivision of areas within housing projects for the purpose of defining the zones of influence of identifiable groups of residents can receive significant reinforcement as defensible space, if facilities are located within these zones that speak directly to the needs of intended sharers.

Our observations have shown that very young children (ages 2 to 5), when playing out of doors limit their field of play to the area immediately adjacent to the entry door to the apartment buildings. If these entry forecourts are further enhanced by play equipment and surrounded by benches, the area will become an important focal point and screening device for building residents. Breukelen Houses is a particularly good example of this joint definition of building entry area further reinforced by the incorporation of amenities.

The location within territorially assigned grounds of amenities such as play and sitting areas, washer-dryer facilities, and car/home repair facilities will tend to give an area a higher intensity of use and further supports any initial claim of territory. The presence in these areas of residents involved in various activities, individual or communal—children at play, women chatting or doing a wash, or men talking over the best way to tackle a faulty carburetor—brings these areas under casual surveillance by concerned members of the family and so further reinforces defensible space attributes. If these areas are juxtaposed to building entrances, then a further means has been created for facilitating the screening of possible intruders.



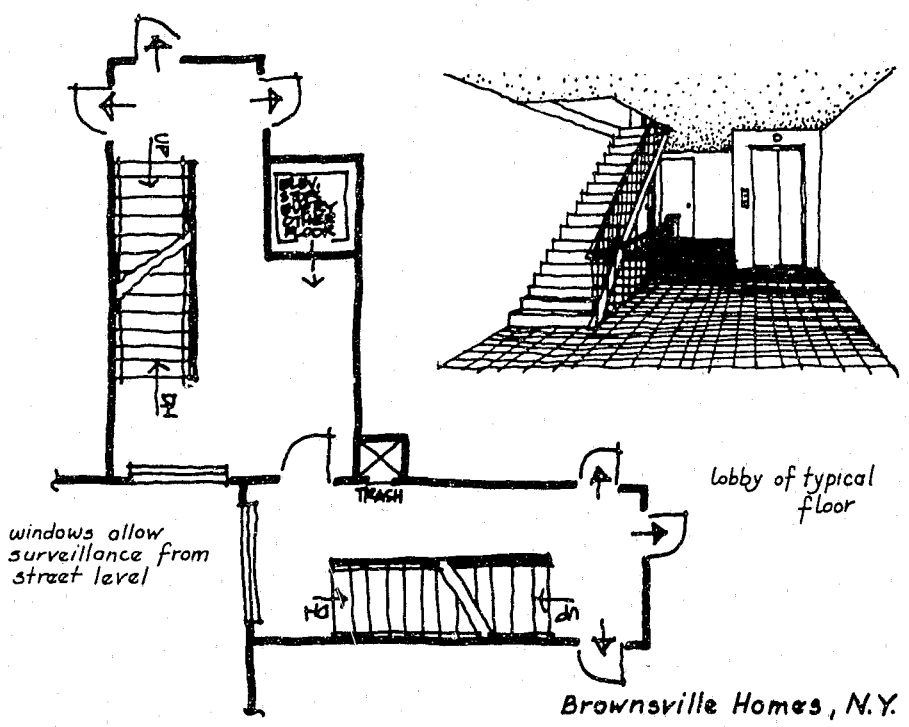


FIGURE 3–25. Brownsville Homes, New York. Stairwells and corridor. Well defined semiprivate areas are created by the free-standing stairwells and corridor configuration. The apartment entries are clustered around a common landing.

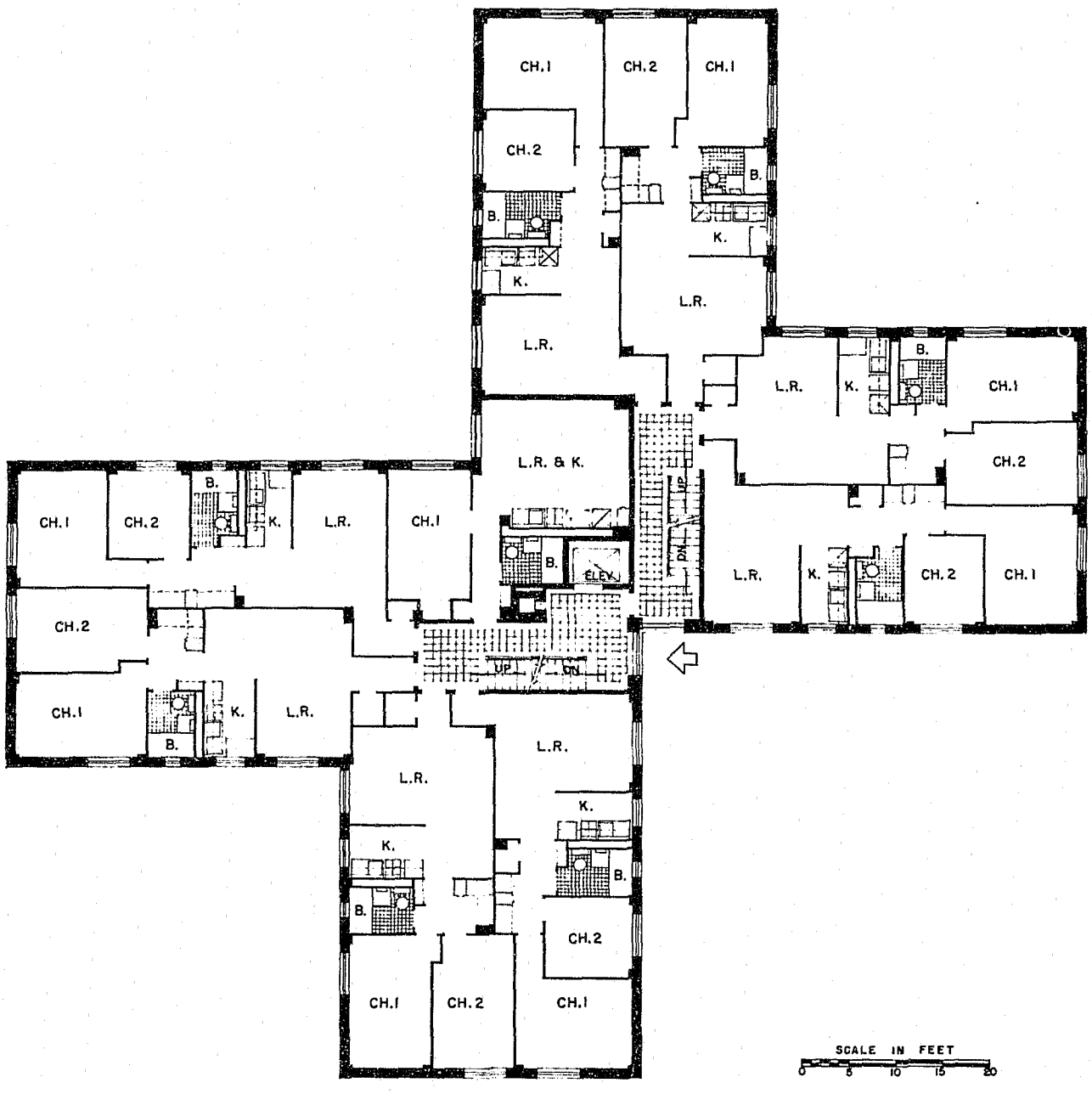


FIGURE 3–26. Brownsville Homes, New York. Floor plan.

5. The significance of "number" in the subdivision of buildings and projects

Reducing the number of apartment units grouped together to share a collectively defined territory and limiting the number of buildings that comprise a housing project is an extremely important consideration for the successful creation of defensible space.

At various scales of subdivision—from number of apartments per hallway, apartment units per building and number of buildings per project—there appears to be a rule which says that the lower the number, the better. We are as yet by no means certain that we can identify the magical number beyond which grouping of units at each of the scales identified becomes critical. We have, however, been able to identify various situations where a specified number has proven quite effective.

In the design of walk-up buildings there is usually no economic conflict in choosing to either

design the building as a single entity and run a central corridor down the full length of it, positioning stairs every hundred feet or so as fire codes dictate, or to distinctly subdivide the building mass internally so that stairs serve only a limited number of units. There are economies in both designs. In the second case, each stair serves only a small number of families (two to four at each level) and a maximum of six to 12 families for the full three stories, rather than connect to a common corridor serving all units at each level. In the former instance, there are many entries to the building, each serving a limited number of families.

We have found that where buildings have been subdivided in this second fashion, residents have adopted a very clear proprietary attitude toward what they can identify as their subbuilding, its internal corridor, landings, stairwells, entry, lobby, and the grounds immediately outside the entry door. Brownsville Homes and Breukelen Houses in Brooklyn are examples of this phenomenon. The St. Francis Square development discussed in chapter 7 is an example of a three-story slab building divided into independent vertical subunits.

The operating mechanisms which make "number" significant here are:

- The capacity for people to distinguish or recognize by sight the members of the families sharing a building and entry with them. (The lower the number, the more quickly and easily the cognitive capacity established.)
- The value of something shared with others increases inversely with the number of people involved in the sharing. Further, we have found that an outside play and sitting area, if it is intended for the exclusive use of 12 families has greater significance to each family than a larger area shared by proportionately more families.

These two mechanisms operating in concert seem to play a very important role in facilitating residents' adoption of territorial attitudes and prerogatives.

Perhaps the most fascinating example of the phenomenon of "number" at work was provided by a comparative analysis we did of two sets of dormitories situated on either side of the main campus commons at Sarah Lawrence College. Both sets of dormitories house approximately the same number of students. The one to the west is a new building (fig. 3–27, p. 56), consisting of one long slab served by an interior, double loaded corridor and four sets of stairs. On the eastern side of the Commons is the older set of dormitories (fig. 3–28, p. 57), consisting of three detached buildings, each with its own internal hall and stairways. The three buildings are in the style of an old English manor. Each has two entrances and a small internal corridor. The entries are small and cramped, with narrow halls and stairs and low ceilings. The individual rooms in both old and new buildings are very small.

In interviews with students in both sets of buildings and with student counselors, the following story emerged. Where there is a strong communal sense in each of the old buildings (called "houses") it is nonexistent in the new buildings. Students in the new buildings have resisted any and all attempts by either other students or counselors to shape them into social groups. Student residents have almost universally adopted loner's attitudes: they conduct their lives within the confines of their individual rooms and seem unconcerned with the other residents of the building. In the new building there seems to be a high incidence of vandalism and a general disregard for the maintenance and cleanliness of corridors and furnishings provided in the common lounges. Students in the set of older dorms, by contrast, feel that they are very much members of an individual house. They form strong social entities which define norms or orders of behavior. By contrast, the corridors and common areas in the older dorms are meticulously cared for.

The two problems facing most dormitory colleges across the country also trouble Sarah Lawrence. The way in which the two sets of dormitories are able to deal with them is very revealing.

There is a much lower frequency of drug abuse and problems stemming from the occasional use of drugs in the individual houses than in the large dormitory. Student counselors explain this as being the result of: (1) The greater ease with which strangers from outside the campus can frequent the new building; (2) the fact that girls in the new building feel they are isolated and on their own; (3) there is little group moral pressure to respond to situations which get out of hand.

Since the adoption of a new open door policy at the college, students are allowed to have occasional overnight guests. This policy has resulted in some instances of boyfriends from the surrounding community using the opportunity to find a place to stay for longer stretches of time. In some instances such guests have betrayed psy-

FIGURE 3–27. Sarah Lawrence College, New York. View of new dormitories. The new dorms are a long double-loaded slab structure. Students in the new dorms feel isolated from any sense of community and often fall into patterns of antisocial behavior.

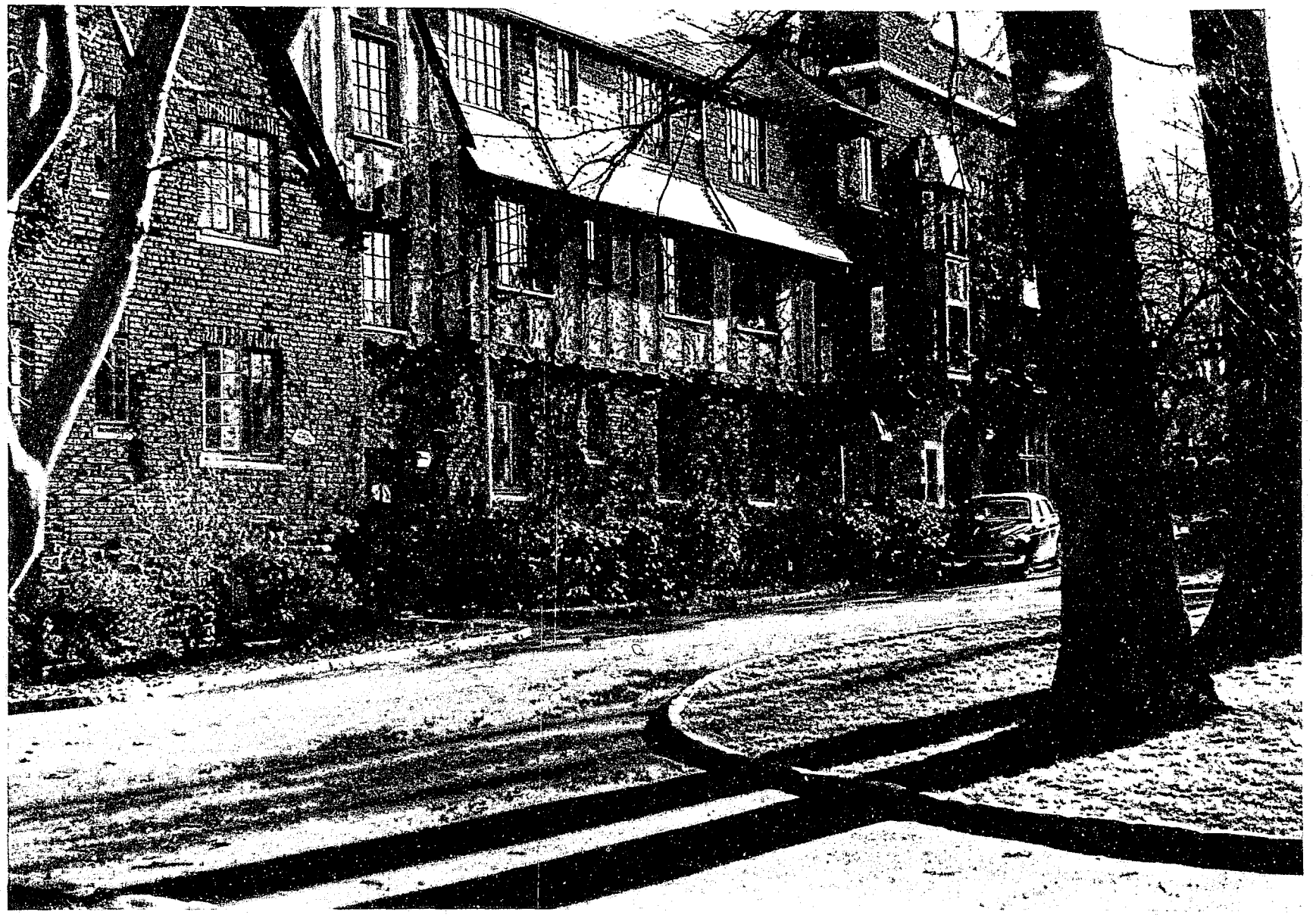


FIGURE 3–28. Sarah Lawrence College, Bronxville, N.Y. View of older dormitories. The old dorms are smaller in scale and resemble old English manor houses. Students here have a strong sense of community.

choses or have otherwise proven a problem for a girl and she has found it necessary to eject him. In the new dorms a pattern has emerged wherein the rejected boy has simply moved down the corridor or to another floor in the building and so has succeeded in extending his stay for weeks at a time. By contrast, a boy being ejected by a girl in one of the older dormitories also finds himself ejected from the house and finds it extremely difficult to ingratiate his way into another such house.

University counselors also find that they learn of the presence of such male visitors much more quickly in the old dorms than in the new.

Lee Rainwater in his study of Pruitt-Igoe identified a common phenomenon—a similar floating male population—among the aid-to-dependent-children mothers. The lesson learned at Sarah Lawrence may be peculiarly applicable to public housing.

The reputation of the new dormitory building has now become legend at Sarah Lawrence, and every freshman scrambles to be rehoused elsewhere for her sophomore year. This has resulted in the new dorms being assigned primarily to unsuspecting frosh—further aggravating the problem.

So insurmountable are the problems of the new dormitory that the college has entered into negotiations with the State, under whose dormitory program the building was constructed, to persuade them to purchase it back and turn it into classrooms and offices. It is now the intent of college authorities to construct new dormitories similar in form to its more successful older buildings.

Infill sites with high-rise buildings

Project sites containing only a few (two to four) high-rise buildings have been found to have appreciably lower crime rates than projects containing many buildings. It is possible that this can be explained by the radical reduction in the housing project image. It is improbable that residents are able to distinguish intruders more readily in a grouping of a few high-rise buildings versus one with many. But it is possible that intruders may feel that they can. In either case, there appears to be much less freedom of movement in the public spaces of the smaller high-rise projects. They more closely resemble middle income high-rise developments and look more private and impenetrable. Also, unlike large groupings in small clusters, every building has an entrance directly off the public streets.

Subdivision in elevator buildings

Elevator apartment buildings, unlike walk-ups, do not allow themselves to be subdivided readily. Depending on the type of elevator employed, economics dictate a very specific number of apartments per floor which must be served. Buildings four to six stories in height can usually be served by an inexpensive hydraulic elevator. In such instances one elevator can serve as few as four or five units. High-rise buildings over seven stories in height, however, require expensive high speed elevators, which economy dictates must serve a larger number of apartments both per building and per floor.

To reduce waiting time in elevator operation, it is common practice for two to three elevators serving a building to be grouped into a single bank. This practice of grouping improves the performance of elevators, but also results in corridors 150 to 400 feet long, many of an "L" and "T" shape configuration (see fig. 3–29 and 3–30, page 59). Following the requirements of fire-safety codes, emergency stairs are usually located every 100 feet along the corridor.

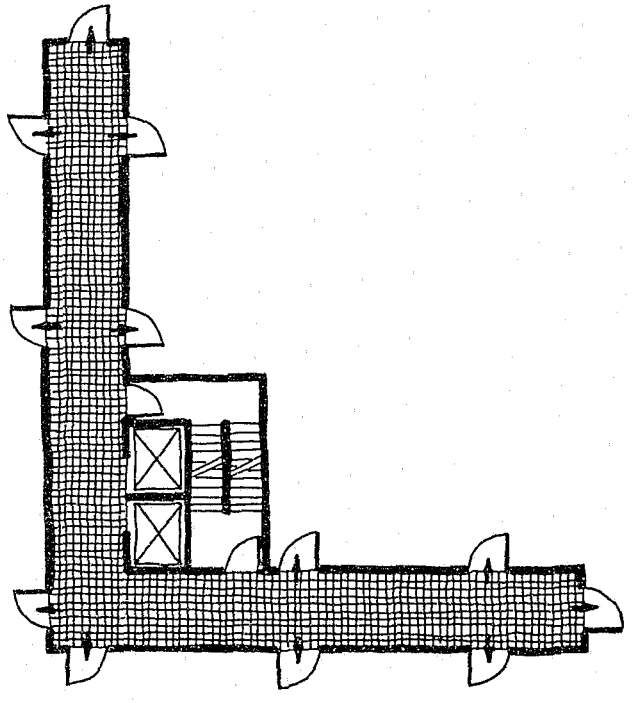


FIGURE 3–29. An "L"-shaped corridor configuration. Elevators and fire stairs centrally located in an "L"-shaped corridor configuration.

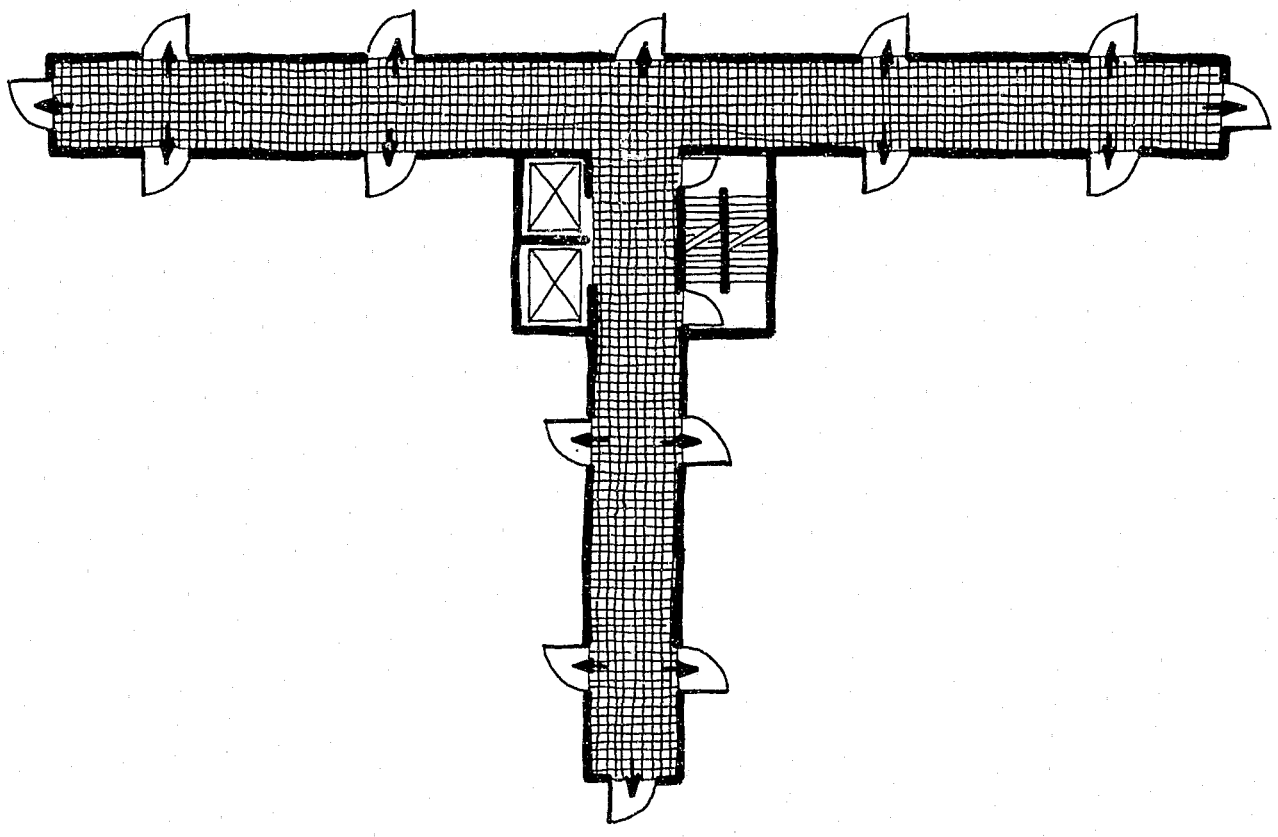


FIGURE 3–30. A "T"-shaped corridor configuration. Elevators and fire stairs centrally located in a "T"-shaped corridor configuration.

The combination of frequent fire stairs and long corridors which serve as many as 20 to 30 apartments results in a highly anonymous interior public space. This can be remedied, at the expense of increased waiting time, by separating the elevators so that one serves only four to eight apartments per floor.

B. The Capacity of Physical Design to Provide Surveillance Opportunities for Residents and their Agents

The ability to see and be seen, hear and be heard, by day and night, is an important contribution to safety and security that can be achieved through design of the physical environment.

The following set of hypotheses speaks to the design of the grounds and internal semipublic areas of housing developments to facilitate the visual and auditory monitoring of activities taking place within them.

Most crime in housing occurs in the semipublic interiors of buildings: the lobbies, halls, elevators, and fire stairs (see table 1–1, page 7, ch. I). Through the relative positioning of buildings, ground areas and access paths in a site plan; the internal design of the lobbies, stairs and corridors of individual buildings; and the relative disposition of apartments, entries, windows, and glazed areas within each building, it is possible to insure that all public and semiprivate spaces and paths come under continual and natural observation by the project's residents.

It is our hypothesis that such surveillance opportunities are significant crime deterrents, that they markedly lessen the anxiety of inhabitants, and serve to create an overall image of a safe environment. This is achieved by creating surveillance opportunities which:

- Allow tenants to continually monitor the activity taking place in all areas of the project outside the privacy of apartment units proper.
- Provide tenants who are in areas of the project outside their homes with some reasonable assurance or the feeling that they are under observation by other project residents.
- Make obvious to potential criminals that any overt act or suspicious behavior will come under the potential scrutiny of many project occupants. This will act to discourage the initial inclination toward such criminal behavior, and/or increase the likelihood of criminal activity being observed and reported.

- Allow users of project paths and corridors to pre-scan the terrain they will be passing through so as to assure themselves that it holds no threats or surprises, and provides them with alternative routes through which they can avoid perceived dangers.

Surveillance and territoriality

Improvement in surveillance capacity—the ability to observe the public areas of a residential environment, to see ahead to one's destination and to feel when one is under observation by other residents—can have a pronounced effect in securing the environment for peaceful and productive activities. An additional benefit, of possibly greater import, is that improved surveillance has a demonstrable effect on reducing irrational fears and anxieties in inhabitants. This may have some self-fulfilling attributes, in that residents, feeling an area secure, make more frequent use of it and so further improve its security by providing the safety which comes with intensive use.

However, experience has shown that the ability to observe criminal activity will not, in and of itself, impel the monitor to respond with assistance to the person or property being victimized. The decision to act, once one has observed, depends on other variables:

- Identification on the part of the observer with either victim or property.
- The extent to which the activity observed is understood to be occurring in an area within the sphere of influence of the observer.
- The extent to which the observer has actively developed proprietary feelings and is accustomed to defending his property.
- Identification of the observed behavior as being abnormal to the area in which it occurs and therefore warranting response.
- The extent to which the observer feels he can effectively alter the course of events being observed

Physical means for furthering the development of proprietary feelings and extending the zone of identification were discussed previously under our hypotheses involving the definition of zones of territorial influence.

The Kitty Genovese incident is perhaps the most widely known example in which many witnesses to a crime were incapable of mounting an effective response. The incident has been the subject of many studies, some involving simulations or in-depth interviews with witnesses. A recurring excuse for inaction was that the circumstances surrounding the incident—the victim was unknown to the observers, and the incident occurred on a public street—precluded intervention.

This account falls short of being entirely acceptable as an explanation for the conduct of the witnesses. There were, of course, other issues identified which point up a more serious breakdown in traditional social values and responsibilities.

It is not our intent to find simple solutions to complex problems, but only to reinforce the point that the effectiveness of increasing surveillance capacities is dependent on the presence of psychological and social factors as well as on physical design considerations. Its unilateral success as a mechanism of crime control is by no means to be implied.

Following are physical mechanisms for improving surveillance, whether employed separately or in concert with other design directives.

Physical mechanisms for providing surveillance opportunities for residents and their agents:

1. The juxtaposition of activity areas in apartment interiors with exterior nonprivate areas to facilitate visual surveillance from within.

2. The glazing, lighting, and positioning of the nonprivate areas and acess paths in projects to facilitate their surveillance by residents and formal authorities.

3. The disposition of entries, access paths, buildings, planting, corridors, indoor and outdoor lighting to facilitate the prescanning of terrain between origins and destinations circulation routes.

4. The reduction in ambiguity among the public and private areas and paths in projects so as to provide focus and meaning to surveillance.

These mechanisms are discussed below.

1. The juxtaposition of activity areas in apartment interiors with exterior nonprivate areas to facilitate visual surveillance from within.

Design with the purpose of facilitating surveillance of outside areas from within the apartment unit can be accomplished in many ways. One involves designing units so that people within them will naturally view the communally used paths, entries, play and seating areas of a project while in the pursuit of their normal household aitivities.

Breukelen Houses has employed this technique with the result that there is very little crime, or fear of crime, on its grounds. Architects have located kitchen windows in each apartment so that

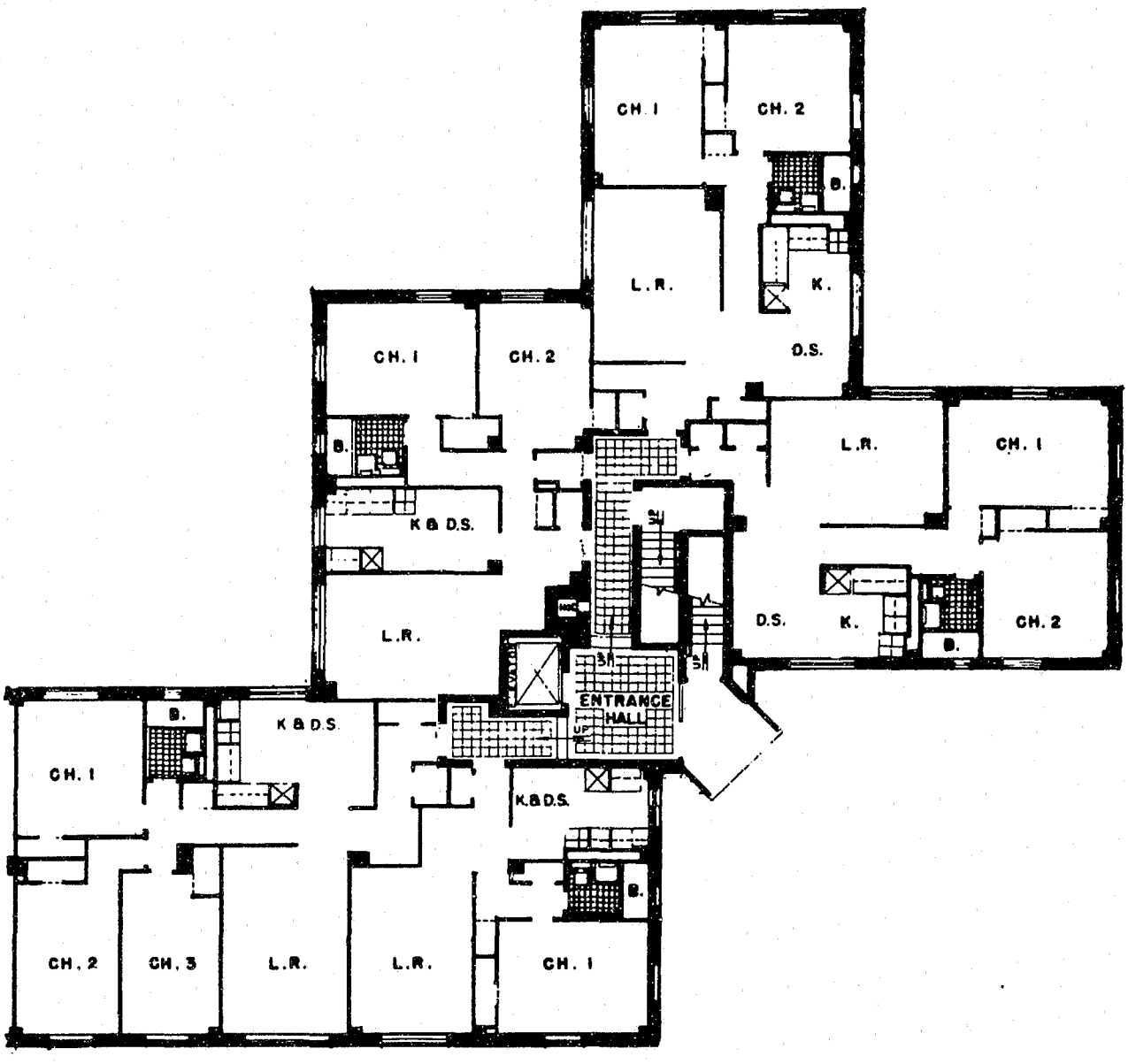


FIGURE 3–31. Breukelen Houses, New York. Floor plan. The design of the apartment units facilitates surveillance. Kitchen windows face front entries, allowing adults to observe the movements of children and other passersby.

they face front entries and their adjacent play and parking areas (see fig. 3–31, above). As adult occupants spend a good portion of their time in the kitchen, they easily and naturally observe their children at play outside, while at the same time monitoring the comings and goings of residents and strangers.

Surveillance of corridors

Apartment buildings of "single-loaded corridor" design provide ready opportunity for surveillance of their corridors from within the apartment units. "Double-loaded corridors" are, by contrast, devoid of surveillance opportunity except where tenants choose to use their door peep-holes (interviewer). "Double-loaded" denotes a building designed with apartment units positioned on either side of a central corridor (see fig. 3–32, p. 62); "single-loaded" designates a design in which apartment units are located exclusively on one side of the corridor; they face an exterior wall which is glazed or, in mild climates, left open to the weather. This latter feature has prompted designers to locate windows in the apartment wall facing the corridor

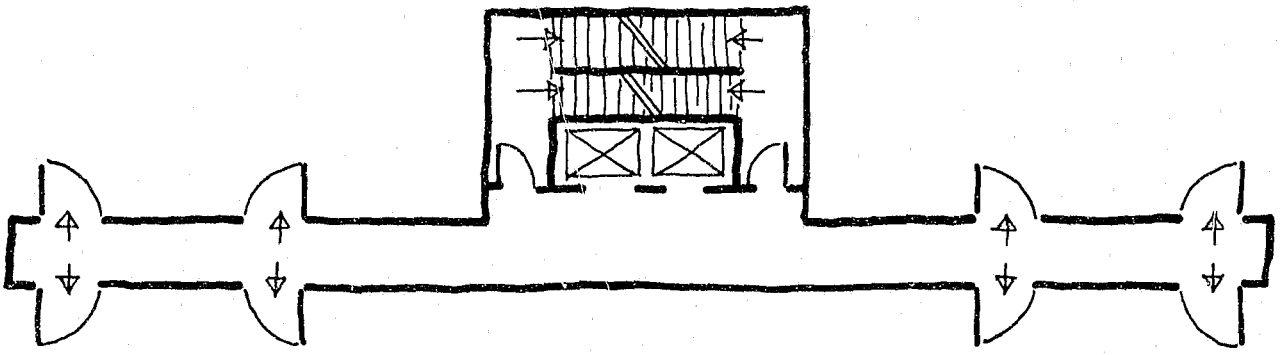


FIGURE 3–32. Sketch of double-loaded corridor. Apartment entries are off either side of a central corridor.

to achieve cross-ventilation of the unit; at the same time, excellent surveillance opportunities are provided. Cross-ventilation of units in a double-loaded corridor design is, of course, impossible; the setting of windows in the corridor wall is further precluded by the lack of privacy that would result from the proximity of facing windows.

An example of single-loaded corridor design in a public housing project is Stapleton Houses in Staten Island, New York (see fig. 3–33, p. 63). At Stapleton, the corridor approaching an apartment unit can be monitored by residents through both their kitchen dining room and their living room windows. Marginally these corridors also receive monitoring from the bedroom windows of opposite buildings. The open corridor window wall also facilitates effective police surveillance from the ground level. It is easy to understand, therefore, why the corridors of single-loaded buildings have almost no crime problems whereas double-loaded corridors house some 20 percent of all crimes committed in the interiors of buildings.

Typical of the single loaded corridor apartment building design is a floor plan in which the elevators and fire stairs are located centrally. The open corridor runs from one end of the building to the other through the central area which is usually enclosed. At least one apartment is located in this enclosed central space opposite the elevators. These apartments have no windows into the corridors and no visual link to the others because of the two doors closing off the central interior space. They are the apartments most consistently burglarized. In one such middle income single loaded corridor building in Manhattan, there has been a recent rash of an average of four robberies per month; all the apartments involved are located within this central elevator area.

The single loaded corridor is more costly than the typical double-loaded solution, and this is a strong inhibiting factor to its general adoption in low-income housing. Riverbend Houses in Manhattan (see ch. 7) goes some way in tempering this cost differential by providing a piggyback maisonette-on-maissonette solution which employs one corridor for every two floors.

At Stapleton there is continual surveillance of the gallery corridors through apartment windows; threats or loitering strangers are detected quickly and reported to the housing authority police. By contrast, the entry lobbies of Stapleton Houses are not related to apartment units and suffer from poor visibility. These are the most littered areas of the buildings, suffer the most vandalism, and are where the most crime occurs.

The typical floor plan at Stapleton also incorporates a design asset not common to single loaded corridor solutions. The entry area to each of the apartments has been set back an additional 4 feet to create a small transitional zone separating the entry from the corridor proper.

This territorial definition, coupled with the facility for continual surveillance activity has resulted in residents' adoption of this corridor space as their own, feeling sufficiently assured of their territorial prerogatives to place lounge chairs outside their doors in hot weather. What is officially designated by the authority as public space has been claimed as semiprivate by the tenants. Children play in this space continually and leave their tricycles and other toys there overnight.

Housing authority management is concerned that the pattern of corridor use at Stapleton Houses constitutes a breach of the rules of occupancy. The authority quite painstakingly informs tenants that there is to be no loitering or other activity in the

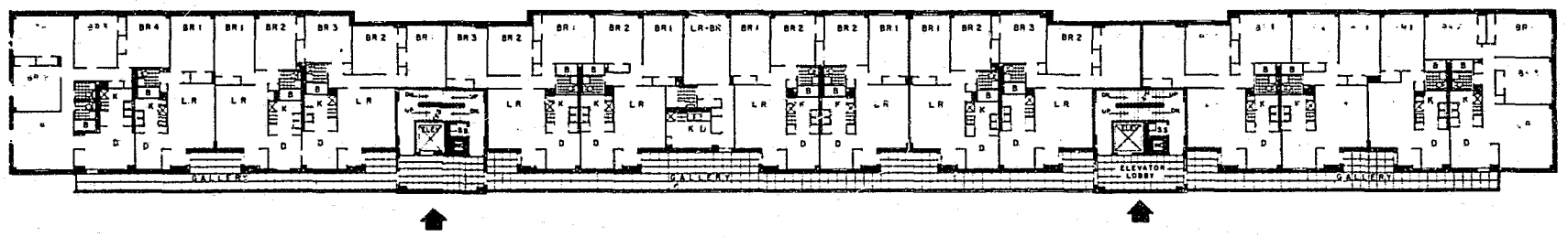


FIGURE 3–33. Stapleton Houses, New York. Floor plan. An example of single-loaded building design. Apartment unit entries are on only one side of the corridor. Living room and kitchen-dining room windows open onto the corridor providing good surveillance opportunities.

public areas of the building. Management is further troubled by tenants bickering over conflicting claims to territory and boundaries in the outside gallery. Settling those arguments apparently consumes some of the project manager's time. Management, as a result, continues to issue directives to prevent this occupation of the public corridor, emphasizing the fire hazard and nuisance of it all.

For all its nuisance value, territorial bickering has an important function in framing tenants' attitudes toward this space and its violation by intruders. Arguments over the minutiae of territorial boundaries are insignificant when weighted against the benefits accrued: tenants have assumed responsibility for the corridor's maintenance and policing and thereby insure its freedom from crime and vandalism.

2. **The glazing, lighting and positioning of non-private areas and access paths in projects to facilitate their surveillance by residents and formal authorities. (Access paths refer to vertical paths as well as horizontal ones and include stairs, elevators, corridors, and lobbies along with the more obvious outside paths.)**

The internal areas of high-rise buildings contain many zones which are devoid of any opportunity for surveillance. Lobbies, elevators, hallways, and fire stairs are by definition, public rather than private spaces and are intended for use by all building residents. Yet, these zones differ from other public areas (e.g., the streets) in that they exist without benefit of continual observation by either patrolling officers or resident observers.

It is possible and preferable to design lobbies so that internal activity—getting mail, waiting for the elevator, using the pram room, or, as the case may be, purse snatching or drug dealing—is observable from the exterior grounds. For example, the design of the entrance lobby of the Columbus Houses project in Newark requires a double turn to bring one to the elevator waiting area (see fig. 3–34, p. 65). Residents enter the building "blind" with no fore-knowledge of what awaits them (see fig. 3–35, p. 66); once inside they are completely isolated from visual or auditory observation by persons within the apartment units or outside on the project grounds.

The design of the Highbridge Houses lobby is a clearly preferable solution. In these buildings, elevators are located directly opposite the entry which was designed as a large window wall as shown in fig. 3–36, p. 67. Similarly, at Seth Low Houses in Brooklyn, the lobby is glazed, well lit and open to visual observation from as far away as 50 yards. The design of Brownsville Homes, which will be discussed at length in chapter 5, provides additional surveillance opportunities by positioning building entrances opposite offstreet parking facilities (see fig. 3–37, p. 67).

Another area of high-rise buildings which is devoid of both visual and auditory surveillance opportunities is the fire stair system. Because of changes in fire code regulations, fire stairs in elevator buildings must be enclosed in fireproof wells. These regulations have resulted in the widespread adoption of the scissor-stair design. This solution has precipitated a wide range of allied problems.

The stairs are virtually sealed off from heavily traversed areas of the buildings they serve. They are commonly constructed of concrete, with access provided through heavy, fireproof steel doors in which the only opening is a 1-foot square area of wired glass. This arrangement effectively precludes the possibility of visual or auditory monitoring of activity in the stair wells. Because of this configuration, most residents make rare use of the stair well for entry and egress, thereby increasing its isolation.

A disproportionate amount of crime has been found to occur on these stairs. It is common practice for criminals to accost the victim in a more heavily used public area of the building (i.e., the lobby, elevator, and corridors) and then to move him, by threat or force, to the sealed fire stairs. This is the area in which a high percentage of the rapes occur, and in which narcotics addicts are found to congregate.

Roof landings (the last landing of the fire stair before exit onto the roof) have presented a similar problem in that they are used continually by addicts as a gathering place. At Brownsville Homes, two kinds of roof landings are employed: one set of landings have windows in them and are well lit; drug addicts are seldom apprehended in these spaces. Other landings are windowless, and are generally the locations of numerous arrests on narcotics charges.

In older buildings and projects, fire stairs were constructed with glass areas larger than contemporary fire codes would permit. For example, at Brenkelen Houses, the landing areas and a good portion of the stairs themselves are surveyable

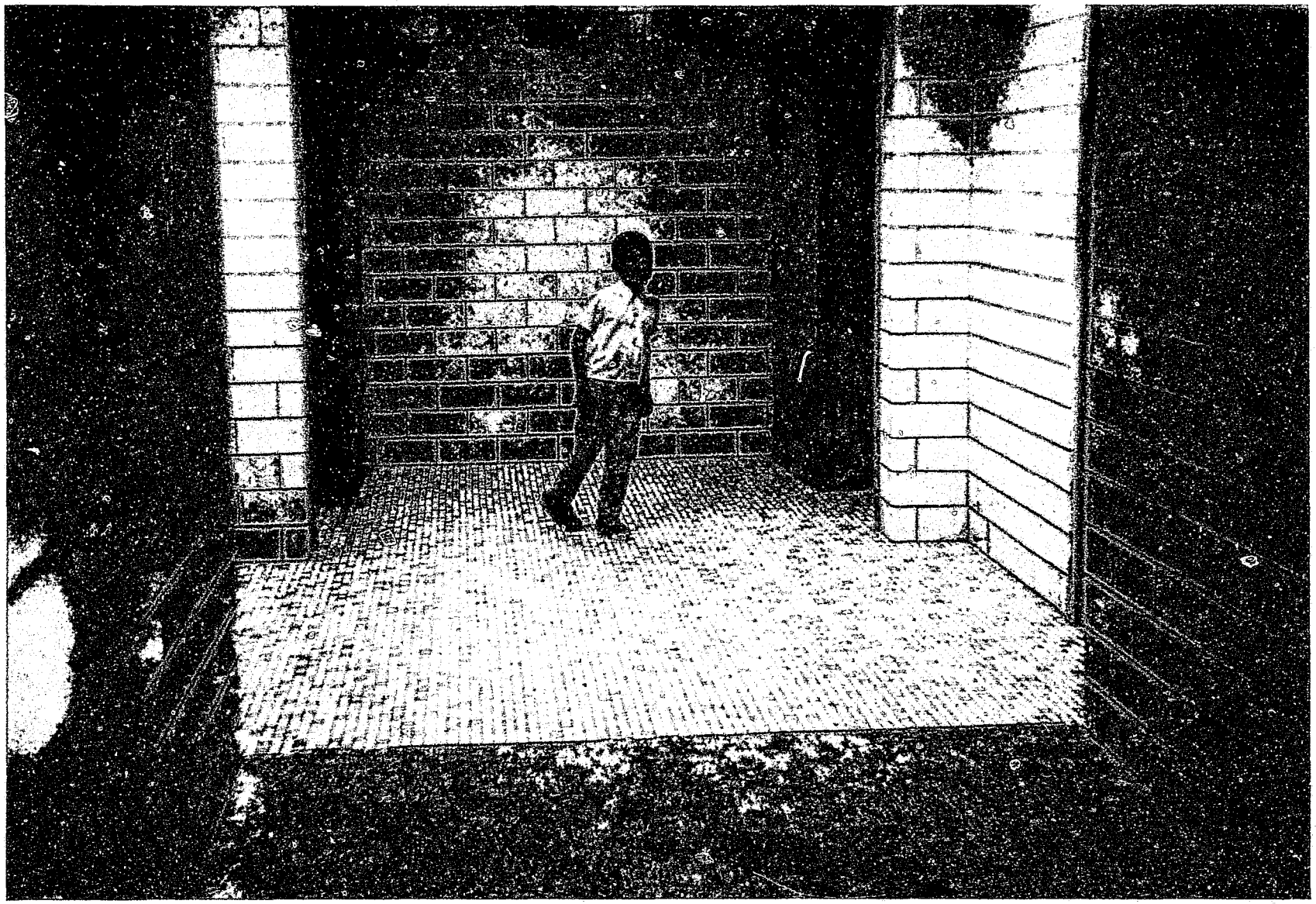


FIGURE 3–34. Columbus Houses, Newark. View of typical lobby. The path to the elevator is circuitous and consists of several blind corners, adding to residents fear of the building.

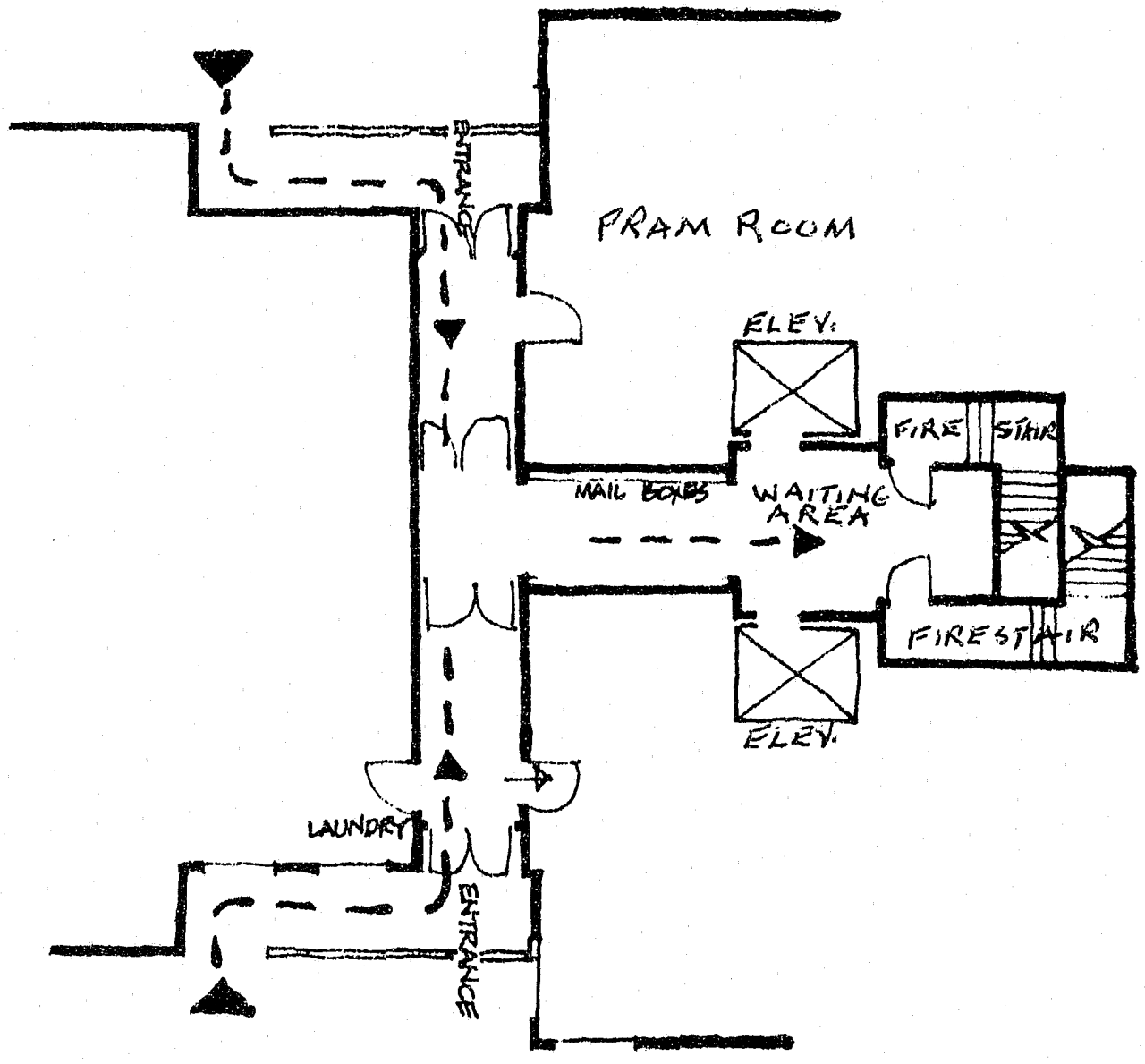


FIGURE 3–35. Columbus Houses, Newark. Sketch of lobby. Entries are on both sides of building from which elevator lobby is hidden from view.

from the grounds and street (see fig. 3–38, p. 68). Large windows at the landings flood the internal stair with daylight. Users of these well-trafficked stair wells feel that they are under observation by other residents and that they can call out to people below in an emergency.

Facilitating police surveillance of internal public areas

Effective formal police surveillance is a difficult task in high-rise buildings. Housing police survey the interior of a building of double-loaded corridor design taking the elevator to the top floor and descending one fire stair after another, observing activity in the corridors at each level as they go. It is a dreary and lonely task, not easily or often engaged in by police. In addition, this method is not particularly effective; it is difficult to see more than a few yards ahead, and it is impossible for a man to cover more than one stair at a time. Conversely, evading a patrolman is very easily done. A patrolman can be located three floors away by the sound of his footsteps and the opening of doors at each level.

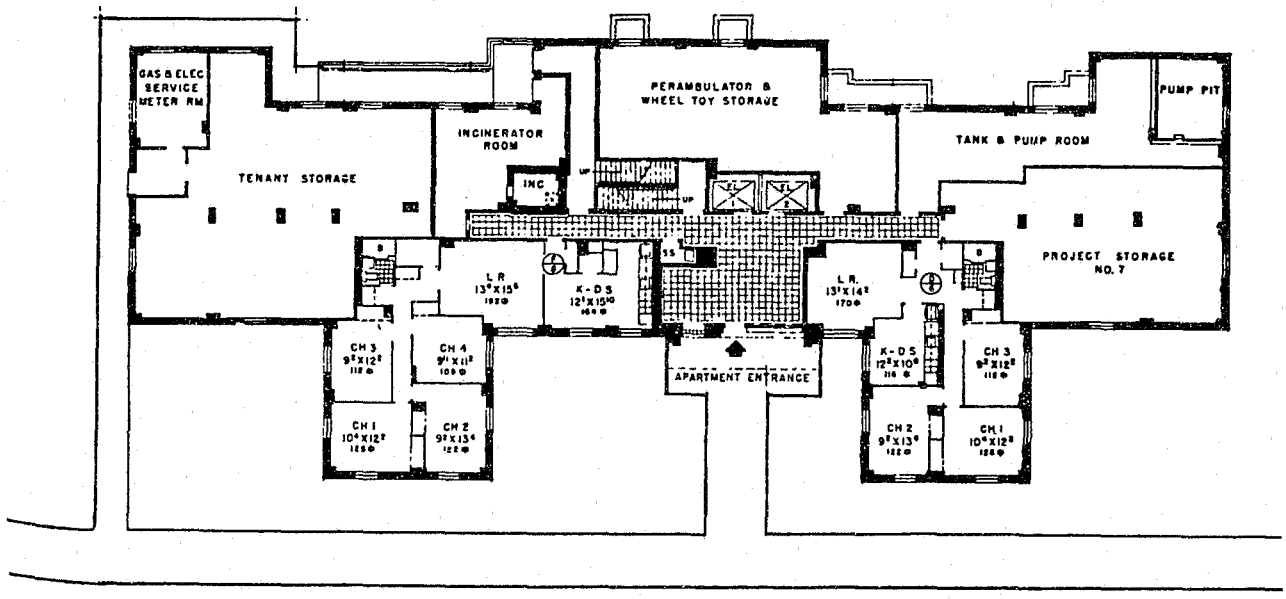


FIGURE 3–36. Highbridge Houses, New York. Floor plan.

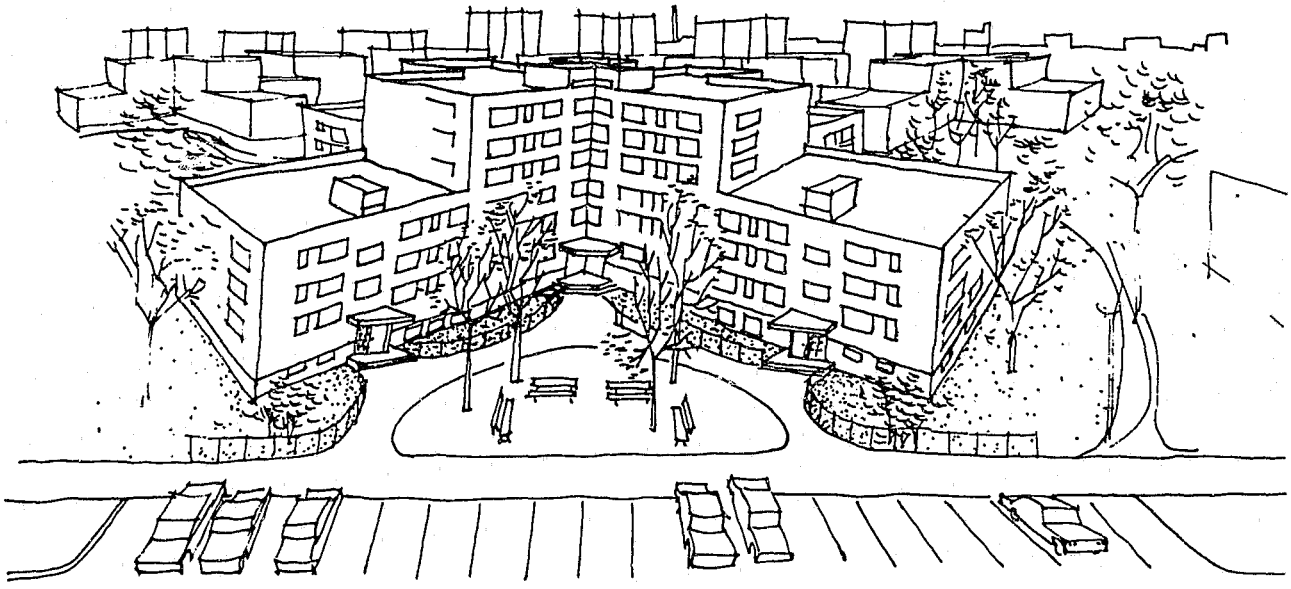


FIGURE 3–37. Brownsville Homes, New York. Sketch of exterior. Additional surveillance opportunities are provided by positioning building entrances opposite off-street parking facilities.

Eluding pursuit by police is further facilitated by the double scissor stair configuration, which produces an exit door on each side of the building. Police officers may be going down one of the staircases while the intruder slips out of the other.

We accompanied officers of the New York City Housing Authority Police in their nightly and daily patrols and witnessed the comparative ease of formal patrol of buildings which have features such as: (1) Windows in the fire-stair walls; (2) lobbies and mailbox areas well lit and easily viewed from the street; (3) elevator waiting areas at each floor which can be seen from the street below. These areas can be surveyed at a glance from the ground. Trouble spots in buildings can be pinpointed easily from the street. Someone moving down a set of stairs can be observed in progress. Dark landings resulting from smashed light bulbs provide a warning that some activity may be taking place there.

FIGURE 3–38. Breukelen Houses, New York. View from inside scissors-stairs. Landing and end-wall are composed of glass-block and window. This glazed end-wall and its positioning adjacent to the street and entry area to the apartment building provides an important degree of contact between persons in the stairs and those outside. It also facilitates police patrol of the stairs by providing visual surveillance capacity at a glance. A removed stair-well light is usually read as a danger signal by patrolling police and is investigated.

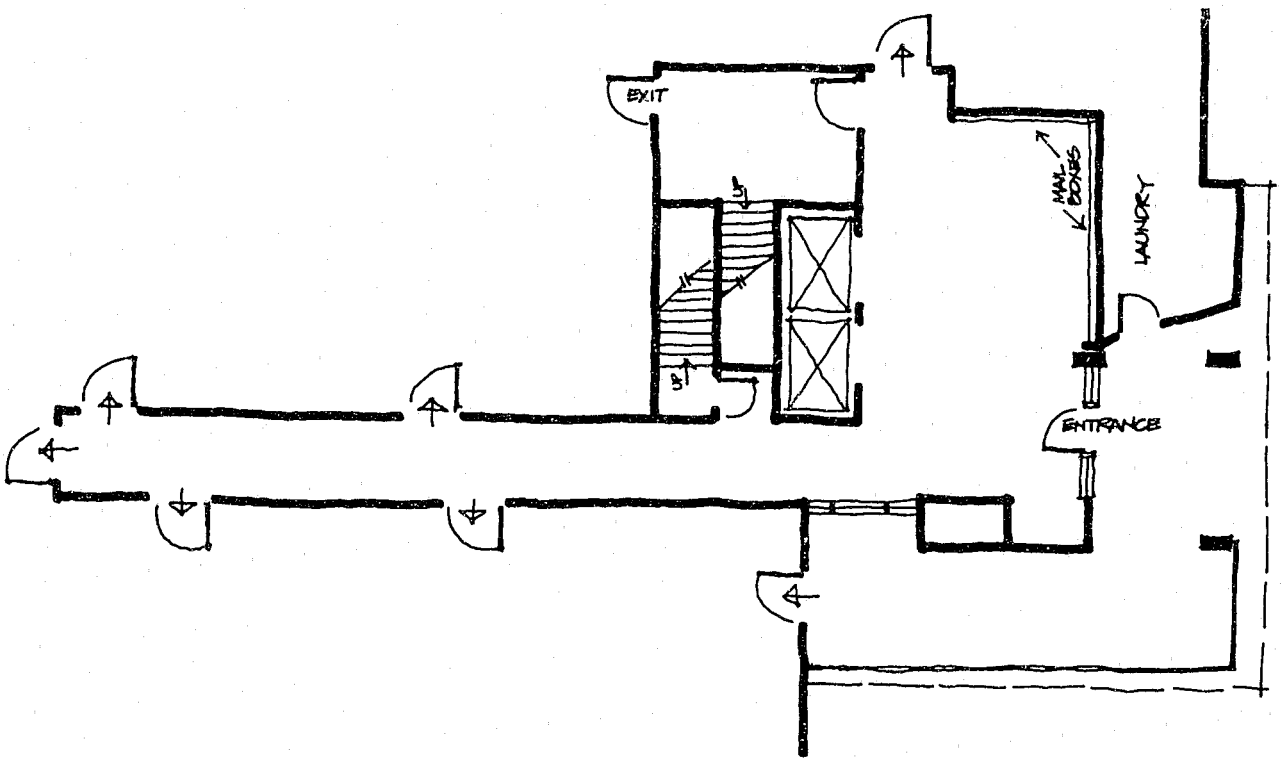


FIGURE 3–39. Tilden Houses, Brooklyn, N.Y. Sketch of corridor. The positioning of windows at the end of the corridor on each floor allows a patrolling officer on the street to observe activity in the public interior spaces.

Tilden Houses illustrates the effectiveness of a simple modification to what is otherwise a standard floor plan in increasing surveillance opportunities (see fig. 3–39, above). Windows have been inserted at the end of the corridor on each floor and at each landing of the fire stair. As a result the patrolling officer on the street can observe much of the activity in the public interior space of the building (see fig. 3–40, p. 70).

Formal surveillance of external areas

The traditional row house street is considered by both residents and police to be superior in design to the superblock configuration, which is often employed in medium and high-density public housing projects. The front and rear entrances of the row-house units are easily surveyed by patrolling automobile. Well lit lanes, with individual lights over entrances, allow cruising police to recognize at a glance any peculiar activity taking place on the block. The positioning of front entrances along the street also serves, of course, to provide supervision by passersby of activity there; the houses in turn provide these passersby with surveillance. The New York City housing police consider buildings with entrances facing the street superior to those with entrances facing the interior project grounds.

The site planning rationale employed in the design of large high density housing estates was directed at freeing as much of the interior from streets as possible. Two to four block areas were commonly wedded into a single super block, with limited vehicular access provided at the periphery. Formal motor patrol of the interior areas of these projects is thus made impossible. This difficulty has been somewhat overcome in New York City projects through the use of motor scooters by housing police. However, the opportunity for the informal superivison provided by passing cars and pedestrians is lost. Similarly, it is impossible for city police to include the internal grounds of such projects in their normal routes.

3. The disposition of entries, access paths, buildings, planting, corridors, indoor and outdoor lighting, to facilitate the prescanning of terrain between origins and destinations along circulation routes.

The random positioning of high-rise towers on public housing sites has produced systems of access

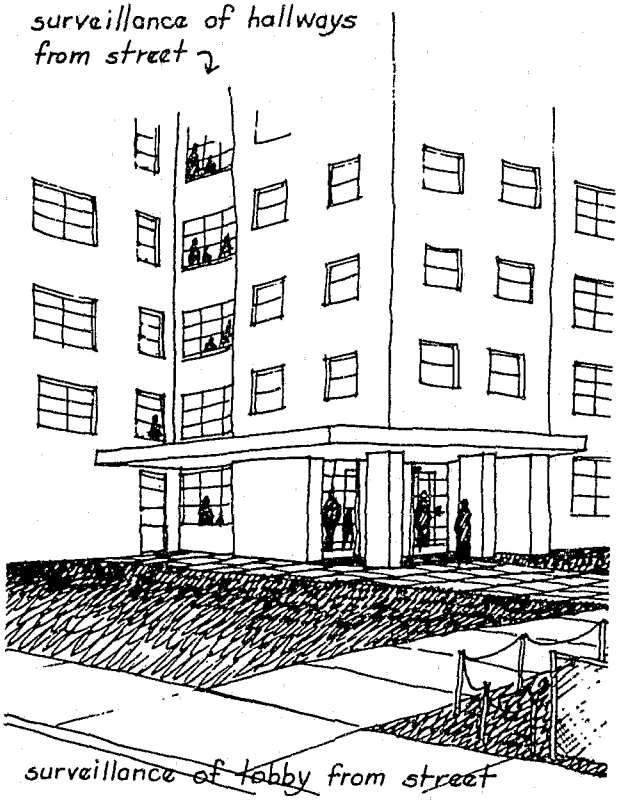


FIGURE 3–40. Tilden Houses, New York. Sketch of building exterior.

paths which are filled with sharp turns and blind corners. Circuitous paths of movement through the interior of large projects are a recurring complaint of residents, especially in projects where the main building entries face interior project grounds rather than public streets. Woodhill Estates in Cleveland, Lillian Wald Houses in New York (see fig. 3–41 and 3–42, pp. 71 and 72) and Edenwald Houses in New York are examples. Winding access paths provide many opportunities for muggers and potential criminals to conceal themselves while awaiting the arrival of a victim. The circuitous access route to building entries is made even more dangers by the common practice of positioning shrubs exactly at the turn in the path. Compositionally satisfying as this practice might be, such visual barriers provide natural hiding places and vantage points to potential muggers.

Regardless of how well lit these areas are, residents express strong fears about turns in the paths system in the walk from the street to building lobby. This problem does not arise in the traditional row house pattern where buildings are set back only a few yards from the street, nor is it evident in projects such as Breukelen and Brownsville where the entry is only slightly set back from the street. Residents are able to scan the terrain they are about to use; they move in a straight line from the relative safety of the public street to what they can observe to be the relative safety of the well lit lobby area in front of their house.

The design of such projects as Columbus Homes in Newark, Pruitt-Igoe in St. Louis, and Van Dyke in Brooklyn all require residents to leave the comparative safety of the neighborhood street and enter the project grounds without knowing what lies ahead.

Access to the building entry requires entering the project interior, circumnavigating a few corners, and finally approaching a point from which they are able to observe the lobby of their own apartment building.

The isolation of neighboring streets

Following the directives of early planning manuals, many housing projects have been intentionally designed to look inward on themselves, with the result that residents cannot view bordering streets. In medium-density, row type housing projects, buildings usually meet adjacent streets only on end, with their entrances and windows facing the interior of the project. As a result, these bordering streets have been deprived of continual surveillance by residents and have proven unsafe to walk along—for both project residents and the members of the surrounding community. Such streets provide the only access to Kingsborough Houses (see fig. 3–43, p. 73); residents have found that the night-time journey between the bus stop and the project interior assumes harrowing proportions. Many project residents choose to remain at home rather than use these streets in the evening, further adding to the lack of path surveillance and to feelings of insecurity.

4. The reduction in ambiguity of public and private areas and paths in projects so as to provide focus and meaning to surveillance

The interior layout and organization of many housing projects is often very difficult to comprehend, particularly when long blocks of buildings are grouped together: Interior corridors flow into one another through fire doors; fire stairs are positioned in left-over corners; exits and entrances to long slab buildings are numerous and difficult to locate. Descending a scissor type fire stair, posi-

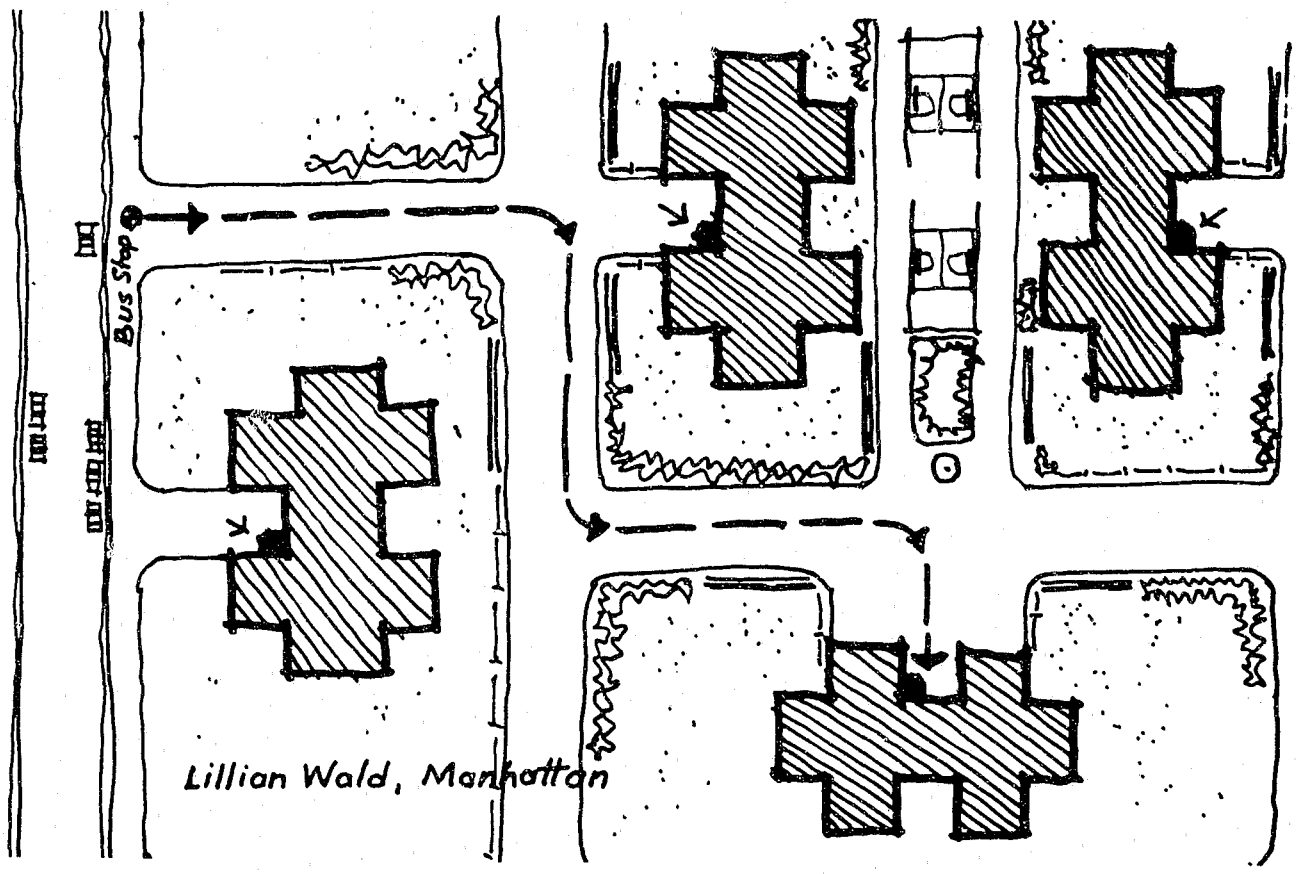


FIGURE 3–41. Lillian Wald Houses, New York. Sketch of grounds. Paths leading to buildings on the interior of project grounds twist and turn, often concealing danger.

tioned identically to its twin, is as likely to deposit one at the rear of the building as at the front. These maze-like plans facilitate the operations of criminals familiar with the project and make the location of a crime and pursuit by police difficult. City and housing authority police, responding to calls in housing projects with which they are unfamiliar, find it difficult to distinguish one building from another, let alone find their way through the building to the right apartment. The locational simplicity provided by the address system in grid-iron streets is not to be easily dismissed.

As was discussed previously, many large high-rise buildings are required by law to have fire stairs no further than 40 to 50 feet from any apartment. This regulation is commonly satisfied by the provision of a scissor stairs in a central location behind the elevator. (See plans of Edenwald and Highbridge.) Separate exits at the ground floor are also required. It is quite common to have the second exit at the rear of the building, opposite the lobby entry.

This practice results in an ambiguity of building layout, with tenants using front and rear entries interchangeably. Criminals evade pursuit simply by alternating fire stairs as they flee the building. There is only a 50-percent chance that a single pursuing officer will exit at the same side of the building.

A similar scissor-stair arrangement, with separate exits at the ground floor, is provided at Edenwald (see fig. 3–44, p. 74); through an accident of design, however, the architect was able to exit the fire stair adjacent to the main entry. This modification enabled him to achieve the following:

- Any person attempting to evade pursuit by using the fire stairs would, regardless of which route he chose, exit at approximately the same point in front of the main building entrance;
- Residents and visitors alike, regardless of which entry they choose, must use the same circulation paths and pass within view of the sitting areas, thus becoming subject to the surveillance provided by this facility;
- Much of the reason for using the fire stair as a more

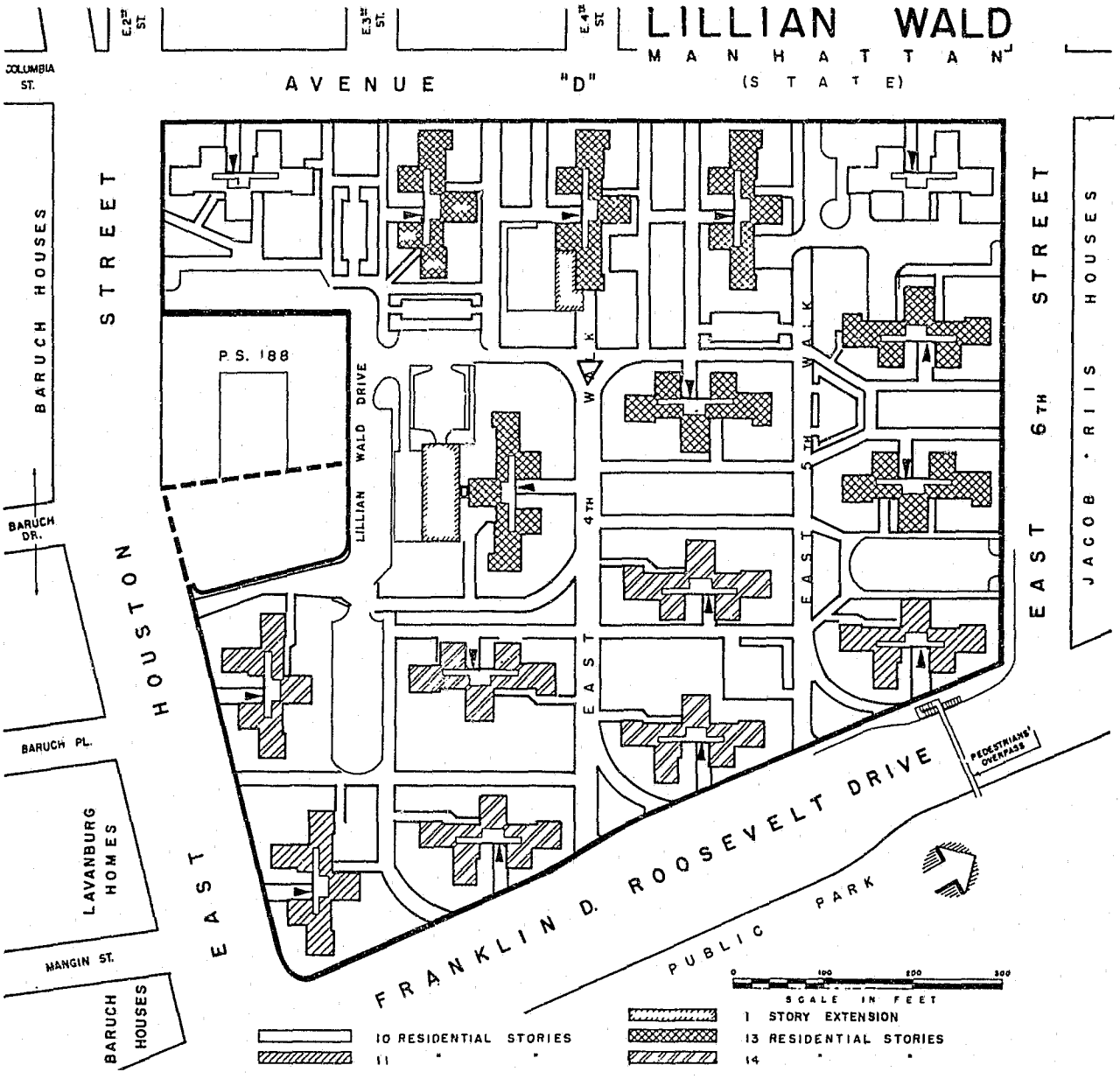


FIGURE 3–42. Lillian Wald Houses. Site plan.

convenient route disappears when access doors to the fire stair and the main lobby are positioned adjacently.

As a result of this design, the fire exit remains predominantly unused as a secondary means of circulation at the ground level. Edenwald consequently maintains its status as one of the few projects under the aegis of the New York City Housing Authority in which the security hardware on the emergency exit doors has not been destroyed.

Interviews with Edenwald residents indicate that the securing of the stairwell entrance at the ground level has greatly increased the security of the stair well at upper levels of the building. The stairs, avoided as unsafe in other projects, are readily used here for secondary vertical circulation and for visiting between floors (see fig. 3–45, p. 74).

Where the fire exit of a building is positioned opposite the main entrance, as in Highbridge (fig. 3–46, p. 75), the opportunity it affords to leave a building and move directly toward one's destination becomes a convenience too precious to be resisted. Tenants have often resorted to jamming the door latch on these doors to provide easy

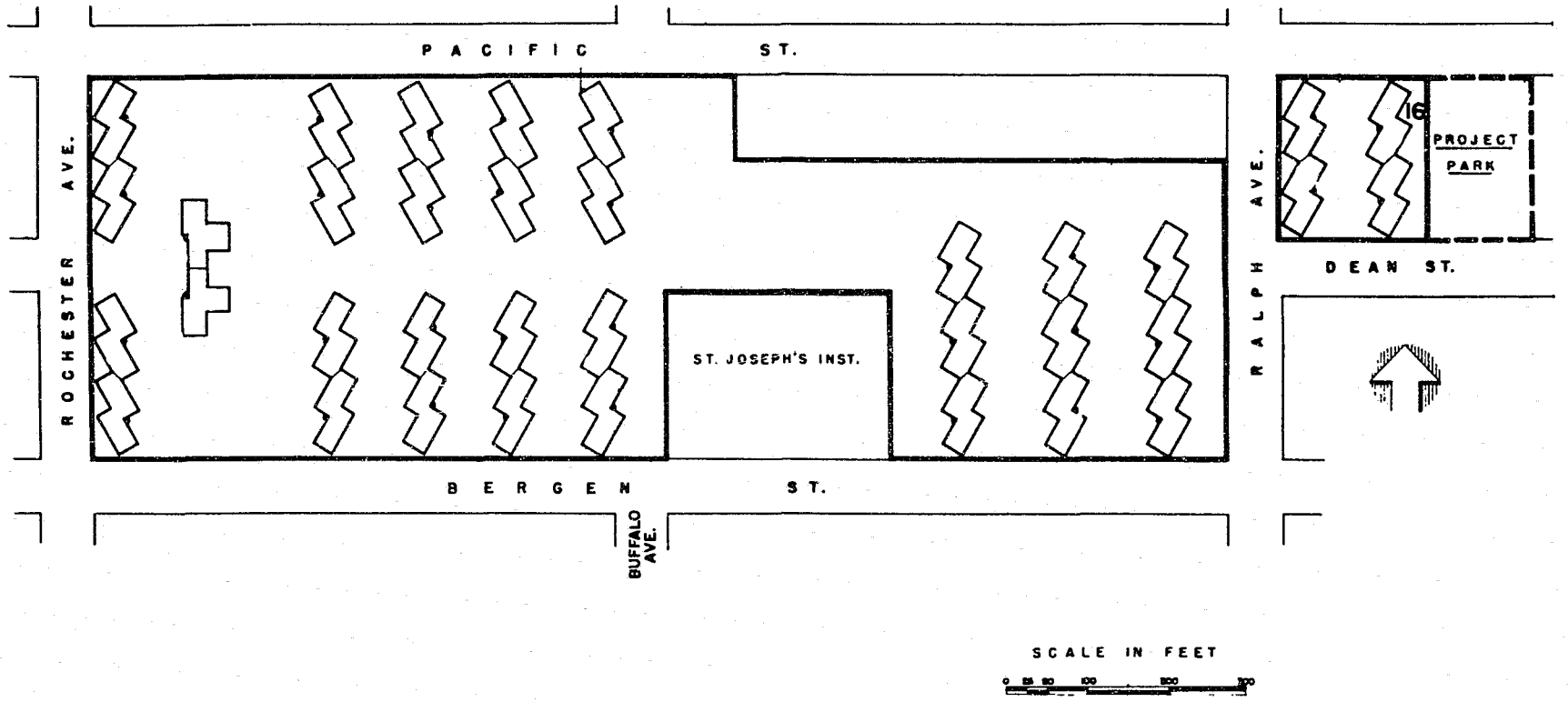


FIGURE 3–43. Kingsborough Houses, New York. Site plan.

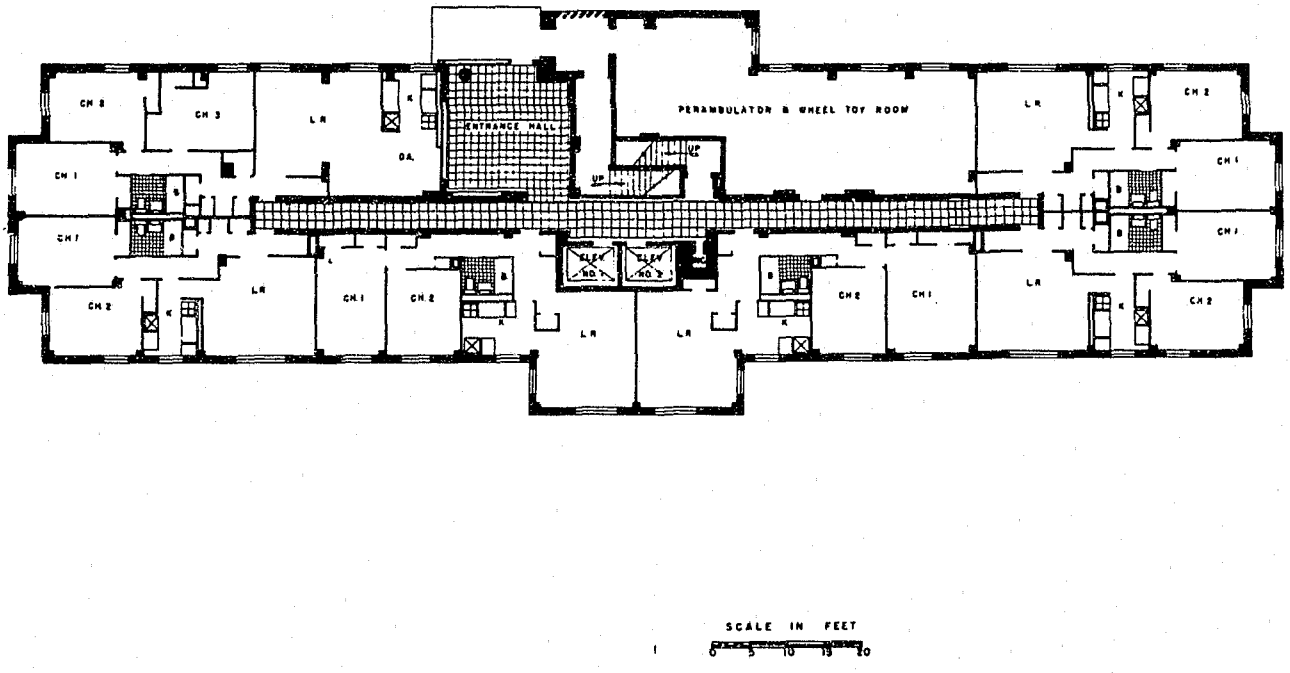


FIGURE 3–44. Edenwald Houses, Bronx, N.Y. Ground floor plan. Shows how separate exits from scissor stairs of high-rise building lead to the lobby or directly to the outside of the building adjacent to the entrance.

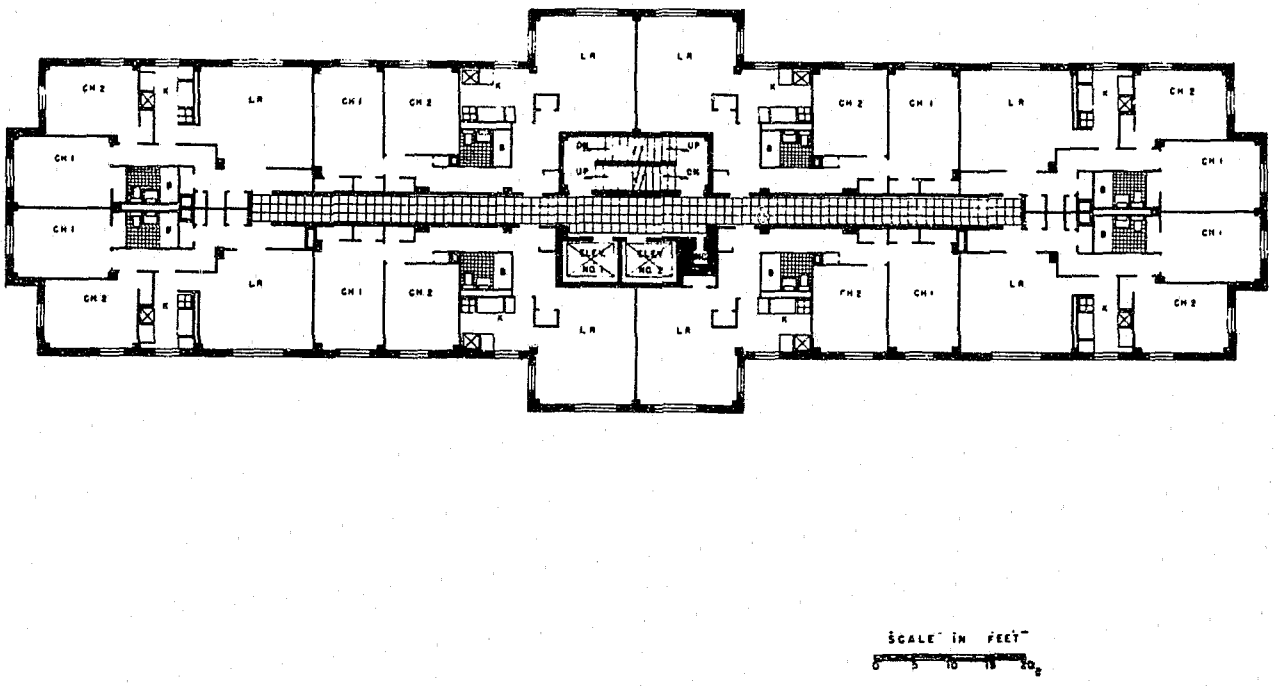


FIGURE 3–45. Edenwald Houses, New York. Typical floor plan.

access for themselves. However, this practice has had a detrimental side effect: the permanently open fire door now provides an easy ingress point for criminals as well as residents. The stair well eventually comes to be recognized as a danger zone and falls into disuse by all, save intruders.

Buildings that are longer than the standard 100 to 150 feet, such as those at Columbus Homes in Newark and Pruitt-Igoe in St. Louis (see fig. 3–47, p. 76), have additional sets of stairs which exit to the ground and are connected at every floor through the common double-loaded corridor. Am-

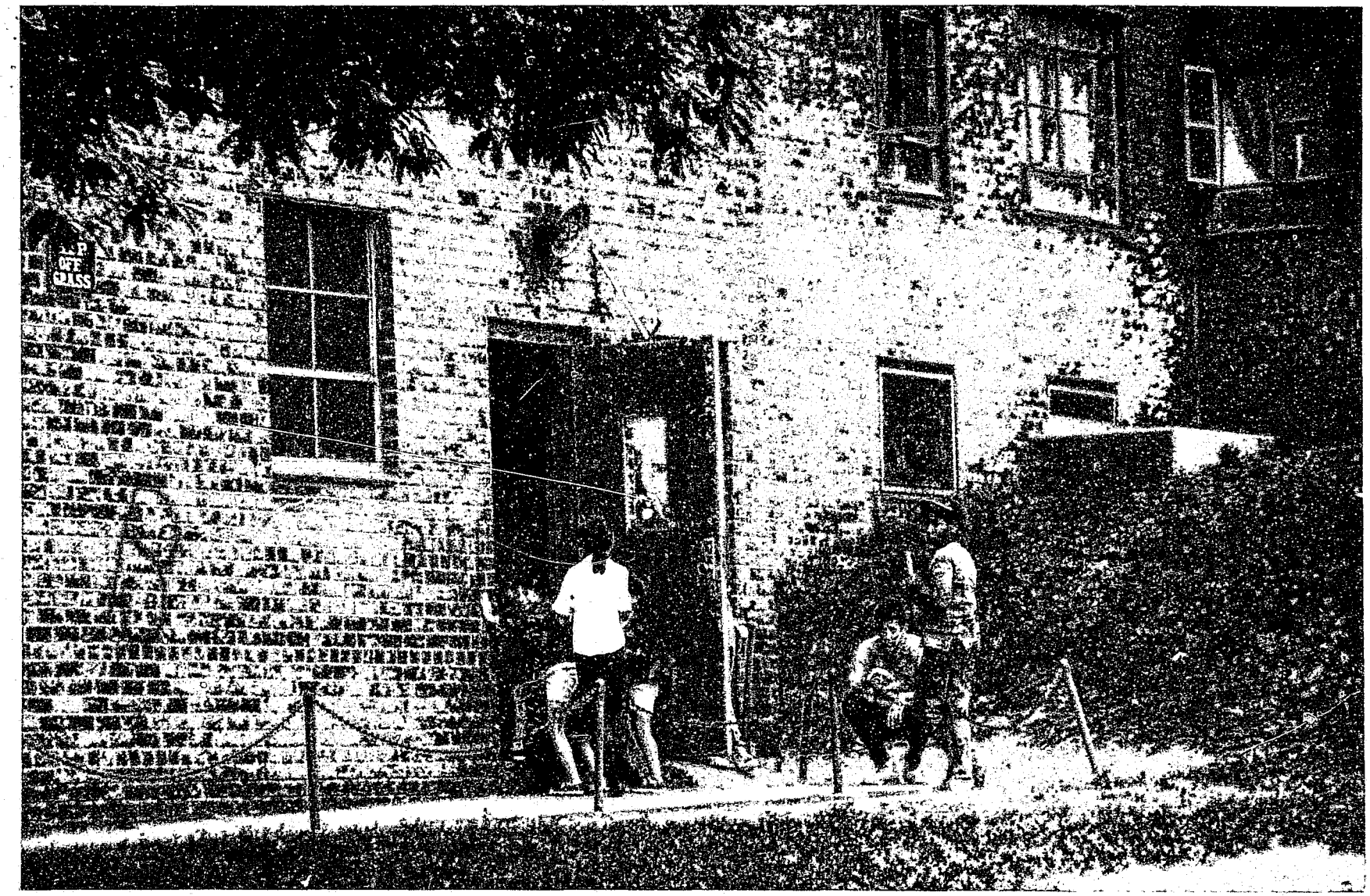


FIGURE 3–46. Highbridge Houses, Bronx, N.Y. View of rear exit door. The rear exit door from the fire stair is often jammed open by the tenants themselves. Although at times this makes access to the building easier, it also creates an opportunity for vandals and criminals to enter and leave unobserved. Children rarely realize the potential danger of playing in such an unsupervised and unsafe area.

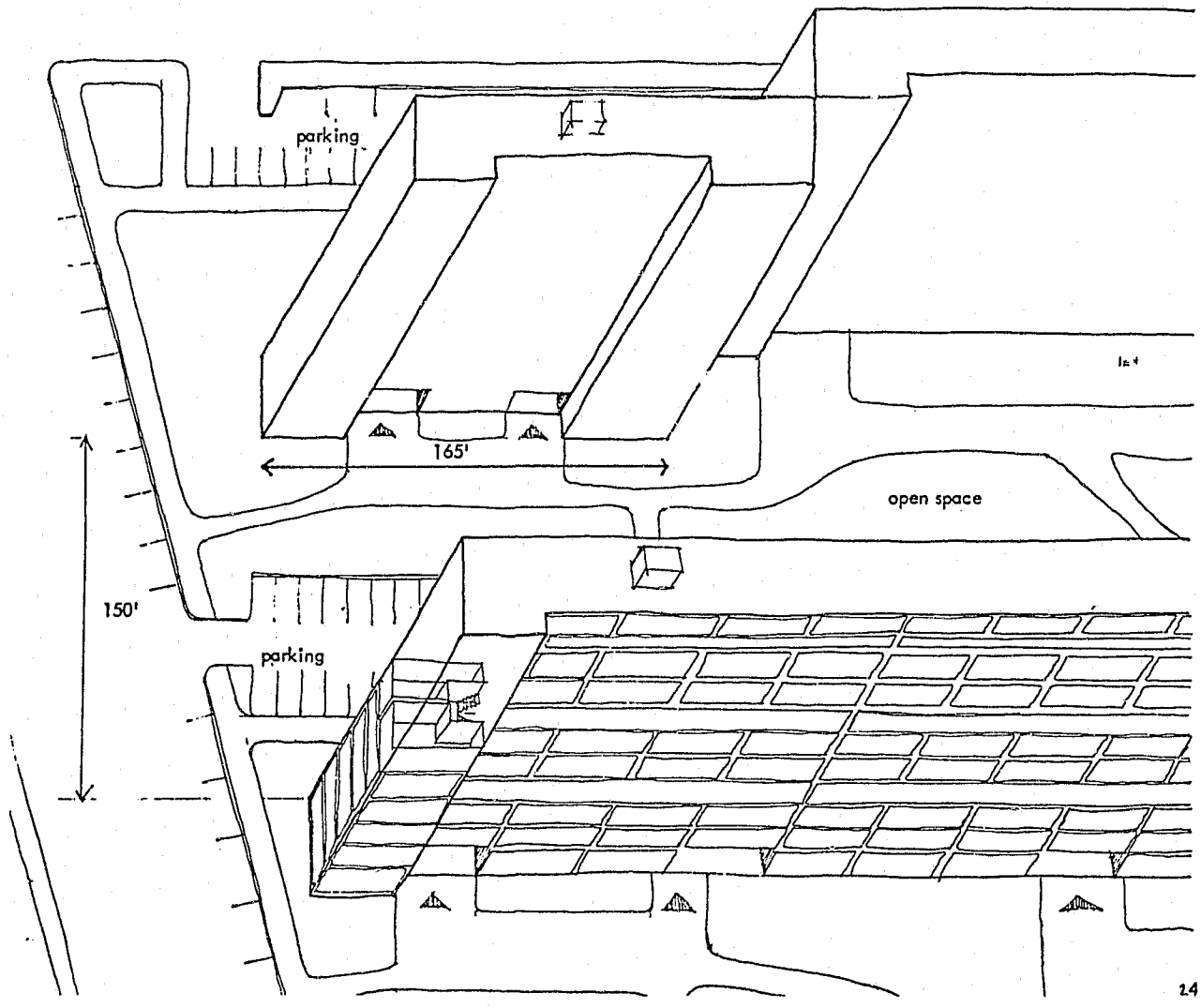


FIGURE 3–47. Pruitt-Igoe, St. Louis. Sketch of stairs and exits. The long buildings at Pruitt-Igoe have sets of stairs which exit at several points on the ground. There is no way to predict where an intruder will appear or where he will exit.

biguity of building plan is even more rampant in such designs. The labyrinthine access routes and corridors make recognition of neighbors difficult to impossible; there are simply too many people coming and going (see fig. 3–48, p. 77). Because of this configuration, residents express fear in using the interior corridors. The many access doors to fire stairs provide almost endless opportunities for intruders to make their way through the building and to surprise tenants at any point along the way. There is no way to tell where someone will appear or where he will exit.

Legibility of the project as a whole

Perhaps even more critical than these functional ambiguities of building design are those ambiguities which are a consequence of the superblock concept of public housing design.

Pruitt-Igoe in St. Louis, Outhwaite Houses in Cleveland, Columbus Homes in Newark, Van Dyke in New York—large public housing projects in almost every city appear to have more problems on a per capita basis than do the smaller estates. These large projects have been designed as "superblocks." That is, architects have further expanded the opportunity to manipulate large open areas, afforded by large scale land acquisitions, by closing off streets which would normally continue through the project. This restriction of normal vehicular and pedestrian traffic allows the creation of uninterrupted open areas within the project.

This superblock concept can operate effectively

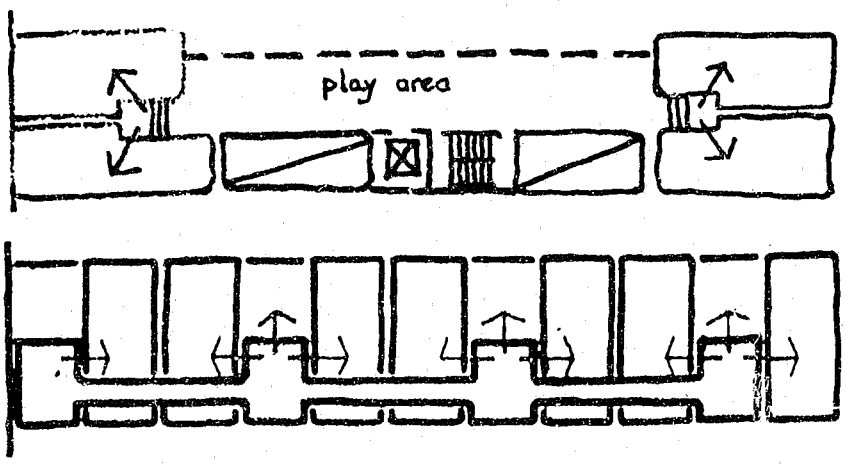


FIGURE 3–48. Pruitt-Igoe, St. Louis. Alternate floor plans of apartment block. The schematic floor plans indicate the labyrinthe access routes and corridors.

in privately developed housing estates for middle income groups, especially when reinforced by fencing, restrictive entry gates, security patrols, and doormen. Public housing projects, on the other hand, must by law remain open to the public. Our findings confirm that the normal vehicular, pedestrian and commercial activity along city streets may act as a social deterrent to crime (as Jane Jacobs suggests and Shlomo Angel goes on to develop). Certainly the continuance of public streets through the project facilitates patrol by formal policing units.

Interviews with project tenants and surrounding community residents show that the large superblocks of new housing, superimposed on an existing urban fabric of individual lots, are read as separate and segregated entities. If we add to this the fact that public housing is usually built in a form and detail which is peculiarly recognizable, the net result is the creation of an area of the city which is isolated and a population which is stigmatized.

The problem of ambiguous project design on this scale is more the result of entropy than of an arrangement of labyrinthine structures which is difficult to decipher. All buildings and all units look alike. There is no orderly progression from street to home. The project looks the same from all angles; all facets of buildings echo the same form.

The result of this uniformity of design is that very large acreages of land, sometimes as many as seven or eight city blocks, are apportioned to a relatively small number of units or buildings, each of which is immense and identical with the next. Nothing that tenants do to their apartments or windows can modify the appearance of their buildings so as to impart identity and individuality.

In fact, project residents almost universally refer to buildings by a number given them on the original site plan, but seldom know building numbers beyond their own and those immediately adjacent to it. When tenants have to describe a building or location to an outsider or to a policeman who does not know the building number system, they are forced to revert to primitive terms—"down that way," "at the other side of the project." Use of city street names or street addresses as a means of locating buildings in a superblock is usually impossible.

Housing authority police data show that buildings located in the interior of large project grounds have appreciably higher crime rates than those bordering or facing the surrounding streets. Project tenants and residents from the surrounding community equally identify the large interior of the public housing projects as the most unsafe areas within the larger residential community. Despite the added protection provided to project grounds by housing authority police in New York, project tenants and community residents often prefer to use more circuitous routes, both day and night, on streets that border the project, rather than go through it.

A cogent example of a large (65 acre) housing project which has avoided this problem is Breukelen Houses in Brooklyn, N.Y. The architects here chose to remove only one city street from the site where they might have removed all six. They further reinforced existing street activity by locat-

ing access and entrances to most of the units on the street side rather than on the interior of the project. Our regression analysis of 160 housing projects indicates that projects with building entries directly off the existing city streets have lower vulnerability to various forms of crime than those whose entries are from the interior of the project grounds. This statistical evidence reinforces the views held by housing authority police, who are familiar with a wide range of projects.

C. The Influence of Geographical Juxtaposition with "Safe Zones" on the Security of Adjacent Areas

If particular urban areas, streets, or paths are recognized as being safe, adjoining areas benefit from this safety in a real sense and by association.

It is possible to increase the safety of residential areas by positioning their public zones and entries to buildings so that they face on areas which, for a variety of reasons, are considered safe. Certain sections and arteries of a city, by the nature of the activities located there, by the quality of formal patrolling, by the number of users and extent of their felt responsibility, by the responsibility assumed by employees of bordering institutions and establishments, have come to be recognized as being safe. The areas most usually identified as safe are heavily trafficked public streets and arteries combining both intense vehicular and pedestrian movement; commercial retailing areas during shopping hours; institutional areas and government offices.

These areas have an image of safety which often correlates with low crime rates. There are contradictory statistics available, however. A commercial street which may have been identified by surrounding inhabitants and users as safe will have been found to have a higher number of crimes taking place there than in adjoining areas which were rated unsafe. This may be explained both by a difference in the type of crime occurring and the lower chance of its occurrence per area user on the "safe" street. Where a purse snatching which occurs on an identified safe street will usually have grab and run modus-operandi, in an identified less safe area it may further involve an assault on the victim. One gathers that both victim and criminal assume that aggravated assault would not be tolerated by witnesses (shopkeepers and/or other shoppers) on a well trafficked commercial street; or that escape time is critical to a criminal in what is considered a more formally patrolled area. Some commercial street corners identified as safe have records of as much as three times more crimes occurring there than in any other place in the immediately surrounding residential area. However, the number of pedestrians passing any point on the commercial street is over 20 times the average of surrounding streets and areas. The rate of occurrence may be higher, but the chance of occurrence per user may be lower. The above explanation, for the moment, is hypothetical.

Physical mechanisms for creating geographical juxtaposition and safety:

1. Juxtaposition of residential areas with other, "safe," functional facilities: commercial, institutional, industrial, and entertainment.

2. Juxtaposition with safe public streets.

3. The dimensions of juxtaposed areas.

These physical mechanisms are discussed below.

1. Juxtaposition of residential areas with other, "safe" functional facilities: commercial, institutional, industrial and entertainment

Some institutional and commercial areas have come to be recognized as safe areas during their periods of intensive use; others have a decidedly opposite image. The reasons identified for their being safe involve: the presence of many people engaged in like activities, providing a number of possible witnesses who might choose to come to the aid of a victim. Most importantly, the presence of many people is seen as a possible force deterring criminals. Many of those interviewed identified staff in charge of commercial and institutional facilities, storekeepers, librarians, or security guards as highly concerned about the safety of adjoining areas. They felt establishment employees have a more significant stake in insuring safety than do uninvolved passersby or fellow shoppers. The juxtaposition of entries to residential units with safe institutional areas was considered of positive benefit by many of those interviewed, although apprehensiveness was expressed about the times of day and week when these facilities are closed and radiate no security whatsoever. The configuration of the juxtaposition preferred was one, which allowed a transitional buffer to intervene between unit entry, street and establishment.

Unsafe juxtapositions: institutional and commercial

A recurring problem of juxtaposition, encountered everywhere results from the juxtaposition of

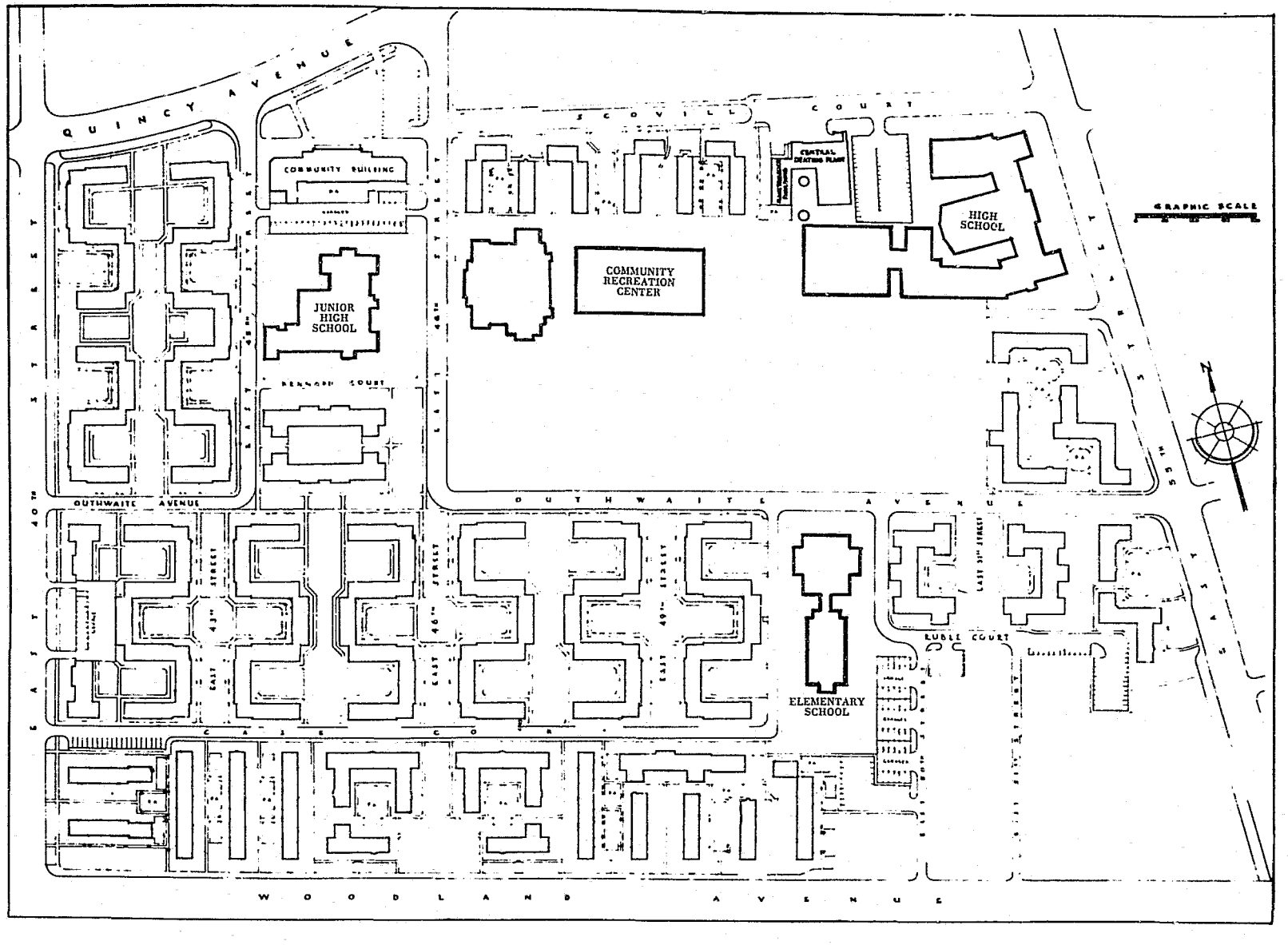


FIGURE 3–49. Outhwaite Homes, Cleveland. Site plan. The Outhwaite homes project borders on three different schools. The areas of the project suffering most from loitering and harrassment are those of buildings whose entries are directly across the street from the school grounds.

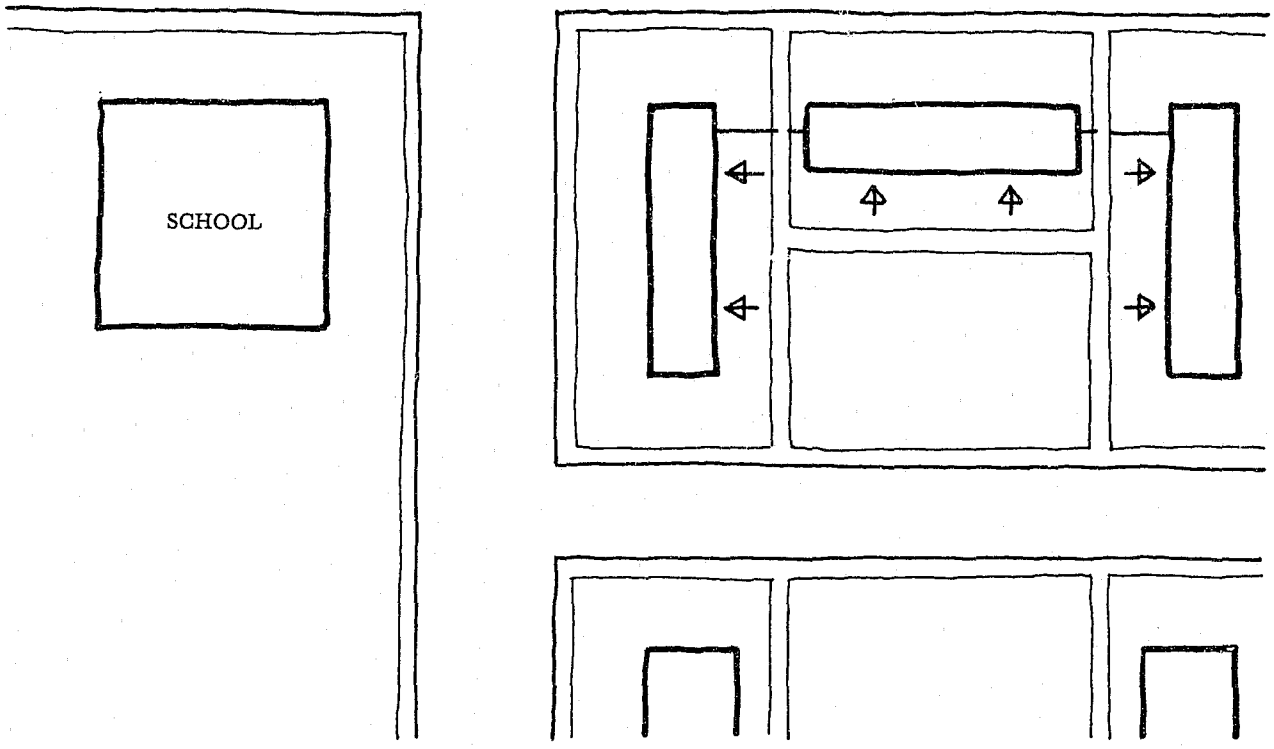


FIGURE 3–50. Site plan. Site plan designed so that access to apartment buildings is not from the streets directly opposite the school.

housing projects with high schools and junior colleges. The Outhwaite project in Cleveland is a particularly notorious case-in-point, in that one area of the project actually borders on three different schools (see fig. 3–49, p. 79). The buildings suffering most frequent burglaries are those juxtaposed with these institutional facilities. Residents and project staff claim that teenagers hang out on the public grounds and in interior stairways and lobbies of adjacent units. They harass and are occasionally involved in the muggings of residents. In high-rise projects with buildings bordering high schools, the enclosed fire stairs are often used by teenage addicts for selling and using drugs.

Where it may not always be possible, or even desirable to intentionally avoid this sort of juxtaposition, it is certainly feasible where juxtapositions are necessary, to design the site plan of the project so that access to apartment buildings is not from the streets directly opposite the schools (see fig. 3–50 above).

In much the same way, where an area of a project faces on a teenage hamburger joint or game room hangout, the buildings immediately opposite have higher crime rates. The statistics on location and frequency of crime in Bronxdale reinforce the claims of police and residents.

The two hamburger stands on the west side of the project, and the teenage play areas on the east, together generate high crime and vandalism rates in the immediately adjacent buildings.

This would lead us to conclude that commercial and institutional generators of activity do not, in and of themselves, necessarily enhance the safety of adjoining streets and areas. The unsupported hypotheses of Jane Jacobs, Shlomo Angel, and Elizabeth Wood must be examined more closely for a better understanding of the nature of their operating mechanisms. The simple decision to locate commercial or institutional facilities within a project to increase activity and so provide the safety which comes with numbers, must be critically evaluated in terms of intended users, their identification with the area, periods of activity, nature, and frequency of presence of concerned authorities, etc.

The present policy of housing authorities across the country forbidding commercial facilities on project grounds, while possibly naive and over-

reactive as an unyielding position, may have some fundamental justification behind it.

Juxtaposition of parks

The provision of parks and playgrounds within and around housing projects has been a program considered highly desirable by communities, planners and housing authority officials alike. It comes as a particular disappointment, therefore, to learn of instances where their provision has been a cause of crime and vandalism.

At Edenwald, the park on the southwest corner of the project was beneficently designed and positioned to serve both the project residents and the surrounding community. It is also located near a commercial strip, which contains a bar and liquor store. Housing authority police and residents claim the park attracts all the bums and addicts from the neighborhood. Because the relationship between park and adjacent project buildings is not clearly identified, the park has become a no-man's land—an open congregation area controlled by no particular group. The buildings at Edenwald which suffer the most crime and vandalism are, needless to say, those immediately adjacent to the park. Residents and management feel that the park would be much safer if its relationship to the project had been more clearly defined. The park, they say, should have been designed so that only one side remained accessible from the street while the other three sides were enclosed by housing units and their entry areas. The adoption of this design would have facilitated natural surveillance of park activities by extension of the territorial concerns of adjacent residents.

A similar problem exists at the Woodhill Homes project in Cleveland. The recreation area at Woodhill is isolated from all other activity areas by a rise of ground which segregates it from project buildings and public streets (see fig. 3–51, p. 82). Use of the recreation facilities by teenagers has been found to degenerate quickly into fighting over claims to territory. In an effort to prevent such encounters, the project manager has removed the basketball hoops and the baseball field backstop. The grounds, as a result, have fallen into disuse even though they are the only recreation facilities available for blocks around. The disposition of new housing units adjacent to these grounds and the addition of a service road could provide surveillance to the area. Such subdivision would serve to define the grounds as a territorial extension of adjacent housing, while hopefully not restricting its use to residents only. If the recreation area could be further landscaped so that part of it were lowered to the level of the street below, this portion would receive additional surveillance from the street and from facing buildings.

2. Juxtaposition with safe public streets

Regardless of variations in the physical configuration of project sites, hundreds of tenants interviewed have consistently identified the public streets bordering the project as being safer than paths which bisect the interior of the project.

This view conflicts with the opinion held by the New York City Housing Authority Police, who feel that the interior grounds are safer and are perceived as safer. Nevertheless, the buildings and areas of projects which tenants have identified as being most unsafe are located in the interior of the project and do not front on any through streets. Consistently, tenants have scale-rated their buildings as safer when the entry, entry grounds, and lobby of buildings face directly onto city streets. Supportive evidence is described at length in chapter 3, "The Pattern of Fear in Housing," and in chapter 5, "Evidence on Crime in Housing," in which large superblock projects involving the closing off of city streets have created many buildings whose entries are off the interior grounds. Large superblocks, at various densities, have been found to exhibit systematically higher crime rates than projects of comparable size and density where city streets have been allowed to continue through the project.

3. The dimensions of juxtaposed areas

From our discussion of the relative merits of juxtaposing housing with other functional facilities, it is evident that a wise evaluation of the problem hinges on an understanding of the thoroughly reciprocal nature of the relationship that exists between the project and the juxtaposed facility.

The success or failure of a particular configuration depends as much on the degree to which residents can identify with and survey activity in the related facility as it does on the nature of the users of the adjoining facility and the activities they engage in. This would suggest that the dimensions and nature of the juxtaposition can be significant.

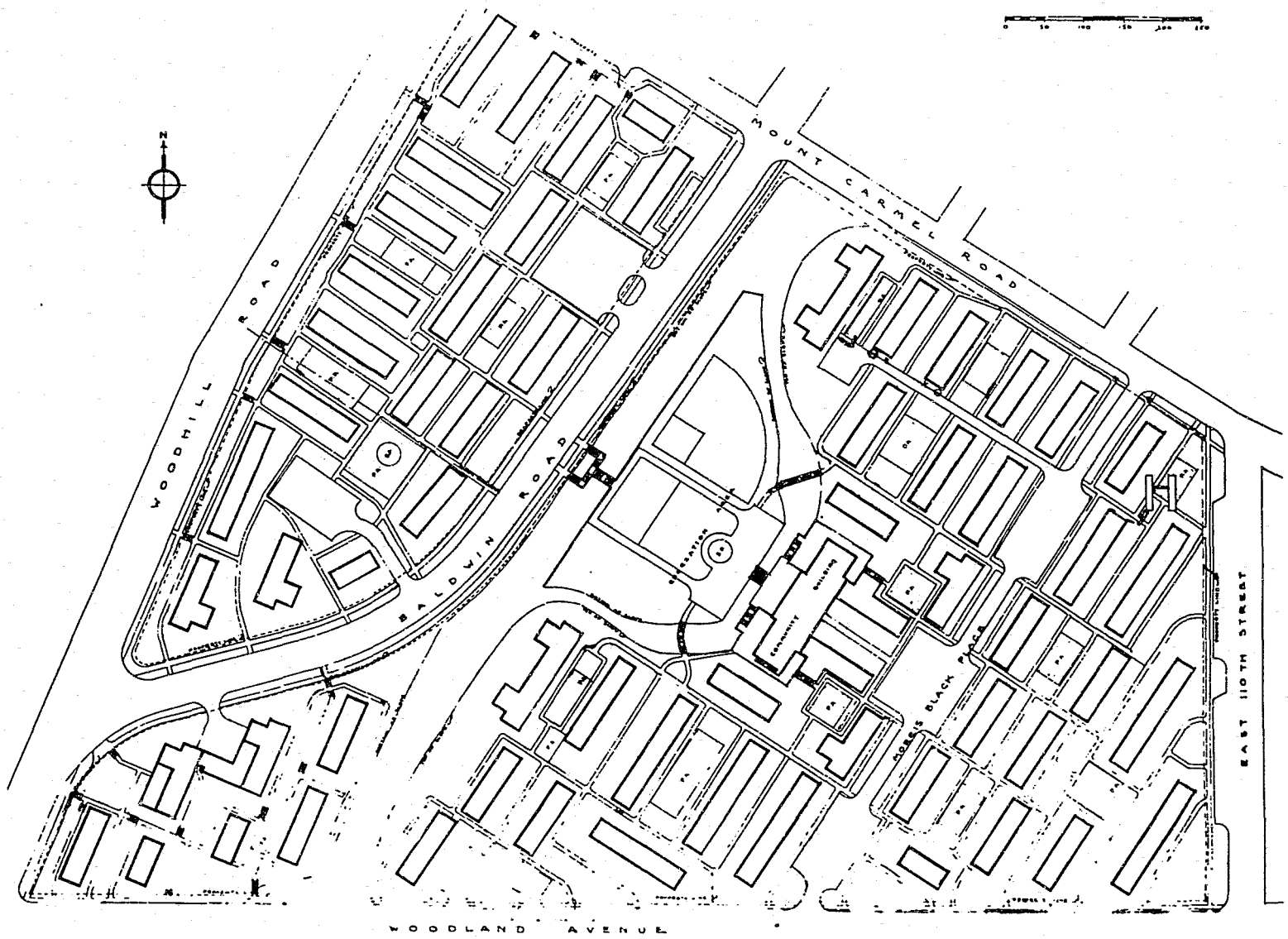


FIGURE 3–51. Woodhill Homes, Cleveland. Site plan. Existing recreation area is on high ground and lacks any visual relationship to project buildings or surrounding public streets. Proposed modifications to improve conditions would include new housing units, a service road, and relandscaping to lower the level of the recreation area.

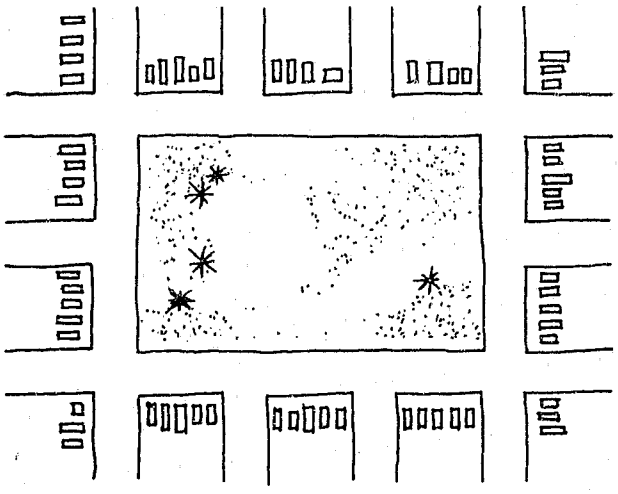


FIGURE 3–52. Unsurveillable park. Proportions of a square park limit the ability to observe activity within from bordering streets.

Where there is little in this regard that one can do about the design and location of hamburger joints, the size, proportions, and positioning of parks, as was already indicated, is however open to ready manipulation.

From experience, the police department of the city of St. Louis believes that city parks should be proportioned to facilitate natural surveillance by adjacent residents and from bordering streets.

Long, thin parks of the same area are therefore preferable to square ones, as they have a longer periphery that can be patrolled (see fig. 3–52 and 3–53, pp. 83 and 84). The proportions of a park need not severely limit the facilities placed within it, or the total area provided.

The dimensions of a park are equally as important as the proportions. The narrow dimension of the oblong park should not be so wide as to prevent someone on one side from seeing through to the other side. In residential areas suffering high crime rates the interiors of large parks which cannot be easily surveyed will go unused. A case in point are the large internal parks on the West Side of Chicago: Douglas (fig. 3–54, p. 85), and Garfield Parks.

D. The Capacity of Design to Influence the Perception of a Project's Uniqueness, Isolation and Stigma

The introduction of a large grouping of new buildings of distinctive height and texture into an existing urban fabric singles out these buildings for particular attention. If this distinctive image is also negative, the project will be stigmatized and its residents castigated and victimized.

Housing projects in America, for a variety of seldom articulated reasons are designed so that they stand out and are recognized as distinctively different residential complexes. It is our hypothesis that this differentiation serves in a negative way to single out the project and its inhabitants. This idiosyncratic image, coupled with other design features and the social characteristics of the general population, makes public housing a peculiarly vulnerable target of criminal activity.

There are many formal ingredients which emphasize the negative differentiation that exists between a project and its adjacent residential area. Ironically, many of these physical features may have been intentionally provided by the project architects as positive contributions to the living environment of intended residents.

Physical mechanisms which influence the perception of a project's uniqueness, isolation and stigma:

1. The distinctiveness of building height.
2. The distinctiveness of number, material, and amenities.
3. The distinctiveness resulting from interruptions in the urban circulation pattern.
4. The distinctiveness of interior finishings and furnishings.
5. Design and life style symbolization.

These physical mechanisms are discussed below.

1. The distinctiveness of building height

Public housing projects are most usually designed to replace high-density slums. Although itself densely designed, it is seldom that a housing project is able to achieve the density of the slum it is replacing in that most slum dwelling units are doubly and triply occupied. Another reason for the dense planning of public housing projects is to reduce land cost per unit so as to meet the high-land cost of inner city sites.

Most architects, faced with the problem of designing a high-density project, opt for high-rise elevator buildings in order to free sufficiently large ground areas for green and recreation facilities.

We have spoken at length of the functional inadequacies of high rise buildings. Our purpose in this section is to identify a further fault—a formal one: High-rise projects stand out very clearly and

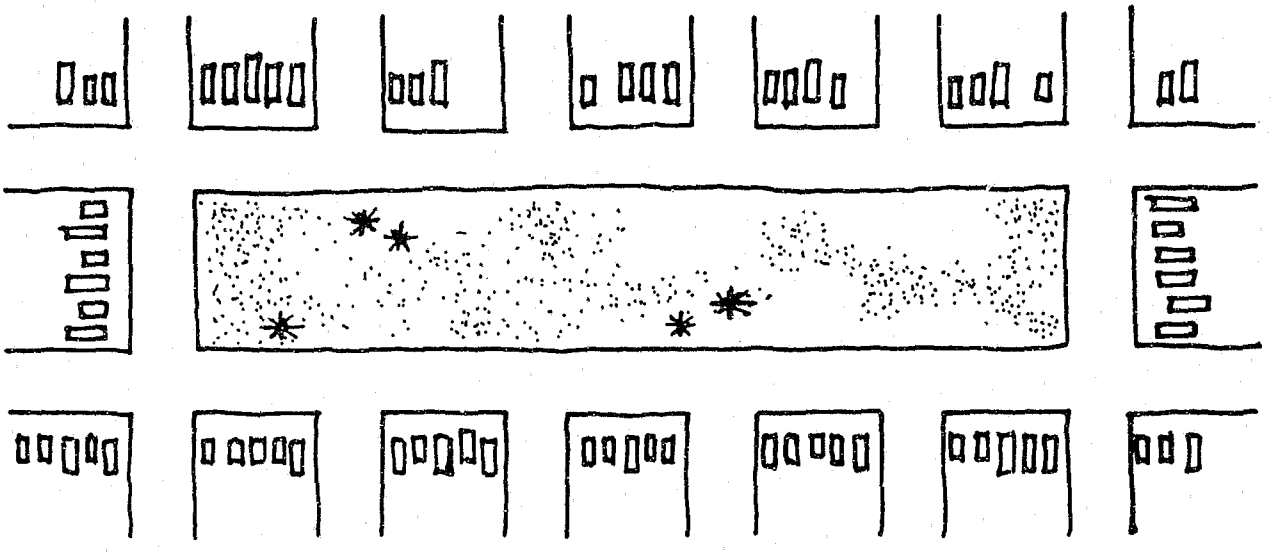


FIGURE 3–53. Surveillable park. A long thin park of the same area affords a longer periphery that can be patrolled from the street.

identifiably from their surrounding community (whether an old tenement area or new middle-income residential complex). This relationship can be most strikingly observed in the aerial and ground photographs of Pruitt-Igoe in St. Louis and its surrounding community when compared with the image of Carr Square Village and LaClede Town and their surrounding communities.

2. The distinctiveness of number, material and amenities

There are, however, many instances of upper middle-income housing that have been constructed in high-rise format, in sharp contrast with adjacent, older low-density development, but which present a more positive image than their surroundings. It is important, therefore, to understand and articulate what in the form of the building makes these differences evident.

High-density, upper middle-income, high-rise buildings are seldom grouped in projects of more than two or three buildings. In contrast, most public housing estates were designed to include from 10 to 30 towers; and because of this scale of development become predominant elements in the urban fabric.

An effort is usually made in upper middle-income housing to treat the facade with high quality materials—an expensive brick, pre-cast concrete, or stone facing—a luxury not usually possible in public housing. Similarly, a percentage of the units in upper middle-income housing are provided with outdoor balconies, a feature economically unfeasible in public housing.

One should not conclude from the above discussion that public housing is built cheaply. In fact, the cost per-square-foot of public housing is usually higher than the cost per-square-foot of luxury high-rise housing. Public housing, built by a housing authority, rather than current turn key practice, is usually built extremely carefully, with good attention to detail and meticulously supervised construction. However, for whatever reasons—and many have been suggested—frills are strictly forbidden.

One of the reasons for intentionally maintaining the visual stigma of public housing was suggested by Adam Walinsky in his article, "Keeping the Poor in their Place." [8] He reasons that in this country, unlike our Western European counterparts, the middle and working class population do not look favorably on those members of our society who require government assistance to pay their rent. Where we have come a long way from our laissez-faire attitudes of the 1920's in developing a more enlightened approach toward less able members of our society, we are still apparently incapable of providing housing for them which looks better than the lowest common denominator we provide for ourselves. (It is interesting that

[8] Adam Walinsky, "Keeping the Poor in their Place: Notes on the Importance of Being One-Up," *The New Republic*, CLI, (July 4, 1964), 15.

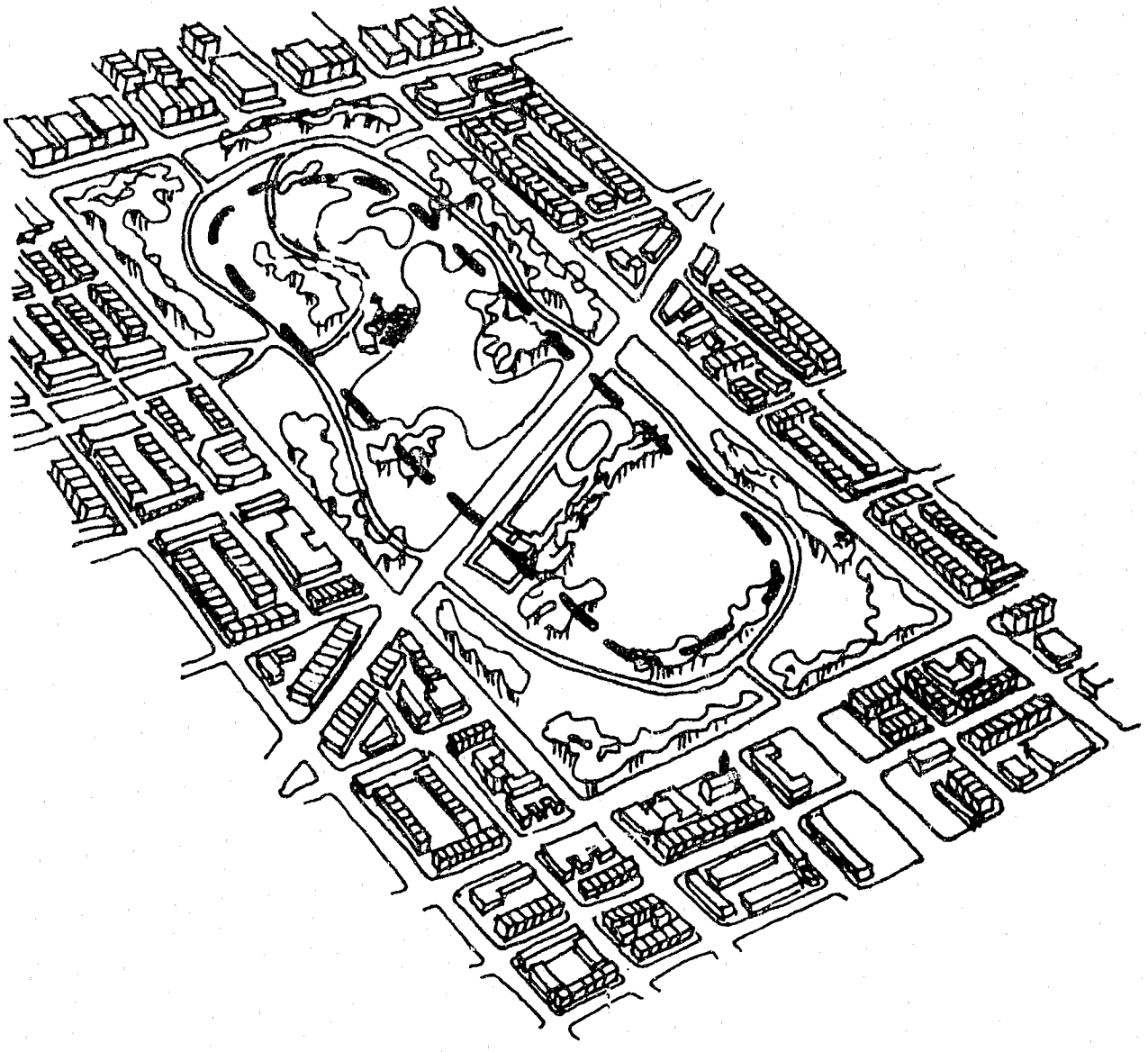


FIGURE 3–54. Douglas Park, Chicago.

although it is visually stigmatized, much public housing and site planning is functionally superior to other low income housing.)

Public housing, even though it may cost more per square foot must never approach the luxurious in appearance. It must, almost by codified gentleman's agreement, retain an institutional image. Unfortunately, this practice not only "puts the poor in their place" but brings their vulnerability to the attention of others.

Parallel to this, and much more devastating, is the effect of the institutional image as perceived by the project residents themselves. Unable to camouflage their identities and adopt the attitudes of private apartment dwellers, they over react and treat their dwellings as prisoners treat the penal institutions in which they are housed. They show no concern for assisting in the care, upkeep and maintenance of the buildings, no inclination toward the decoration of their apartment units with paint or curtains.

"Finally, the consequences for conceptions of the moral order of one's world, of one's self, and of others, are very great. Although lower class people may not adhere in action to many middle-class values about neatness, cleanliness, order, and proper decorum, it is apparent that they are often aware of their deviance, wishing that their world

could be a nicer place, physically and socially. The presence of nonhuman threats conveys in devastating terms a sense that they live in an immoral and uncontrolled world. The physical evidence of trash, poor plumbing, and the stink that goes with it, rats and other vermin, deepens their feeling of being moral outcasts. Their physical world is telling them that they are inferior and bad just as effectively perhaps as do their human interactions." [9]

This lack of concern—lack of evidence of the display of personal taste and idiosyncracy to temper the starkness of the building structure—further reinforces the public housing image, and the vulnerability of building and resident. A resident who has resigned himself to not caring about the condition of his immediate surroundings—who has come to accept his ineffectualness in modifying his condition—is not about to intercede, even on his own behalf, when he becomes victim to a criminal.

3. The distinctiveness resulting from interruptions to the urban circulation pattern

Another ingredient which contributes to the stigma and isolation of a project is the practice of closing off city streets for the purpose of gaining open space for the interior project grounds. The rectangular grid that is the texture of most American cities has been recognized by planners as an incredibly naive and simplistic approach to urban form and development. It does, however, have certain attributes in that streets, with their constant flow of vehicular and pedestrian traffic, provide an element of safety. Most importantly, the rectangular grid provides an almost universal link between any position on one street and another position on another street.

The design of a huge project which closes off internal streets and provides vehicular access only at the periphery, originally heralded as an important new design tool for the redevelopment of cities, has served also to single out areas for their uniqueness and possible vulnerability. This, coupled with the obvious disadvantages that come from closing streets which were considered safe areas, serve to further handicap public housing design.

4. The distinctiveness of interior finishes and furnishings

It has long been the policy of public housing authorities to design and equip buildings with furnishings which are vandal proof and wear resistant. Glazed tiles of the kind employed in hospitals and prisons are standard in the corridors of public housing projects of Breukelen. They are convenient to wash down (e.g., to erase graffiti) and they wear appreciably longer than plaster walls do. Corridor lights, in turn, are now being enclosed in unbreakable plastic and are intended to survive forever. Exterior lighting with its own unbreakable housing is usually of the mercury-vapor type. They cast a strong, if purplish, light. There are many such examples.

The result of this attitude toward interior finishes and furnishings is the creation of an institutional ambience not unlike that achieved in our worst hospitals and prisons. Even though the materials are in fact stronger and more resistant to wear, tenants seem to go out of their way to test their resistance capacities. Instead of being provided with an environment in which they can take pride and might develop a desire to keep up, they are provided with one that begs them to test their capacity for tearing down. In the long run, even the institutional wall tiles and vandal resistant radiators at Pruitt-Igoe met their match.

We are not advocating esthetic treatment of halls and apartments for the sake of beautification alone, although even the President's Commission on Law Enforcement and Criminal Justice recognized the debilitating effect on the spirit of a deteriorated living environment.[10] In our discussion esthetic considerations assume importance for the ways in which they can contribute to the definition and subdivision of the environment. The current treatment of halls and lobbies using uniform and durable fixtures and materials is more driven by an esthetic of uniformity than is the approach we are advocating. Uniformity and durability is an attempt to achieve the maximum of neatness, order and maintenance ease for the project as a whole. This universal denominator eliminates the highs and lows in concern for the environment which marks the private housing market characterized by individuals performing their own upkeep. Everyone is aware of how the individual efforts of homeowners—lace curtains on windows, treatment and care of garbage—can grace or disgrace a street. Their most important attribute

[9] Lee Rainwater, "Fear and House as Haven in the Lower Class," AIP Journal, January 1966, p. 23.

[10] The President's Commission on Law Enforcement and Administration of Justice, "The Challenge of Crime in a Free Society." E. P. Dutton. New York, 1968. pp. 182–184.

may be their individual differences: the public display of individualism indicated as much in a show of precious concern as it is in occasional examples of indifferent neglect.

5. Design and life style symbolization

Our interviews with tenants have led us to the unmistakable conclusion that living units are assessed by tenants not only on the basis of size and available amenities but on the basis of the life style they purport to offer, and/or symbolize. Building prototypes, from rowhousing to high-rise, symbolize various forms of class status. The small, two-story rowhouse unit totalling 1,200 square feet, with a couple of hundred feet taken away by an interior staircase, is held more universally desirable than the 1,000-square-foot apartment in an elevator building, equipped with more modern conveniences. Low-income groups, as American society in general, aspire to the life style symbolized by this housing prototype and by the suburban bungalow. They view the rowhouse as more closely resembling the individual family house than the apartment within a communal building. A piece of ground provided adjacent to a unit for the exclusive use of a family is cherished and defended, regardless of how small.

Chapter 4. The Pattern of Fear in Housing

A. Surveys of Residents of New York City Public Housing

Our research team recently performed a survey of 425 tenants in seven public housing projects in New York City. These projects were representative of all but a few types of public housing complexes in New York. They included high-rise projects, low-rise projects, and projects with a mixture of both. Throughout these interviews it is apparent that the single most important problem faced by people in public housing is "fear of crime." The single most important directive they have for the use of Federal funds is to reduce crime and criminal opportunities. (See appendix C.)

By asking tenants to rate their fear of crime from 1 (safe) to 5 (unsafe) in various areas of their housing projects, it is possible to learn of the high proportions of people who are fearful of crime.

- 55.7 percent of the total sample rated building areas outside their apartments, including halls and buildings entrances, as either fairly unsafe or unsafe. Only 22 percent said they were safe or fairly safe. (See table 4–1.)
- Building height directly affects the perception of risk by tenants in the building. (See table 4–2, page 89). Only 16 percent of the tenants of high rise buildings interviewed claimed their buildings to be safe or fairly safe. 32 percent of residents of low-rise buildings (three stories) saw their buildings as safe or fairly safe.
- Race and ethnic status also affected fear of crime. Negro families by and large were least afraid of crime, with 47 percent claiming their project was fairly unsafe or very unsafe. Of white families, 57 percent claimed their project to be fairly unsafe or very unsafe.

In high-rise projects Puerto Rican families were most afraid, with 65 percent claiming the project in which they lived to be fairly unsafe or very unsafe.

"Neighboring" was found to be clearly correlated with fear of crime, and also influenced by building design. In general, the larger the number of neighbors a resident claimed he knew moderately well, the lower his perceived risk of crime. While "neighboring" obviously varies with an individual's gregariousness, it also depends on the opportunity for repeated contact with other residents.

Table 4–1.—Attitude Survey
Fear of Crime—Interior Spaces

[Rated as safe, 1; unsafe, 5]

	Halls	Elevators	Stairs	Lobbies
Highbridge	3.58	4.31	4.22	3.00
Bronxdale	3.65	3.96	4.10	3.28
Breukelen	3.61	4.01	4.12	3.43
Edenwald (high-rise)..	3.57	3.92	3.27	3.35
Edenwald (low-rise) ..	3.41	...	3.08	2.86
Gravesend	2.78	3.12	3.21	2.46
Hammel	3.76	3.82	3.64	3.28
Throgg's Neck	3.57	3.75	3.51	3.09

Where building design makes repeated contacts unlikely, or where the presence of large numbers of people make difficult the discrimination of neighbors from visitors and nonresidents, people were found to act less gregariously. This, in turn, influenced their fear of crime.

For example, persons interviewed were asked how many of their neighbors they knew well enough to ask a small favor of, for example, accepting a package in their absence. (See table 4–3). In high-rise projects less than 25 percent felt they could ask this small favor of the closest four apartments. In low-rise buildings more than half of the residents felt they knew all four of their closest neighbors well enough to ask a small favor of them.

The largest numbers of residents of high-rise buildings (31 to 41 percent) said they only had one or two neighbors in the building of whom they could ask a small favor. In low-rise buildings, a relatively small percentage of people knew as few as one or two neighbors well enough to ask a small favor (17 percent).

Interestingly, the percentage of residents who claimed they knew no one at all in the building well enough to ask a small favor of did not vary with building height and was consistently about

Table 4-2.—Overall Fear Index; X Selected Single Characteristics

[Rated as Safe, 1; unsafe, 2]

	Projects							
	1	2	3	4	5	6	7	Total
A. Fear of crime (average) by building height:								
3 stories	...	...	3.88	...	...	3.36	3.21	3.48
6 to 7 stories	...	3.89	4.11	2.89	3.67	3.65	...	3.63
10 or over	3.77	...	...	...	...	...	3.55	3.66

	Projects							
	1	2	3	4	5	6	7	Total
B. Fear of crime (average) by age:								
Under mean	...	...	...	2.58	3.42	3.58	3.35	3.24
Over mean	...	...	...	2.98	3.67	3.22	3.53	3.37
60 plus	...	...	...	2.88	3.71	3.20	3.57	3.34
Under 30	...	...	...	2.36	2.64	2.59	2.68	2.74

	Projects							
	1	2	3	4	5	6	7	Total
C. Fear of crime (average) by race:								
White	3.96	3.72	4.18	3.28	3.83	3.25	3.48	3.69
Black	3.18	3.66	3.60	2.34	3.74	3.53	3.42	3.35
Puerto Rican	3.94	3.98	4.38	2.45	3.88	3.70	3.70	3.72

Projects: 1 = Highbridge, 2 = Bronxdale, 3 = Breukelen, 4 = Gravesend, 5 = Hammel, 6 = Throgg's Neck, 7 = Edenwald.

Table 4-3.—Percentage of Neighbors Known Sufficiently Well to Accept Delivery of Package

[Percent of interviewees]

	Project											
Number of neighbors	Highbridge	Bronxdale	Breukelen	Edenwald	Gravesend	Hammel	Throgg's Neck	Edenwald (lo)	Edenwald (hi)	Breukelen (Lo)	Breukelen (Hi)	Throgg's Neck (Low)	Throgg's Neck (High)
All on Floor	27	16	42	42	28	17	22	62	25	59	21	36	12
3 to 7 Apartments	24	21	12	11	26	23	19	..	20	..	24	..	36
1 to 2 Apartments	27	41	28	25	19	26	42	17	31	18	35	43	41
No Apartments	21	20	18	22	26	34	16	22	23	23	20	21	11
Total[1]	33	55	50	64	35	35	33	29	35	21	29	14	19

[1] Number of interviews on which percentages are based.

20–25 percent in all projects. This implies that truly isolated people are not influenced by building design. Buildings create opportunities for interaction; they do not transform isolated people into gregarious people. They may, however, force people who would like to be gregarious into semi-isolation. In high-rise buildings, fear of elevators and stairhalls is far greater than fear of building lobbies or floor halls. Doubtless this results from the fact that stairhalls in high-rise buildings are separated from apartment floors by the soundproof fire door of the stair housing. Stairhalls in low-rise buildings are close to apartment doors and not enclosed within a fire shaft. These stairs were found to be among the least feared areas in low-rise building units.

In studying patterns of fear across all projects, an interesting conclusion was reached concerning its causes. Edenwald Houses is a project in the Bronx comprised of both high- and low-rise units. On overall indices of fear, the residents of high-rise units were more fearful than those of low-rise units. Paradoxically, the stairhalls here were found to be less feared places than in other high-rise buildings. Almost as an accident of design, the stairhalls exit on the ground level next to the front door of the building. Because there is no reason to use them for exit or entry, the door remains locked at ground level and is used only in emergency. In other buildings, similar fire stairs exit at the rear, providing an alternative form of access to the building and so are used frequently. Any hardware affixed to these doors to keep them closed (except for emergency use) is quickly broken.

What is so striking in Edenwald is that the elimination of circulation into these stairwells from the street (i.e., requiring persons who would wish to use the stair to enter through the lobby and use the internal set of stairs) seems to affect the perceived safety of the entire system of stairs on all floors.

Finally, closeness of buildings to public streets clearly seems to affect the perceived risk of crime. The closer a building entrance is to the public street, the less the fear of crime. This is especially evident in a low-rise project where homes can be divided into those facing inward and those facing public streets. On the average, residents of internal buildings are far more fearful than residents of external buildings. Of course, this is a complex issue requiring further elaboration on the meaning of "street." In general, it means avoiding indirect paths which carry the individual out of sight and sound contact with other people.

B. Fear on Project Streets and Grounds

To examine the dynamics of fear outside of building structures (on project paths, grounds and adjacent streets) requires elaborate information as to the ways in which tenants traditionally use the project facilities, and their impressions of the pockets of safety and danger constituting its terrain. Interviewees were given a skeletal map of their project and asked to indicate gross areas they considered to be dangerous and safe indicated by dotted areas. In addition, they were asked to indicate paths they use to enter and exit from the project, paths they use to take a leisurely walk, paths they use to visit friends in the project indicated by shaded lines (see fig. 4–i, p. 91).

By and large, residents of public housing in New York City lead simple lives. They have few friends nearby, find little reason to leave their apartments other than for shopping, work and an occasional visit to a relative. Their behavior-maps indicate highly ritualized use of paths. There are clearly defined areas they avoid; in all, they exhibit a rather rudimentary functional relationship to grounds areas of their buildings.

C. Contagion of Fear

Satisfactory housing design allows tenants to develop a sense of knowledge and familiarity with the building they live in, its surroundings, and the other people who live alongside them or use the building regularly. While people report being generally afraid, they perceive their own building and its surrounding area as safer than other unfamiliar areas in the project, even though areas they fear may in fact be less dangerous than their own.

The presence of authentic divisions of a project site into subunits gives residents the opportunity to view a certain segment of the project as their own turf and to psychologically "locate" the danger elsewhere. Also, the presence of public streets provides residents with an avenue of perceived security, a right of way through a troubled area. Except in severely sparse, dark, or dilapidated areas residents and criminals alike appear to respect the public stage provided by streets, the sense of being observed.

All maps drawn by residents indicate that where

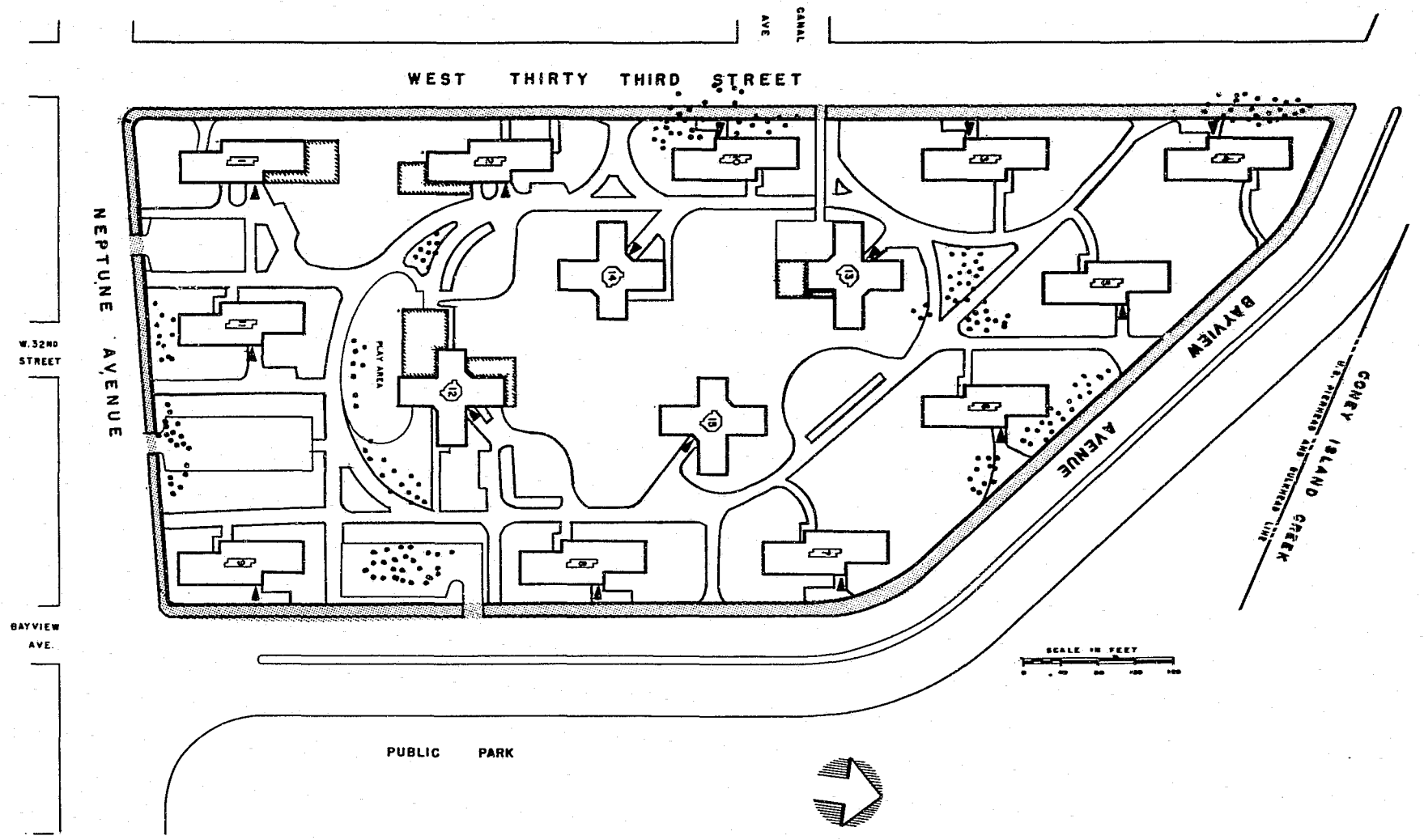


FIGURE 4–1. Gravesend Houses, Brooklyn, N.Y. "Fear map."

strong paths are suggested by design of grounds, and when pedestrian traffic is channeled along predictable routes, perceived risk or danger diminishes.

Second, where divisions do not exist within a project plan, an incident in one area can affect the impression of safety in the project as a whole. Crime incidents have the effect of reducing the legibility and clarity of poorly engraved distinctions in the siting of buildings. It operates to level or nullify important differences between good and bad areas by spreading a contagion of fear across all areas.

Finally, the greatest fear of crime is produced in situations where tenants are forced by circumstance to use an area they feel is dangerous, or where social politeness compels them to accept risks they might not otherwise accept through fear of offending a neighbor.

If a project is subdivided in an authentic fashion and tenants perceive the boundaries as real, fearful areas can be circumscribed, and tenants can avoid areas considered to be dangerous while continuing to conduct their business as usual.

Throggs Neck Houses, a project in the East Bronx, contains 1,185 apartment units and has a mixture of seven-story high-rise and three-story walk-ups intermixed throughout a scattered site. Fear is concentrated in the 11 buildings comprising one block, articulated from other buildings by the presence of a large public street. Where project grounds are feared, tenants consciously walk as long as they can on public streets before entering smaller, less public paths. They pick the route which gives them the longest line of sight to their building door, avoiding corners which make impossible advanced notice of what is ahead. It is striking how carefully some tenants diagnose the conditions of access and egress, and painstakingly discern the best of a series of bad routes.

By way of contrast, Hammel Houses (Far Rockaway, Queens) requires that tenants use project paths to get to almost all buildings. Interviews reveal intense fear of internal areas of the project. The further tenants have to stray from the public street, the greater the amount and concentration of fear. What is especially noteworthy is that project paths, as opposed to public streets, do not provide an authentic division of grounds. Fear is spread diffusely and uniformly throughout the project; there is no one place they feel especially safe. Without barriers or boundaries there is a high contagion of fear from a single incident to other areas of the project (see fig. 4–2, p. 93).

Breukelen Houses is a project with 1,595 apartment units divided into three-story walk-ups and seven-story elevator buildings. The unique feature of this project is that the city street system was retained in its design. Also, buildings have multiple entrances adjacent to the street, thereby accentuating the function of the public streets in bringing people to their buildings. Here, the majority of tenants clearly and consciously use the city street system and avoid somewhat shorter routes through internal project paths.

D. The Consequences of Fear

It makes little sense to tell people that fear of crime is more of a problem than crime itself. Statistics on the likelihood of the average person becoming a victim of crime in the cities are still very slim, especially outside the borders of the ghetto. But adults in this society live probabalistically. For an adolescent, with an undifferentiated conception of probability, a chance of one in 100 seems a remote possibility. This is why statistics on the incidence of death due to overdoses of heroin are not especially intimidating to the adolescent mind. For adults, odds of one in 10,000, that they will be victims of a violent crime are considered beyond the minimal standards of safety. Also, what has doubtless contributed to the problem is that most people have either been victims of crime or personally know of people who have been victims. Fear becomes concretized under these conditions; it leads to fantasy and preoccupation with crime.

The unfortunate consequence of this fear is the undifferentiated *mistrust of strangers* that has resulted, along with fear of retaliation should they intercede or inform police. Fear, in itself, can increase the risk of victimization through isolating neighbor from neighbor, witness from victim, making remote the possibility of mutual help and assuring the criminal a ready opportunity to operate unhampered and unimpeded.

Interestingly, fear of crime was not always found to correlate directly with incidence of crime, but is a complex function involving the status of the respondent, his expectations of safety, the nature of the community and the actual incidence of crime. In stable, well-functioning communities, residents did not feel reluctant to introduce them-

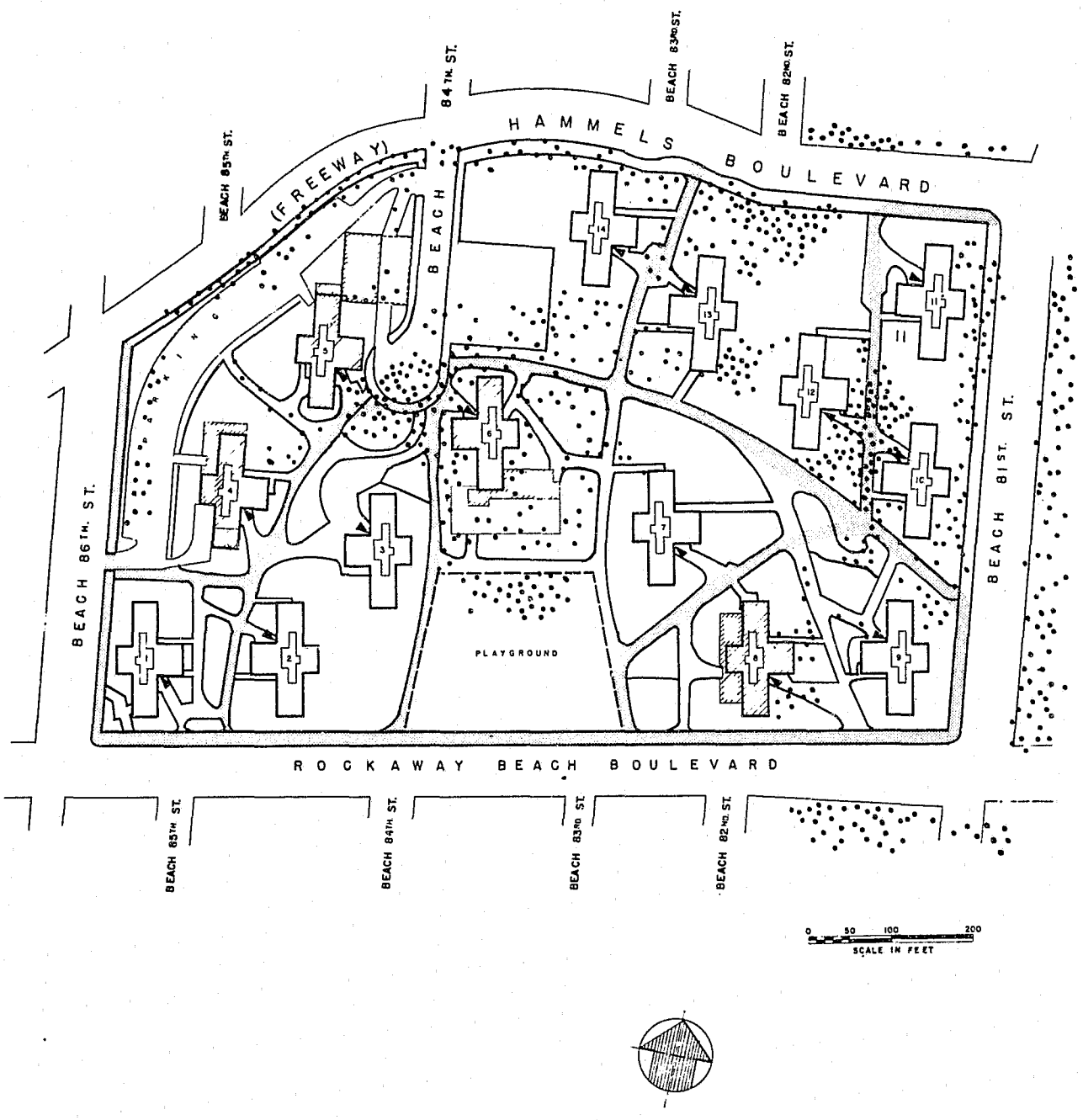


FIGURE 4–2. Hammel Houses, Queens, N.Y. "Fear map." Residents at Hammel Houses are forced to use the internal path system. Building entrances are located too far into the interior of the project to offer safety by street surveillance. Tenants reveal intense fear of these areas.

selves to strangers and to watch, greet, or question people they did not recognize. Because they felt well within their rights in questioning the intentions of others, residents could perform this task efficiently and directly. They expected social ambiguities to be resolved quickly in an atmosphere of good will and mutual respect.

The primary purpose of questioning strangers is to elicit new information about their intentions; information that may not have been sufficiently evident in their behavior. For example, a person sitting on a step near the entrance to a small private low-rise apartment building may be asked, "Are you waiting for someone?" by an entering

resident. The purpose of the question is to resolve ambiguity about why a stranger is sitting on the entrance step. The question can be phrased as a gesture of assistance, and need not take the form of a demand or a confrontation. From responses to these simple requests for information, the resident is able to make a clearer assessment of the strangers intent, calling upon data provided by his voice, his gesture, his eyes, and his manner, in addition to the content to his answer. In this situation, the physical setting—being seated on the entrance steps of a private building—calls for a social explanation. This explanation is usually given promptly and willingly, without loss of face for either party. The social event usually ends on a note of cooperation. If the request happens to be phrased nervously or sharply, or if the situation is ambiguous—for example if it is not evident that the questioner lives in the building—the "intruder" may respond a little less willingly. He may begin to feel that his own rights of privacy are being threatened by a person who has not demonstrated his right to ask questions.

In large, internally undifferentiated high-rise buildings the presence of large numbers of unknown faces severely restricts the range of areas in which people feel they have the clear right to question the presence of others. Unless there is an alert doorman, who serves to limit access to residents and their guests, the area in which people feel they have this right is limited mostly to the small area around the door to their apartment. Typically, people say they are reluctant to confront people elsewhere in and around the building for fear of either provoking them or insulting them unintentionally.

In large public housing projects made up of high-rise buildings, these fears of provoking strangers are not entirely unfounded. Questioning the presence of an unknown person may in fact evoke reactions ranging from mild resentment to extreme outrage at having been falsely accused or unjustly singled out. There is little clarity concerning the rights of tenants to question the presence of people because few places in these buildings are territorially restricted. Only police and management have the clear right to question the presence of people in buildings.

Where sociospatial distinctions are lacking, as in the interior of most high-rise buildings, the intruder, often as not, has the same right to question the presence of his interrogator. In communities which have suffered a high incidence of crime, people try to avoid these ambiguous social encounters at all cost. Inherent in these encounters is the danger that strangers are actually bent on crime. In these instances, residents find it impossible to distinguish different levels of risk in asking questions of strangers. The possibility of a mild rebuke can not be distinguished from the possibility of a major assault. Misdiagnosis of a social situation, which results in falsely accusing someone brings with it the risk of severe social shame, rather than the momentary embarrassment of a simple social error.

The result of this heightened ambiguity is usually withdrawal into the partial security of well-known social rituals. People depend primarily on a small group of immediate neighbors who they feel sure they can not easily offend. They use overlearned, well-traveled routes to and from their dwellings in an attempt to ward off even the slightest chance of encountering new or unusual social situations.

The Crime Commission suggests that there are grave dangers in exaggerated fear of crime. Among them, people tend to think of crime as a diffuse category, and assume that all increases in crime indicate an increase in violence. In other words, the increase in property crimes is assimilated in the mind of the public into a single category and included with those that have been singled out for public view by the news media as especially violent acts.

This same logic of extension carries over to our own studies of the relationship between fear of crime and building design. Just as all crimes are assimilated to crimes of violence, so the concept of "crime in the streets" like all gross generalizations, tends to deny existing spatial distinctions which might lead to a containment of fear to those areas over which no one has proprietary rights. This abstract fear can be controlled and defined through the subdivision of projects and buildings to enable tenants to persist in making distinctions between legitimately dangerous places, those areas of moderate security, and islands of extreme safety.

E. Summary of Initial Results on Crime and Housing Design

Fear of crime is by far the greatest single problem identified by residents of public housing. Although fear of crime is roughly correlated with

actual danger of victimization, the design of buildings influences the perception of risk. In like manner, the design of buildings and projects influences the criminal's perception of the risks of being confronted or apprehended by tenants or police.

The physical design factors influencing fear include:

1. *The division of projects by public streets.* Public streets provide a haven of safety, especially if they are faced by project windows and building entrances.

2. *Project paths are safe if defined by buildings.* The path system through projects, defined by building entrances and walls containing windows, provide a corridor of safety through the project and create areas outside the home in which parents allow their children to play.

3. *High-rise buildings induce anonymity and isolation.* High-rise buildings with a large number of families and their guests sharing a single entry make it impossible to distinguish neighbors from intruders. Where tenants can come to recognize their neighbors, they can be more alert to strangeness or breaks in routine.

In our findings the lack of familiarity with neighbors is correlated with fear of crime. Residents who feel isolated from neighbors are far more frightened of crime than those who feel a sense of contact with neighbors. Equally clear is the influence of building design on the likelihood of tenants becoming familiar with the identity and habits of their neighbors. Low-rise buildings, and multistory buildings with exposed stairs (Brownsville) or with elevators limited to a small number of families produce a higher degree of familiarity with nearby families than do high-rise buildings.

Freedom to survey, supervise and question strangers is a function of building design

The willingness of tenants of low-rise projects to leave their doors ajar, or to look out their windows onto the street below is an indication of their sense of attachment to areas around their building and concern about activities that occur in these zones. The size, scale and orientation of buildings contribute to the effectiveness of this impulse to watch. Streets and paths become more interesting when they are used by adults and children. Surveillance breeds "use", "use" creates interest, which in turn induces more surveillance.

Contagion of fear is a function of the scale of a project and the relation of buildings to one another

When the project is capable of being perceived as a unit, all at once, a crime in one area casts a spectre of fear and cynicism on the whole environment. Throggs Neck Houses has one isolated area of extreme crime. The presence of a strong public street allows tenants in other areas to juxtapose the safety of their home area with the dangers of this circumscribed zone. This allows tenants and police alike to sustain the impression that crime is contained and manageable. Criminals likewise do not assume that the project has, as a whole, fallen into anarchy. They respect the proprietary edges and margins of other areas of the project.

Chapter 5. Evidence on Crime in Housing

A. Methods of Investigation

It is difficult to test the influence of the physical environment on the willingness of people to anticipate, defend against and control crime in and near their home environment in that many factors other than physical configuration contribute to the willingness of residents to confront strangers, share attitudes and fears with neighbors, and develop the social mechanisms and interdependencies which ultimately reduce the danger of crime.

People differ in their capacities to enter into new and necessary forms of social relationship with their neighbors. Some of these differences can be correlated with the personal or social background of tenants. For example, people differ in their threshold of acceptable levels of ambiguity of behavior. For a socially reticent person, the presence of any stranger is perceived as a threat, and may induce withdrawal or isolation; for more gregarious types of people, strangers can be questioned in a kind way without intended threat or perceived danger. Differences in personal style may carry over into larger concerns, for example, the degree of social order versus anarchy people expect and insist upon.

The responsibility of being a parent or spouse clearly increases the likelihood of taking responsibility for one's life setting and surroundings; economic stability affects the individual's self esteem, lessens his political and social cynicism and enhances his conception of the worthiness of battling against crime; finally, differences in psychological stability may imply differential capacities to distinguish reality from fantasy about crime, to make disciplined judgments about the nature of the problem of crime. Unstable people may be flooded with feelings of fear and apprehension, leading them to passively accept crime as ubiquitous and epidemic.

It would be impossible to fully detail these personal and social characteristics that determine the individual's willingness to engage in the battle against crime. Although the subject of our work, it is equally difficult to identify those specific features of the residential environment which interact with these psychological and social characteristics to produce high or low crime proneness of a community.

A fair test of hypotheses concerning the impact of the physical environment on crime requires comparison of communities in which social characteristics of the population are held constant, where the only variation is the physical form or composition of the buildings in which they live. Were differences in crime demonstrable between these samples, it would display an interaction between positive social factors which inhibit criminality, negative social factors which produce likely victims of crime (i.e., factors such as social isolation and anonymity) and important physical characteristics of the residential environment which serve to catalyze the crime proneness or crime resistance of a community.

As a rough approximation, one must employ those objective measures which are available, framing the problem with methods that yield maximum control of unknown or unwanted variation.

A paramount consideration in the selection of public housing in New York City as the population for these studies was the volume of personal data available on the more than one-half million residents. It was also important that this population fell within a rather restricted range of economic and social characteristics. Finally, although all public housing buildings and projects share a common character, there is a sufficient variety, from large high-rise projects, to infill high-rise buildings, to garden apartments, to allow an evaluation of the effects of building design on crime.

Two methods of study were decided upon for the first phase of research, and preliminary findings of each of these methods are presented in this chapter. These methods are:

- Comparative studies of coupled projects.
- Statistical analyses of crime rates in relation to housing design.

The first of these methods, comparative studies, is largely a biographical or anthropological approach to the problem, pursued through interviews of a wide range of participants in the life of a community, and augmented by objective data on characteristics of tenants. It required finding pairs of housing projects which were sufficiently similar in tenant population to support the assumption that crime rates would be about the same if they were a product of social characteristics alone. In those pairs of projects selected for presentation, physical design characteristics alone are the distinguishing features through which projects can be contrasted; these distinguishing features bear directly on our hypotheses concerning crime.

Although differences in crime rates follow the hypothesized direction, the comparison of Van Dyke Houses and Brownsville Houses included in this chapter is by no means conclusive evidence that housing design induces crime.

To broaden the scope of these findings, the Statistical Analyses were undertaken. In addition to testing the generalizability of hypotheses garnered through more intensive anthropological methods, it made possible the disaggregation of factors related to crime rate. It allowed a further means for separating effects due to tenant characteristics from those due to physical characteristics of projects.

Finally, a third manner of testing the impact of physical environment on crime is to observe the effect of changes in a given environment on the same people, in the same social context, over time. This method is discussed briefly in appendix E and is the substance of further studies to be reported in a sequel to this monograph on the "Impact of Architectural Modifications on Crime." By observing the cumulative effects of defensible space design modifications to existing projects, one can identify the specific mechanisms through which the impact of physical design on crime is felt. This last method has some disadvantages in that it makes impossible the comparison of strikingly contrasting life styles. For example, the same community of people cannot feasibly be moved from low-rise to high-rise buildings. Nevertheless, it is the only satisfactory direct test of design hypotheses.

While none of these methods is by itself adequate to identify the contribution of physical design to crime proneness or resistance of a community, the three taken in concert have begun to unearth a wide range of significant data.

In the comparative studies of coupled projects which follows, a biographical method was used to compare residential environments which are different in important aspects of their physical form but equivalent in regard to important social characteristics. Results of more detailed statistical analyses through which the effects of social variables can be statistically compensated to allow for a fair test of the catalytic functions of the environment follows the comparative studies.

B. Comparative Studies of Coupled Projects

1. *Brownsville-Van Dyke: a biographical comparison*

As a first test of the feasibility of our hypotheses it was necessary to find two residential communities that served comparable populations and were sufficiently different in important architectural and physical characteristics to provide a testing ground for evaluating the impact of the physical environment on crime and vandalism.

Two New York City housing projects, Brownsville Houses and Van Dyke Houses, were selected and compared on the basis of similarity of social and economic characteristics of tenants and striking contrasts in physical characteristics. These projects differ in design (see fig. 5–1, p. 98) in that Brownsville Houses is comprised of low (three- to six-story) walk-up and elevator buildings while Van Dyke Houses is comprised of a mix of three story buildings and 14 story high-rise slabs. Although there is almost an equal number of low and high-rise buildings at Van Dyke, 90 percent of the apartment units are located in the high rise slabs. The two projects are across the street from one another and share the same housing authority police and New York City police services.

As a first step, crime incident rates and maintenance rates for the two projects were compared. In summary, Van Dyke Homes has 66 percent more total crime incidents with over 2½ times as many robberies (263 percent), and 60 percent more felonies, misdemeanors and offenses. Even though Brownsville Houses is an older project, beginning to suffer from natural decay, Van Dyke has required a total of 72 percent more maintenance work. As a measure of tenant satisfaction, Brownsville Houses, the older project with smaller room sizes in similarly designated apartment units has a lower rate of move-outs than Van Dyke Houses. Naturally, when using the results of one year's experience, one runs the risk of deriving conclu-

FIGURE 5–1. Comparison of Van Dyke Houses-Brownsville Houses. Comparative view. Van Dyke Houses (left, 14-story high-rise) and Brownsville Houses (right, six-story buildings) are across the street from one another. Although tenant populations are identical, crime and vandalism rates are 40 percent to 150 percent greater in Van Dyke than in Brownsville depending on the nature of the crime.

sions on the basis of an historical accident. Consequently, results were tabulated annually over an 8-year period, including sampling of move-ins to the two projects, and these data have provided additional confirmation of differences in crime and vandalism between the projects that cannot be readily assigned to differences in their tenant populations.

2. *Physical design, Van Dyke Houses*

Differences in physical design of the Brownsville and Van Dyke projects are apparent even to the casual observer. Van Dyke Houses has the appearance of a large, undivided project. The most dominant buildings are the 13 14-story slabs. In less evidence are the nine 3-story structures. Each building sits independently on the site with large open spaces separating it from its neighbors. The project is divided through the middle by a vast open area, used in part for automobile parking and including a Department of Parks playground. By design, these large open areas do not relate to surrounding buildings. Entrance to Van Dyke buildings requires that tenants walk off the public street onto project paths that wind into areas blinded to surveillance from the street (see fig. 5–2, page 100). The only areas of the project grounds which relate somewhat to buildings are the small seating areas in the channel of space between the double row of buildings. Entrance to the high rise buildings is directly off the project paths with no gradation or distinction indicated by the design of the grounds in front of the building lobby. This functional entrance to the buildings is actually a small door shared by 112 to 136 families.

Two low speed elevators carry families to their living floors in the high-rise buildings. Elevators are placed directly opposite the building entrances as mandated by the Housing Authority to improve surveillance from the outside. Full benefit is not derived from this arrangement, however, since entrances face the interior of the project rather than the street.

The housing floors of the high-rise buildings are each occupied by eight families. The elevator stops in the middle of the corridor, and the apartment units are reached by walking left or right down a dead end corridor with apartments positioned on both sides (see fig. 5–3, p. 101).

3. *Physical design, Brownsville Houses*

Brownsville Houses presents the appearance of being a smaller project due to the disposition of units in smaller and more diverse buildings (see figures 5–4 and 5–5, pages 102 and 103). It might be said that the buildings, their design, and their siting have been used to divide the acreage on which the project sits into smaller, more manageable zones. These ground areas have been humanized through the relationship they bear to individual residential buildings. Activities that take place in small project spaces adjoining buildings have become the business of the neighboring residents, who assumed a leading role in monitoring them.

All residents and police who have been interviewed at Brownsville perceive the project as smaller and more stable than Van Dyke. All intruders, including police and interviewers, feel more cautious about invading the privacy of residents at Brownsville. Their attitude toward invasion of the interior of corridors at Van Dyke is, by contrast, callous and indifferent.

This emphasis on space division carries over into the design of the building interiors of Brownsville Houses as well. Individual buildings are three and six story structures with six families sharing a floor. The floor is further divided by an unlocked swinging door into two vestibules shared by three families each (see fig. 5–6, p 104). In the six story buildings there is an elevator which stops at odd floors requiring residents of upper stories to walk up or down one flight using an open stairwell around which apartment doors are clustered. Vertical communication among families is assured by this relationship of elevators to apartments, and also by the presence of open stairwells connecting the floors.

At the ground level, the building lobby leads up a short flight of stairs to several apartments which maintain surveillance over activity in this small entryway. On all floors tenants have been found to maintain auditory surveillance over activity taking place in halls, by keeping their doors slightly ajar. These features of the building have allowed occupants to extend their territorial prerogatives into building corridors, hallways and stairs. Mothers of young children at Brownsville allow them the freedom to play on landings and up and down the stairwells and monitor their play from within the apartment. An interruption to the din of children at play in the stairwells was found to bring mothers to their doors as surely as a loud scream.

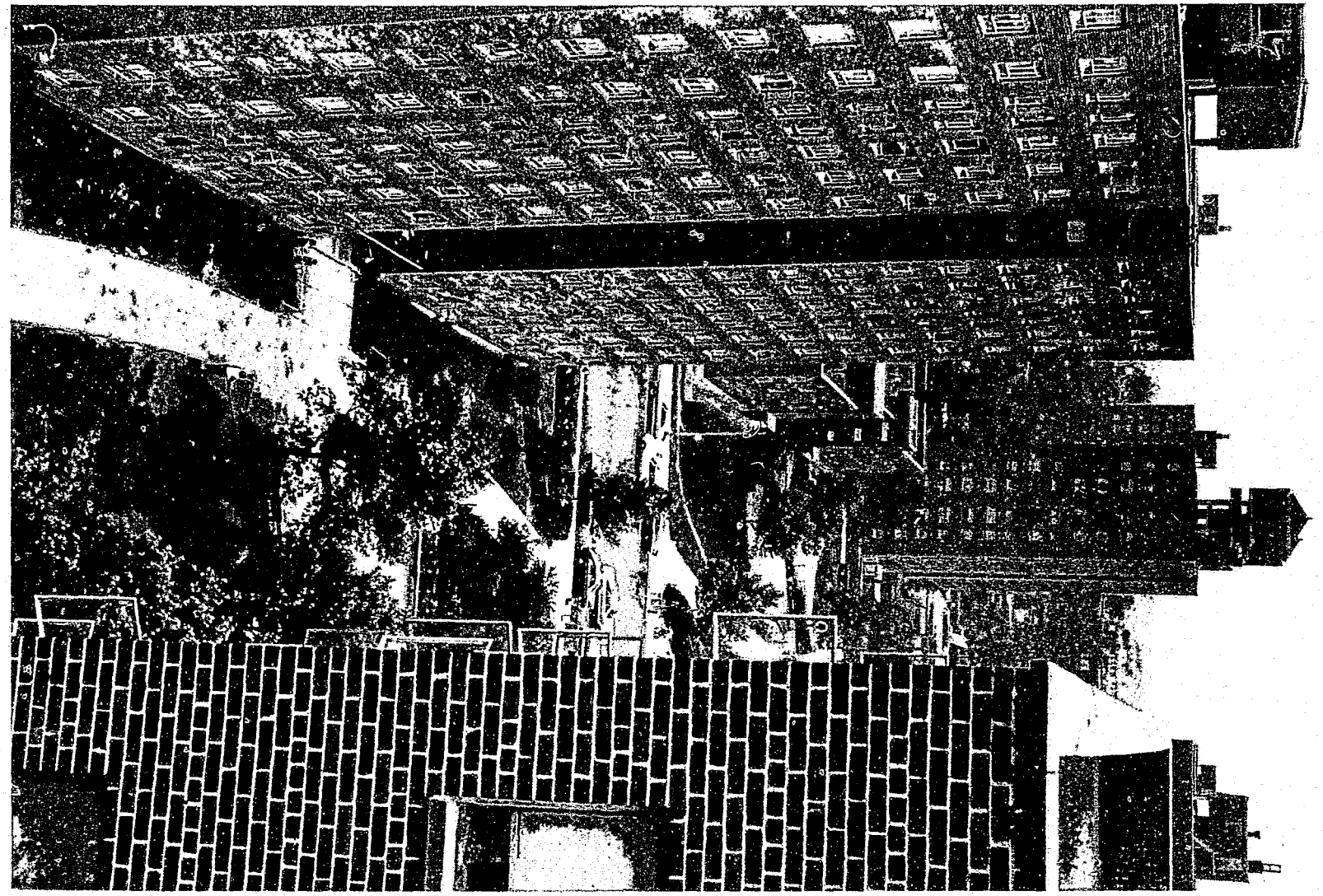
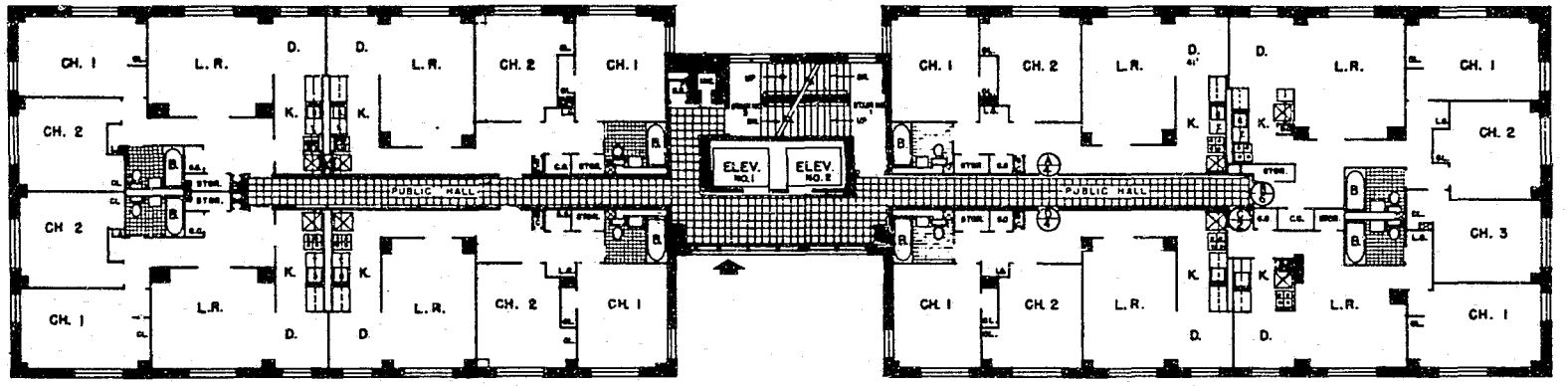
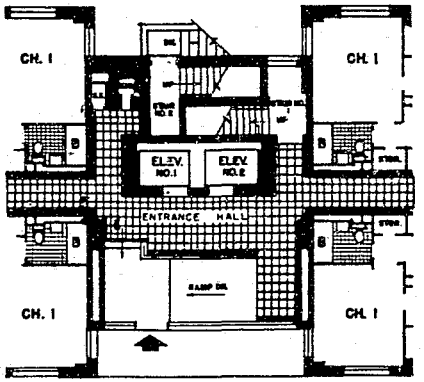


FIGURE 5–2. Van Dyke Houses, New York. View of entrance. Entrance to 14-story buildings is removed from the street making casual surveillance by autos, pedestrians, and police impossible. Lobby areas are considered dangerous by residents, especially at night.



FOR BLDG. NOS. 3, 5, 7, 11, 12, 17, 20 & 22

FOR BLDG. NOS. 1, 8, 16, 19 & 21



PLAN OF ENTRANCE AT FIRST FLOOR

REV. 9-29-55
REV. 6-8-55

FIGURE 5–3. Van Dyke Houses, Brooklyn, N.Y. Sketch of floor plans. Floor plans show the location of elevator and fire stairs with respect to the entrance lobby and the individual apartment floors in Van Dyke high-rise buildings.

FIGURE 5–4. Brownsville Houses, New York. View of buildings and grounds. Oblique view shows dense coverage and division of grounds into areas defined by and associated with buildings. Each wing of the six-story buildings contains three apartments on a floor clustered around a common vestibule.

FIGURE 5–5. Brownsville Houses, Brooklyn, N.Y. Sketch of exterior. The building layout at Brownsville is such that the central portion is six stories high. The extended wings are three-story walk-up structures.

By contrast, young children at Van Dyke are not allowed to play in the corridors outside their apartments. First, the halls of Van Dyke and other high-rise buildings are designed solely for their corridor function and are inhospitable to the fantasy-play of children (fig. 5–7, p 105); second, to many families utilize a typical high-rise hall for a mother to comfortably leave her child unsupervised. Mothers are reluctant to leave their door ajar for surveillance for the same reason—too many people, including strangers and guests of neighbors, wander through the Van Dyke halls unchecked and unquestioned; fourth, to give children real freedom of use of the building would require their using the elevator or fire stairs to gain access to other floors. But both these areas are frightening, and would take the children out of the surveillance zone of the mother and other tenants. The elevator cab is sealed by a heavy metal door that cannot be opened manually. The fire stair wells are designed to seal floors in the event of fire. A by-product of their fireproofing is that noises within the stairwells cannot be heard in the corridor outside (see fig. 5–8, p. 105). Criminals often force their victims into these areas because the soundproofing feature and low frequency of use make the detection of a crime in progress almost impossible.

The sense of propriety which is apparent in the way tenants of Brownsville Houses use their halls to monitor and maintain surveillance over children and strangers appears to have carried over to the grounds adjacent to building entrances. Because of the unique construction of the buildings there are areas on the ground level just outside the front door to the building where parents can allow their children to play while maintaining contact with them through their kitchen windows (see fig. 5–9, p. 106). Interviews have revealed that the range of spaces into which young children are permitted to roam (assuming parents adopt this parietal role of "giving permission") is greater in Brownsville than in Van Dyke.

Finally, where entries to Van Dyke high-rise buildings serve over 130 families, Brownsville buildings are entered through a series of doors, each serving a small number of families (9 to 18). The ground area adjacent to these entries has been developed for use by adults, and for play by young children. Parents feel confident about allowing their children to play in these clearly circumscribed zones. Frequently, these entry areas are located just off the public street, and serve to set off the building from the street itself by acting as an intervening buffer area. The placement of entrances just off the street avoids the dangers created at Van Dyke by forcing tenants to walk along blind interior project paths to get to their buildings.

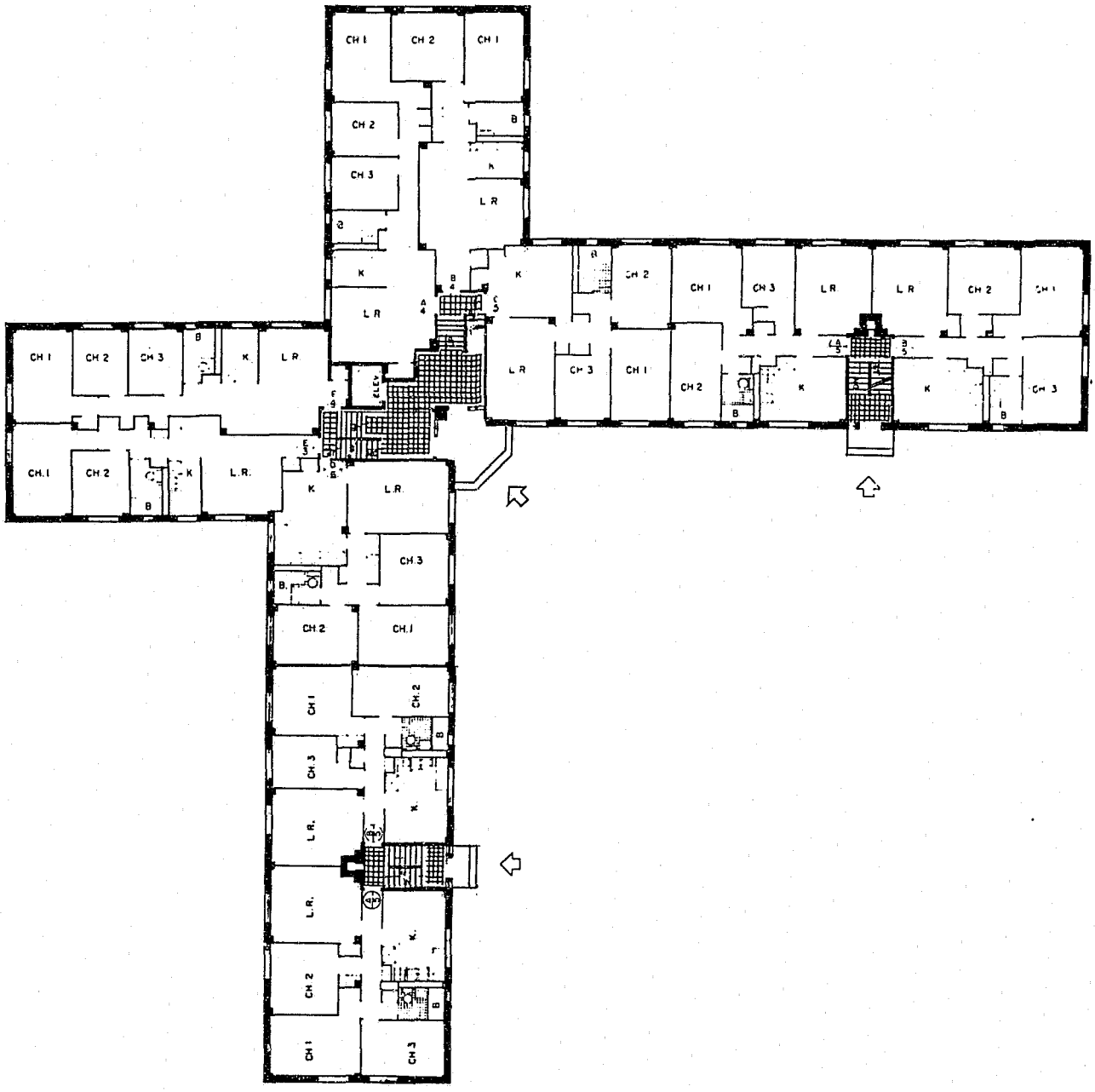


FIGURE 5–6. Brownsville Homes, New York. Floor plan.

4. *Tenant characteristics*

Inspection of table 5–1, page 107, tenant statistics, reveals that the tenants of Brownsville and Van Dyke are rated similarly on overall indices of socio-economic status, family stability and ethnic, racial and family composition. It is also clear that these rough similarities are consistent from year to year. Comparison of demographic data over the period 1962 to 1969 reveals few exceptions to this overall pattern of identity between the projects.

5. *Comparison of physical and tenant characteristics*

Review of the objective data (see table 5–2) on the physical characteristics of the two projects reveals many striking parallels. The projects are almost identical in size, each housing approximately 6,000 persons, and are designed at exactly the same density: 288 persons per acre. Major differences arise in the composition of buildings and the percentage of ground level space they occupy.

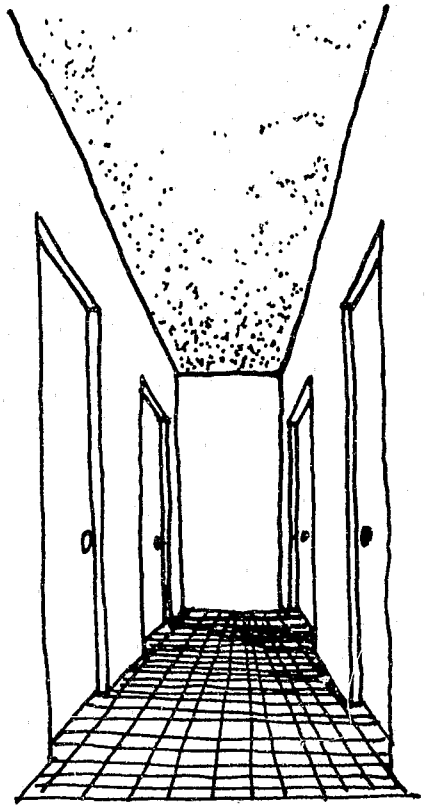


FIGURE 5–7. Van Dyke Houses, Brooklyn, N.Y. Sketch of corridor. Corridors at Van Dyke are narrow and are not conducive to play or socializing. They serve only as a means of entrance and exit for the residents.

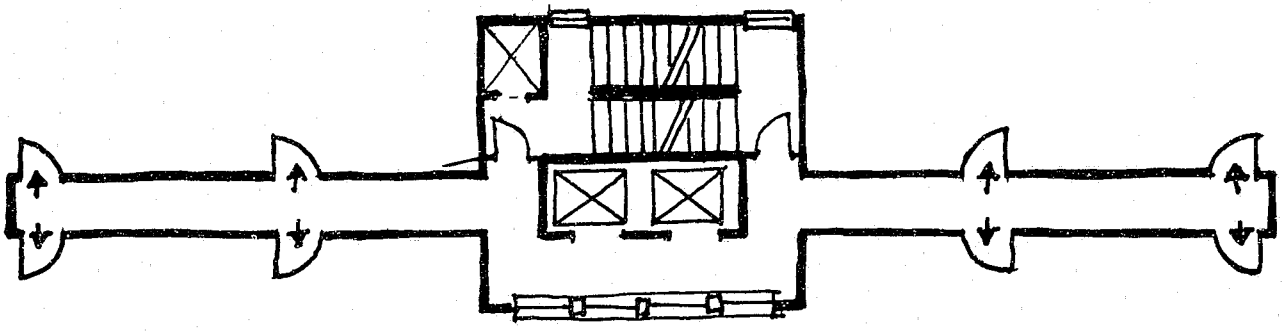


FIGURE 5–8. Van Dyke Houses, New York. Floor plan. The fire stair doors seal off the corridor from noises coming from other floors, thereby inhibiting casual audio surveillance.

Brownsville buildings cover 23 percent of the available land, whereas Van Dyke buildings cover only 16.6 percent of the total land area—including nine three-story buildings which occupy a large percentage of space but house only 24 percent of the total project population.

6. *Study of move-ins 1967-1969*

It was a widely held belief that many so-called "problem families," displaced by the Model Cities renewal programs, were among recent move-ins to Van Dyke. Many people drew an immediate correlation between the higher crime rate at Van Dyke and this change in population. We obtained information on a representative sample of families who have moved into the two projects over the past three years (see table 5–3). Sample data on one of every five move-ins reveal no striking differences in the social conditions of the projects as a whole (see table 5–4, page 108).

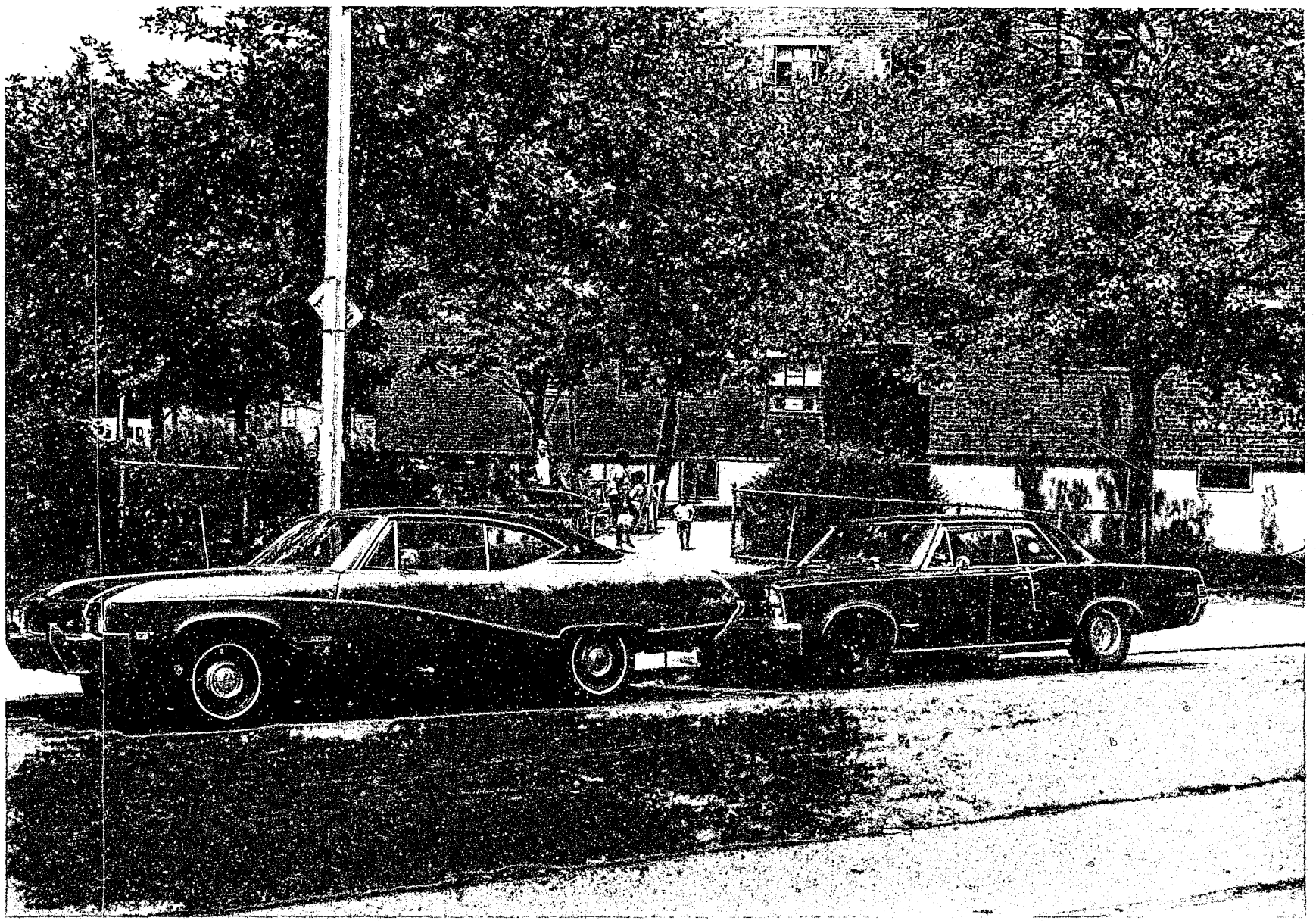


FIGURE 5–9. Brownsville Homes, Brooklyn, N.Y. View of grounds. The site configuration of the buildings at Brownsville creates a triangular buffer area similar in design and use to that at Breukelen houses (see ch. 3). These play and sitting areas are easily observed from the street and from apartment windows.

Table 5–1.—Tenant statistics

Characteristic	Brownsville	Van Dyke
Total population	5,390	6,420
Average family size	4.0	4.0
Number of minors	3,047 (57.8%)	3,618 (57.5%)
Percent population black	85.0	79.1
Percent population white	2.6	5.6
Percent population Puerto Rican	12.4	15.3
Average gross income	$5,056	$4,997
Percent on welfare	29.7	28.8
Percent broken families	31.7	29.5
Average number of years in project	9.0	8.5
Percent of families with two wage earners	11.0	12.2
Number of children in grades 1 through 6	904	839

Source: N.Y.C. housing authority records, 1968.

Table 5–2.—A comparison of Physical Design and Population Density

Physical measure	Brownsville	Van Dyke
Total size	19.16 acres	22.35 acres
Number of buildings	27	23.
Building height	6 story with some 3-story wings.	13 to 14 story, 9 to 3 story.
Coverage	23.0	16.6.
Floor area ratio	1.39	1.49.
Average number of rooms per apt.	4.69	4.62.
Density	287 persons/acre.	288 persons/acre.
Year completed	1947	1955 (one building added in 1964).

Source: N.Y.C. housing authority project physical design statistics.

Table 5–3.—Move-Ins: A 3 year comparison

Year	Brownsville	Van Dyke
1967	109	158
1968	118	127
1969	75	93

Source:

Bear in mind that the total number of move-ins in these three years constituted fewer than five percent of the project population in both Van Dyke and Brownsville. To blame problems of the project on a small number of "bad seeds" would clearly be gratuitous. To insure that these mean figures were not misleading, frequency distributions were plotted for each variable which permitted such treatment. For example, the frequency of each family size varying from one to fifteen was plotted separately for Brownsville and Van Dyke.

7. *Comparison of objective data on crime and vandalism*

Crime and vandalism are major problems at both Van Dyke and Brownsville Houses. The problem has become serious over the past ten years with the decline of the old Brooklyn community and the failure to create renewal opportunities. The area surrounding both projects is severely blighted; store owners conduct business in plexiglass booths to protect themselves from addicts. The local library requires two armed guards on duty at all times. The local hospital claims it records fifteen teenage deaths per month due to overdoses of drugs.

Table 5–5 presents data on major categories of crime expressed in terms of rate per thousand population. Data are also presented on specific crimes including robbery, possession of drugs and loitering.

In general, the crime statistics confirm the opinions of law officers and residents alike—at Brownsville the problem is manageable; at Van Dyke it has gotten out of hand. Robberies do occur two to four times as frequently in Van Dyke than in Brownsville. The overall incidence of felonies is far greater as well.

8. *Some conclusions*

It is unwarranted to conclude that these data provide final and definitive proof of the influence of physical design variables on crime and vandalism. It is equally misleading to assume, as did management officials, that the differences can be explained away by variations in tenant characteristics in the two projects. The project manager assumed that Van Dyke Houses had a larger number of broken families and that these families had a larger number of children than those at Brownsville. The statistics do not bear out this assumption, but the image described by the manager and other public officials suggests the extent of the problem and may in turn contribute to it.

There are some elementary differences in the physical construct of the projects which may contribute to the disparity of image held by officials. Police officers revealed that they found Van Dyke Houses far more difficult to patrol. To monitor

Table 5-4.—Tenant statistics for move-ins

Characteristic	Brownsville	Van Dyke
Race:		
Negro	51	41
Puerto Rican	7	10
White/Caucasian	0	0
Total	58	51
Source of income:		
Private employment	34	36
Government employment	5	1
Own business	0	1
Department of welfare	16	9
Social security	1	1
Disability insurance	0	1
Military allotments	2	2
Assets:		
None or unknown	27	51
Less than $1,000	1	0
$1,000 to $1,999	3	0
$2,000 to $2,999	9	0
$3,000 to $3,999	5	0
$4,000 to $4,999	8	0
$5,000 to $5,999	5	0
Previous housing:		
Own apartment	46	43
Apartment with relatives	10	0
Furnished room	1	7
Hotel	1	1
Residence at last address:		
Less than 6 months	7	4
6 to 11 months	8	7
1 year less than 2	13	16
2 years less than 3	8	10
3 years less than 4	6	6
4 years less than 5	3	1
5 years less than 10	6	4
10 years less than 15	3	2
15 years less than 20	2	1
20 years or more	2	0
Family composition:		
Single person	3	1
Married couple	4	3
Father, mother, children	34	33
Father with 1 or more children	1	0
Mother with 1 or more children	14	14
Other	2	0

Characteristic	Brownsville	Van Dyke
Sex of head of household:		
Male	38	36
Female	20	15
Age of head of household:		
Less than 20 years	2	2
20 to 29 years	27	26
30 to 39 years	11	13
40 to 49 years	8	3
50 to 59 years	5	3
60 to 69 years	3	4
70 to 79 years	2	0
Number of children under 21:		
0	10	6
1	17	20
2	23	20
3	4	2
4	2	2
5	2	0
7	0	1

Source: A sample of 1/5 of move-ins, 1967–69.

Table 5–5.—Comparison of crime incidents

Crime Incidents	Brownsville	Van Dyke
Total incidents	790	1,189
Total felonies, misdemeanors and offenses	264	432
Number of robberies	24	92
Number of miscellaneous mischief	28	52

Source: N.Y.C. housing authority police records, 1968.

activity in the enclosed fire stairs requires that a patrolman take the elevator to the upper floor and then walk down to the ground level, alternating at each floor between the two independent fire stair columns.

Police express pessimism about the value of themselves at Van Dyke Houses. At Brownsville they are much more optimistic and, in subtle ways, respond to complaints with more vigor and concern. All these factors produce a significant positive effect in Brownsville. At Van Dyke the negative factors of anonymity, police pessimism, tenant feelings of ambiguity about strangers caused by large numbers of families sharing one entrance, conspire to progressively erode any residual faith in the effectiveness of community or official response to crime.

9. *Maintenance and vandalism statistics*

Another measure of security concerns the rate of decline of facilities (see table 5–6). Although most of the decline of physical facilities is due to

Table 5-6.—Comparison of maintenance

Maintenance	Brownsville (constructed 1947)	Van Dyke (constructed 1955)
Number of maintenance jobs of any sort (work tickets) April, 1970	2,376	3,301
Number of maintenance jobs excluding glass repair	1,651	2,643
Number of nonglass jobs per unit	1.16	1.47
Number of full-time maintenance staff	7	9
Number of elevator breakdowns per month	110	280

Source: N.Y.C. housing authority project managers bookkeeping records.

natural use, much of the problem is due to vandalism, and/or the breakdown of efforts at upkeep and repair. Because it is an older project, one would suspect that Brownsville Houses would require greater expenditures of effort in repair and maintenance. It is interesting to note that the average outlay of time and funds for upkeep of Van Dyke is proportionately higher than that of Brownsville. Not only is there less need of repair at Brownsville, but tenants themselves play a greater role in seeing to the cleanliness of buildings either through insistence on janitorial services or by individual effort.

One of the most striking differences between the two projects concerns elevator breakdowns. The far greater number of breakdowns at Van Dyke is first a function of more intensive use; but more breakdowns are due to vandalism at Van Dyke than at Brownsville. This form of vandalism is especially diagnostic in that adolescents who tamper with Van Dyke elevators do not have a sense of identity with the people they inconvenience.

C. Statistical Analysis of Crime Rates in Relation to Housing Design

Architectural features can serve to increase or decrease the probability that crimes will occur within buildings and on project grounds in two inter-related ways:

Social.—by creating spatial arrangements which either encourage or discourage a feeling of communal responsibility among tenants for the defense of certain areas.

Physical.—by making spaces more or less accessible, and by facilitating or inhibiting the criminal in evading pursuit. A firestair placed adjacent to apartment windows will allow entry; buildings with multiple exits make it easy to evade pursuit.

In our computer-aided comparative analysis of crime patterns, New York City Housing Authority projects were categorized according to selected design features. The following is the result of a study of the correlation of each of these selected design categories and the corresponding crime rate for the year 1969. Since the computer tapes on crime do not provide a building by building breakdown, information could not be used for those projects with mixed building types, and they were eliminated from analysis.

1. *Types of crime and their location*

The first step in relating physical design to crime, was to determine where crimes happened in projects, and if any overall pattern of location existed. We were aware first that certain parts of project buildings seemed more prone to crime than others and, that secondly, certain types of crimes predominated in particular areas of a building. What we needed was exact information as to which places appeared to be most vulnerable. With this knowledge, it was then possible to further ascertain the connection between particular design factors and crime.

Vulnerable areas

By far, the greatest amount of crime (49.4 percent + 27.0 percent, or 76.4 percent of all felonies such as assault, burglary, murder, rape and robbery) occurs in interior spaces of buildings, defined here as apartment, lobby, elevator, hallway, roof and landing. However, of this 76.4 percent, the majority (or 65 percent) occur in the interior *public* spaces of the buildings. (See fig. 5-10.)

Of the various public spaces in a building, the elevators are the most notorious, accounting for 19 percent of all serious crime. Elevators are fol-

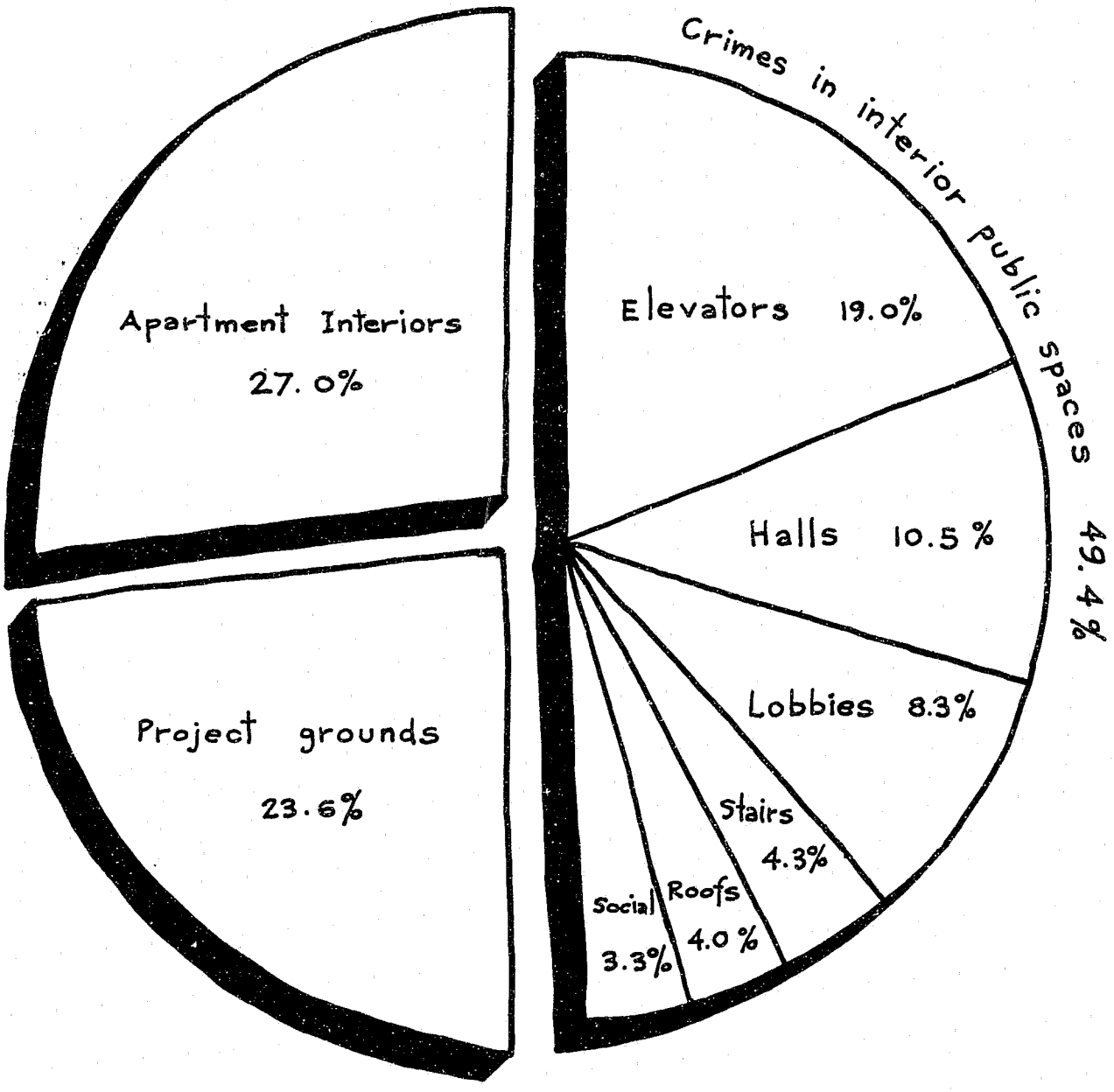


FIGURE 5–10. Place of occurrence of crimes in buildings. Source: New York City Housing Authority, Police, 1969 data (felonies).

lowed by the hallways which account for 10.5 percent and lobbies which account for 8.3 percent. This reality is, by and large, reflected in a survey of 190 residents of Bronxdale, a project in the South Bronx, where tenants were asked to rate various interior locations on a 1- to 5 scale of unsafe to safe (daytime only). Elevators received the highest score (3.20), followed by lobby and hall with 2.72 and 2.60 respectively.

Apartments account for 27 percent of the five most serious felonies occurring inside buildings, yet on the fear scale mentioned above, the apartment unit was ranked as "safest" by the tenants. Since apartments are second only to the lobby in accounting for interior serious felonies, there appears to be some discrepancy. However, this can be explained by the fact that 93.8 percent of these felonies are burglaries, and since burglaries do not involve the victim in direct personal contact with the criminal, they are not feared to the same ex-

Table 5–7.—Location of crime [1]—all projects

General space category and exact location	Total Crime	Total FMO's	Total Felonies	Assault	Burglary	Murder	Rape	Robbery	Lingering	Mailbox (all incidents)	Drugs (all incidents)	Malicious mischief (all incidents)
Interior private space:												
Apartment	21,680	5,692	2,321	54	2,087	7	16	62	29	22	195	2,561
Interior public space:												
Lobby	9,746	4,103	682	18	7			591	3,321	2,267	207	828
Elevator	5,451	2,165	1,549	10	1		13	1,490	58		12	537
Stairway	4,572	2,129	347	14		1	14	286	1,460	1	230	1,568
Hallway	7,379	2,419	817	40	3	1	5	718	1,720	6	185	1,263
Roof and landing	1,395	396	72	3	3		39	7	446	3	210	143
Other inside	3,894	1,351	319	14	197		2	73	309	4	80	777
Sub-total	32,437	12,563	3,786	99	211	2	73	3,165	7,314	2,281	924	5,116
Non-tenant space:												
Social facility	1,639	610	227	2	213			3	32	1	5	271
Commercial facility	285	144	55		38			15	11	1	1	41
Sub-total	1,924	754	282	21	251			18	43	2	6	312
Exterior project public space:												
Project grounds	15,031	4,649	1,990	107	3	2	8	1,419	719	7	660	432
Exterior non-project public space:												
Contiguous to project	763	358	229	11		1		175	4		67	3
Off-project and other	24		3		2			1	1		1	1
Sub-total	787	365	232	11	2	1		176	5		68	4
Totals	71,859	24,023	8,611	273	2,554	12	97	4,840	8,110	2,312	1,853	8,425

[1] All incidents reported to NYCHA Police in 1969, excluding intra-household incidents.

tent as are other crimes. Surprisingly, only 23.6 percent of all serious crimes occur on the grounds of projects.

Crime types by building location

As previously mentioned, not only are certain areas more prone to crime than others, but certain types of crimes predominate in particular areas of a building. To explore this phenomenon we have examined locations for occurrence of the most numerous crimes: malicious mischief, lingering, robbery, burglary and drug offenses (See table 5–7). 91.1 percent of all malicious mischief (including criminal tampering) occurs in the interior of buildings. Unsuccessful attempts at burglary usually are reported as malicious mischief, and understandably, 50.0 percent of it reported is connected with the apartment unit. More people were arrested for lingering in the lobby than in any other place, followed by the hallway and stairway. The exact connection between lingering and the more serious crimes is uncertain, but a positive correlation does exist.

Over 62 percent of the serious felonies (as previously defined) committed in projects are robberies (muggings), and of these, the majority (76.4 percent) take place indoors, mainly in the elevator (19.0 percent). However, a significant number take place on the project grounds as well (23.6 percent). Burglaries, second only to robberies in frequency, form 32.8 percent of serious crimes and take place, by definition, in apartments; 81.7 percent of burglaries occurred here, most of the others occur in the community rooms. Finally, almost half of criminal activity connected with drugs seems to occur indoors, the most likely places being, in order, the stairways, rooftop and lobby. A significant amount (35.6 percent) occurs on the project grounds.

Table 5–8.—Apprehension by location
[In percent]

Robbery	Apprehended same day	Apprehended other day	Apprehended total
Apartment	3.2	0	3.2
Lobby	5.8	.8	6.6
Elevator	1.9	1.4	3.3
Stairway	2.4	1.4	3.8
Hall	3.6	1.5	5.1
Grounds	7.6	1.9	9.5

As mentioned before, only 23.6 percent of all serious crimes occur on the grounds of projects. This can be better understood when one examines table 5–8, outlining apprehension by location. For example, a criminal's chances of being caught committing a robbery on the grounds of a project are four times greater than in an elevator. Similar ratios hold up for all other interior locations. Naturally, since his aim is to avoid arrest, the criminal, whether desperate or under the influence of narcotics, will refrain from settings where visibility lessens his chances.

2. *Building height*

The investigation into the relationship between building height and crime was begun with the basic hypothesis that a positive correlation exists between the two; that as building height increases, so too, does crime. Recognizing the fact that height alone was not the reason for such a connection, we took into account the various other factors that usually attend high buildings: a larger number of apartment units and people using a single lobby, entry and elevators, with resulting anonymity; more interior public space hidden from view, and so on.

From the computer tapes of the New York City Housing Authority Police, the 1969 crime records for 100 projects were examined. These projects were selected to meet the following criteria:

- Buildings throughout an individual project had to be of uniform building type.
- The project had to be seen as a separate entity from the surrounding community.

Projects were divided into two groups those with buildings six stories or less, and those with buildings seven stories or greater. In addition, these projects were also divided by size, those under 1,000 units and those greater than 1,000 units.[1] The crime rate for a project was found by taking the total number of felonies, misdemeanors and offenses occurring in 1969 and dividing it by the project population. An analysis of variance was performed on the subsequent data and the results are contained in the following table.

[1] Population can be substituted for units to indicate project size. An examination of raw data revealed a linear correlation between the two, allowing such interchangeability.

Table 5–9.—Project size vs. building height

	Building height	
	≤ 6 stories	> 6 stories
≤ 1000 units	N = 8	N = 47.
	M = .047	M = .051.
	SD = .025	SD = .023.
> 1000 units	N = 11	N = 34.
	M = .045	M = .067.
	SD = .026	SD = .024.

N = Number of cases; M = Mean; SD = Standard deviation.

The apparent effect of height on crime is quite evident. In both building size categories, the mean or average crime rate jumps when one compares low buildings with higher buildings. (But what seems to be most interesting is the fact that buildings six stories or more, with over 1,000 units have the most severe problem and that larger projects in general have significantly more crime than projects of under 1,000 units.) In terms of our hypothesis, larger projects encourage crime by fostering feelings of anomie, irresponsibility, lack of identity with surroundings, etc., and our evidence indicates the ameliorative effect of low buildings, a phenomenon that seems to offset what one might assume to be a factor conducive to high rates of crime.

In the higher buildings a significant increase in average crime rate is seen when one compares the smaller project size category to the larger. The fact that projects greater than 1,000 units and with buildings of seven or more stories have the highest rate, indicates that it is not only large size, but large size in combination with higher buildings that contributes to a more criminally active situation. It seems that one can still maintain high density (size) and not encounter higher crime rates, as long as building height remains low.

Additional supportive evidence

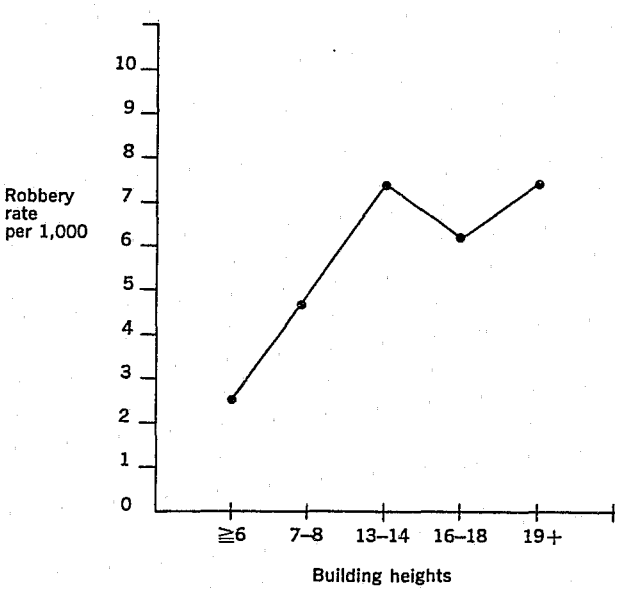
In addition to the above analysis of variance on project size vs. building height, various other evidence was found indicating trends supportive of the hypothesized relationship between building height and incidents of crime. Total felonies were compiled for all qualifying projects over a period of one year, including those exterior crimes that occurred near a building as well as interior building crimes (see fig. 5–11, p. 115). When this data, in the form of a ratio of felonies per thousand people was placed into four building height categories and examined, a dramatic increase occurs: from a mean of 9 for three-story buildings, the rate rises to 19 for 16 story buildings and taller.

Note that the felony rate remains relatively constant for buildings over 13 stories in height. It is our contention that the reason for this is that burglaries of apartments occur most frequently in ground floor apartments: three times as often as they do in apartments above the first floor. The higher the building, therefore, the proportionately fewer ground floor apartments and hence the fewer burglaries per building. Another factor to explain the apparent leveling off relates to the unwillingness of criminals to repeatedly "hit" the same building.

If one removes apartment burglaries from the gross figures and looks only at robbery (muggings) occurring in interior public spaces (elevator, hallway, and stairs), and once again examines this data against building height then, from a rate of 2.6 per 1,000 people for six story buildings, crime rises to a high of 7.5 per 1,000 people for buildings with 19 or more floors (see fig. 5–12).

When elevator crime was separated out for the year 1969, and examined according to building

FIGURE 5–12. Robberies in interior public spaces* for building height categories



*Elevator, stairs, and hallways.

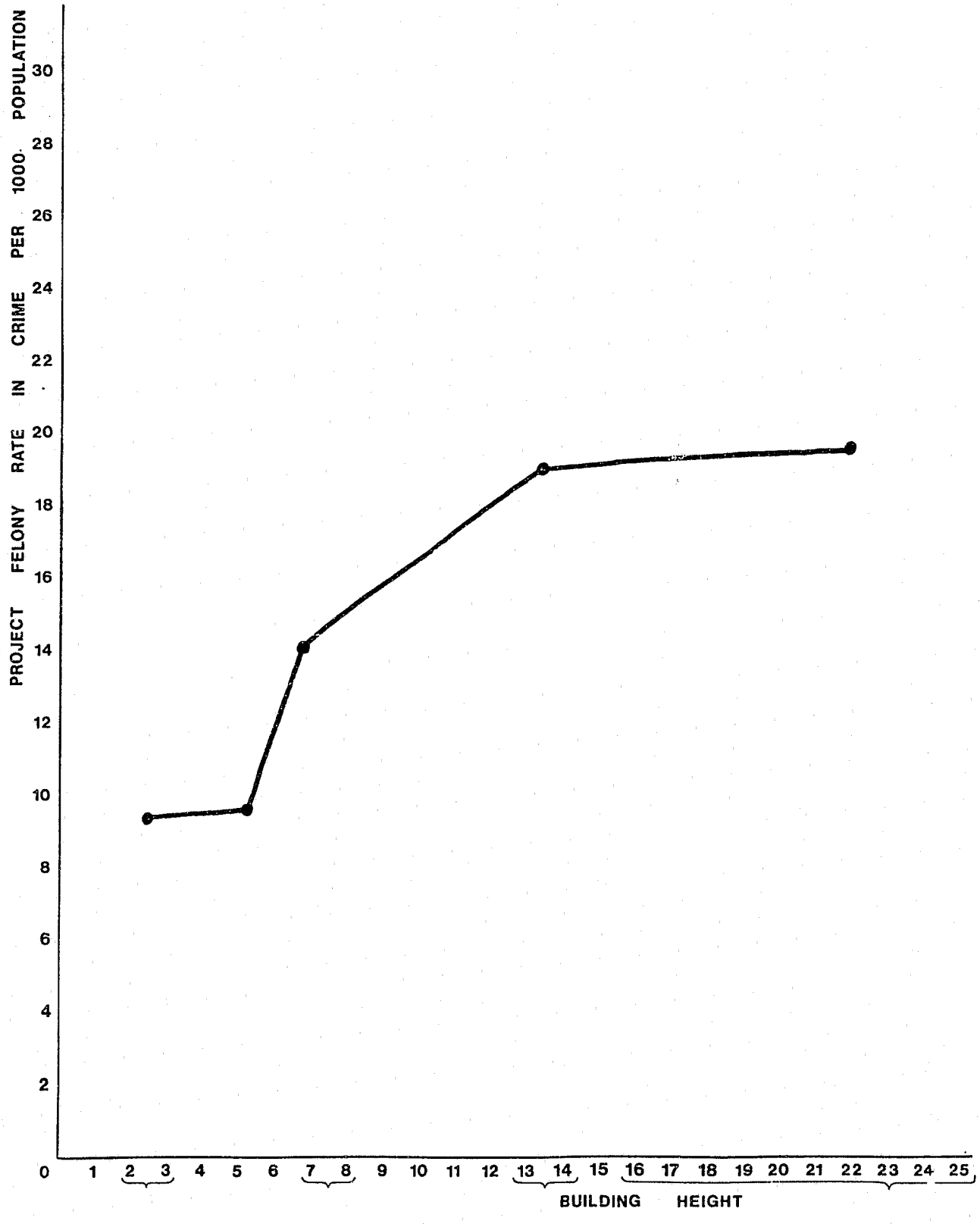
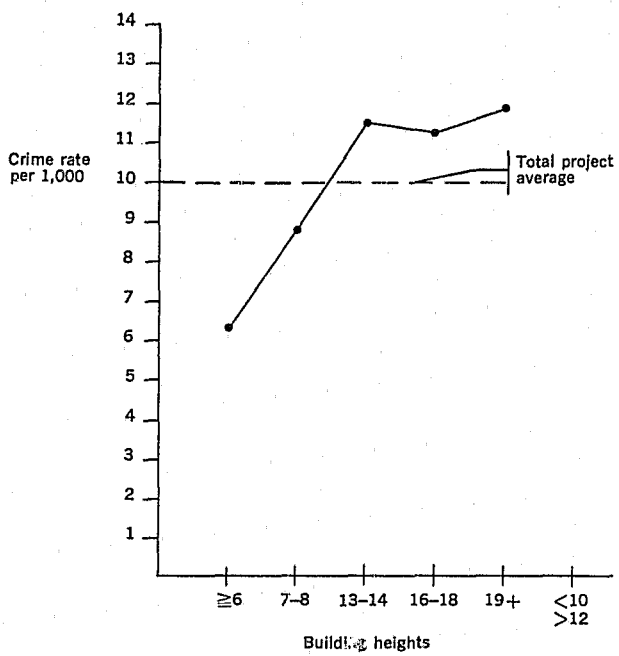


FIGURE 5–11. Project felony rate by building height.

FIGURE 5–13. 1969 Elevator crime reports average for building height categories



Building category	≧6	7–8	13–14	16–18	19+
Number per category	19	21	22	16	30
Crime incidents per 1,000 population	6.35	8.87	11.51	11.32	11.85

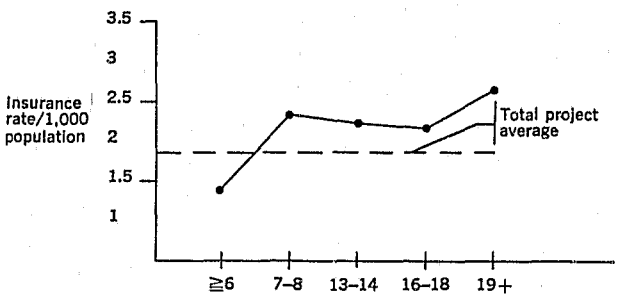
Sources: N.Y.C.H.A. police crime report 1969.

height, it was found that a definite increase in crime rate occurs as building height increases (see fig. 5–13). From six crimes per thousand population for buildings six stories high, the crime rate rises progressively to a peak of 12 per thousand population for buildings 19 floors or more.

Evidence supportive of the hypothetical connection between crime and building height was also uncovered when insurance claim reports against the housing authority were examined by the height of the building in which the incident took place (see fig. 5–14). Of these claims 69 percent were caused by mechanical failures in the elevators, and when the N.Y.C.H.A. elevator repair service was studied it was found that approximately 58 percent of these failures were directly attributable to vandalism (only 17 percent are due to equipment failure). Therefore, approximately 45 percent of all insurance claims are attributed to vandalism in the elevators. This, plus the fact that 68 percent of the claims are attributed to assault and vandalism make the findings, as illustrated on the following chart very supportive to the hypothesis.

A steady rise is seen to occur in the average insurance incidents per thousand people, from a low

FIGURE 5–14. Insurance claim reports by various building heights



Building category*	6	7–8	13–14	16–18	19+
Number per category	19	21	22	13	30
Average insurance incidents per 1,000 population	1.42	2.36	2.29	.....	2.67

Sources: N.Y.C.H.A. public liability reports January 1969–June 1971.

*In New York City, there are no projects which are entirely composed of buildings 9, 10, 11, or 12 stories high.

of 1.42 in buildings of six stories to a high of 2.67 for buildings 19 stories or higher.

Final additional weight to our initial hypothesis suggesting a positive correlation between crime and building height was provided by the results of a lengthy questionnaire directed towards tenants of three projects showing that tenant fear increases as the height of the building increases. On a scale of 1 to 5, safe to unsafe respectively, people living in a three story building rated themselves the safest (3.48). Those in 6–7 story buildings received a slightly higher average of 3.63 while a high of 3.66 was recorded for tenants of 10 or more story buildings.

3. *Size*

Project size

It was our initial feeling that larger projects would most likely experience higher rates of crime due to the impersonality such a place presents both to tenant and potential criminal; residents of large projects would be less likely to identify with their fellow tenants and the area as a whole. Such isolation breeds anonymity and alienation, two factors that make projects attractive to criminals.

When a two way analysis of variance was performed on project size and building type, those projects that were under 1,000 units in size had a significantly lower crime rate in both architectural types of buildings than those over 1,000 units. There was no statistical significant interaction between type and size.

Table 5–10.—Project size vs. building type

		Type	
		Point block	Double loaded corridor
≤ 1,000 units	N =	6	41.
	M =	0.054	0.051.
	SD =	0.031	0.022.
> 1,000 units	N =	4	30.
	M =	0.072	0.066.
	SD =	0.015	0.025.

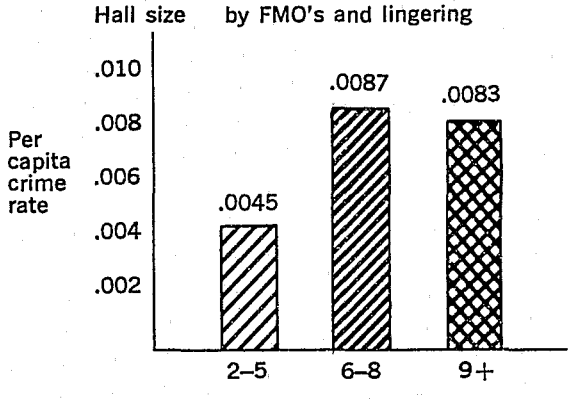
N = Number of cases; M = Mean; SD = Standard deviation.

Hall size

It was hypothesized that smaller halls or vestibules that give off to only a few apartments would provide a more inimical atmosphere for criminal activity than larger ones, by encouraging among the tenants proprietary attitudes and territorial prerogatives.

The exact relationship between hall size and crime was found by totalling felonies, misdemeanors, and offenses as well as lingering crimes that occurred in halls of project buildings. Examination of the results, as seen below in fig. 5–15, reveals a definite trend indicating that smaller halls (here defined as those with 2–5 apartments on them) have a much lower crime rate average than do larger corridors.

FIGURE 5–15. Relationship between hall size and crime



4. *Surveillance capability*

It was our initial feeling that in buildings where general visibility conditions are good, both through sufficient lighting and exposure to pedestrian and casual police circulation (and therefore to potential witnesses), crime would be considerably lower than in buildings lacking such factors. Also, the opportunity exists of a short, direct walk from public street and transit facility to the front door.

To determine the effect of location of buildings and its effect on crime, projects were divided into three categories.

a. Those with buildings facing and within 50 feet of the street.

b. Those with buildings facing and within 50 feet of the street and with good lobby visibility (large window area)—a subcategory of (a).

c. Those with less than 30 percent of the buildings facing and within 50 feet of the street.

The total number of felonies, misdemeanors, and offenses (FMO) was calculated for all projects as well as for the three categories, and a rate per thousand population was determined (see table 5–11).

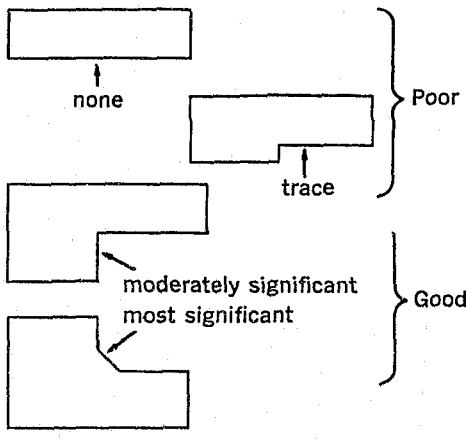
The lowest rates were recorded for the second category (optimum surveillance possible). The highest rates occurred in the third category where most buildings had poor surveillance potential. Evidently, the orientation of a building to the street and the design of its lobby bear a direct effect on the attractiveness it possesses to criminal elements. A project with buildings facing and close to a street, with lobbies visible to passers-by, is less likely to experience as much crime as one where these factors are not present.

Table 5–11.—Surveillance (building relation to street)

FMO's in lobby	Crime rate per 1,000	Projects
(a) Projects where all buildings are facing and within 50′ of street	5.3	22
(b) Projects where all buildings are facing and within 50′ of street and having good lobby vision	4.4	12
(c) Projects where less than 30 percent of the buildings are facing and within 50′ of street	9.7	21
All projects	7.5	140

Projects were examined and divided into two main groups: those with buildings having good definition of entry, and those that had poor definition of entry (see fig. 5–16).

FIGURE 5–16. Type of lobby entry as defined by shape of building



In addition, the same projects were also divided into two groups good and bad according to quality of lobby visibility, from the outside primary door. Those projects that fell into both good design categories were labelled cateory 1, those which qualified as good on only one design feature formed category II, and finally, those projects in which buildings were rated poor on both counts were listed under category III. Felonies, misdemeanors, and offenses occurring in both lobbies and elevators were totaled for all projects concerned.

The results, as found in the following table, underline the importance of the effect of design on discouraging crime.

Category I projects, in which buildings were rated good on both counts, had a comparatively low crime average. Category II had slightly higher crime rates, while the highest rates were recorded for catgory III where both design factors were considred poor.

Table 5–12.—Effect of lobby visibility and entry design on crime rate

Category			Crime rate (F.M.O.s) per 1,000	
			Lobby	Elevator
I.		Good visibility/good entry definition	7.3	3.8
II.	(a)	Poor visibility/good entry definition	7.8	4.5
	(b)	Good visibility/poor entry definition	..	..
III.		Poor visibility/poor entry definition	8.6	4.6

When separate scores were calculated for both parts of category II, it was discovered that for both the elevator and lobby, crime rates were higher when visibility was poor than when it was not, clearly indicating to us that of the two design factors, visibility seems to be the determining one for crime rate, not entry definition.

Table 5–13.—Category II

Category			Crime rate (F.M.O.s) per 1,000	
			Lobby	Elevator
II.	(a)	Poor visibility/good entry definition	8.9	4.9
	(b)	Good visibility/poor entry definition	7.2	4.1

A final indication of the relationship between visibility and crime was discovered when robberies occurring in elevators were examined (elevator robberies were the most numerous of the major crimes in 1969). The annual rate per thousand population for those elevators judged not visible from outside the main entrance was 3.8 compared to a considerably lower 2.3 for elevators that were visible.

Chapter 6. Predecessors

Our recognition of the significance of territoriality is by no means new to the architecture and urban design profession. Many have begun to perceive the need for scientific investigation as a substitute for esthetic bickering. To date, most advocates of the importance of respecting territorial needs of man have had little more than personal and naturalistic observations with which to back up their pleas. Jane Jacobs, Marc Fried, Walter Firey, Lee Rainwater, and Christopher Alexander are among the many who have intuitively recognized the wisdom in this approach but have so far been unable to provide definitive data in support of their insights.

Previous advocates of the importance of territoriality were content to laud its praise as a social mechanism in rather vague terms. It was not until the current epidemic of crime that some of the risks of careless architectural decisions have become clear. If society cannot insure physical security, a fundamental biological need, then we have passed the point of dealing with vague, evanescent social requirements like happiness, fulfillment or satisfaction (at best difficult to measure). The toll of good or bad designs has finally become estimable in terms of real human events, and in dollars and cents. The advantage of studying the impact of design on crime and security is that it narrows the outcome variables to easily measurable, quantifiable indices of success or failure.

For historical purposes it is important to pay particular tribute to Elizabeth Wood and Jane Jacobs because of their clear commitment to the principles embodied in this manuscript, coupled with an abiding involvement in public policy. There are many others who could be cited as intellectual predecessors who have espoused these principles in theory. It is important, however, to recognize the unique impact of Jacobs and Wood who entered directly into the foray while operating within the economic and social constraints of their times. In this chapter, we discuss architectural practitioners who have experimented with and realized the importance of territoriality in individual projects and on a more limited scale. Jane Jacobs and Elizabeth Wood are, in a sense, the spirit, the voice, and in some cases the inspiration of these many isolated efforts.

A. Elizabeth Wood and Social Design Theory [1]

In the early years of public housing, one of the prime advocates of the importance of physical design considerations in achieving social objectives was Elizabeth Wood. It was her long-standing contention that housing project managers can never hire enough janitors, policemen, guards, and grounds-men to pick up after, or stop the vandalism of, a hostile or an indifferent tenant groups." [2] Throughout her years with the Chicago Housing Authority, Miss Wood's efforts were directed at providing a richer and more fulfilling environment for low-income populations. She advocated the provision of places within housing projects to en-

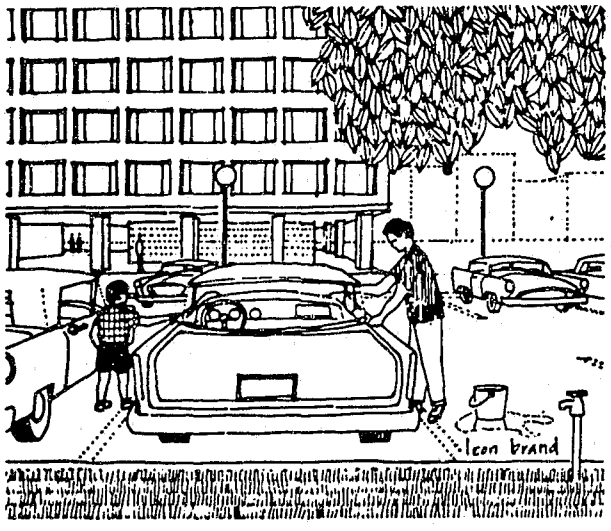


FIGURE 6-1. Car washing within project grounds.

[1] Wood, Elizabeth. *Housing Design, A Social Theory.* New York, Citizens' Housing and Planning Council of New York, Inc., 1961.

[2] *Ibid.*, p. 4.

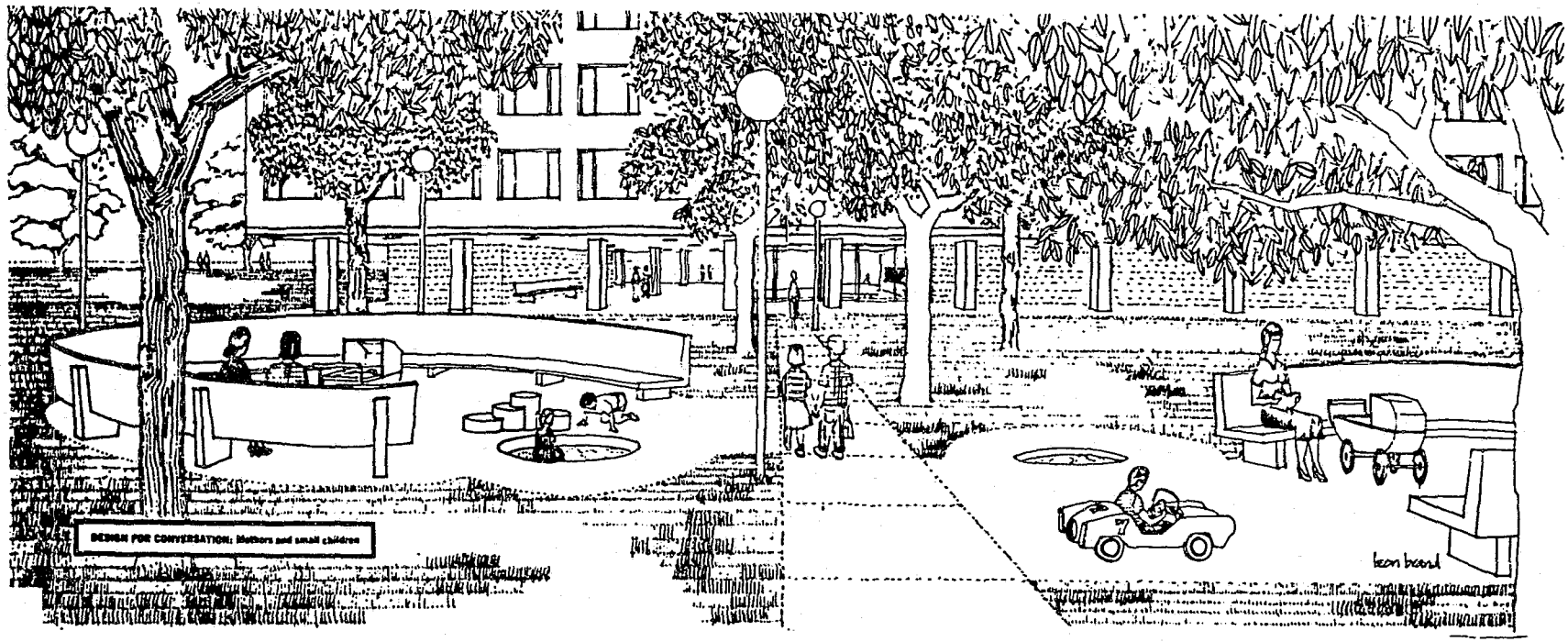


FIGURE 6–2. Children's recreation areas and adult sitting areas situated within view of apartments, themselves.

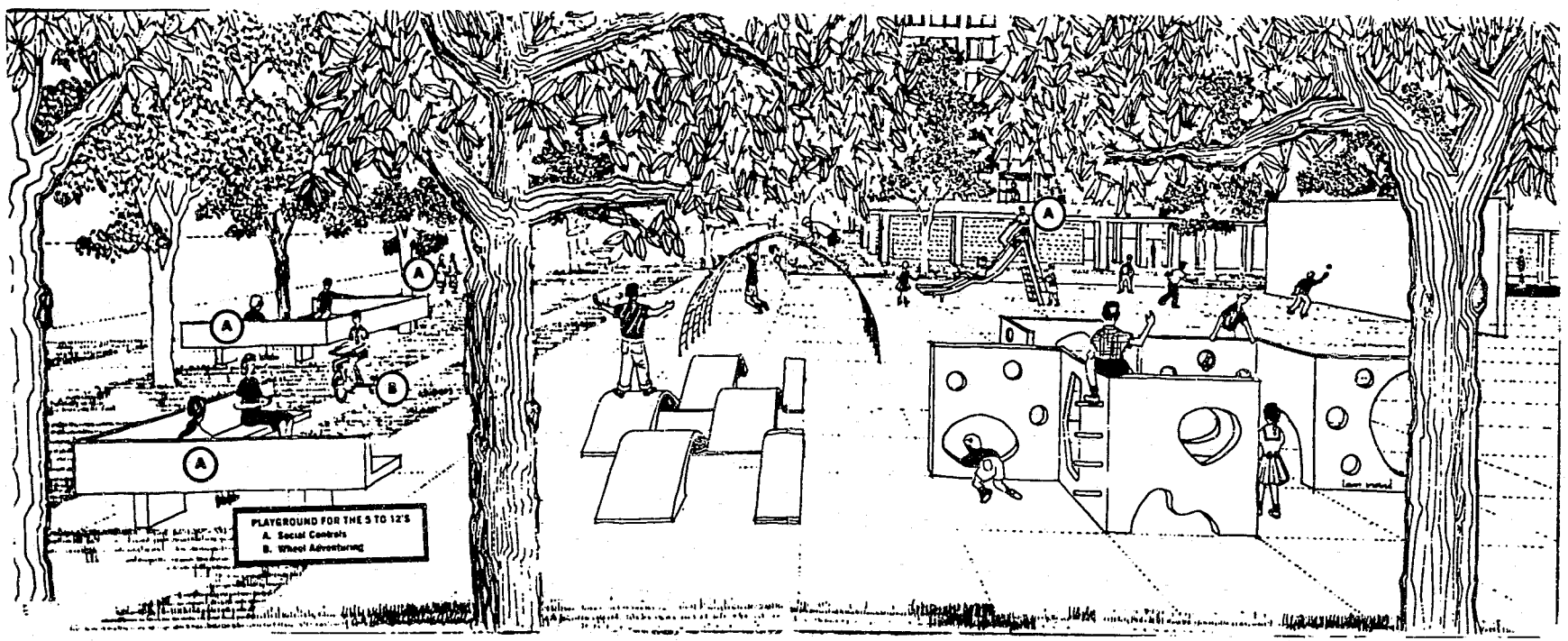


FIGURE 6–3. Children's playground and adult sitting area.

able tenants to pursue active exercise; the necessity for providing fresh air and sunshine inside a building and out; the need for people to be able to get away from one another and for meeting places of all types: shops, churches, centers, and additional places where domestic chores (car washing—see fig. 6–1, p. 119) could be accommodated within the project grounds. In articulating design mechanisms for achieving these goals she framed an important set of guidelines for improving the security of low-income residential environments.

A primary design goal manifested by her ideals was the improvement of visibility. She recommended that children's recreation areas and adult sitting areas be situated within view of the apartments themselves (see fig. 6–2 and 6–3, pages 120 and 121). For high-rise developments, the "gallery-in-the-sky," or exposed single-loaded corridor was suggested (see fig. 6–4, below).

Another design goal she offered was the creation of spaces for loitering (see fig. 6–5, p. 123). These were places where persons could meet casually to chat for a while. Miss Wood was especially sensitive to the needs teenagers have for this kind of loitering, and she concluded that if they were unable to loiter in acceptable places, under social control, they would loiter in unacceptable places without social control. In a vast proportion of public housing projects, teenagers have only lobbies and stairhalls in which to gather. They end up committing acts of vandalism, annoying nearby residents, and are routinely, if temporarily, chased off.

Several alternative types of outdoor seating, reasonably removed from any building, were encouraged for teenagers. These made use of the controls provided by anyother facility, e.g., a shopping area, a soda shop, with adjacent outdoor benches as a source of control. These locations would be a minimal nuisance to residents and would be recognized by teenagers as a proper place for meeting away from the influence of their parents; at the same time they would retain the advantage of being highly visible and easily subject to outside supervision (see fig. 6–6, p. 124).

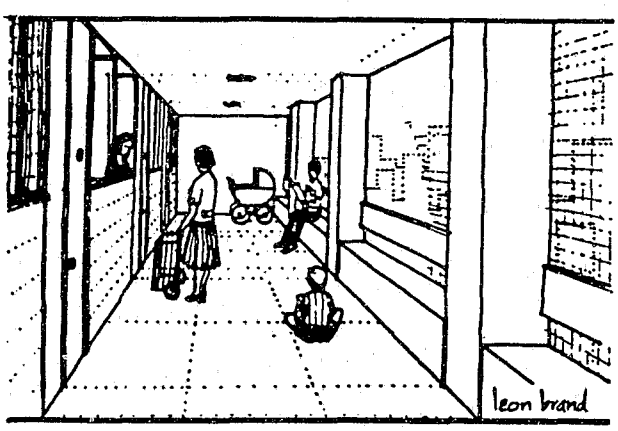


FIGURE 6–4. Design for visibility in high-rise developments: outdoors—upstairs.

Miss Wood's concept of the social control of residential areas is predicated on the presence of and natural surveillance by residents. Areas that are out of view and unusued are simply without control. Of course a viable social control structure involves many other factors such as residents' response to committed acts and the knowledge that a community exists which will not tolerate certain behaviors. Perhaps most significant, Miss Wood recognized the possibility that opportunities for spontaneous social control could be eliminated easily by negligent design. Were there no opportunity for residents to perceive one another as neighbors, if play areas were isolated, if legitimate loitering places were nonexistent, then even a strong community lore could not maintain acceptable levels of proper conduct and safety. Conversely, she argued, a plan which invited relations among neighbors, where legitimate gathering places are open to all, where apartment windows look out upon a variety of activities, increases the potential for community social control.

Miss Wood endeavored to create a design vocabulary based on these goals. She advocated use of exterior corridors to bring play and sitting areas closer to apartments. She proposed that lobbies be utilized as planned loitering areas, through the expansion of their present area and their esthetic design, and adding new functions through seating, soda machines, and rest rooms (see fig. 6–7, p. 125). More importantly, she advocated that such lobby areas be entirely open to public view and brightly lit. Again, these design measures would, she hypothesized, fulfill the social function of making the lobby safer for residents and less comfortable for criminals.

A related idea of Miss Wood's was to open up vast portions of the ground level of a building. These areas could then serve as play or loitering space, and would be usable in bad weather.

As a further link in the social control mechanism, she suggested the appointment of a tenant to act as "concierge" for each high-rise building. The concierge would not need to be a maintenance man or woman, but rather a readily available link

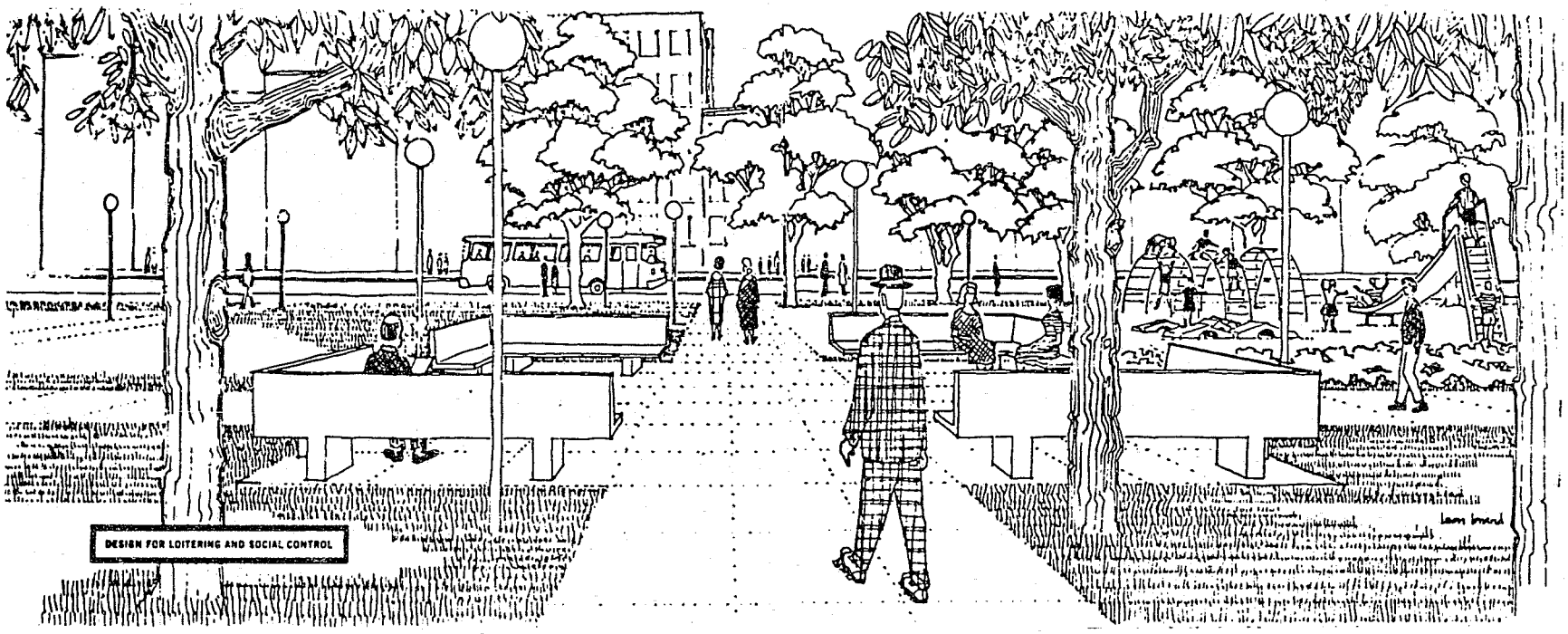


FIGURE 6–5. Design for loitering and social control.

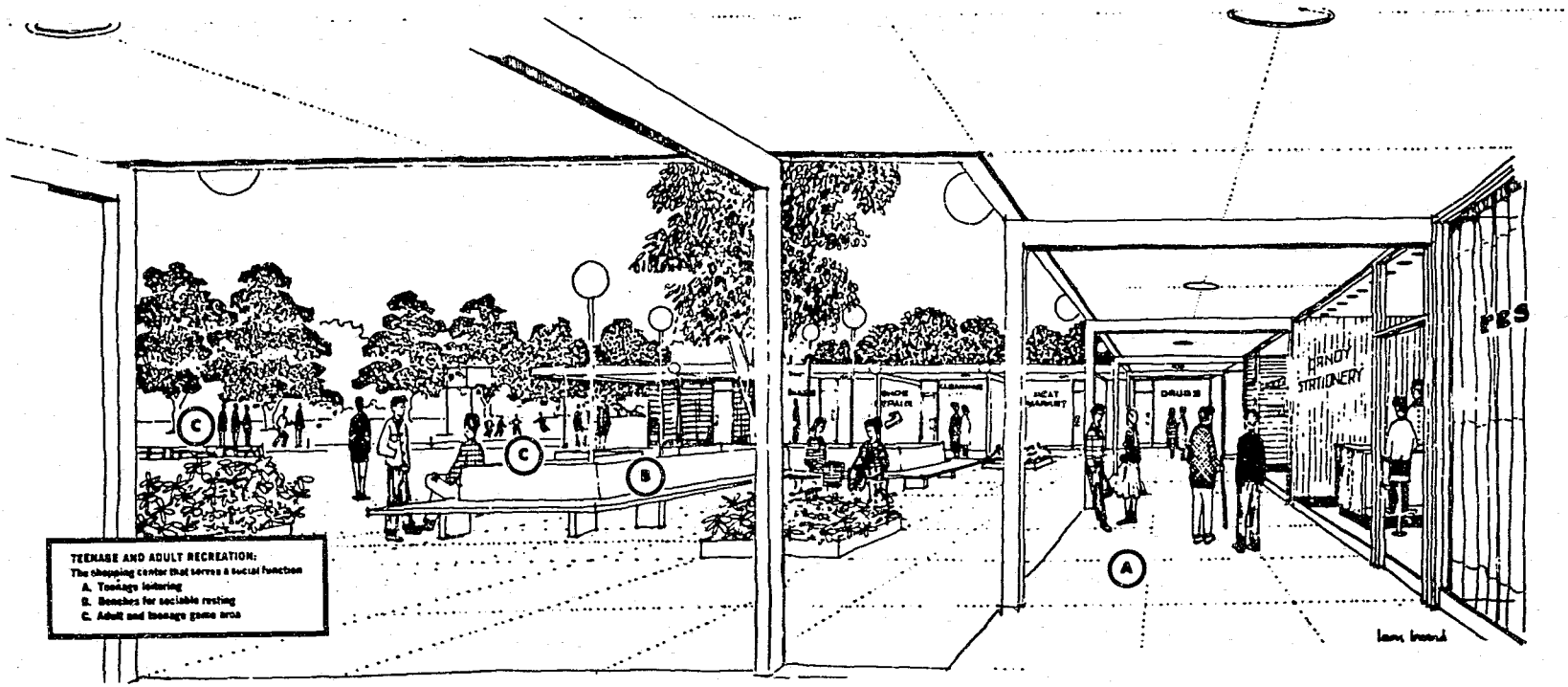


FIGURE 6–6. Teenage and adult recreation areas.

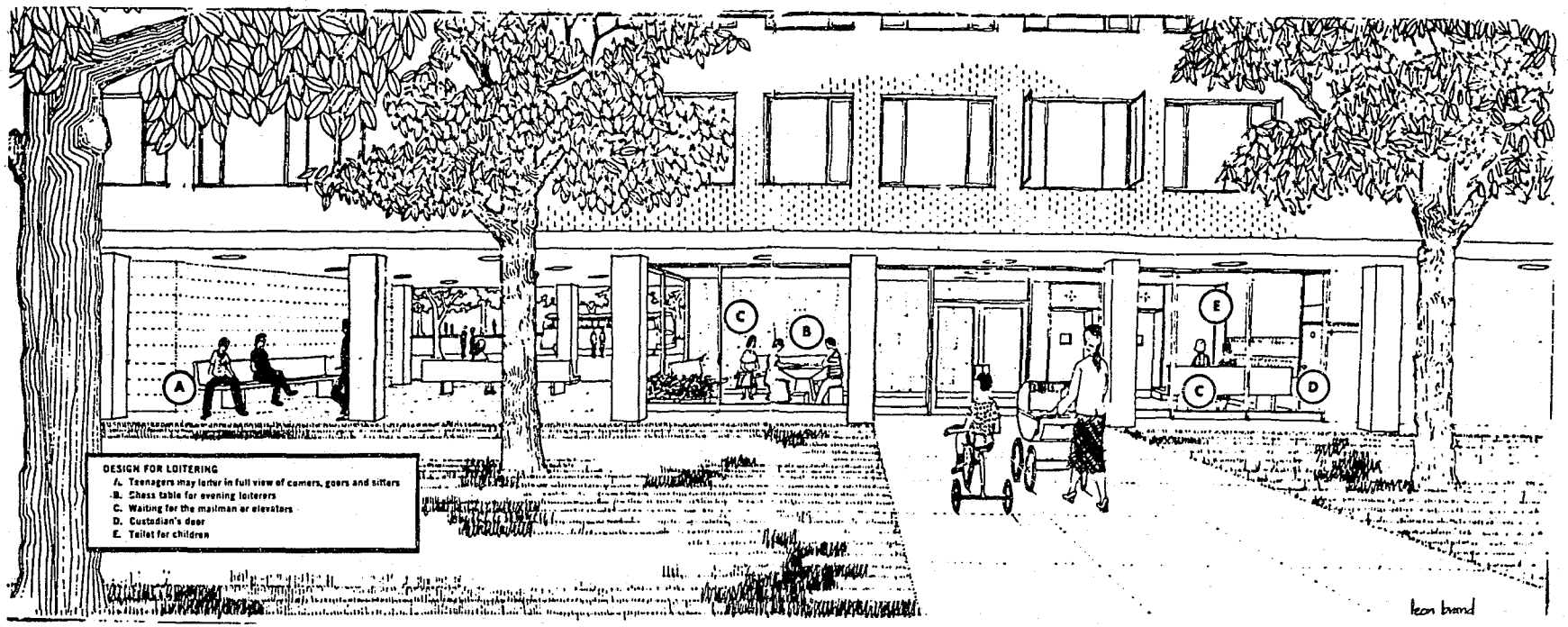


FIGURE 6–7. Use of lobbies as planned loitering areas.

to the management and a natural focal point for community activities. Again, such a person, knowing virtually all the normal activities of tenants within their building, would act as a strong agent of security by recognizing and reporting all suspicious behavior. It is interesting to note that during World War II when male help was in short supply, tenant women were employed by housing authorities to provide janitorial service for the buildings in which they lived. This program is said to have resulted in cleaner buildings at lower cost with the added benefit of a controlling body motivated toward reducing its own work load.

Elizabeth Wood was perhaps the foremost practitioner of social design in the field of housing. Her goals and designs resulted from years of experience and well-tuned instincts. There have, however, been few opportunities to realistically test her hypotheses as an empirical totality. A few buildings in Chicago were constructed incorporating some of her directives; but the designs were so compromised that they allow no test of the success of the components of her approach.

B. Jane Jacobs: Death and Life of Cities [3]

Jane Jacobs is the great defender of the quality of life in the dense core areas of the 19th century industrial American city. A newspaperwoman by trade, the great asset Mrs. Jacobs brings to her work is her sensitivity to the subtle nuances of the urban environment—to the ambiance of street life. Her strong commitment to informal means of social control is highlighted by the following harsh judgments on modern city planners:

> Deep and complicated social ills must lie behind delinquency and crime, in suburbs and towns as well as in great cities. It is sufficient at this point to say that if we are to maintain a city society that can diagnose and keep abreast of deeper social problems, the starting point must be * * * to strengthen whatever workable forces for maintaining safety and civilization do exist—in the cities we do have. To build city districts that are custom-made for easy crime is idiotic. Yet that is what we do * * *
>
> The first thing to understand is that the public peace—the sidewalk and street peace—of cities is not kept primarily by the police, as necessary as police are. It is kept primarily by an intricate, almost unconscious network of voluntary controls and standards among the people themselves, and enforced by the people themselves. In some city areas—older public housing projects and streets with very high population turnover are often conspicuous examples—the keeping of public sidewalk law and order is left almost entirely to the police and special guards. Such places are jungles. No amount of police can enforce civilization where the normal, casual enforcement has broken down.[4]

A city street, Mrs. Jacobs points out, is populated with strangers. Individuals must feel when they walk the streets that not only will any wrong-doing be apparent to other persons, but that something will be done about it. We know that under certain circumstances people will not respond to crime. However, the vast majority of persons will intervene if they feel themselves personally threatened. Mrs. Jacobs is quick to note that some of the poorest, densest and oldest neighborhoods, such as Boston's West End, or Back-of-the-Yards in Chicago, have lower crime rates than far more affluent communities.

The basic requisite for the functional surveillance she advocates is diversity of use. Business establishments provide persons with a proprietary interest in the street directly in front of them. In addition, stores give people a reason for using the street—they create a flow of pedestrians. Such streets also become usable as travel routes, because they offer not only a variety of anticipated sights and sounds, but a degree of safety through surveillance. Finally, an active street simply attracts people who want to be "where the action is."

This view of the role of commercial facilities reverses the prevalent image of such places as magnets of danger. A busy bar, with its constant flow of patrons, and a proprietor accustomed to handling all types of abnormal situations may evolve into a security asset rather than a haven for ne'er-do-wells.

Mrs. Jacobs presented several other techniques for promoting the intricate interrelationship that results in felt and actual security. One important point she makes is that transient or unconcerned residents who do not know the rituals and personalities of the street are less effective surveillance agents than those who do. Dwellings only provide surveillance if the resident is concerned enough to look out of the window, to watch the street with a sense of concern for the community.

Street play, according to Mrs. Jacobs, is a most important and indicative element of street life. Children can act as witnesses, and their mothers, usually only a short distance away are there to back them up. Within this framework, playing in the street becomes highly desirable. Children, like adults, prefer places that are lively and they enjoy participating in or simply watching activity. Streets,

[3] Jacobs, Jane. *The Death and Life of Great American Cities*. New York, Vintage Books, 1961.

[4] *Ibid.*, pp. 31–32.

she theorizes, should be made inviting to children; play areas should relate to homes. The active, varied street is an ideal play area for enriching children's experiences and they, in turn, enrich the street by their presence.

The physical configuration of a city favored by Mrs. Jacobs is one composed of short blocks. This design affords the pedestrian more varied and intricate views, and ultimately greater choice. Each intersection presents a new panorama as one walks across it.

Nothing contrasts more sharply with this image than the average public housing project. Mrs. Jacobs reserves her most scornful judgments for the planners and builders of large scale public housing.

The large open spaces, the unsurveyable corners, the lack of diversity in public housing call forth her description of them as the "Blight of Dullness."

Normal streets have a clear definition of public areas, semiprivate building zones and distinctly private apartment units. In many large housing developments, these demarcations are nonexistent. There is little or no differentiation between a sidewalk within a project and a lobby or even a hall corridor. At the same time there is insufficient surveillance in these areas to provide the advantages inherent in more diversified public streets.

In general, the design directives Mrs. Jacobs advocates for public housing would alter existing housing projects to conform to the urban street pattern. Stores could be included within their boundaries; play areas could be as close to apartments as possible; exposed galleries might be tried as a partial solution. But most of all, streets and their associated activity could be brought into the body of the project. The alleged serenity of trees and benches would give way to casual but uniquely exciting urban activities of all sorts.

While one might question the wisdom of extending her formula to new housing design, the pointedness of her criticism cannot be mistaken or easily deflected. It is her rediscovery of the function of street as places of interaction, unique to the urban environment, for which she will be remembered. The limitation of her approach is that it is the result of observations of existing, well functioning urban communities, and not from a more general theory of human social behavior. The guidelines she frames are tied to specific facilities, e.g., the inclusion of shops in projects, the intensification of street play areas, etc.

Where they have been incorporated into existing public housing they have produced marginal or disappointing results. Of course, one cannot merely graft these facilities onto traditional high density projects and expect to induce authentic changes in their underlying character. And yet Jane Jacobs has not provided any alternative means of designing new high density communities which would foster the positive attitudes and behaviors she advocates.

As important as it is that the lessons of history should be evident in their design, new high density housing cannot be built as simple reincarnation of past solutions.

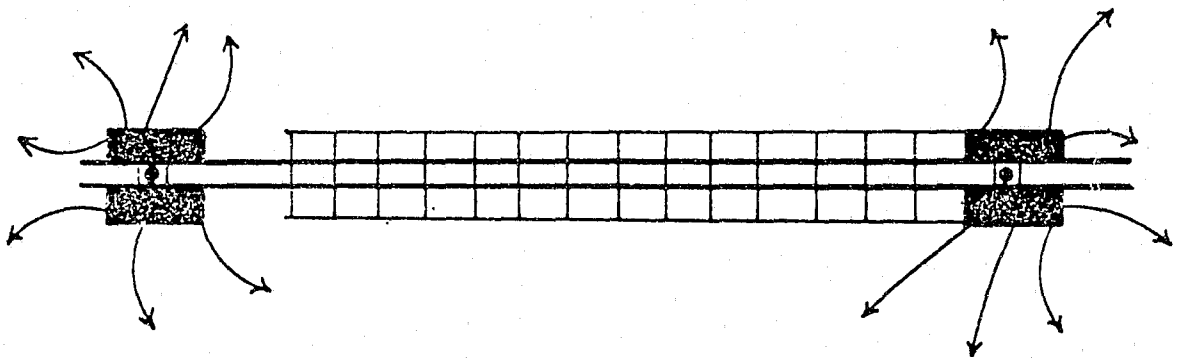
C. Schlomo Angel's Determinism

In recent years, there has been widespread acceptance of the significance of including opportunities for surveillance by local residents and police in the design of both residential and commercial facilities. Some examples of this new consciousness are illustrated in this chapter on architectural practitioners who have in some way employed defensible space design principles. Frequently, however, the underlying motivation for including opportunities for surveillance is not a matter of design philosophy but merely a functional need taken in isolation from other design criteria—that is to increase the probability that crimes will be witnessed by passersby, store owners, or local residents. Some investigators have underscored the importance of surveillance as a deterrent to crime without highlighting the relationship of surveillance to principles of territoriality. What results is a functional system in which deterrence of crime is based on the actual or implied presence of police or their surrogates. Design for surveillance, when not reinforced by a system of defensible spaces, might achieve little more than a shift in the location of crimes to less public, less intensely used places. Defensible space design, on the other hand, is intended to bring all spaces in the city under some degree of surveillance and local control, and to serve to inhibit or discourage crimes of opportunity in all locations.

An example of the functional approach to surveillance design is afforded by Schlomo Angel in his publication, Discouraging Crime Through City Planning.[5] Mr. Angel reasons that the primary

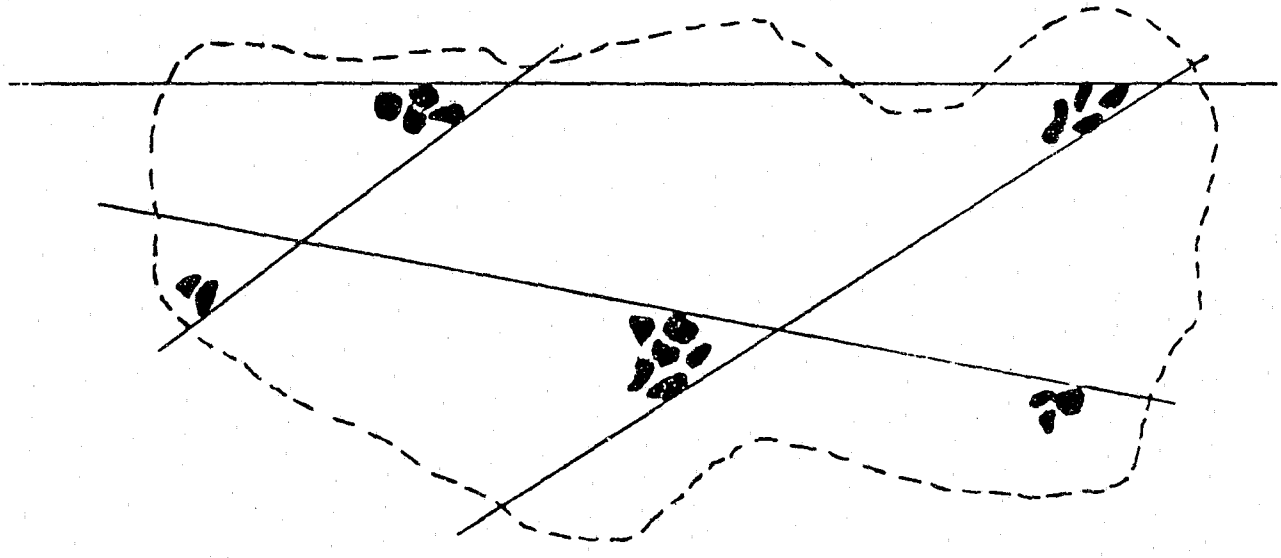
[5] Angel, Schlomo. *Discouraging Crime Through City Planning.* Berkeley, The University of California, 1968.

Configuration No. 1. Strip commercial development along arteries should be divided into two types of sections, those which are deserted in the evening and those which remain open. All those which remain open should be agglomerated in clusters at the main pedestrian access routes to high density residential developments. Bus stops should be distributed such that evening stops are in the center of these agglomerations.



Pedestrian-flow in and out of high-density dwellings should be encouraged to pass through these agglomerations in order to assure the desirable channel intensities.

FIGURE 6-8. Schlomo Angel's Concept of the "Evening Square."

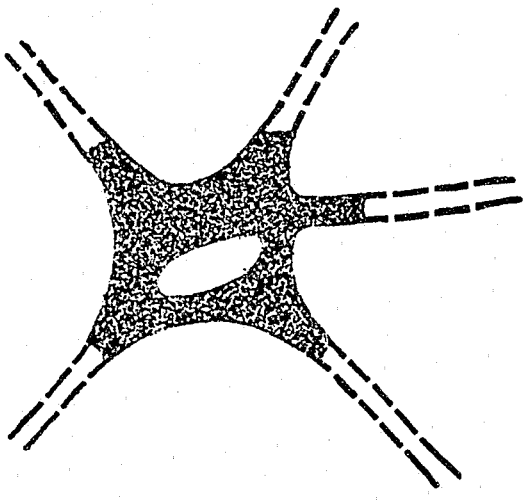


Configuration No. 2. Location of evening squares.

Physical details of "evening squares":

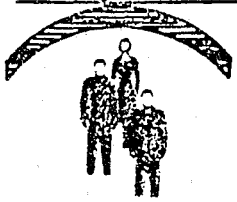
The following is a partial list of configurations which are to hold in the small and large "evening squares" whenever possible in order to assure optimum performance. No differentiation in form between the small and large squares is provided at this stage. Most of the rationale for these configurations should be apparent from the preceding theoretical discussion.

Configuration No. 3:



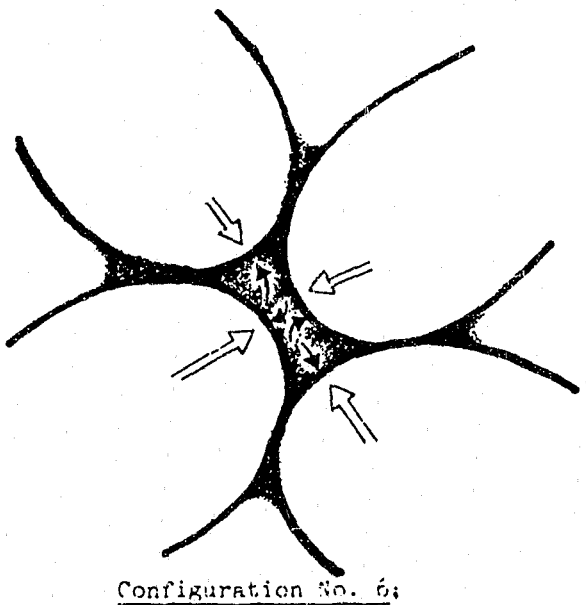
All circulation paths inside the square are heavily used. Little-used circulation paths can be blocked off and circulation paths serving daily establishments are not required for movement. Amount of circulation space provided is enough for people to come and rove about without using commercial establishments, and channels make it possible to take tours.

Configuration No. 4:



Square is to function all year round. Pedestrian areas are protected against rain, wind and hot weather.

Configuration No. 5:

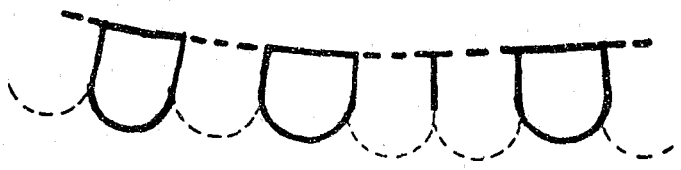


All establishments in the square are oriented toward the public areas. People can see inside from the public areas and people from inside establishments should be able to survey the public area.

Displays do not obstruct visibility from inside out and vice versa.

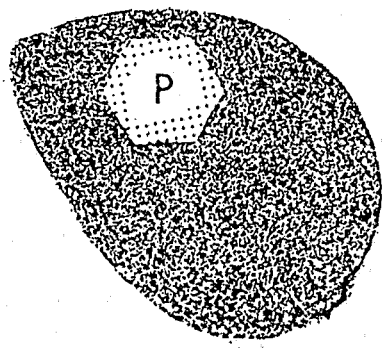
Maximum unobstructed visibility of pedestrian approaches to square. Adequate uniform lighting to insure maximal visibility conditions.

Configuration No. 6:



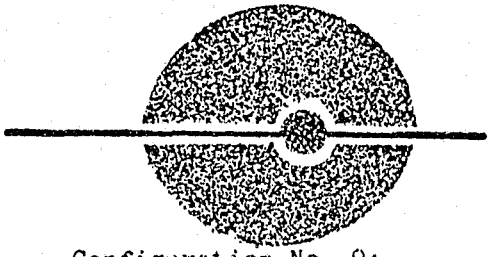
Frontage of open establishments well exceeds that of closed ones. No strip of closed frontage more than 60 feet in length.

Configuration No. 7:



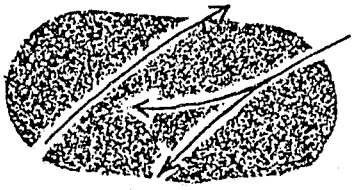
Parking areas are not in fringe, but inside limited areas in the square (above ceiling, below, behind, adjacent). Well-lighted, visible pedestrian walkways in parking areas. No obstructing barriers for clear vision. No easy access to parking areas from the fringe areas.

Configuration No. 8:



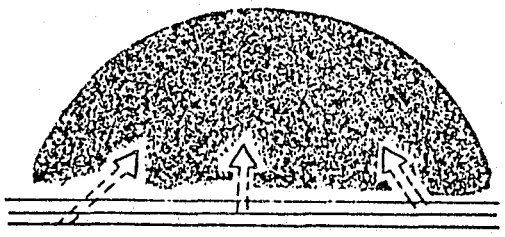
Bus terminal or bus stop is inside the square or with a very direct, clearly-visible access to it.

Configuration No. 9:



Provision of passageways to attract pedestrians who are only passing through.

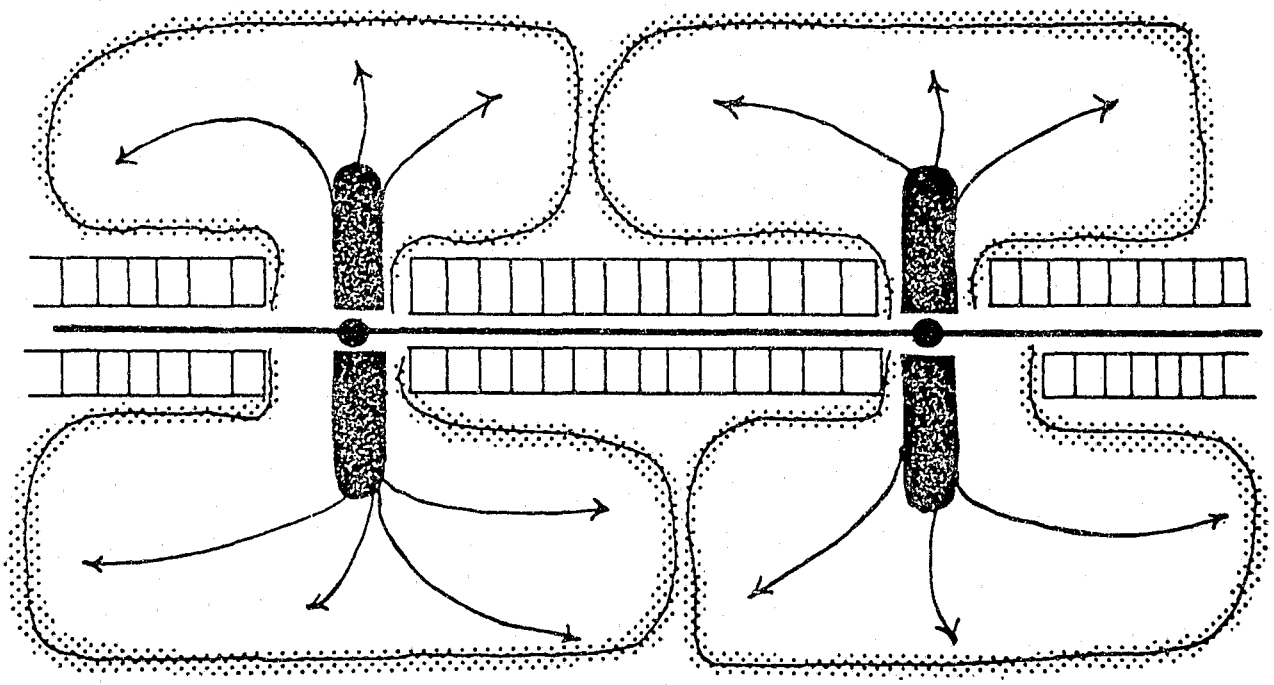
Configuration No. 10:



There are provisions enabling cars passing by to observe the people in the square, and to see the activities inside and provisions for stopping, turning, etc. after seeing it.

These squares will have the potential of assuring maximum safety. Users which arrive by car can be provided with internal parking, others may come by means of public transportation into the squares.

Configuration No: 11: The evening squares, particularly the smaller ones that cater to the high-density residential neighborhood should be located in the most central access points to the neighborhood. They should be located along a major arterial but should extend into the residential areas while maintaining safe intensities of use.



deterrent to crime is the presence of police. As a corollary notion he posits that high-intensity use of an area deters crime by providing large numbers of effective witnesses; low intensity of use, on the other hand, discourages crime by eliminating the necessary number of potential victims. He concludes that there is a critical intermediate zone where intensity of use is moderate, where sufficient criminal opportunities abound, and where there are insufficient numbers of witnesses to deter crime. It is in this critical zone that he predicts the maximum number of crimes will occur.

Given this as yet untested hypothesis, Mr. Angel goes on to develop a series of design suggestions and directives to achieve its intent. His suggestions include: the concept of the "evening square," the concentration of evening businesses into circumscribed zones, allied with mass transit and parking facilities. These evening squares would have the character of oases of security dotted along major arterial paths and isolated from their surrounding or adjacent residential communities. Businesses, open at similar hours to maximize surveillance, would be concentrated in these areas and would face inward to large unobstructed well-lit central areas. Pedestrian traffic would be channeled through them to increase the presence of effective witnesses to crime. See figure 6–8, pages 128, 129, 130, 131 and 132.

While this approach recognizes the importance of surveillance as a mechanism of crime control, it fails to articulate the motivation of the observer, his willingness to act as a witness, and the factors which prompt reaction to crime on the part of by-standers. The approach still delegates to police the primary responsibility in deterring and fighting crime.

It is more important to recognize that there is a limited reservoir of human energy in any community that can be pressed into service to achieve functional surveillance. People are on the streets or in transit only a limited number of hours during the day. The presence of people on or near the street is clearly a deterrent to crime, but the concentration of their daily activities into isolated

zones may have sigfinicant detrimental side-effects on surrounding low-intensity areas.

First, there is a strong possibility that the pattern of crime will be shifted to low-intensity areas. This end of the hypothetical critical intensity model should be tested. We have observed many instances of public housing projects with rather low intensity of use where crime and fear of crime run rampant. Criminals merely sit and wait, sometimes for hours, for a potential victim. Because of the low intensity of use and the public nature of the facilities, there are few who feel they can question strangers and exercise social control over people lingering around their home. In these settings, criminals have no incentive to keep on the move or to stay in hiding. They feel comfortable enough to sit and wait for a victim to arrive.

Second, and perhaps more important, Angel's proposals would increase the alienation of neighbor from neighbor, making it possible for them to meet only under the intense spotlight of public facilities. What his approach fails to recognize is that surveillance is not a one-dimensional activity. Surveillance near the home brings with it a different range of feelings of violation and impulses to respond than surveillance in the public square. If it is apparent that they live on the block, the presence of two or three people standing on a street of brownstones in New York may equal the cumulative deterrence of 50 people on a major public thoroughfare. This because the presence of two residents in a system of defensible space implies the presence of their families, neighbors, and other residents of the area; it causes a would-be criminal to detour around the area.

Third, the primary mechanism of crime control in Mr. Angel's view is the implied presence of police. The real goal of crime control should be education as well as deterrence. This requires recognition by criminals that individual people will not allow themselves to be victimized once they are supported by a community of other potential victims.

Criminal courts and the system of punishment remain an abstraction to the criminal imagination; criminals do not plan on being caught. Given this state of affairs, fear of punishment can never be as effective in deterring crime as observation of the effects criminal acts have on individual people. Youngsters who commit crimes can best be taught to inhibit these impulses by observing the actual outrage of a community, provided that the community persists in acting within the law. The controlled, carefully designed, rational punishments of society cannot hope to convey this lesson as convincingly as face-to-face reactions. It is important to find ways in which individual citizens can act in the fact of crime, without resorting to extremes of behavior, either actively taking the law into their own hands or passively shifting all responsibility to police.

While evening squares might control crime within their bounds, they do so at the expense of vast portions of the reservoirs of available human energy which might better be expended in smaller parcels, near the home.

Fourth, from the point of view of city planning, Mr. Angel's directives imply more megastructures, channeling limited community resources into concentrated areas which operate as parts of a megalopolitan plan. One evening square cannot really function effectively without the implied or actual presence of a network of such squares. The problem is to find solutions based on empirical evidence which: (1) Allow us to make decisions about the future form of our cities which avoid the sin of hubris, the sin of men who dared to be more than men, and (2) allow decisions to be made on the local level, guided by a larger framework or philosophy.

Finally, from a technical viewpoint, it is conceivable that criminals would adapt themselves to the new rhythm of the evening square. Instead of concentrating their activities during the peak evening hours when security is high, they will learn to respond at appropriate points in the cycle of startup and shutdown of the evening square. For example, they can wait until the crowds begin to dissipate, at the end of the evening, before showing up on the scene, after the critical mass of observers or witnesses has been reduced below threshhold. Mr. Angel's plan conjures up an image of storeowners and shoppers showing upon schedule, all at once, and leaving behind them a ghost town, all at once, when the clock strikes 12. The proposals bring with them an implied bureaucratization of life that would further curtail the freedom of city-dwellers to engage in spontaneous activities.

While superficially similar to our own approach, there are vast differences between the underlying intent of surveillance design oriented toward achieving a single functional outcome, and defensible space design, where surveillance is part of a system of territorial mechanisms.

Chapter 7. Current Examples of Defensible Space

This chapter is devoted to examples of recently completed housing projects which employ a variety of physical features to provide a natural form of security for their inhabitants. They are different from the examples cited in the development of our defensible space hypotheses in that they: (1) are all current and (2) represent conscious decisions on the part of contemporary architects to build environments which have a natural capacity for assuring the residents of security opportunities.

A project's being current has additional significance beyond either its possible trendishness or the likelihood of its being a response to the magnitude of the current crime problem. Contemporary building codes and fire regulations are different from those of a few years ago. Codes have a way of changing every 10 to 15 years and of markedly affecting both the internal design of buildings and their relative dipsosition on project sites.

The architects who produced the Brownsville Houses project in 1948, working within existing fire and building codes, succeeded in providing many security features. The same architects, attempting to produce a 1,300-unit project 8 years later, would have found the codes drastically changed and might have seen themselves unconsciously producing a project not unlike the unsafe Van Dyke Houses, simply in conformity to the new fire regulations and building codes. The superior security properties that were an integral part of their earlier designs would have been forfeited to the new by-laws. In citing physical features of projects in the development of our defensible space hypotheses, we were not particularly concerned with whether or not they met present-day codes. Our purpose was to examine and identify working solutions, past and present. The problems involved in adapting these designs to meet current codes and regulations would, we realized, have to be faced later. Contemporary projects with defensible space attributes, by comparison, at least meet current regulations.

Another reason for looking at current examples involves building economics. Present interest-rates and spiralling construction costs make the incorporation of many building features which were standard 10 years ago an impossibility. Unfortunately, even some of the examples illustrated in this chapter, built as little as 5 years ago, are priced out of today's market. They are included with the knowledge that today's market is unusual and that the current economic situation facing housing will have to be altered if the Nation is to begin to answer any of its pressing housing needs.

One brief example of housing in Great Britain is included as an illustration of the different values employed by housing authorities in other countries. Seen in the light of the internal disputes presently raging in the Greater London Council regarding the adoption of higher housing density policies and building programs similar to those currently employed in America, our commendations on their past successes may be peculiarly appropriate.

The projects that follow have been categorized by density, income-level of inhabitants and urban location. They range from high density, inner-city solutions to relatively low density, suburban solutions. It was decided to adopt this structuring method and to discuss projects on an individual basis rather than to categorize individual design features and then to survey many projects analyzing their shared components. Many security design features operate only in concert with others; the manner of their combination in a project must be seen in totality in order to fully appreciate the success or failure of the system.

Categorization of Prototypes; and Projects Selected for Examples and Discussion

- High-density, inner city examples:

  Lower-middle income housing: Riverbend Houses, New York, N.Y. 624 units, 3.7 acres (170 d.u./acre) East Coast.

  Upper-middle income housing: 560 Riverside Drive, New York, N.Y. 273 units, 1.8 acres (150 d.u./acre) East Coast.

- Medium-density, inner city examples:

  Low-income public housing: North Beach Place, San Francisco, Calif. 229 units, 4.6 acres (50 d.u./acre) West Coast.

  Middle-income housing: St. Francis Square, San Francisco, Calif. 299 units, 7.2 acres (37 d.u./acre) West Coast.

  Lower-middle income housing: LaClede Town, St. Louis, Mo. 680 units, 22.7 acres (30 d.u./acre) Midwest.

  Upper-middle income housing: Hyde Park, Chicago, Ill. (20 d.u./acre) Midwest.

- Low-density, suburban examples:

  Upper-middle income housing: The Californian, Tustin, Calif. 190 units, 12 acres (16 d.u./acre) West Coast.

  Low-income public housing: Easter Hill Village, Richmond, Calif. 300 units, 25 acres (12 d.u./acre) West Coast.

  Middle-income housing: Tower Hill, St. Louis County, Mo. 44 units, 6.3 acres (7.0 d.u./acre) Midwest.

The projects chosen for discussion by no means represent an exhaustive list. Rather, they are intended to represent prototypical solutions ranging from those built in densely urbanized settings with public financial support to those in suburban areas developed under private ownership. They were selected from a list of projects brought to our attention by the responses to our widely distributed questionnaire. There are many examples of work closely resembling those cited here which were excluded to avoid redundancy. We apologize to those architects and planners whose work, though pertinent, was passed over; and in particular, to those professionals who took time to respond to our questionnaire at length and to assemble illustrative plans and data. We spent no little time agonizing over which projects to include and are thankful to all respondents. Those who do not find their work illustrated may find that their ideas contributed significantly to the formulation of our hypotheses.

Another criterion in our selection of projects to be used as prototypes was to look for examples which were simple rather than complex and which could clearly be read as direct statements of prototypical defensible space solutions. Many other solutions, incorporating identical security features, were encumbered by other features of a compositional or amenable nature. We have reluctantly excluded them in favor of predominantly security-oriented examples because we felt their other qualities detracted from the thesis we wish to present in this monograph.

Finally, we wish to say that the extent of success of the illustrated projects in inhibiting crime and improving security has not yet been measured in anything bordering a thorough fashion. They are discussed here because they embody many selfevident features and have a general history of low-crime rates in comparison with other projects of similar density, occupancy, and location. The full measurement of their success and failure and the way in which the different components of their design contribute to the defensibility of the overall project will have to wait for the completion of our studies over the next 2 years.

A. High Density, Inner City Examples

1. *Lower-middle income housing: Riverbend Houses, New York, New York. 624 units, 3.7 acres (170 d.u./acre). Architects: Davis and Brody, New York.*

Density and locale

Riverbend Houses in Manhattan is a State financed, low-middle income housing project, totalling 624 units, built at a density of 170 units to the acre with parking facilities provided at 0.4 cars per unit. It is located in Harlem, bordered by Fifth Avenue on the west and Harlem River Drive on the east, between 138th and 142nd Streets (see fig. 7–1, p. 136). This section of Harlem, just north of the Puerto Rican ghetto, suffers from a felony rate roughly three times the New York City average.

Riverbend residents are 98-percent black and include many civil servants. The rental charges are not sufficient to permit the use of doormen, yet the project has suffered fewer than a dozen robberies, burglaries, and muggings since its opening in October 1968.

Defensible space attributes

There are many security design features which have been incorporated into the project and which together contribute significantly to its defensibility. Many are common to recently constructed projects and will be discussed at length. There are two principal components in the design of Riverbend, however, which are somewhat unique to the American architectural vocabulary and which, acting in concert with those other security devices commonly employed in high-rise, urban apartment buildings, combine to give this doormanless project its incredible safety record. One feature operates at the

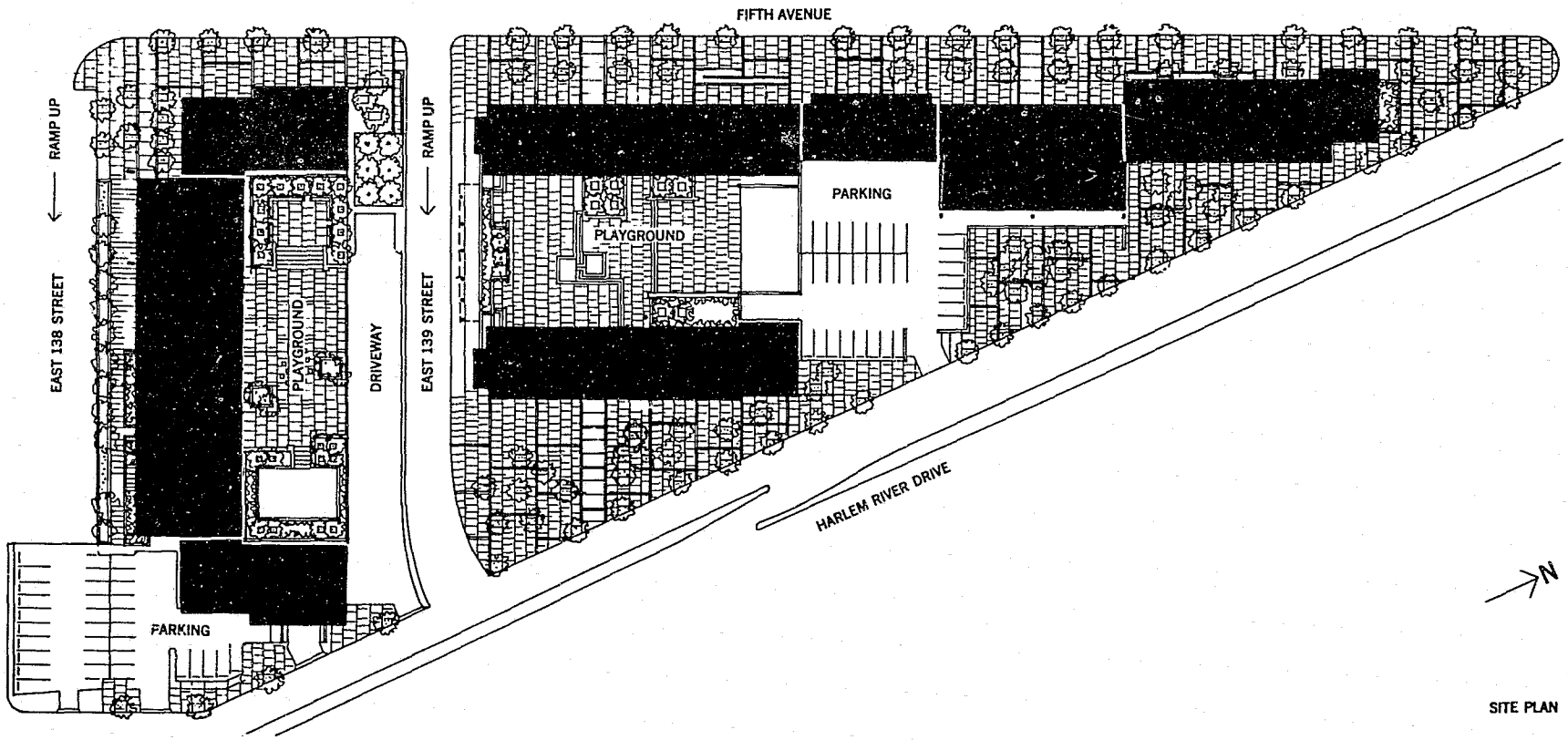


FIGURE 7–1. Riverbend Houses, New York, N.Y. Site plan.

scale of the individual dwelling unit and involves the way in which the unit has been disposed relative to its access corridor: the second functions at the scale of the project site plan and involves the positioning of the high-rise, single-loaded corridor slabs in relation to each other, the intervening grounds, and the surrounding urban fabric.

The total project contains three different building prototypes: the traditional high-rise double-loaded corridor; the single-loaded corridor; and two-story duplex apartments, piled five high upon each other for a total contained height of 10 stories. There is also an eight-story duplex wing. The unique security features at Riverbend relate to these latter piggyback, duplex apartment slabs and their disposition on the site. We have therefore divided the Riverbend site plan into three zones, A, B, and C, for the purpose of isolating that portion of the project, zone "B," which from our particular area of interest, "defensibility," is most successful.

Two story duplex units

The large family units at Riverbend were designed as two-level, duplex apartments piled in five double layers, equivalent to 10 stories. Access to these elevated two-story duplex apartments is first by elevator to a common lobby, then along an open sidewalk leading to the units. At the entry to the unit, one is required to walk up a few steps, past individual outdoor patios to the door of the interior of the unit.

Juxtaposition of slabs containing duplex apartments

The common playground and community area, situated between the two slabs contaiining the duplex apartments, is constructed on the roof deck of the two-story garage (see fig. 7–2, p. 138). It is separated from the surrounding city streets and accessible only from within the project. It is so positioned that the outdoor access corridors of the two 10-story slabs face each other across the common recreation deck.

The internal arrangement of space in the two-story units has the living room, dining room, and kitchen on the lower level with an interior stair leading up to the bedrooms and bathrooms on the second level (see fig. 7–3, p. 139). The outdoor access corridor to these units is easily visible from both the bedroom and living room levels of the terraced apartment units they serve, from the units across the common court yard, and from the ground below as well.

Entry to a particular unit from the outdoor corridor walk is up three steps; these serve as an important symbolic demarcation of the semiprivate terrain of the family patio. The patio itself is screened by a wall which is 6 feet high from the corridor side, but only 4 feet high from the internal patio side. There can be no question that anyone ascending the steps and entering this space is stepping into the territorial bounds of a particular family; an intruder's presence in this area requires immediate explanation. There is no possibility that loitering could be tolerated here except by the immediate family and its friends. A person ascending the steps and entering the patio is seen easily and immediately from the interior of the unit. The outside corridor serves as many as 10 to 12 units, but is identified by tenants as a semiprivate space shared by these families. Though loitering along the corridor is readily engaged in and allowable by the nature of the space, unrecognized individuals who loiter too long, or who hesitate in making their intentions clear, come under surveillance and question and, on occasion, direct encounter with either residents or resident-alerted guards.

The arrangement of the two high-rise slabs, containing the duplex apartments so that their outside corridors face each other across the common play area, allows residents easily and casually to monitor the goings and comings of people on all the floors of the slab opposite. Where, from within their units, residents can monitor only a small portion of the corridor serving their own apartment unit, they can take in at a glance all the activity on the corridors of the slab opposite. Our observations and interviews with residents show that they recognize by sight, but do not necessarily know, almost all members of the families in the slabs opposite them. By contrast, they usually know the people on their own floor, but can recognize only a few others in their own building. This pattern of visual recognition should not be confused with friendship and chore-sharing patterns which are decidedly different. The realization that people are in a better position to carry out monitoring and surveillance from opposite slabs makes it all the more important that the two slabs have some mutual definition of territory and area of concern. Hence the significance of the common central play area.

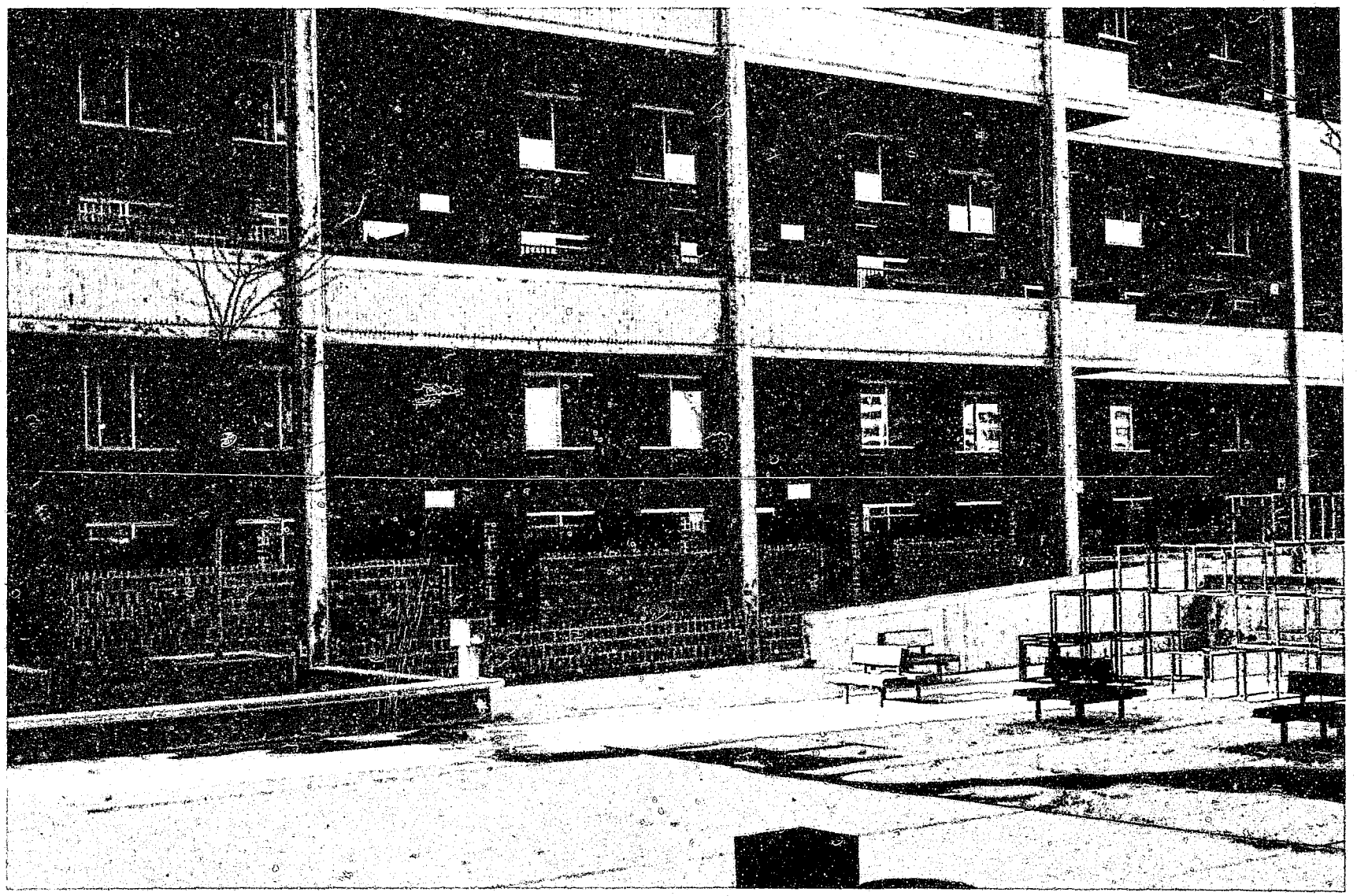


FIGURE 7–2. Riverbend Houses, New York. View of deck-located play area. Excellent surveillance is provided by the surrounding buildings. The area is defined as semiprivate in that it is accessible only through the buildings.

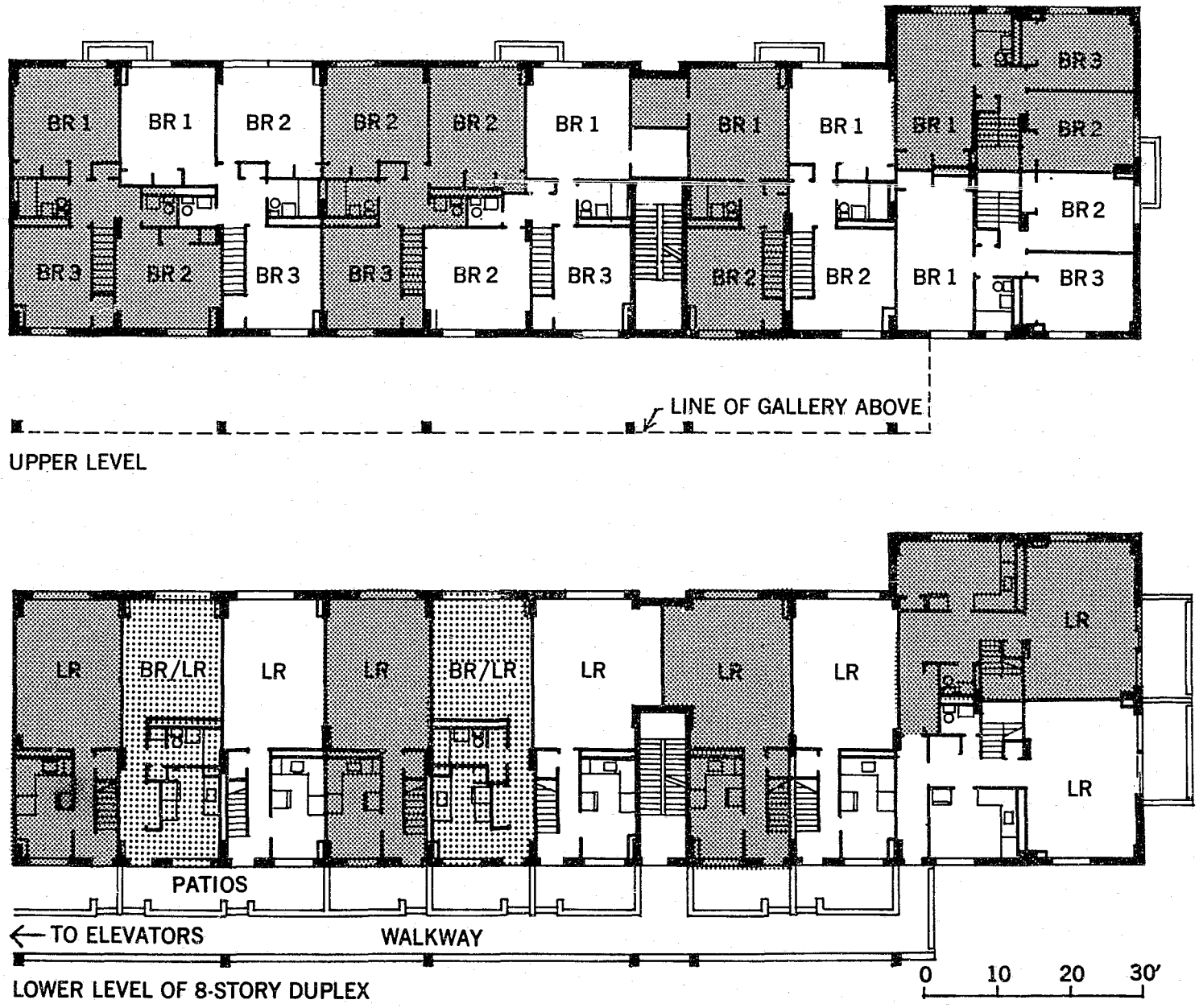


FIGURE 7–3. Riverbend Houses, New York. Floor plan.

It should be mentioned that this surveillance activity would be greatly facilitated if the wall that bounds the individual apartment patios were lowered a couple of feet. It is doubtful that this would seriously interfere with the feelings of privacy in the individual patios and might also improve the light and sun penetration. The lowering would allow tenants in adjacent apartments and in the slab opposite to see a bit more into the patio where a burglar might secrete himself while attempting to force a living room window. More importantly, it would allow residents from the interior of their units to naturally and easily observe the comings and goings of people along greater lengths of their own corridors as well as the corcorridors of the slab opposite. It should be noted that the ground level of every unit has bars on the kitchen window; this serves clearly to indicate the weak spot in the security system.

As was mentioned earlier, the economics of Riverbend cannot afford the use of doormen at the individual entries. Instead, a total of four security guards is assigned to the project. They work as individuals in shifts from 4 p.m. to midnight and from midnight to 8 a.m. The project's design, then, is particularly significant as a prototype for low-income residential developments which cannot support the expense of a doorman.

Riverbend Houses has the following additional features built into it which work in concert with the more significant of its qualities mentioned above:

- Entry areas immediately off the city street.
- Intercom in the entry vestibules.
- Lobbies, elevator waiting areas and laundromats which are glazed and exposed to the street.
- Closed circuit television surveillance of elevators.
- Fire-stair system.
- Exposed parking.

Entry areas: Entry to the Riverbend complex is restricted to a total of four entries. All entries but one are directly off Fifth Avenue, an intensively used vehicular and pedestrian artery.

Entrance to the lobby and elevator waiting area is restricted by an intercom system. It does not have a history of perfect functioning, in that the door controlled by the buzzer suffers from intermittent jamming or destruction of the strike plate by youngsters who have forgotten their keys. Repair and/or replacement of strike plates usually follows in a day or two and has not proven to represent a serious security breach during the interval of its malfunction. It is, however, one of the other weaknesses in the system and could have been remedied by having the doors open into the vestibule rather than into the lobby. Had that been done, the door frame, rather than the lock's strike plate, would have been holding the door in place. Forcing a door open against its strike plate is virtually impossible to accomplish, while kicking it in against its strike plate is accomplished rather easily.

Intercom system: Entry from the vestibule into the lobby and elevator waiting area is by intercom and electric door buzzer opener controlled from each apartment. Residents were found to be conscientious about checking the identity of the party before buzzing.

Lobby and elevator waiting areas: The lobby and elevator waiting areas front on the street behind large plate glass panels. Because they are well lit, activity within is easily visible from the street and vestibule (see fig. 7–4, p. 141) . This allows residents and visitors to preview these areas prior to entry, and once in the lobby and waiting for the elevator, allows internal activity to be easily surveyed both by passing pedestrians and cruising vehicles on Fifth Avenue. More importantly,, people within the lobby feel they are under observation, as would a potential mugger.

Television surveillance of elevators: Each elevator has its own closed circuit television set, housed in a corner of it (see fig. 7–5, p. 142). In order to provide the required light level, an additional high voltage flood lamp has been located above the television unit.

The television camera can be monitored both in the lobby prior to entry into the elevator and by residents on the unused channels of their television sets. Unfortunately, because monitoring on home television sets was conditional on the installation and universal use of cable television, this component has not been successful.

It should be noted that the internal view of the elevator on the television screen does not scan the entire elevator area, and it is possible for as many as two discretely placed people to be standing in the elevator without registering on camera. Entry to and egress from the elevator, however, requires passing in front of the camera.

There have been no instances of camera vandalism in the 2 years the system has been operating. The television cameras also have the capac-

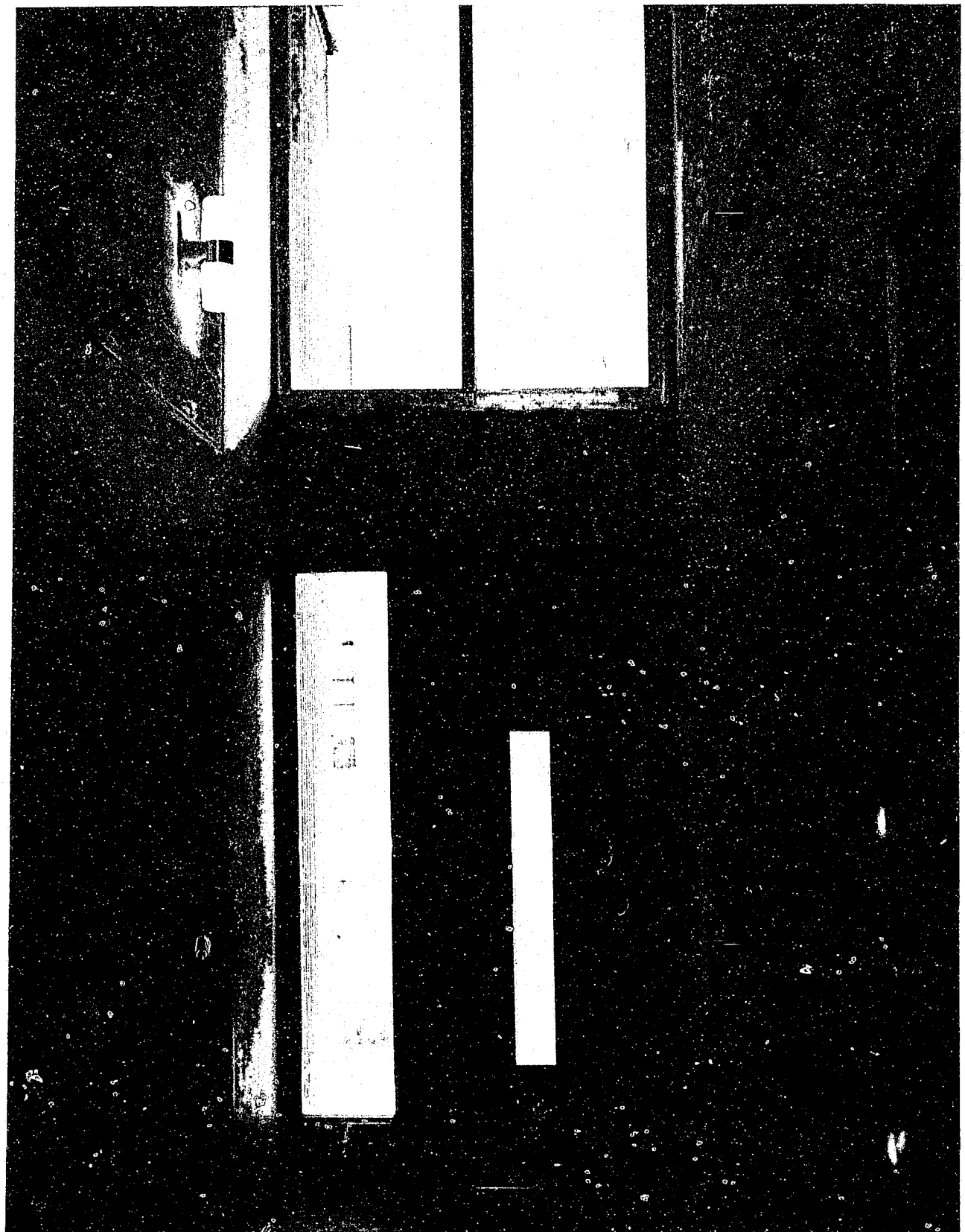


FIGURE 7–4. Riverbend Houses, New York. View of elevator waiting areas. Activity within well lit areas is easily visible from the street and vestibule.

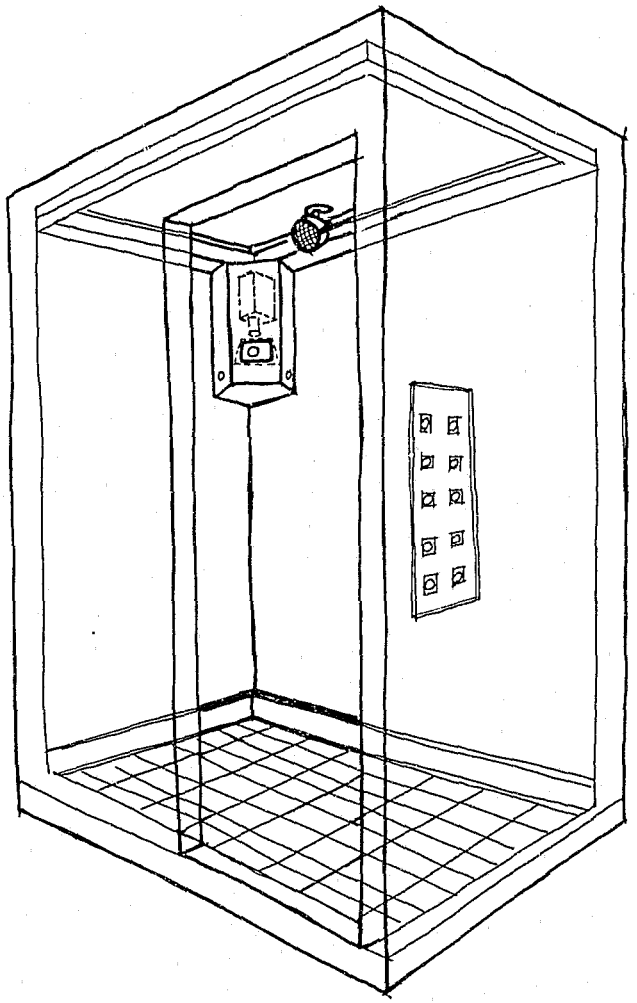


FIGURE 7-5. Television surveillance of elevators.

ity of being monitored by security guards and the management office. They are usually monitored only casually by the guards as they pass through the lobby. Their effectiveness lies in the opportunity they provide for casual observation by large numbers of people.

Fire stair system: A note should be made about the handling by Davis and Brody of the fire stairs in the terraced apartment slabs. One fire stair has been located within the elevator core, while the other has been located at the end of the access corridor. The one within the elevator housing serves as an adjunct vertical circulation facility to the elevator. It is used quite commonly by people who have a floor or two to go. The door at each level opens from either direction. This stair has been found to have frequent use if for no other reason than that the skip-stop elevator is notoriously slow and an aggravation to tenants.

A faster elevator would have been more expensive but would have been an important security investment. It should be kept in mind that fire stairs are for the most part windowless and remain the one public area in this residential complex where activities cannot be easily monitored.

The second fire stair which is located at the end of the corridor of each slab is intended primarily for emergencies. It can be entered from the corridor at every level. However, the doors cannot be opened from the inside of the stairs except at the ground floor which is the exit to the street. This is an important precautionary device although we have found that the latch on some doors has been jammed. Both fire stairs, as mentioned before, are windowless, except for a long strip of wired glass at the entry door at each level. Fire regulations have made this a common practice in contemporary housing, where 10 years ago window walls at the mid-landing between floors were quite commonly provided.

Exposed parking: Because of a parking requirement of 0.4 cars per unit on this restricted site, the architects have had to provide a portion of this space in a two level garage under the central recreation deck. Although access to the parking area is by key and is carefully restricted, there have been numerous reports of theft and vandalism. This is a common problem in all enclosed residential garages which do not employ attendants. By contrast, cars located in the one area of the site where parking is exposed do not experience such problems.

Summary

Slabs composed of duplex apartments with open sidewalks in the air is, as all architects know, not the unique contribution of the firm of Davis and Brody. It represents what is possibly the most common design for low-income housing used in Western Europe. England and Holland in particular have traditionally employed almost no other high density prototype for family housing. The decision to employ this prototype in a contemporary American elevator high rise; to incorporate the patio feature; and to achieve it all within the severe economic restraints of low-middle income State-subsidized housing is the unique contribution of the firm of Davis and Brody, architects.

Riverbend was designed for an upper monthly rent limit of $30 per room, which is low for New

York City. The additional cost of the single-loaded exposed corridor is tempered somewhat by a piggy-back, duplex-upon-duplex solution, requiring only one corridor every two floors. This has allowed for the creation of the walkways and the elevated patios.

The other security components mentioned as included in the design of Riverbend, while noteworthy, are by no means unique to the Riverbend complex. Together, however, they do succeed in providing a very secure environment which has no appearance of paranoia and contributes significantly to the safety of the surrounding streets.

2. ***Upper-middle income housing: 560 Riverside Drive, New York, N.Y. 273 units, 1.8 acres (150 d.u./acre). Architects: Brown and Guenther, New York.***

Density and locale

560 Riverside Drive is a Columbia University faculty housing project located at the south-western edge of Harlem in upper Manhattan in New York. This precinct has a reported felony rate more than twice the New York City average.

We have chosen to employ the project as an example of a small (one to two-acre), high density, upper-middle income, privately financed, inner-city development. It is not, however, entirely prototypical of small private developments, in that the economic restraints on construction costs were not as severe. The below market interest rate financing for the project, for example, allowed the employment of single-loaded and T-shaped corridors, where their occurrence in private development is infrequent.

The project consists of 273 apartments predominantly occupied by families living in two and three bedroom units, disposed in two 22-story towers, astride four stories of garage space. The roof deck of the garage was designed as a recreation area for children and an informal lounge space for adults (see fig. 7–6, page 144).

This project has been chosen over another possibly more prototypical solution because during the course of our study we have had the opportunity to advise on, to see undertaken, and to measure the effectiveness of, physical modifications to improve the security of the project.

The project houses middle and upper-middle income families and is located in a predominantly low income area, which happens also to be within walking distance of Columbia University. Stringent security precautions, therefore, were understood to be a necessity.

Defensible space attributes

The complex was designed to employ the services of doormen, which this rental rate allows. However, in order to limit the number required, two towers were disposed so that they share a single, common entry at the ground level, or play deck. A single doorman can therefore be positioned in the lobby of building "A" and effectively screen all entrants to both buildings. The entry to the elevator lobby of building "B" requires passage through lobby "A" along a glazed and secured corridor to building "B".

The two elevators which serve each of the towers descend to the common lobby and to various levels of the garage below (see fig. 7–7, p. 145). This arrangement is not atypical of private development. An additional elevator, serving each of the garage levels, was provided as a back up. It culminates its vertical climb in the lobby of building "A".

There are three other security features in the design of 560 Riverside Drive which are worthy of mention: the entry ramp into the project; the single-loaded corridor systems; and the relative juxtaposition of the two slabs.

The Entry Ramp

The project site has an extreme slope, dropping some 35 feet in 350 feet from south to north. This led the architects to attempt to accommodate the four-story garage in the lower portion of the site and to restrict pedestrian entry to the apartments to the upper portion. Because of the need for an additional level of parking, the garage deck proved to be some 6 feet higher than the access point where it was intended to meet the sidewalk. This difference in level was handled by the introduction of a curvilinear ramp forming a bridge from the sidewalk to the play deck. The arrangement has resulted in a naturally defined limitation of entry to the deck from the surrounding public streets. The ramp bridging from the public street to the private deck serves as an important symbolic definer which emphasizes the polarity of these two spaces.

The Corridor System

The corridor system of building "A" is single-loaded, though glazed and enclosed. Single-loaded

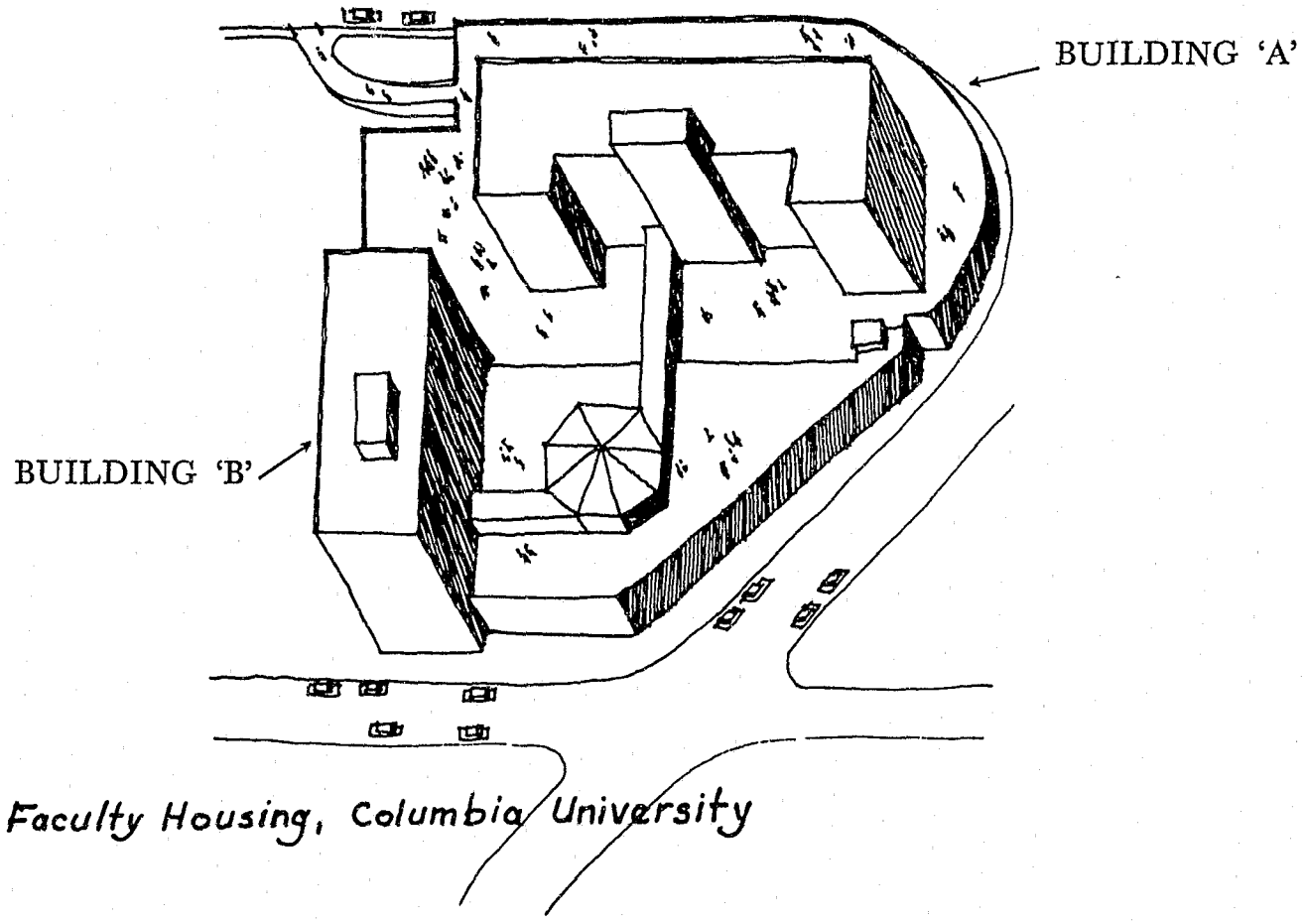


FIGURE 7–6. 560 Riverside Drive, New York. Sketch showing roof deck of garage. 560 Riverside Drive consists of two 22-story towers on top of four stories of garage space. The roof deck of the garage serves as a recreation and sitting area for children and adults. The two buildings are connected by a glazed corridor on the garage deck level.

corridors are not totally foreign to residential developments, particularly in our southern States. There is usually one example of a single-loaded corridor building in the public housing vocabulary of every major city. The south side of the City of Chicago is comprised of almost nothing else. The departure from the norm in the 560 Riverside Drive design is in the glazing of the exterior side of the corridor.

Except for this modification, the architects designed the interior wall of the corridor in the traditional manner: setting the windows from each apartment's kitchen and dining area along the interior wall. As a result the access corridor, as in Riverbend, is under continual surveillance from the units it serves. No one can loiter long in the corridors without attracting the attention of residents. Its nature is very similar to that of a well observed semi-public street (see fig. 7–8, p. 146).

An additional surveillance feature at 560 Riverside Drive, which does not appear frequently in other single-loaded slab buildings, is the positioning of large apartments at the ends of the corridor. This allows the kitchen windows in these units to face the corridors at right angles and so enables occupants to look down the full length of the corridor (see fig. 7–9, p. 147).

Relative Juxtaposition of the Two Slabs

The positioning of the new building "B" in the complex created the opportunity for its residents to survey, from their living rooms, the activity of the corridors in building "A" at every level (see fig. 7–10, p. 148). Where most residents in building "B" were found normally not to concern themselves with the comings and goings of residents along the corridors of building "A", any unusual activity seems to be quickly spotted. The undue

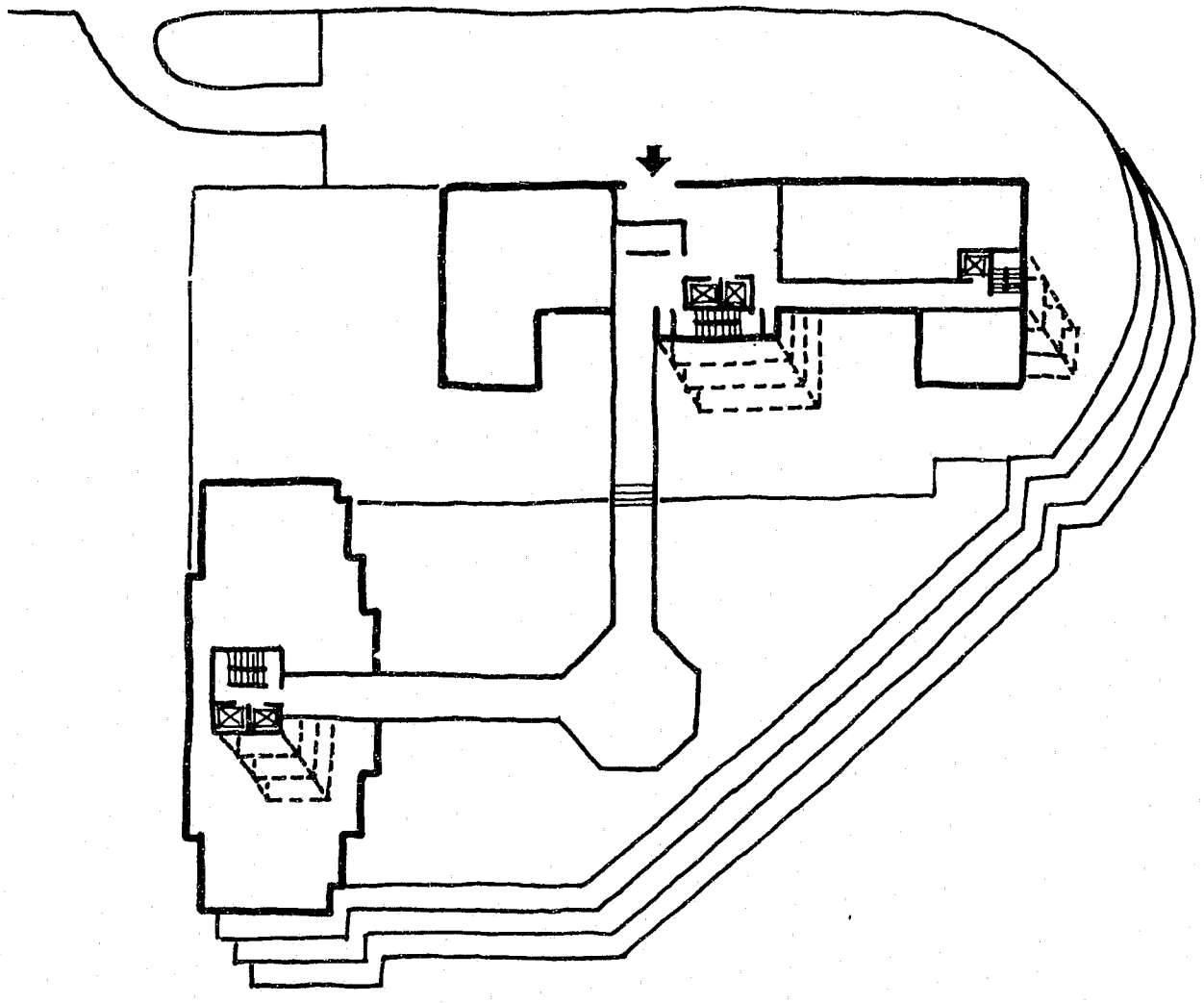


FIGURE 7–7. 560 Riverside Drive, New York, N.Y. Sketch showing locations of elevators.

lingering of an unknown person in the corridor is habitually quickly noted and brought to the attention of the doorman of building "A".

By contrast, the T-shaped corridors of building "B" have none of the inherent advantages of those in building "A". There are no windows facing out of the apartments into corridors and, because of the relative positioning of the two buildings, there is no observation of corridor movement possible by residents of building "A".

This is a good opportunity to reemphasize our hypothesis that the capacity to observe is alone relatively insignificant unless coupled with feelings of shared proprietary concern by observers. Both at 560 Riverside and at Riverbend Houses, even though residents observe the activities of people in high-rise slabs other than their own, the feeling they have is that both slabs belong to a common project and that they share a common interest.

The T-shaped corridor at 560 Riverside Drive can also be observed by the residents in private developments in the adjacent area. But, as they are totally unknown to each other and share no common concerns, it is most unlikely that observations of criminal activity except of a violent or explosive nature such as felonious assault would lead to any decision to act, or even to the simple reporting of observations to police.

A further note should be added on the likelihood of apartment windows facing into corridors serving as a deterrent to crime. There have been no instances over the past five years of successful burglaries, or even attempts at entry, in building

FIGURE 7–8. The corridors of building "A" are singly-loaded. View of corridors, entrance doors, and windows of the apartment kitchens and dining rooms line one side of the corridor while the exterior side is glass-enclosed. Activity in the corridor cannot go unnoticed.

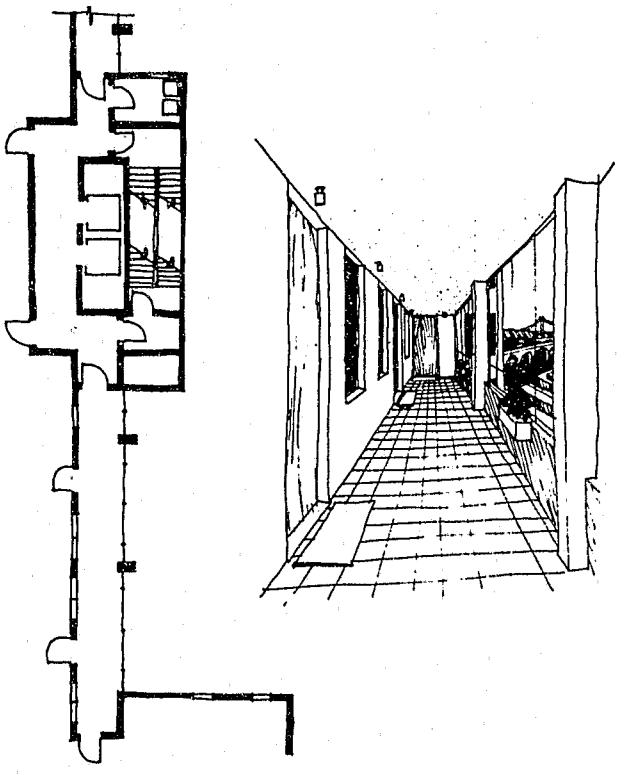


FIGURE 7–9. 560 Riverside Drive, New York. Sketch showing corridors.

"A" (which has the apartment windows facing into the corridor). Building "B", which has been in existence only one year, has had a few instances of burglarized apartments and a few instances of burglars observed in the act of attempting to pick a lock.

Modifications to improve security

The project for security design in urban residential areas was invited to examine the security of the 560 Riverside Drive complex and to make recommendations for its improvement. This invitation was prompted by a period of recurrent muggings in the elevators, culminating in the rape of a young girl.

Although, as outlined above, the project was designed by the architects with security in mind, the following failings in the security system were isolated as the contributing ingredients in its breakdown.

The garage space was found to be readily accessible to most intruders by the following method: There are two portals to the garage, both operated by a transistor signal for the convenience of the tenants. Tenants were found to use the transistor and to speed their cars in and out of the building without assuring themselves that the doors were closed and that no intruders, either on foot or in a car, also used the occasion to enter the garage. Once in the garage, any intruder could easily make his way by elevator into the residential portion of the building.

The first recommendation, then, was to isolate the garage space from the residential portion of the building. The elevators serving the residential portion were keyed so they would not descend to the garage except when used by the building maintenance staff for removal of garbage or furniture moving. This required everyone entering the residential portion of the building to pass by the doorman on duty.

The second contributing factor in the breakdown of security was the performance of the doormen. They were found to be abused on a continuing basis by the demands of the tenants in the building, who asked them to assist with parcels and to run small errands. They graciously succumbed to these requests, particularly in the interval prior to Christmas. This effectively eliminated the gate-keeping function of the doorman.

Doormen were also found to have a certain reluctance about questioning well-dressed and presentable people about their intended destinations. In tests we conducted with our own subjects, white, middle-aged, well-dressed persons, totally unknown to the doormen, were found never to have been stopped; while blacks, people under 30, and anyone not particularly well-dressed, were always questioned. The rape of the young girl which sparked the concern for security appears to have been committed by a well-dressed white about 30 years of age. The frequent muggings were committed by both blacks and whites.

The second recommendation, therefore, involved the definition of a code of behavior (for the information of both doormen and residents) outlining the function of the door man. Doormen and residents were informed that at no time was a doorman on duty to leave his post. Because residents were accustomed to receiving assistance from the doorman, this restriction has required the services of an additional porter during peak hours of 8 to 10 a.m. and 4 to 6 p.m. The porters now fulfilled the function of ferrying groceries and miscellaneous items back and forth, previously attended to by doormen. Doormen were told that everyone they did not recognize as a resident in

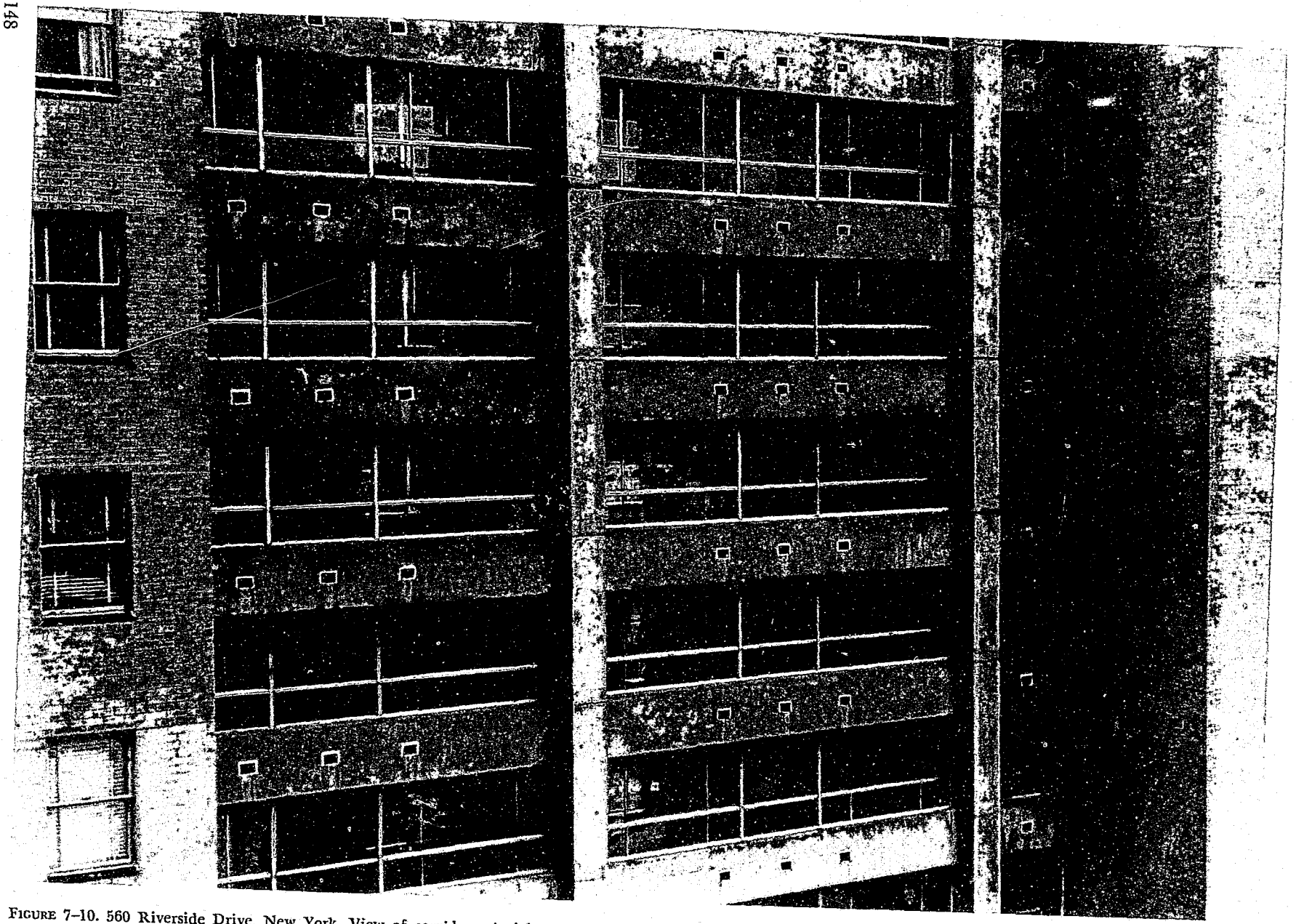


FIGURE 7–10. 560 Riverside Drive, New York. View of corridors. Activity occurring in the glazed corridors of building "A" can be readily observed from across the way.

the building or a frequent visitor was to be announced on the intercom and admitted only upon the approval of the resident host.

Doormen expressed forebodings over their ability to insist that all visitors abide by this procedure and were assisted in the performance of their duty by the conspicuous placement of a sign, lettered in gold on a mahogany panel which reads, "For the Security of Residents, All Vistors are to be Announced." Cantankerous visitors who resisted questioning were referred to the sign.

There was reluctance on the part of some residents to agree to the adoption of these measures in that they presented inconveniences. Younger residents also felt that their private lives would come under a good deal more scrutiny. It was suggested that a slightly larger contribution to the doorman at Christmas would assist him in his discretion. These objections were overruled by the majority of elderly families and families with children who were anxious about the recurrence of mugging and child molesting.

A third deficiency in the security system related to the fire emergency doors at the ground level, which provide exit for the two fire stairs in each of the two towers. These doors were found to be easily opened from the outside and provided easy access and egress to intruders. Through our recommendations, all external hardware on these doors was removed. The doors were wired to a panel adjacent to the doorman's position in the lobby. Use of any of the fire exits for egress now sounds a bell and flashes a warning light on a panel next to the doorman.

Upon questioning, the doormen were found to be as frightened of intruders as were any of the tenants. The following precautions were consequently introduced for their protection:

- A photoelectric cell was hidden at the internal end of the ramp so that anyone entering the deck would signal their presence to the doorman. This was found particularly useful in the evening when doormen tend to doze from inactivity. It also forewarned the doormen of anyone attempting to enter the deck in order to try another entrance to the building other than the single portal he controls.
- To assist doormen in apprehending intruders who refused to be announced and chose to push past and into the elevators, a key was installed in the elevator control panel at the ground level which the doorman could turn to lock the elevator and its door in midtraverse.
- To facilitate the doorman's signalling police in the case of an emergency, a telephone line to the local police precinct was installed which can be activated simply by pulling a lever.

The above modifications were effective as follows:

Within 1 month of the installation of the hardware and the adoption of the doorman guidelines, four men, a couple, and two women were apprehended in attempting unauthorized entry into the building. The police were called in some instances; other instances were handled with only a reprimand as there was some question of the legitimacy of their presence. After these initial arrests, word apparently got around that stringent security measures had been undertaken at 560 Riverside Drive and for a while no further attempts were made. A little over a year later, there is some indication that the security of the Riverside complex is again being tested by potential intruders.

A curve can be drawn describing the persistence of the doormen and concern of the inhabitants on the matter of security. Concern is highest at the period immediately following an incident and lowest in the period devoid of incidents.

The net effect of the introduction of the proposed system on the residential portion of the building was to prevent all further muggings, burglaries, and rapes. After an initial 2-month period subsequent to its installation, knowledge of the presence of the system had reduced attempts at unauthorized penetration to an estimated 20 percent of what was previously common.

The one area that remains resistant to improvement is the garage, in which there is a continuing though appreciably lessened pilfering of items from the interior of the cars. It has been recommended that a closed circuit television camera be installed in the interior of each portal which could be monitored by the doorman in the lobby and would allow him to see all people passing through the system. The effectiveness of this device is yet to be measured.

B. Medium-Density, Inner City Examples

1. *Low income public housing: North Beach Place, San Francisco, Calif. 229 units, 4.6 acres (50 d.u./acre). Architects: Gutterson & Born, San Francisco.*

Density and locale

Located in the northeast section of San Francisco between Coit Tower and Fisherman's Wharf,

the 229 unit, 4.6-acre project is in a predominantly low income residential area which includes some warehouses and industrial buildings. North Beach Place was designed as public housing and completed for occupancy in 1953. It is almost an exact replica of a late 1920's working-class housing prototype built by the more enlightened of city governments in Austria, England, and Holland. But for minor modifications, such as the provision of large parking areas, it is a perfect transplant, down to the decision to expose the formwork on the raw concrete.

The project is a three-story walk-up, at a density of 50 units to the acre, consisting of slabs of building grouped in a horseshoe around common courtyards. The slabs are tied together at the ends by exposed stairs and access balconies at the second and third levels. The courtyards are used alternately for parking and play areas (see fig. 7–11, p. 151).

The apartments on the second and third levels are reached via single loaded corridors, which have been left unglazed and exposed to the weather (see fig. 7–12, p. 152). Open stairwells provide access to the upper levels. They are located at opposite ends of each courtyard, in close proximity to the two parallel streets which define the length of the project: Bay Street and Francisco Street.

Most ground floor units are entered from the common interior courtyard, although those ground units facing Bay Street are entered directly off the street.

Defensible space attributes

The open corridors which provide access to the second and third story units face each other across a commonly shared entry court and parking area and so share in common surveillance. As in Riverbend Houses, discussed previously in this chapter, surveillance opportunities are reinforced by the fact that units face each other across a territorially defined and collectively used area.

The stair towers at the Francisco street side of the project also serve to define the gateway to the courts, further symbolizing the court's and project's restricted use. Where the placement of parking within the shared entry court was a significant decision in enhancing the security both of the units and the vehicles, the isolation of the play areas into a distinctly separate court seems to have worked out poorly. These play areas, although for the most part fenced off from Francisco street, are isolated as well from the unit entries. The windows facing the play court are small. There is no access to the court directly from the units and almost no passage of adult residents through the area.

A particularly fascinating feature of the project's design was the decision on the part of the architects to have the ground floor units along Bay Street enter directly off the sidewalk. This is a somewhat unique occurrence, wherein walk-up buildings have been designed to open to the grounds in front, independent of what has been placed above them. They were desinged as if they were a single family house within a row house configuration. This feature serves to provide the Bay Street side of the project with surveillance and territorial identity, where the Francisco Street side has neither.

In order to provide a transition and buffer zone for the doors to the ground floor units on Bay Street, the entry areas have been set back a few feet from the street, defined by a low wall, a set of steps and a landing turned at right angles to the street. Textured brick has been used to differentiate the ground surface area immediately adjacent to the building which contrasts sharply with the cement sidewalk of the rest of the block. Together with the steps and landing, the whole serves to create a zone adjacent to the entry door which clearly will not tolerate ambiguous use or loitering.

As a further susveillance feature, the entry has been constructed with a window that immediately abuts the door, so providing residents with an additional device for looking out on the street and the entry landing area.

Although we have singled out the entries off Bay Street for special comment, it may not be possible to transpose the ground floor apartment units as designed to a high crime area in other cities. However, by providing for a further set back from the street, and with additional symbolic, territory defining devices to improve the buffer area between the windows and entry of the unit and the streets on which they face, the design might be made workable even in Manhattan. A protective grill for ground floor windows might prove an additional necessity. While the physical configuration of the project has been exhibited, excellent defensible space attributes, the esthetic treatment of the buildings leaves something to be desired. A recurrent complaint focuses on the quality of the exposed concrete surfacing. Where this treatment may delight the architect, it represents a factory

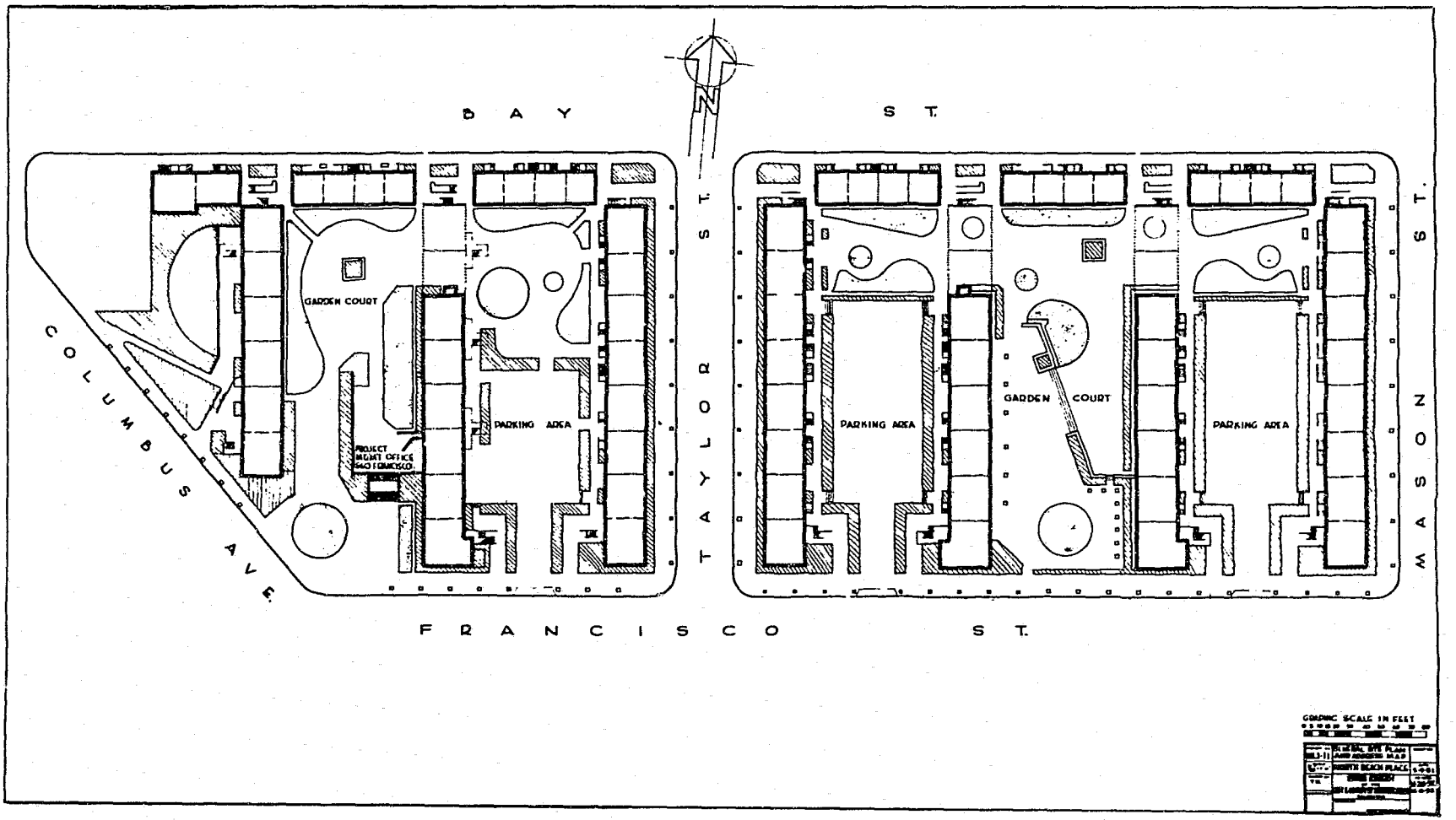


FIGURE 7–11. North Beach Place, San Francisco, Calif. Site plan.

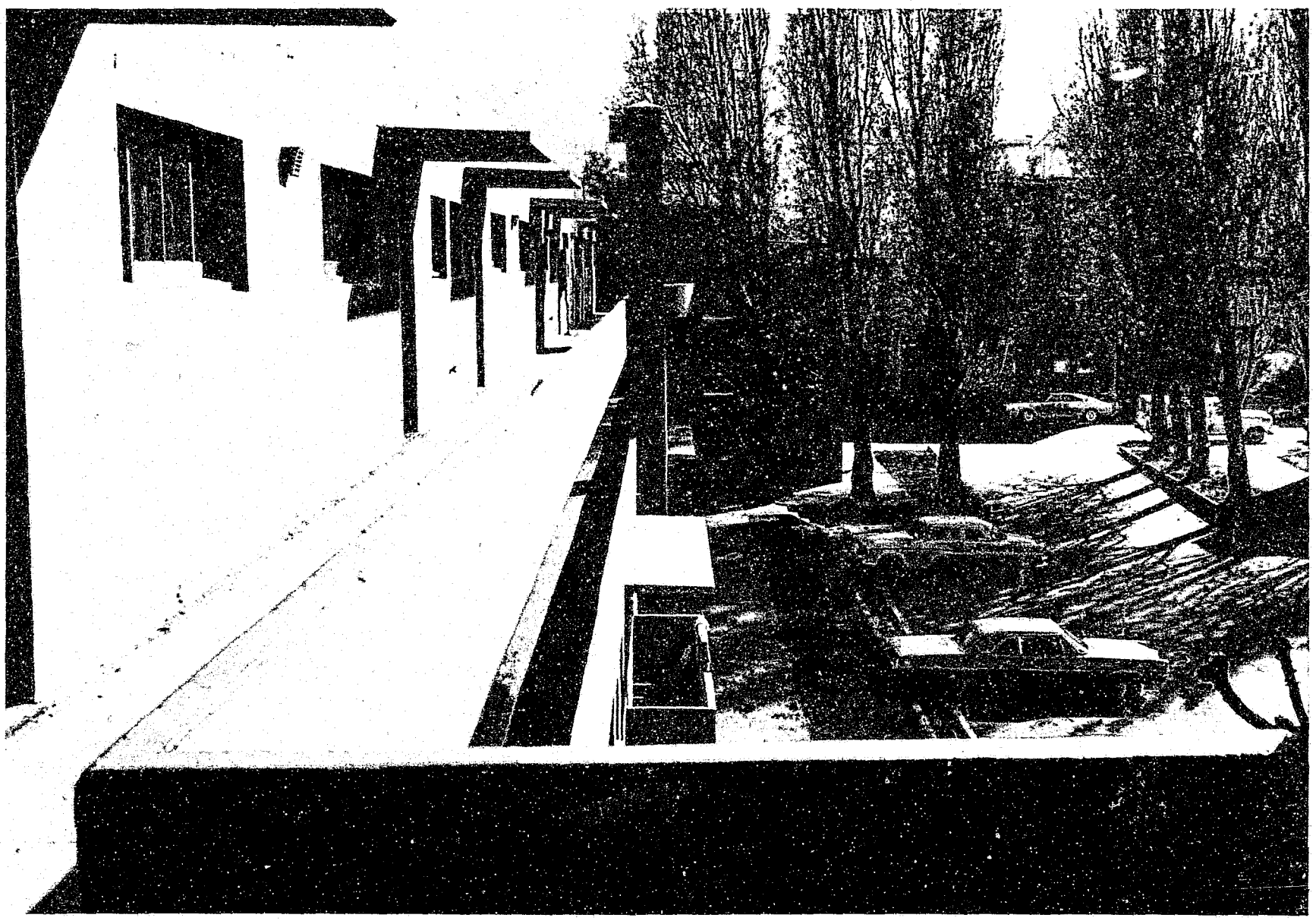


FIGURE 7–12. North Beach Place, San Francisco. View of corridors. The open corridors, serving the second and third floors of the apartment wings, face one another across a commonly shared entry court and parking area.

or barracks esthetic to tenants and housing authority officials alike.

2. *Middle income housing: St. Francis Square, San Francisco, Calif. 299 units, 7.2 acres (37 d.u./acre). Architects: Marquis & Stoller, San Francisco.*

Density and locale

St. Francis Square is a medium density, middle income housing project built to be occupied by working class families in cooperative ownership. It is located in what used to be a low income, relatively high crime area in the City of San Francisco. The area is undergoing renewal and now finds itself surrounded on two sides by new upper middle income residential and commercial developments and on the other two sides by public housing projects and an old, deteriorating residential section. The project is composed entirely of three story walk-up garden apartments.

Defensible space attributes

The project has numerous "defensible space" attributes, both at the scale of the apartment unit clustering and in the overall site plan. Although the project is built at 37 units to the acre, with 75 parking spaces per unit, the architects have been able to capture the feeling of a spacious but well scaled single family rowhouse development.

The project's site plan consists essentially of three playing areas defined on each side by a block of building and separated from other squares by parking (see fig. 7–13, p. 154). Each building block contains two to five double units. A double unit consists of two, side by side, three-story tiers of flats. The two tiers, or six apartments share a common entrance path, entry door, lobby and stairway (see fig. 7–14, p. 155). The second vertical fire exit stair is provided as a fire escape connecting the third floor balcony to the second floor balcony.

With only six families sharing an entry most people interviewed spoke of the stair and lobby as an extension of their private dwelling. The fact that the architects also chose to further distinguish those six family units by stepping them back and forth and down the hillside probably contributes as well to the resident's referring to the six-family unit as their house.

To meet fire codes the entry to each unit is separated from the stairwell by a door and vestibule. These serve to provide a clear transition buffer which separates and defines the entry to each apartment. A second exit to each tier of six apartments is provided at the rear of the building and is a weak point in defensibility design. This vulnerability is somewhat integrated in those building blocks designed with rear gardens, which provide a buffer for the rear exits.

There is an apparent inconsistentcy in the positioning of front and rear entries (see fig. 7–15, p. 156). Entry lobbies are located off surrounding streets, off parking lots and off the interior play courts. Rear entries, while never located to face surrounding streets, do appear interchangeably off the parking lots and play courts. From a "defensible space" point of view there may be method to this madness. Clearly, the most important decision was to position as many entries as possible facing surrounding streets: this serves to define the project and insure the safety of both the streets and units. In this light however the positioning of three parking areas on Geary Boulevard was most unfortunate. The decision to allow the interior playing areas to be accessible from the street, rather than only from the apartment buildings, may have also required that some unit entries face these courts, if only to provide surveillance (see figs. 7–16 and 7–17, pp. 157 and 158). The same rationale may apply to the parking areas.

A more consistent and possibly safer design might have evolved from the adoption of the Anselivicus-Montgomery site-plan rationale in the St. Louis Tower Hill project (see fig. 7–32, p. 176). Parking and play courts are combined there into one common area with the front entries to all the units facing onto it. This design, if applied to St. Francis Square, would be altered only where building blocks faced adjoining streets—in which case entry lobbies would face on the street rather than the rear parking and play area.

The project is similar in intent to The Californian in Tustin in that the architects have endeavored to create a hierarchy of public to private spaces. It is distinctly different in that most areas at St. Francis Square are territorially defined for the use of particular inhabitants and are readily surveyable by them, at each level in the hierarchy.

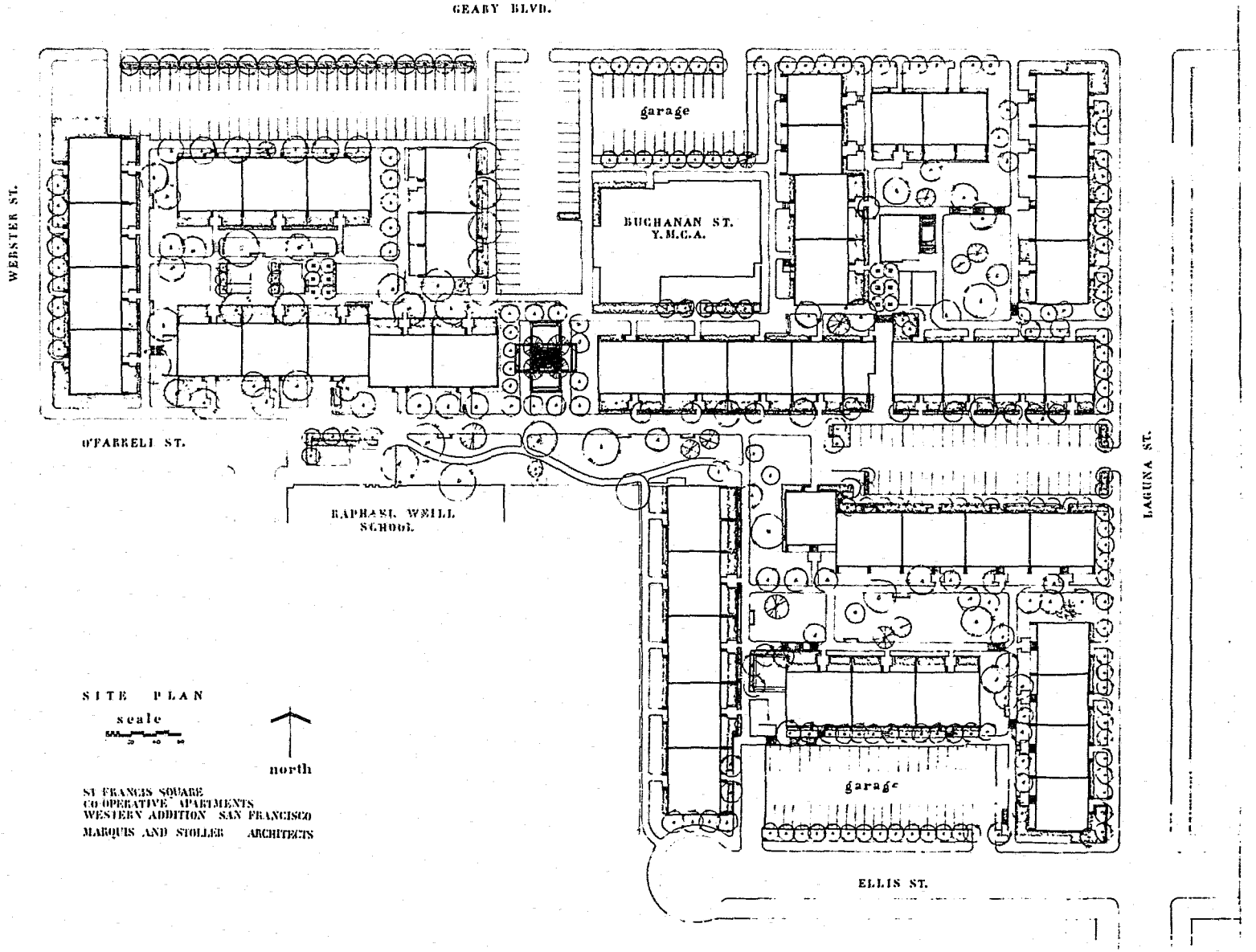


FIGURE 7–13. St. Francis Square, San Francisco, Calif. Site plan.

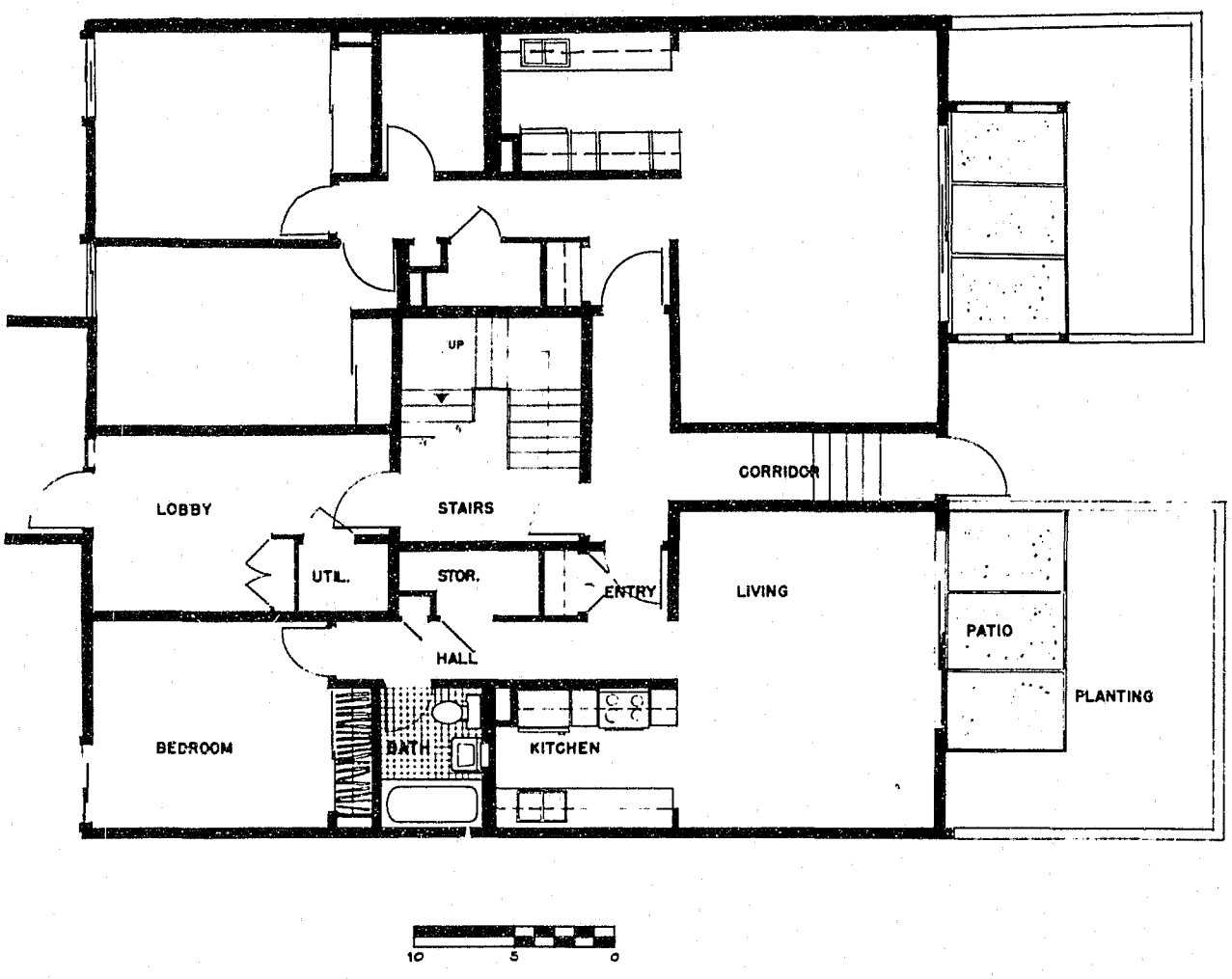


FIGURE 7–14. St. Francis Square, San Francisco. Floor plan. Three levels of two apartments each share a common entrance path, entry door, lobby, stairway, and corridor to the rear play court.

3. ***Lower-middle income housing: LaClede Town, St. Louis, Missouri. 680 units, 22.7 acres (30 d.u./acre). Architects: Clauthele Smith and Associates, Washington, D.C.***

Density and locale

LaClede Town is a low- to middle-income housing project constructed in the Mill Creek urban renewal area in the inner core of the City of St. Louis, and financed under a Federal Housing Assistance Program 221 (D) 3.

It consists of a mix of row housing and three-story walk-up garden apartments densely grouped at 30 units to the acre. Parking has been provided at 1.25 automobiles per unit.

The project is an interesting example of a large urban redevelopment project respecting the grid of an existing urban setting, and designed to allow incremental development over a flexible time schedule.

Defensible space attributes

The following features in the site plan of the project provide it with defensible qualities:

All units face immediately onto a pedestrian and vehicular street which connects into the existing street grid of St. Louis. Parking for all units is at the curb, at right angles to the traffic flow and juxtaposed with unit entries. Parked cars, front doors, front walks, sidewalks and street share in security by joint surveillance. Residents within the building can easily observe all activity on the sidewalk, street, parking area and areas immediately in front of their houses. Similarly, passing vehicles and pedestrians are able to observe all activity in

FIGURE 7–15. St. Francis Square, San Francisco. View of entries. The apartment blocks facing each other across the Laguna Street parking lot seem to be oriented inconsistently. On the north side the rear entries open onto the parking lot. On the south side, the front entries open onto the same parking lot.

FIGURE 7–16. St. Francis Square, San Francisco. View of interior play courts. The interior play courts are accessible from the street. In order to provide surveillance, some unit entries face these courts.

FIGURE 7–17. St. Francis Square, San Francisco. View of interior play courts.

these areas, which also come under easy surveillance by formal police patrol.

The areas designated as semi-private and community spaces are located at the rear of the dwellings (see fig. 7–18, p. 160). The building units themselves have been so disposed as to provide an encircling definition to these areas. Although the rear semi-private spaces and common areas are not fenced off from public access, entry is limited to a few portals which serve as symbols to indicate that one is entering into a more private portion of the project.

The rear entry to the two- and three-story row house units is further defined by a small patio consisting of a raised concrete deck, with two low defining walls on either side. The patio is intended to serve a variety of private family functions, but operates predominantly as a distinguishing element defining the semi-private space adjacent to the unit.

A similar territory-defining mechanism is used in the walk-up garden apartments by providing all entries from a common court. The court is defined by changes in level, texture and lighting, and through the grouping of a small cluster of units to define a semi-restrictive, semi-private zone. Activity in this common court is easily surveyed both from the street and from the units to which it provides entry.

Another feature employed in LaClede Town to give this medium-density multi-family complex a feeling of privacy and individuality is the articulation through surface texture and color variation of each row house and garden apartment. The architects have also occasionally stepped back individual units within a long row-house block and have mixed three- and four-story units among two-story units to further this articulation and to give the whole an uncontrolled and somewhat chaotic image similar to that which occurs in privately built single-family row house development. The effect is also similar to what occurs in the older sections of our cities where families alter the building fronts to suit their own tastes.

4. ***Upper-middle income housing: Hyde Park, Chicago, Ill. (20 d.u./acre). Architects: I. M. Pei and Associates, New York; Harry Weiss and Associates, Chicago.***

Density and locale

The Hyde Park row housing proposals of Harry Weiss and I. M. Pei are interesting as defensible space prototypes for small scale, medium- to low-density redevelopment within an older existing urban fabric. The projects of both architects are designed at approximately 20 units to the acre. They consist of row-house developments which follow the existing grid of Chicago streets with the only variation being the provision of off-street parking areas and the removal of the rear alleys to create a common community court. These courts are predominantly entered from the rear of the dwellings and serve the activity of some 25 to 30 families (see fig. 7–19, p. 161).

Defensible space attributes

The units are disposed on their site in a manner not unlike the existing pattern of an older neighboring single-family residential development. They have been provided with a formal entry area immediately off the sidewalk defined by low walls, a paved walk and a set of stairs which lead a half flight up to the ground floor level (see fig. 7–20, p. 162). These various devices serve to very clearly designate the 10 feet in front of the dwelling as being under the sphere of influence of its occupants. The activities on the street are easily monitored from the dwelling units proper and from passing vehicles.

Dwellings are grouped to form a common interior play area and community court which, in the case of the Weiss design, is also accessible from the public street through a one-story opening in what is otherwise a perfectly enclosed square.

The I. M. Pei design, which does not use buildings to totally encircle the square, employs eight-foot wrought iron fence to complete the encirclement (see fig. 7–21, p. 163). The interior courts are open to public use. Where neighboring children and adults do avail themselves of the recreation facilities in these courts, they clearly come under the surveillance and rule system of the immediately surrounding residents.

The rear of each unit is separated from the common rear play areas by a patio defined by 6-foot high wooden and brick fencing, sometimes totally enclosing the rear space and at other times allowing the one side facing the common patio to remain open (see fig. 7–22, p. 164).

The off-street parking is provided with resident surveillance through the positioning of units so that the front doors face this area. Unfortunately, unlike the LaClede Town proposal, the off-street parking area is removed from, rather than di-

FIGURE 7–18. LaClede Town, St. Louis. View of rear courts. Semiprivate common spaces occur at the rear of the dwelling units. Individual two- and three-story units have a patio and low fence adjoining this common area. Access to these rear courts is limited and the arrangement of the buildings around these courts further defines the space.

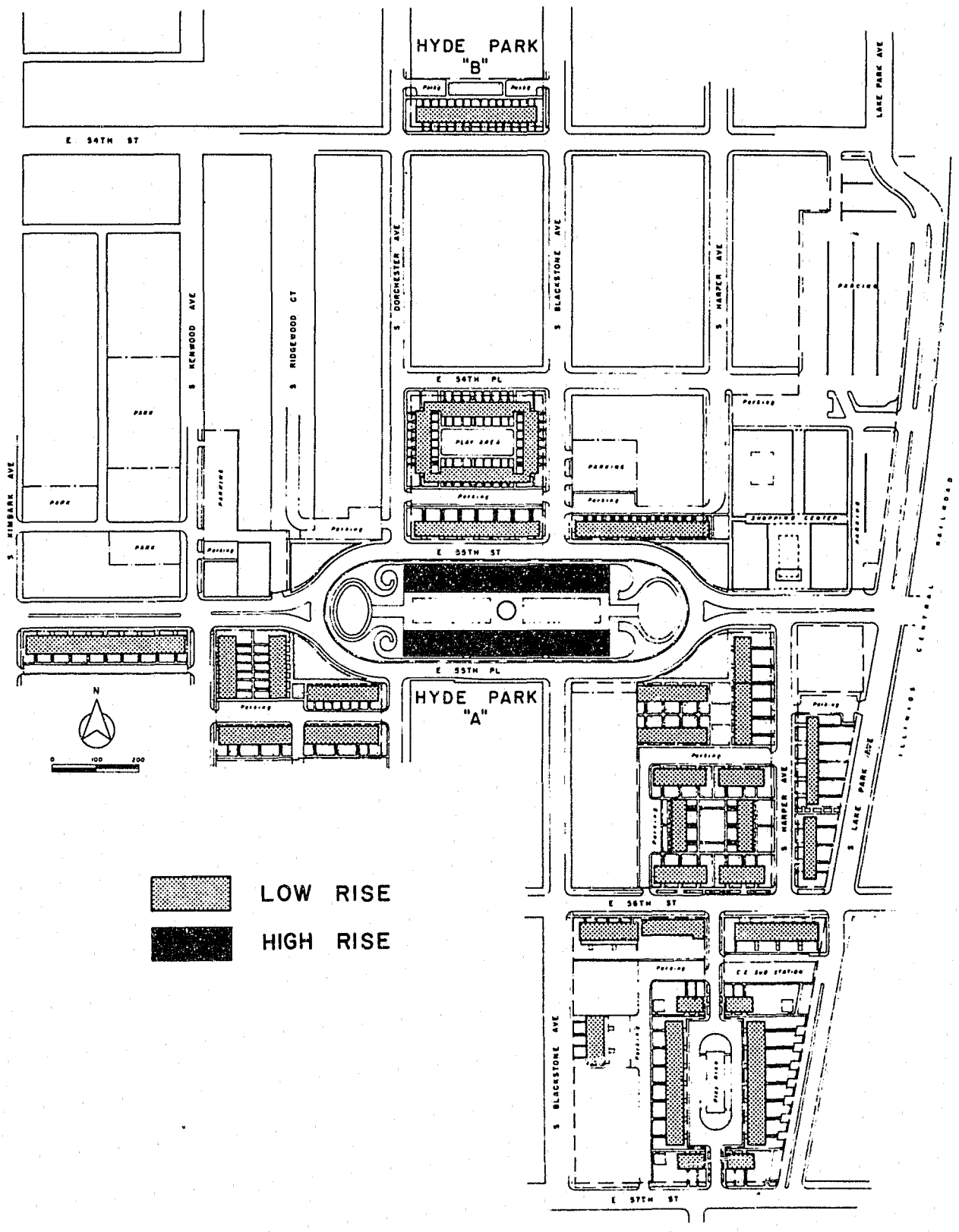


FIGURE 7--19. Hyde Park, Chicago, Ill. Site plan.

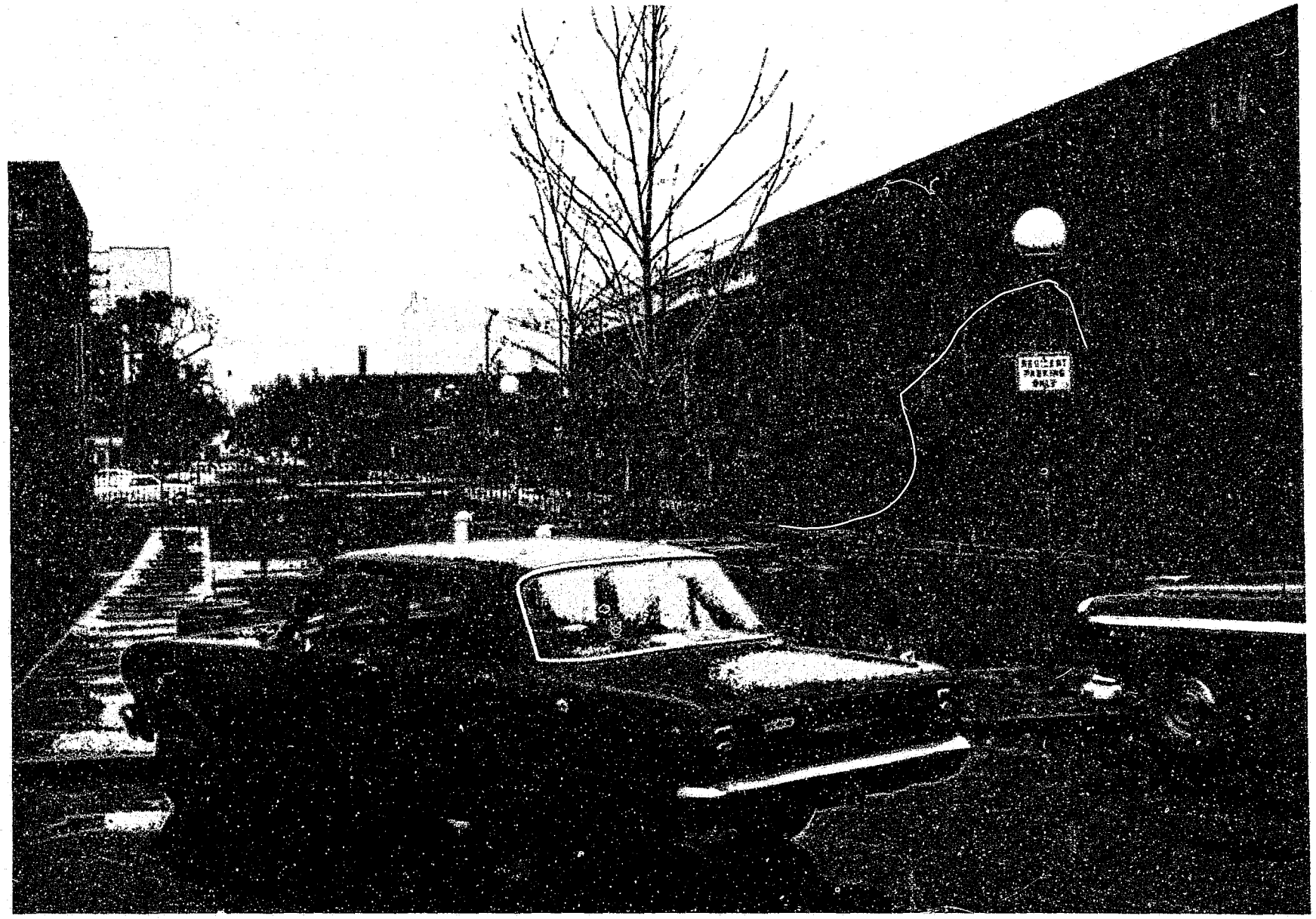


FIGURE 7–20. Hyde Park, Chicago, Ill. View of formal entry. Individual units have a ceremonial entrance marked by grass, fence, stairs, and a vestibule.

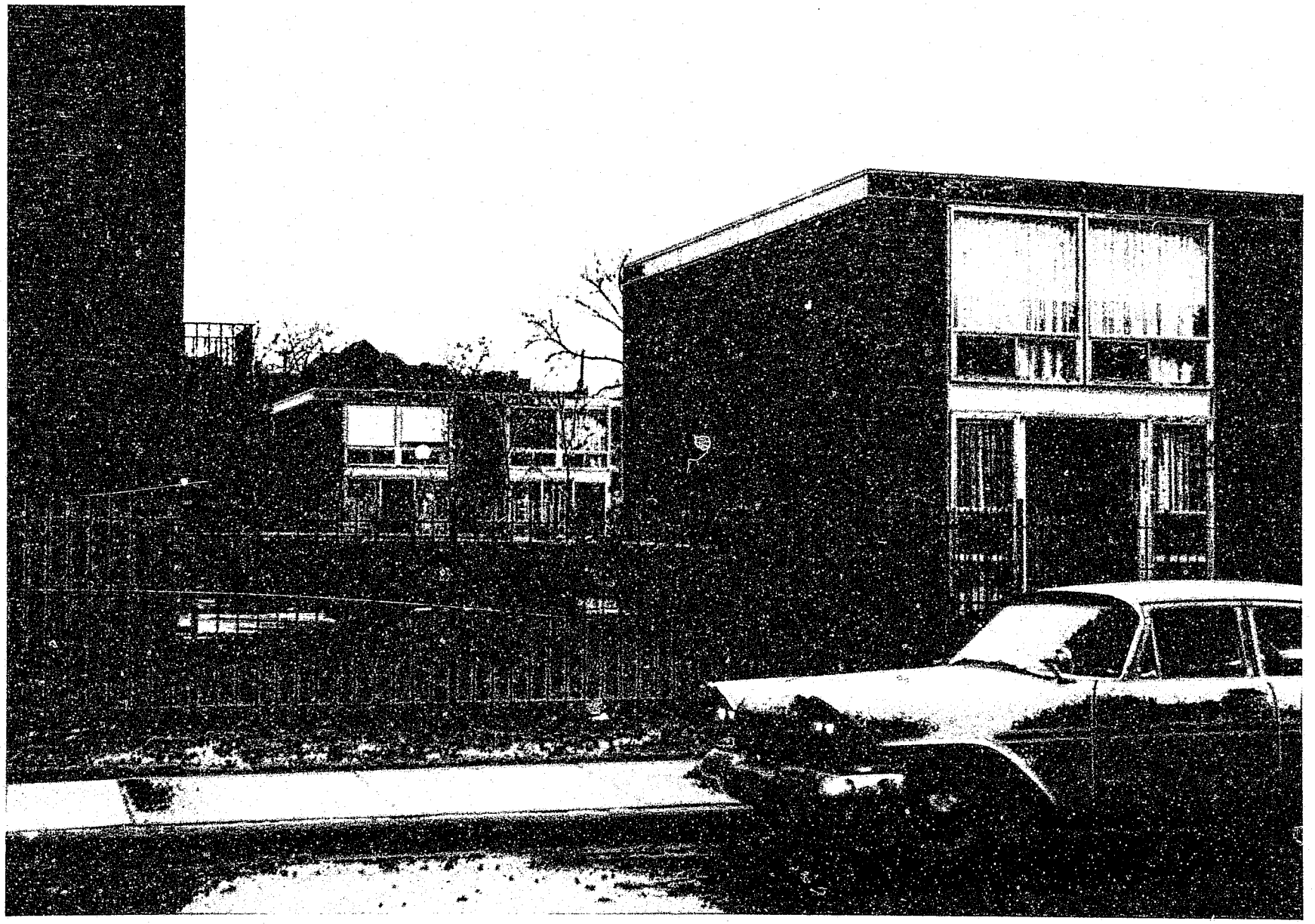


FIGURE 7–21. Hyde Park, Chicago, Ill. View of court. Attractive fencing demarcates limits of court area in the Pei plan.

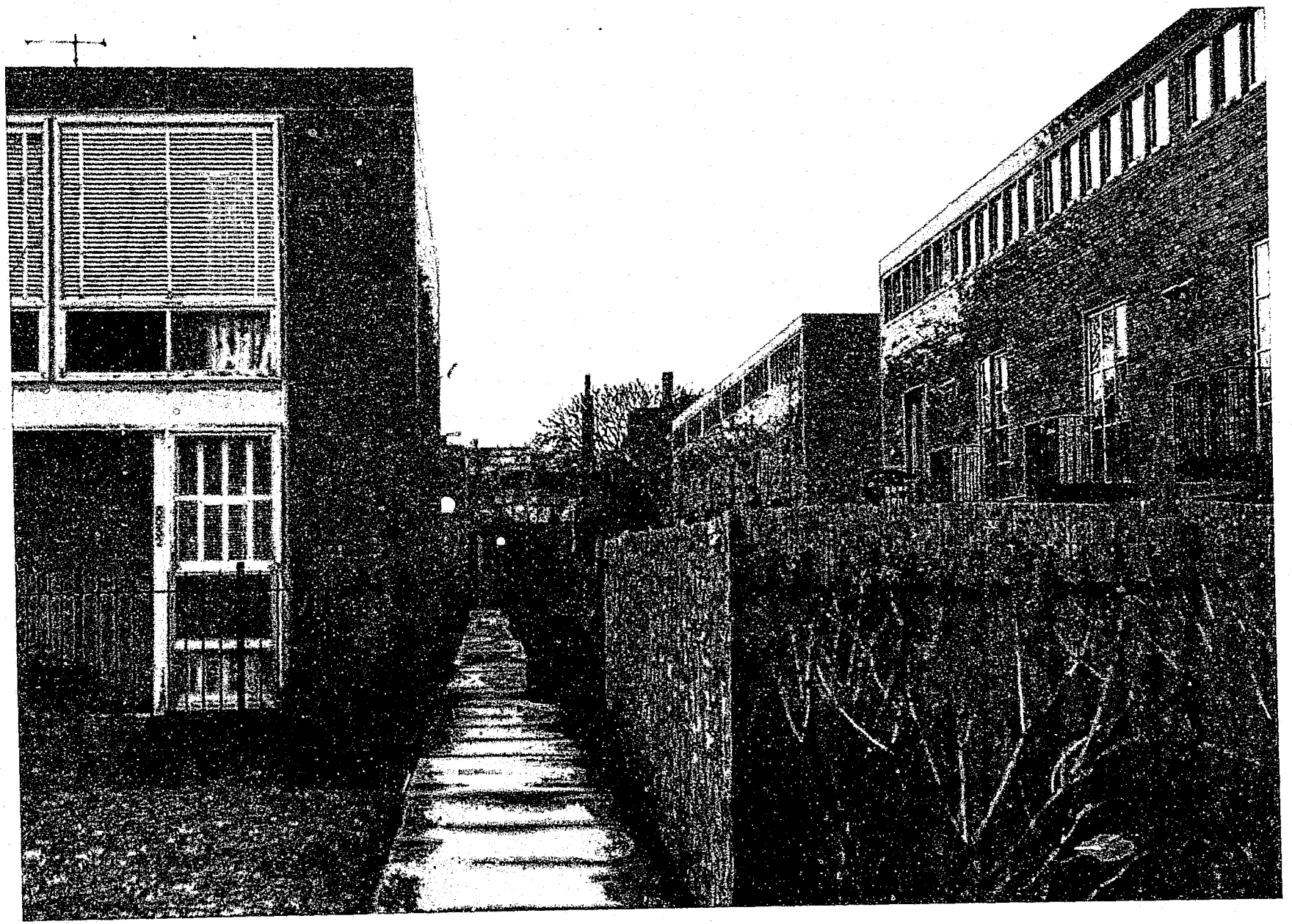


FIGURE 7–22. Hyde Park, Chicago, Ill. Each unit has an enclosed and gated back-yard area opening onto the communal court.

rectly on, a through street and so does not benefit from this additional form of potential surveillance.

C. Low Density, Suburban Examples

1. *Upper-middle income housing: The Californian, Tustin, Calif. 190 units, 12 acres (16 d.u./acre). Architects: Backen, Arrigoni, and Ross, San Francisco.*

Density and locale

The Californian is a newly completed 12-acre residential community in southern Los Angeles. It is a privately developed low-medium density project, built at 16 units to the acre, comparatively higher than surrounding development which varies from four to 10 units per acre.

The project is located at the outskirts of Tustin, a small town near Santa Ana with a relatively low crime rate even for Los Angeles. The design of the project—the individual units, their grouping and site plan—closely follows the directives and schematic prototypes developed by Chermayeff and Alexander in their book, *Community and Privacy.*

Defensible Space attributes

In essence, this is a design for an internalized pedestrian community, surrounded on three sides by its own parking and sealed off from adjacent city streets (see fig. 7–23, p. 166). Chermayeff and Alexander, in their treatise, strove to create a community subdivided into a hierarchy of increasingly more private zones. At the most private level, the single-family unit was designed around its own enclosed courtyard (see fig. 7–24, p. 167). Few windows except those in the two story apartments look out onto the adjacent walks or courts (see fig. 7–25, p. 168). The intermediary subdivisions of the hierarchy share collective walks and courts in a variety of combinations. Major recreation and community facilities for the entire project—a pool, adult play area, community center, and rental office—are centrally located.

The intentional separation of vehicular from pedestrian traffic has resulted in isolated parking areas and pedestrian paths, both devoid of surveillance opportunities. This configuration coupled with the windowless internal pedestrian streets, requires residents to walk from parking area to home through an almost totally unsurveyed outdoor no-man's land (see fig. 7–26, p. 169).

The architects are primarily concerned with defining and enhancing the privacy of the individual dwelling unit. The designation of a hierarchy of semipublic and semiprivate spaces remains little more than designation, as the subdivisions are unsupported by physical or social opportunity to enforce this hierarchy. The semipublic and semiprivate spaces may have been designed for the use of certain geographical subgroups, but there are few windows, restrictive portals, or formally designated agents to act as the natural or authoritative surveying bodies. Proximity is the only mechanism which even begins to suggest a definition of the intended users of these collective and semiprivate spaces. The decision to make the private dwelling inward-looking has removed much of the opportunity for natural surveillance (see fig. 7–27, p. 170).

By comparison, the typical suburban development bordering the project benefits from street surveillance as it in turn benefits the street by providing surveillance from within. The positioning of entries and walks directly on the street provides an extension of territorial concern from dwelling unit to street.

But for a few areas: an occasionally well defined entry to paired apartment units (see fig. 7–28, p. 171), a stretch of two story apartments looking out along a street, the project is weak in defensible space attributes.

The authors have, in effect, strangely succeeded in giving the total project the look and feel of a warehouse district on a Sunday. Everything is walled in, and there is no activity anywhere. The pursuit of privacy has produced large, unsurveyed public zones rivaling the interior corridors of high-rise, double-loaded apartment buildings.

The lack of security identified in the above criticisms relates predominantly to the poor design of the public and semi-private paths through the project. This is due to no small part to the lack of windows facing the street. The self-contained image projected by these solid walls may imply to strangers that it would be difficult to effect entry. In practice, however, this is more illusion than reality: the walls of the unit courtyards are easily scaled and, once within the courtyard or vestibule serving two units, one is hidden from outside view and subsequent entry into the unit can be made at one's leisure (see fig. 7–29, p. 172). In a high crime area, the project, with its unsurveyed parking areas, walks, and courtyards, could prove to be dangerously insecure.

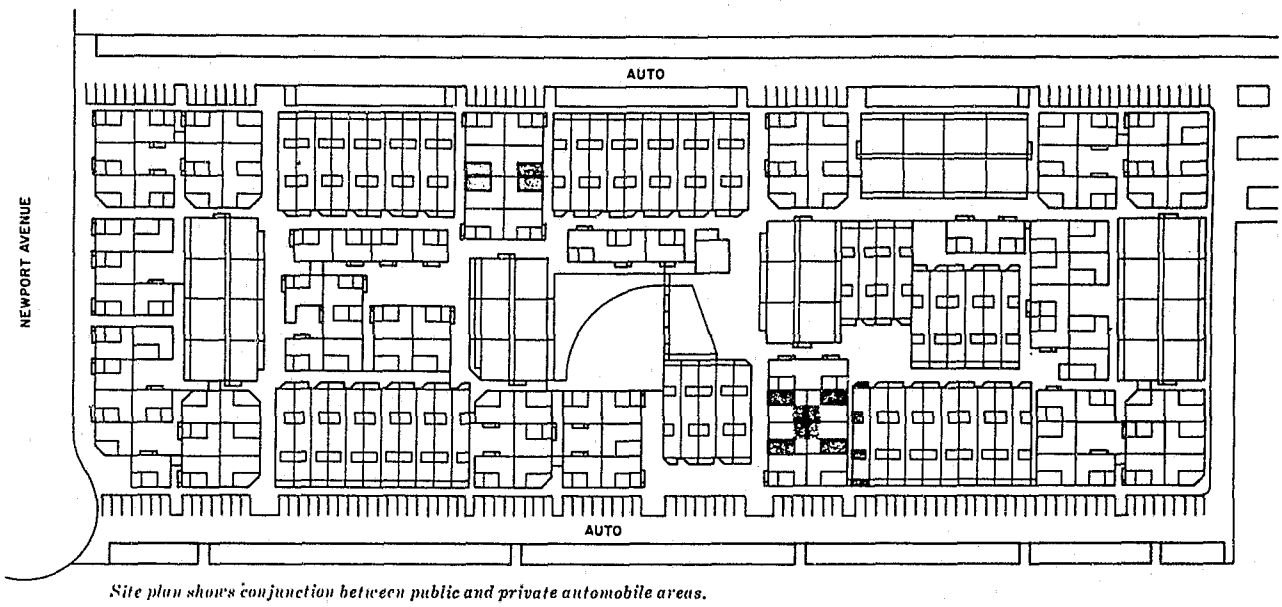


FIGURE 7–23. The Californian, Tustin, Calif. Site plan.

2. ***Low income public housing: Easter Hill Village, Richmond, Calif. 300 units, 25 acres (12 d.u./acre). Architects: Hardison and Demars, San Francisco. Landscape architect: Lawrence Halprin, San Francisco.***

Density and locale

Easter Hill Village is a 300-unit, low-density, two-story row house public housing project in Richmond, California (see fig. 7–30, p. 173). It is unique not so much for its overall site planning, which from a defensible space point of view is somewhat weak, but rather from the concern that the architects and site planners have had for the areas immediately bordering the units.

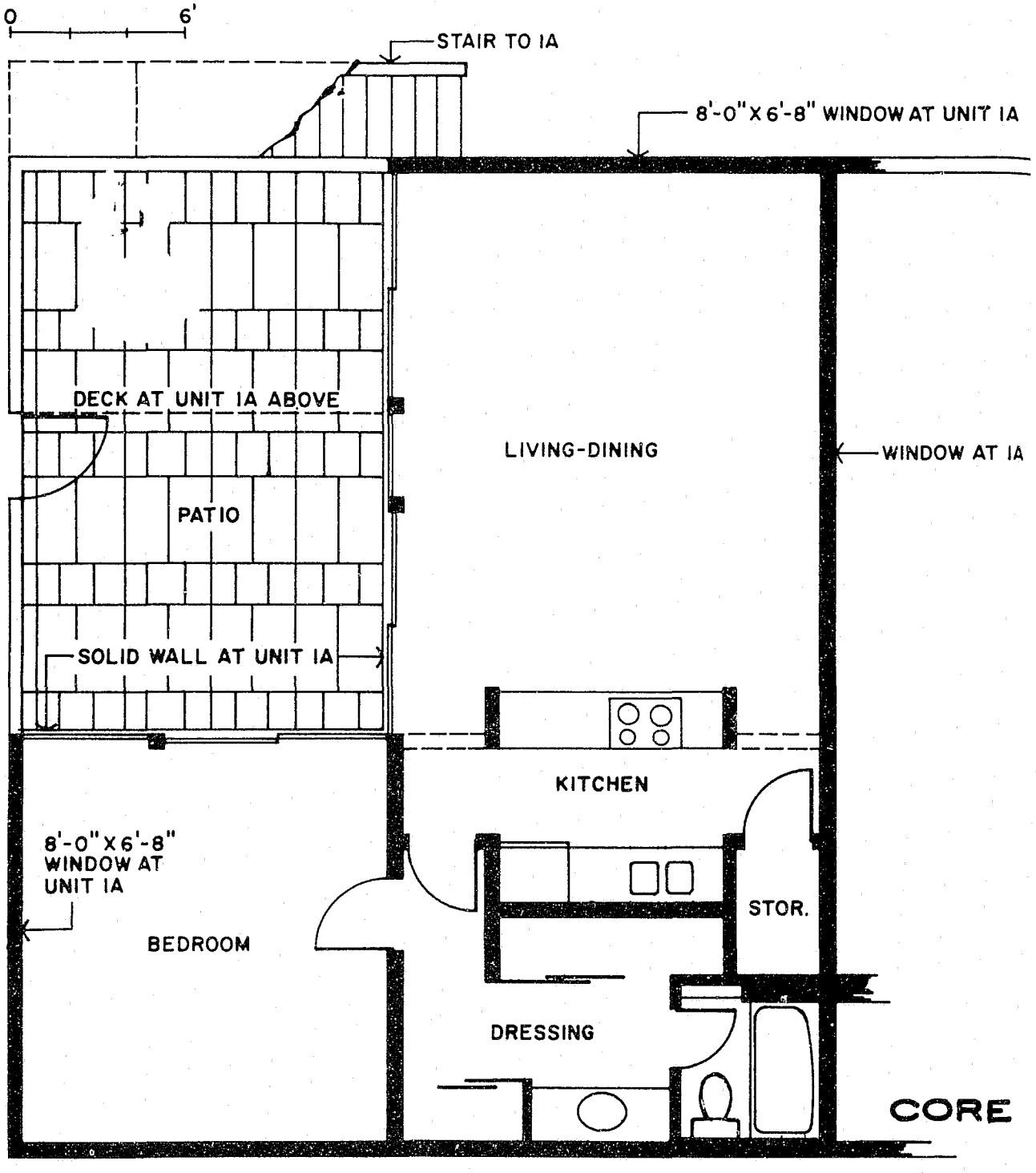
Density space attributes

Three features have been employed which, though not uncommon in private developments, are unknown to public housing. The rear of the units have been provided with a low fence to define the rear yard; the front of the units have been provided with a small individual front porch with an unfenced front yard.

In the summer of 1964, 10 years after its completion, a survey and interview was undertaken by Clare C. Cooper of the Center for Planning and Development Research, Berkeley, to determine the extent of success of the design proposals. Almost universally, interviewed residents spoke about the attributes of the privately defined rear yard and the significance of the front porch. Fifty-five percent of those interviewed would have preferred the rear fences to be six or more feet high and thus more visually defined and screened; the family could then utilize this area as private outdoor space rather than be restricted by its present semi-private nature.

"Whereas the back yard at Easter Hill Village appeared to be a space into which family activities overflowed from inside the house, the space at the front of the house had more social connotations, forming both a barrier between the privacy of the house and the completely public nature of the surrounding neighborhood, as well as a link between the small social group of the family and the larger social group of the community. As we have noted above, the front porch and the front yard were important as locales where tenants could add individuality to their homes and maintain status in their own and their neighbor's eyes. As such, then, they performed just as important a psychological and social function as do the carefully tended front lawns of suburbia."

Having come this far in their conceptualizing of private and public spaces, it is surprising that in their site plans the architects did not also choose to restrict entry to the rear access paths to groups of 10 to 15 families.



The basic one bedroom unit contains a large living room which adjoins a semi-private terrace.

FIGURE 7–24. The Californian, Tustin, Calif. Sketch showing apartment floor plan. Plans of apartment units at Tustin are designed so that the rooms surround enclosed patios. Few windows, if any (except those in the two-story apartments) look out onto the adjacent walks or courts.

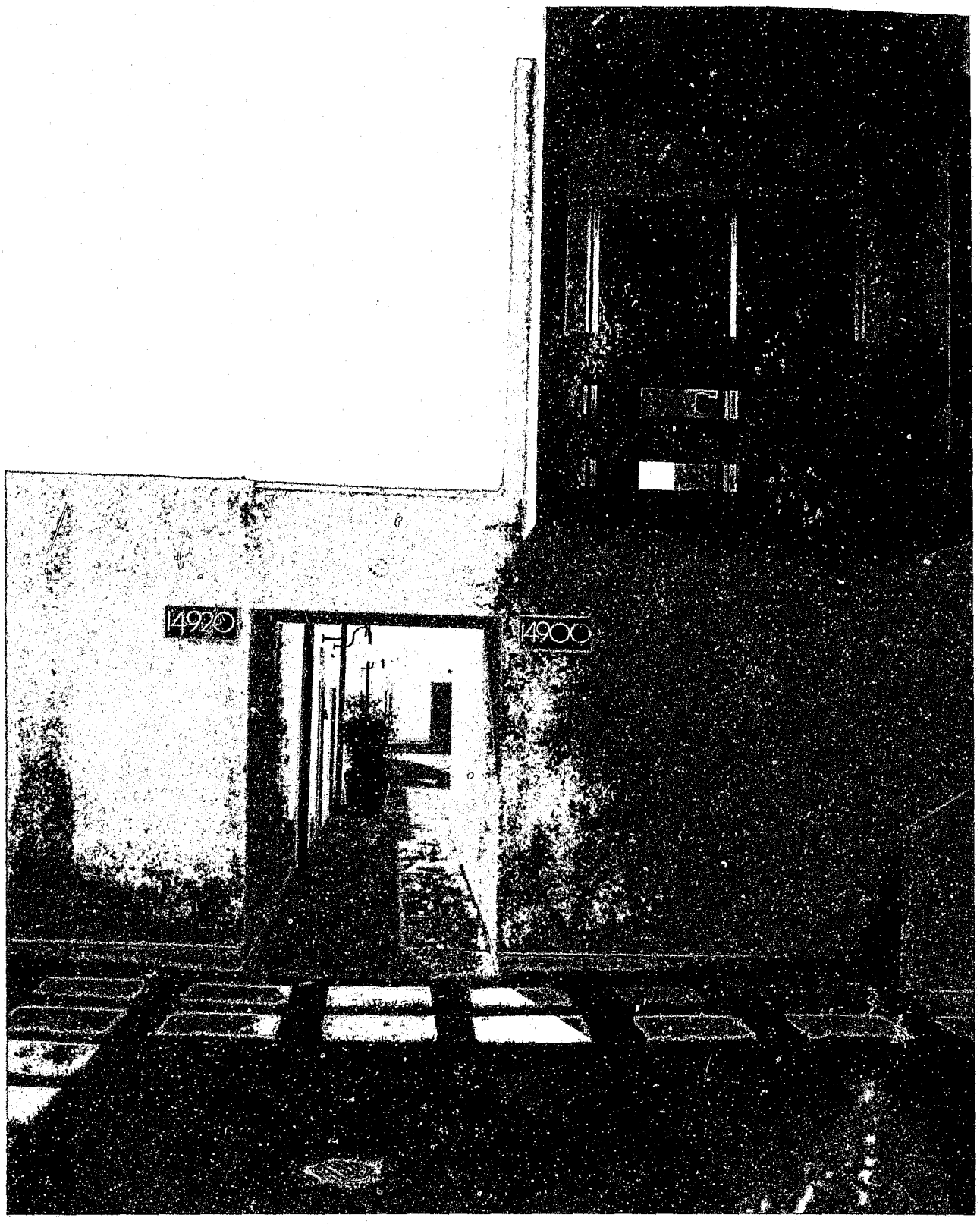


FIGURE 7–25. The Californian, Tustin, Calif. View showing court and walkways. Walkways at Tustin are interrupted only by an occasional entry way and even less frequently by a second-story window.

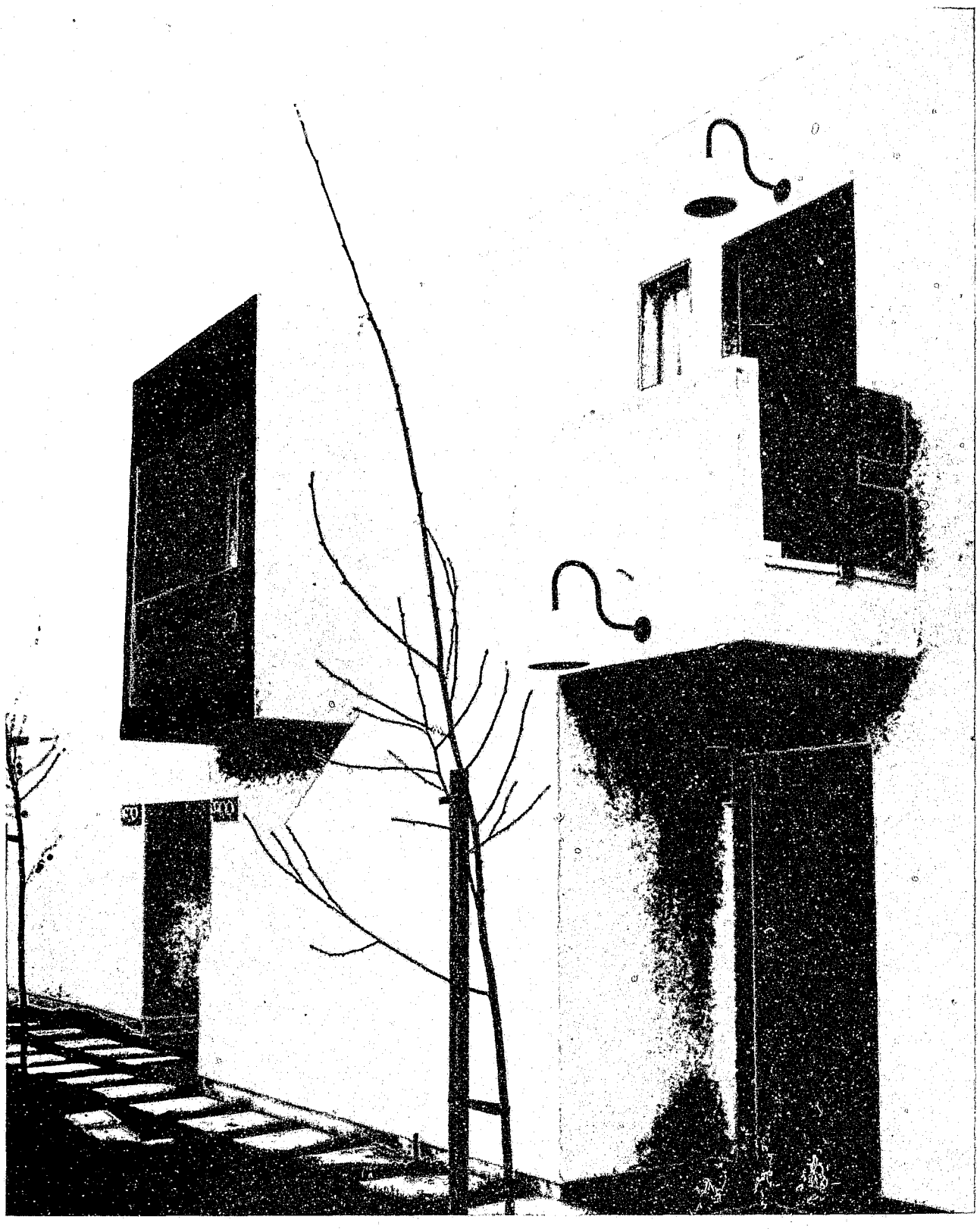


FIGURE 7–26. The Californian, Tustin, Calif. View showing the interior of the project. Windowless walls border static green spaces and narrow walkways.

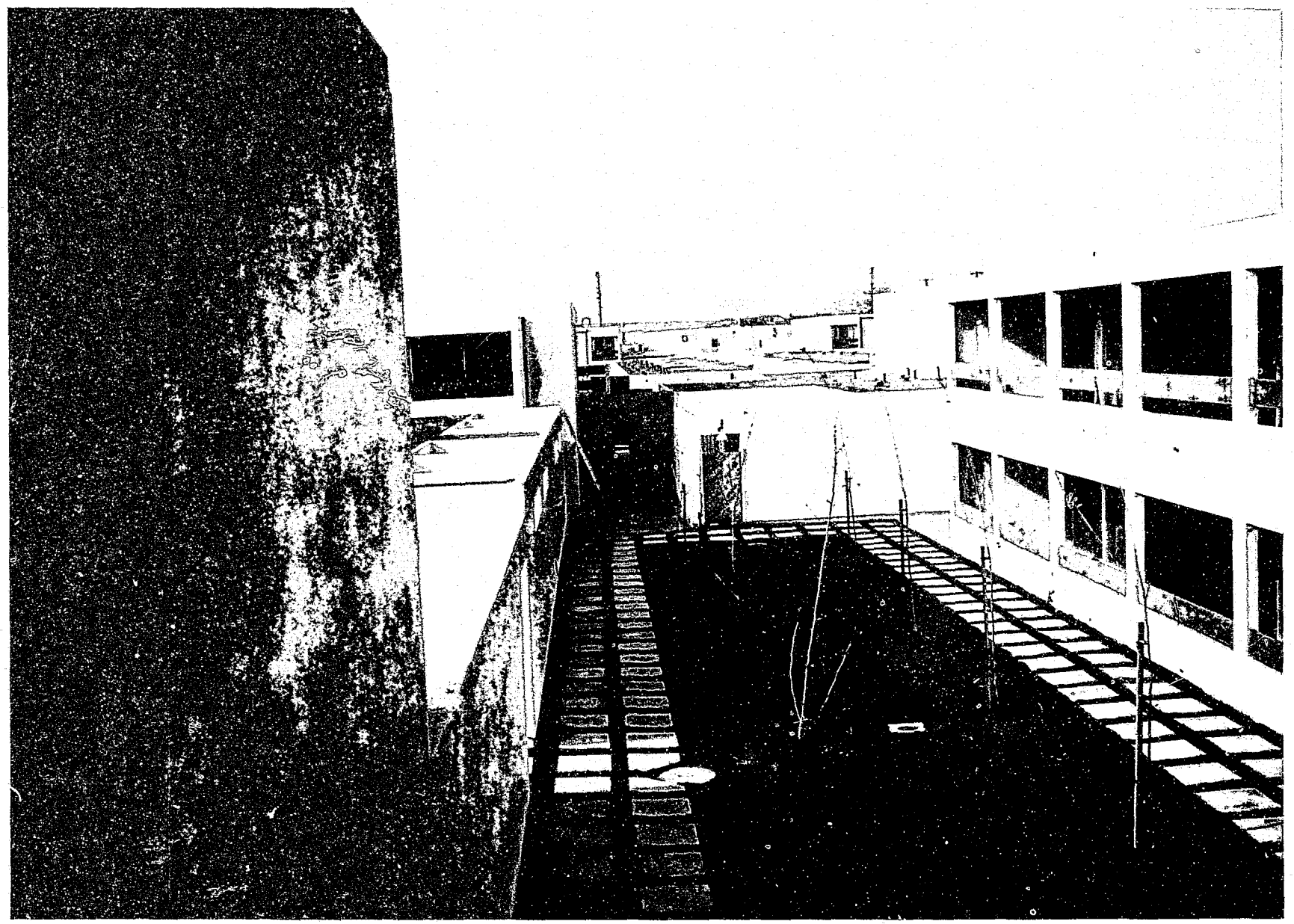


FIGURE 7–27. The Californian, Tustin, Calif. View showing inward looking units.

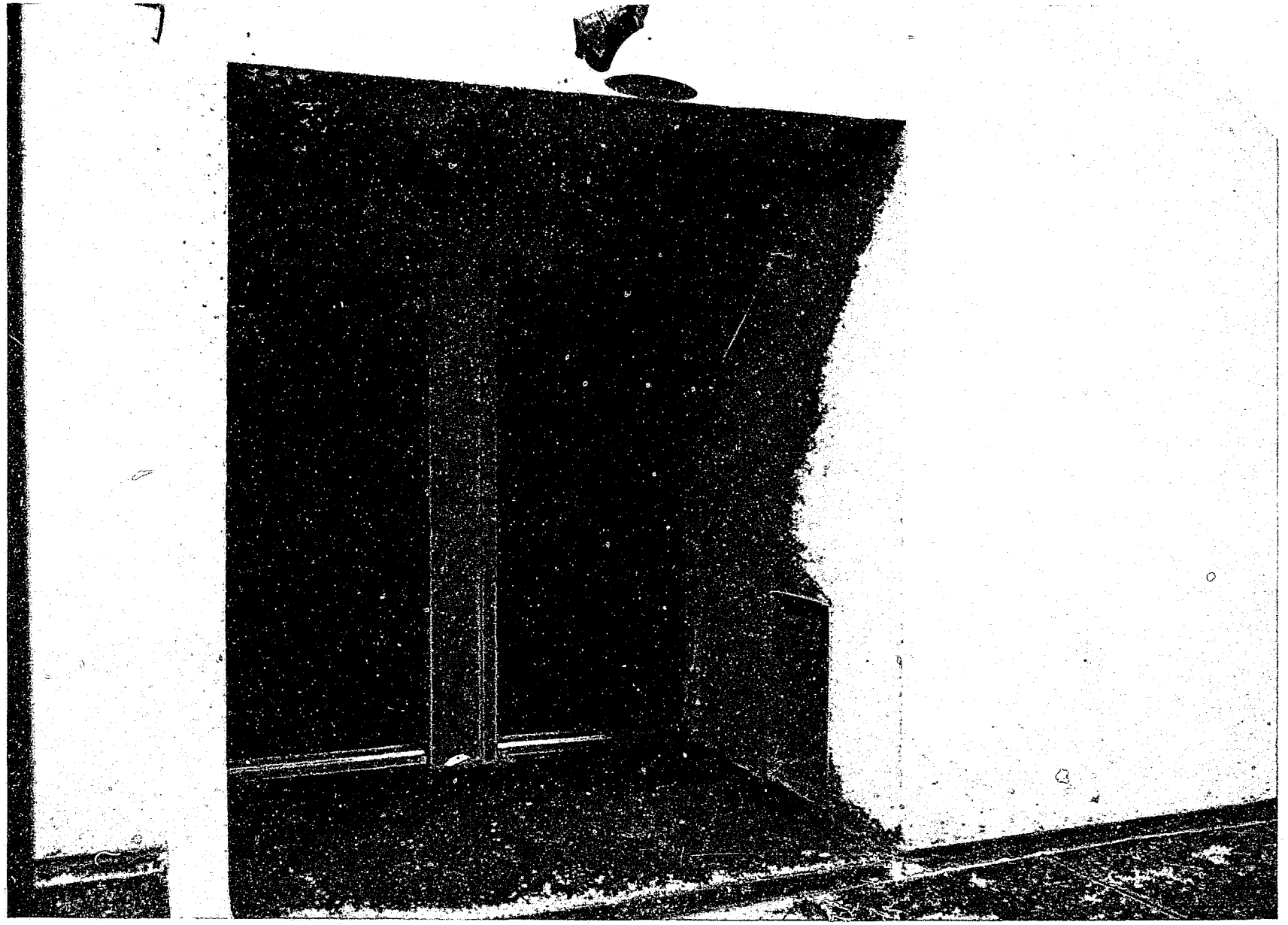


FIGURE 7–28. The Californian, Tustin, Calif. View showing entry. Entries to paired units are well-defined, in spite of the other inadequacies of design.

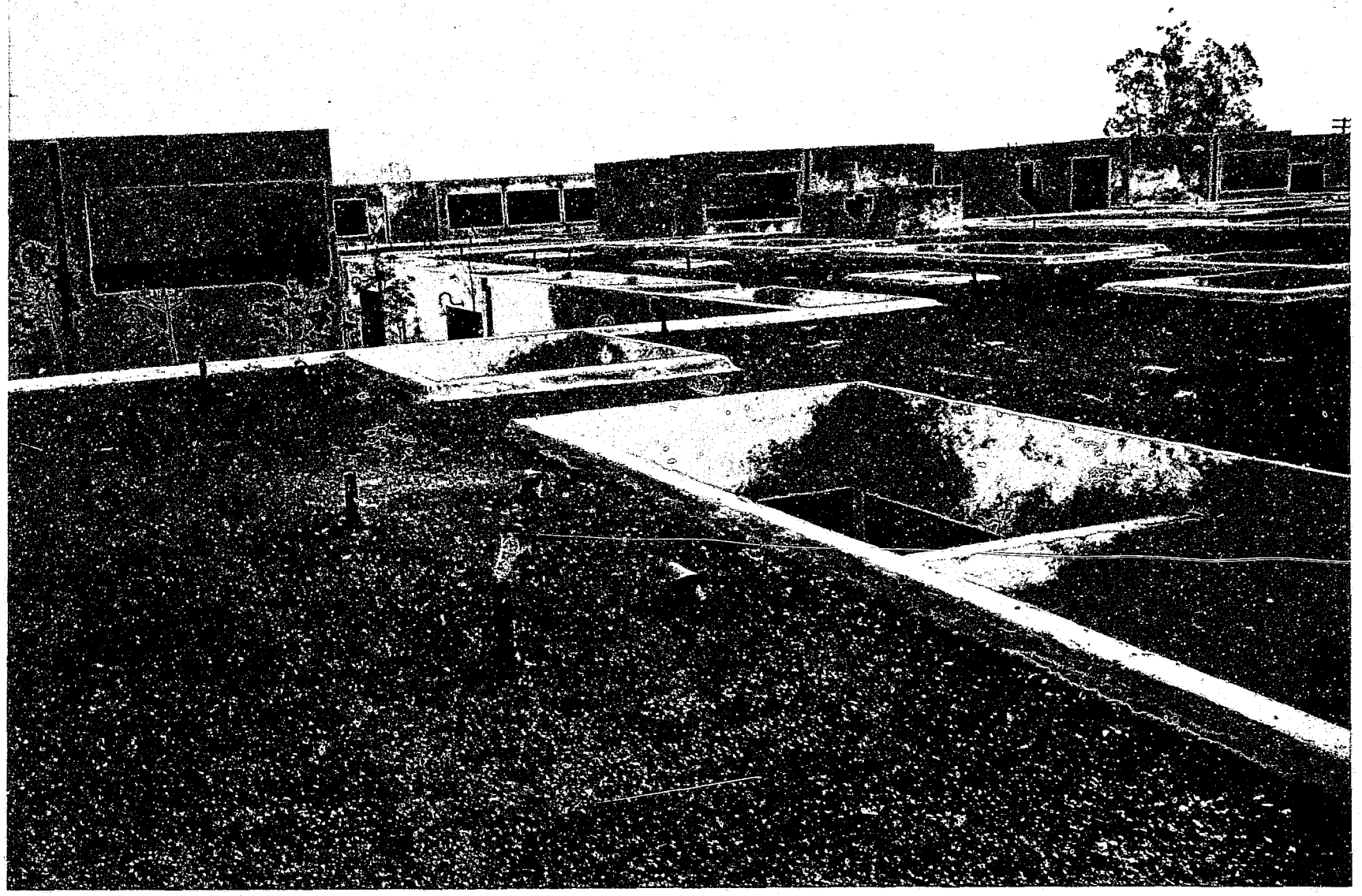


FIGURE 7–29. The Californian, Tustin, Calif. View showing courtyard walls. The walls of the unit courtyards are not as protective from a security standpoint as one might think. The courtyard walls are easily scaled, and once within the courtyard or vestibule an intruder is hidden from outside surveillance, free to force entry into the unit at his leisure.

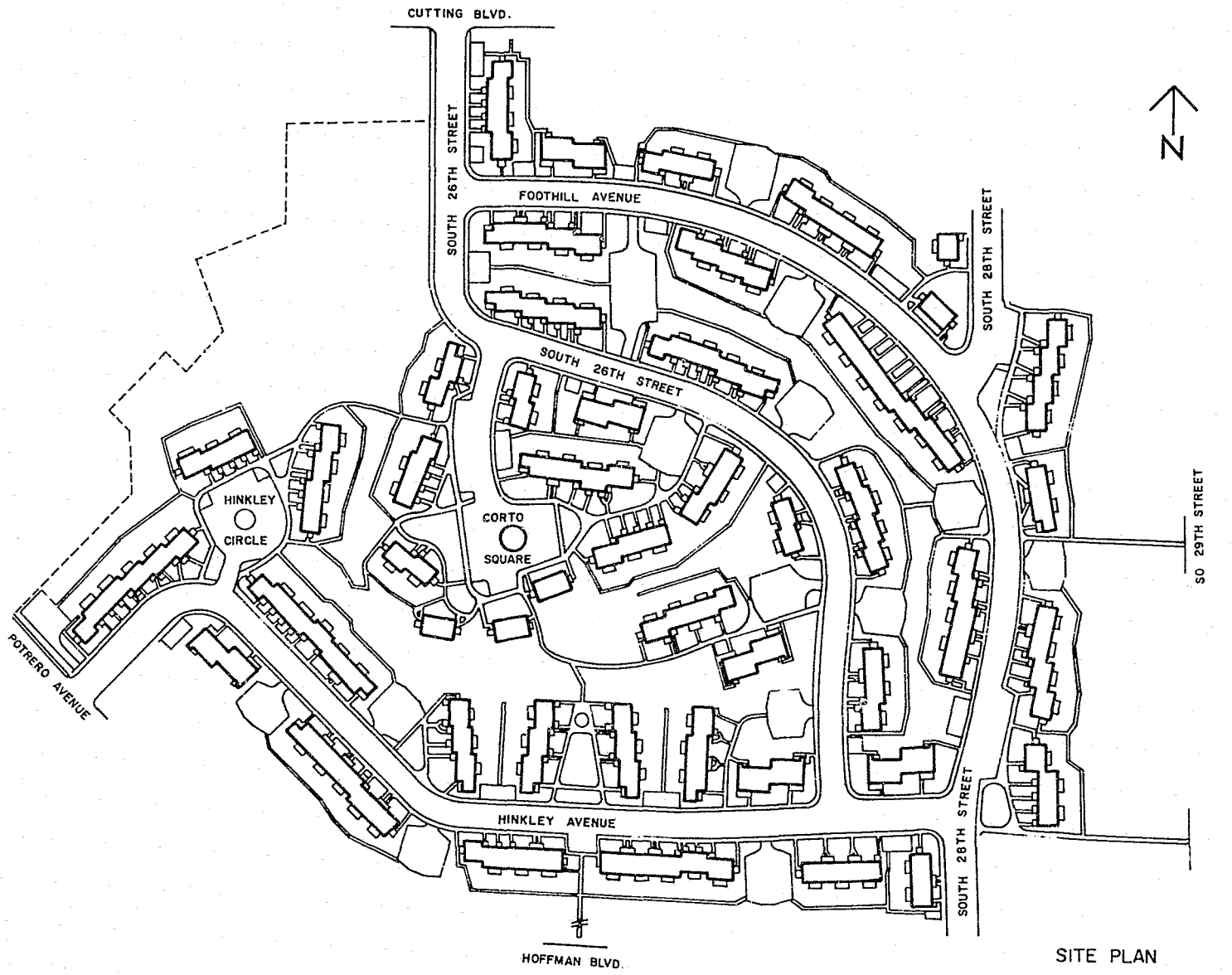


FIGURE 7–30. Easter Hill Village, Richmond, Calif. Site plan.

3. ***Middle income housing: Tower Hill, St. Louis County, Mo. 44 units, 6.3 acres (7.0 d.u./ acre). Architects: Anselinicus and Montgomery, St. Louis.***

Density and locale

Tower Hill is a middle income, 41-unit project, in size not atypical of a small suburban development package. It makes two rather significant contributions to a defensible space vocabulary: the use of earth moving techniques to complement the natural topographical features of the site to achieve a multi-level separation between the public front and private rear of the dwellings; and the grouping of units and their front entries around a central public square and parking area, which is also the main entry to the project.

Defensible space attributes

The architects have reasoned that the entry to the house immediately opposite the parking area in a suburban family dwelling inevitably becomes the main entry to the building, whether front or rear, so designated or not. They have also reasoned that the most public zone of the project is the space occupied by the road and public vehicles.

So in what must appear to many architects as blatant pandering to the automobile and a questionable expression of an automobile oriented life style, the architects have intentionally chosen to make the center of gravity of the project its large central parking lot (see fig. 7–31, p. 175).

In practice, the architects have been accurate in their predictions. The parking lot, the sidewalks bordering and defining it, and the entries to the units immediately facing these walks, have become the development's recognized public zone (see fig. 7–32, p. 176). Since a good percentage of the vehicles are in use during the day, the emptied parking area has become a significant play space for the ten to sixteen year olds living there.

The private areas of the project are located behind the dwelling units, a level or two below the grade of the parking and entry area (see fig. 7–33, p. 177). They are screened from this public area by the dwelling units themselves, coupled with the steep grade differential. The grounds area in the rear, immediately adjacent to the dwelling unit, is developed as a private patio, usually facing off the playroom space one or two levels below the entry.

The project has proven a very successful defensible space design in that entry into the project by vehicle is limited to the common parking space and public area and the front doors of the units all face each other and this area. Entry by foot along anything but the designated routes and public paths is difficult due to the ringing of the project with artificial berms. Anyone attempting alternate entry would appear odd indeed and become subject to surveillance and question.

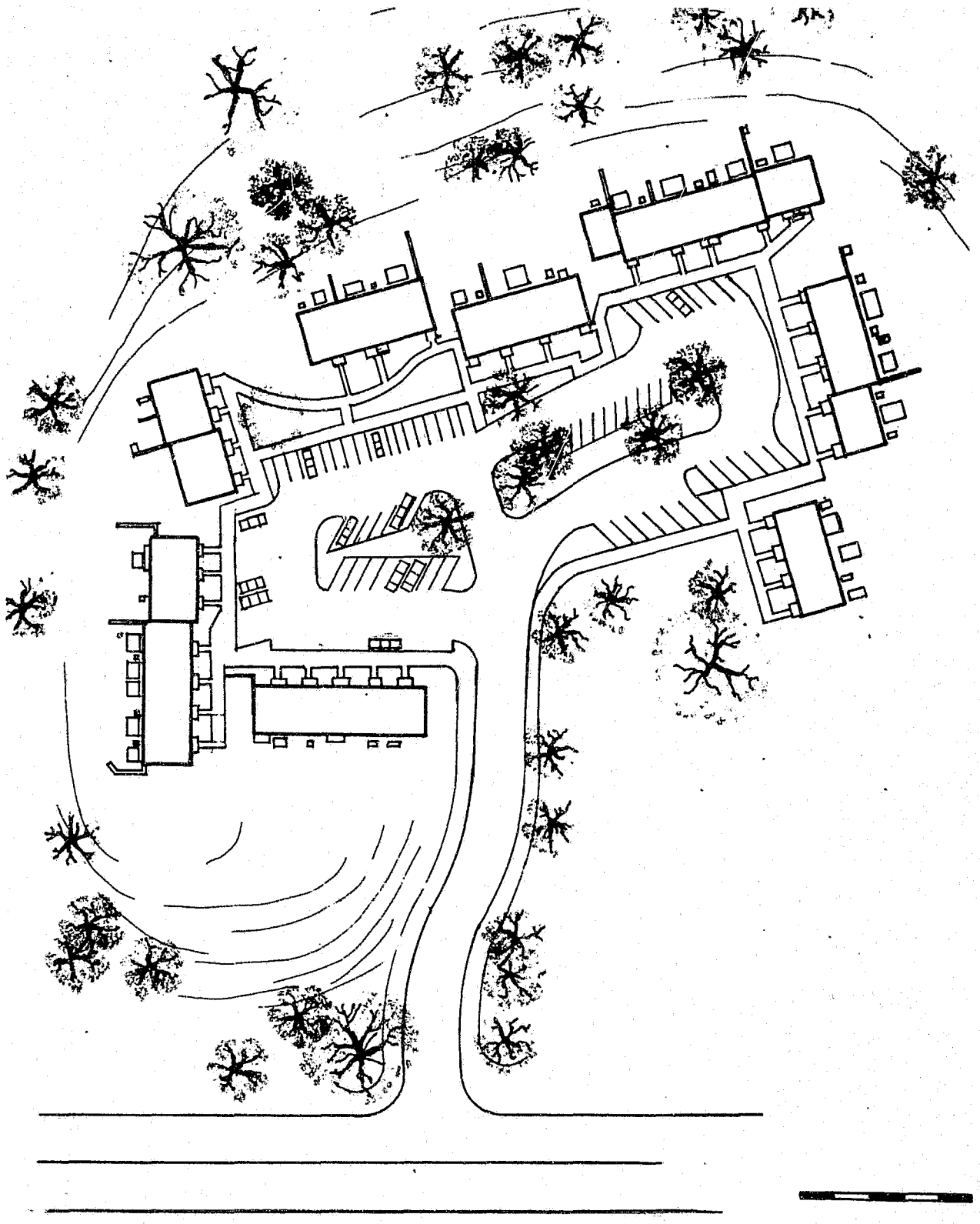


FIGURE 7–31. Tower Hill, St. Louis County. Site plan.

FIGURE 7–32. Tower Hill, St. Louis County, Mo. View of central parking area. Row-house entrances maintain surveillance.

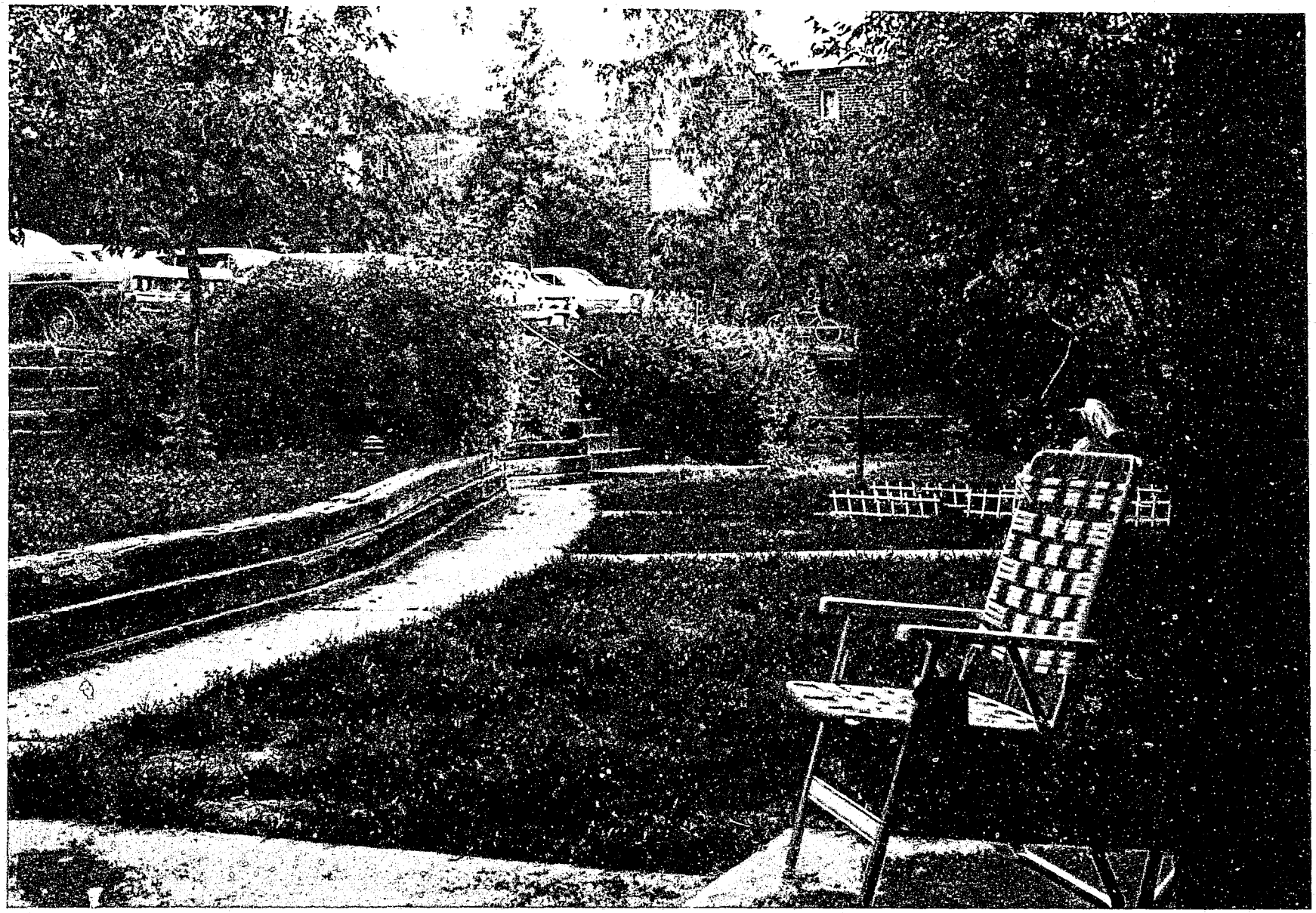


FIGURE 7–33. Tower Hill, St. Louis County, Mo. View showing semiprivate sitting areas. Individualized green areas near the stoop of each door provide semiprivate sitting areas with high visibility around entrances.

Bibliography

Environmental form:

Alexander, Christopher. *Notes on the Synthesis of Form,* Cambridge, Mass., Harvard University Press, 1964.

Boulding, Kenneth E. *The Image,* Ann Arbor, Mich., The University of Michigan Press, 1956.

Jennings, Burgess H., and Murphy, John E. *Interactions of Man and His Environment,* New York, Plenum Press, 1966.

Lynch, Kevin. *The Image of the City,* Cambridge, Mass., The M.I.T. Press, 1966.

Meier, Richard L. *A Communications Theory of Urban Growth,* Cambridge, Mass., The M.I.T. Press, 1970.

Parr, A. E. "City and Psyche," *Yale Review,* IV:4, Autumn, 1965, pp. 71–85.

SER 2. *Environmental Evaluations,* Ann Arbor, Mich., The University of Michigan Press, 1965.

Stripe, Robert E., ed. *Perception and Environment,* The Institute of Government, University of North Carolina at Chapel Hill, 1966.

Webber, Melvin, et al. *Explorations into Urban Structure,* Philadelphia, University of Pennsylvania Press, 1964.

Wingo, Lowdon Jr. *Cities and Space: Future Use of Urban Land,* Baltimore, Johns Hopkins Press, 1963.

Social policy:

Bell, Daniel. *The End of Ideology,* New York, Macmillan Co., 1960.

City of New York. *The Threatened City: A Report on the Design of the City of New York,* by the Mayor's Urban Task Force. New York: 1967.

Duhl, Leonard, ed. *The Urban Condition,* New York, Simon and Schuster, 1963.

Ewald, William R., Jr., ed. *Environment and Policy: The Next Fifty Years,* Bloomington, Indiana University Press, 1968.

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

Montgomery, Roger. "Improving the Design Process in Urban Renewal," *Journal of the American Institute of Planners,* XXXI:1, February, 1965, pp. 7–20.

———, "Comment on 'Fear and House-as-Haven in the Lower-Class,'" Journal of the American Institute of Planners, XXXII:1, January, 1966.

New York City Planning Commission, *Plan for New York,* New York, 1969.

Newman, Oscar. *Park-Mall Lawndale,* St. Louis, Urban Renewal Design Center, Washington University, 1968.

Roslansky, John D., ed. *The Control of the Environment,* Amsterdam, North-Holland, 1967.

Starr, Roger. *Urban Choices: The City and Its Critics,* Baltimore, Penguin Books, 1966.

Urban Renewal Administration, *Design Objectives in Urban Renewal,* Technical Guide #16, Washington, D.C., U.S. Government Printing Office, 1965.

Wilson, James O., ed. *Urban Renewal,* Cambridge, The M.I.T. Press, 1966.

Housing and the Sociology of the Family:

Adams, Bert N. *Kinship in an Urban Setting,* Chicago, Markham Publishers, 1968.

Brolin, Brent C., and Zeisel, John. "Mass Housing: Social Research and Design," *Architectural Forum,* July/August 1968, pp. 66–71.

Festinger, Schacter, Back. *Social Pressures in Informal Groups (A Study of Human Factors in Housing),* Stanford, Stanford University Press, 1950.

Firey, Walter. *Land Use in Central Boston,* New York, Greenwood Press, 1968.

Fried, Marc, and Gleicher, Peggy. "Some Sources of Residential Satisfaction in an Urban Slum," *Journal of the American Institute of Planners,* XXVII: ?, 1961, pp. 305–315.

Gans, Herbert J. *The Urban Villagers,* New York, Macmillan Company, 1962.

———, "Planning and Social Life," *Journal of the American Institute of Planners.*

Gutman, Robert. *A Sociologist Looks at Housing,* New Brunswick, New Jersey, Urban Studies Center, Rutgers University Press.

Lewis, Oscar. *Five Families,* New York, Mentor, 1959.
——, *La Vida,* New York, Vintage Books, 1965.
———, *The Children of Sanchez,* New York, Vintage, 1963.
Morris, R. N., and Mogey, John. *The Sociology of Housing,* London, Routledge and Kegan Paul Ltd., 1965.
Rainwater, Lee. "Fear and the House-as-Haven in the Lower-Class," *Journal of the American Institute of Planners,* XXXII:1, January, 1966, pp. 23–37.
——, *Workingman's Wife,* New York, Oceana Publications, 1959.
Schorr, Alvin L. *Slums and Social Insecurity,* Washington, D.C., U.S. Government Printing Office,
Van der Ryn, S. *Amenity Attitudes of Residential Location,* San Francisco: A. D. Little, 1965.
Van der Ryn, S., and Silverstein, M. *Dorms at Berkeley: An Environmental Analysis,* Berkeley, University of California at Berkeley, 1967.
Young, Michael, and Willmott, Peter. *Family and Kinship in East London,* Baltimore, Penguin Books, 1957.
Wilner, Walkley, et al. *The Housing Environment and Family Life,* Baltimore, Johns Hopkins, 1962.
Wood, Elizabeth. *Housing Design: A Social Theory,* New York, Citizens' Housing and Planning Council of New York, Inc., 1961.

Human territoriality:

Ardrey, Robert. *African Genesis,* New York, Dell Publishing Company, 1961.
——, *The Territorial Imperative,* New York, Dell Publishing Company, 1966.
Barker, Roger G. *Ecological Psychology,* Stanford, Stanford University Press, 1968.
Barker, Roger, and Gump, Paul. *Big School, Small School: High School Size and Student Behavior,* Stanford, Stanford University Press, 1964.
Goffman, Erving. *Behavior in Public Places,* New York, Macmillan Company, 1963.
———, *Interaction Ritual,* New York, Doubleday, 1967.
Hall, Edward T. *The Silent Language,* New York, Fawcett, 1959.
Newman, Oscar. *Physical Parameters of Defensible Space, Past Experience and Hypotheses,* New York, Columbia University, 1969.
Rand, George. *Territoriality and Behavior: Private and Public Domains in the Urban Setting,* New York, Columbia University, 1969.
Sommer, Robert. *Personal Space: The Behavioral Basis of Design,* Englewood, New Jersey, Prentice-Hall, 1969.
Stea, David. "Space, Territory and Human Movements," *Landscape,* XV:4, Autumn, 1965.
Theodorson, George A. *Studies in Human Ecology,* New York, Harper and Row, 1961.

Urban crime:

Angel, Schlomo. *Discouraging Crime Through City Planning,* Berkeley, The University of California, 1968.
Annals, The. *Patterns of Violence,* The Annals of the American Academy of Political and Social Science, Volume 364, March, 1966.
———, *Combatting Crime,* The Annals of the American Academy of Political and Social Science, Volume 374, November, 1967.
Chicago Housing Authority. *Annual Statistical Report,* Chicago, 1969.
Federal Bureau of Investigation. *Crime in the United States: Uniform Crime Reports,* Washington, D.C., 1970.
Hoffman, Richard B. *The Transfer of Space and Computer Technology to Urban Security,* Berkeley, University of California, 1966.
Morris, Norval, and Hawkins, Gordon. *The Honest Politician's Guide to Crime Control,* Chicago, The University of Chicago Press, 1970.
The National Commission on Civil Disorders. *Report of the National Commission on Civil Disorders,* New York, Bantam, 1968.
New York City Housing Authority Police Department. *Annual Report,* New York, 1969.
New York City Housing Authority, *Tenant Data,* New York, 1969.
President's Commission on Law Enforcement and Administration of Justice. *The Challenge of Crime in a Free Society,* New York, Dutton, 1969.
St. Louis Housing Authority. *Annual Statistical Report,* 1969.
Westin, Alan F. *Privacy and Freedom,* New York, Atheneum, 1970.

APPENDIX A. Conference on Design for Improving Safety in Residential Evironments

(Held at Columbia University, New York, N.Y., November 13 and 14, 1969)

AGENDA

Thursday, November 13

9 a.m. to 12:30 p.m.:

Visit to publicly and privately financed housing projects in New York City and Newark. En route description and discussion of problems.

1:30 p.m. to 5:30 p.m.:

Welcome by: Peter Kenan, provost; Henry S. Ruth Jr., director of NILECJ.

Presentation of papers and discussion: "Territoriality and Behavior, Private and Public Domains in the Urban Setting" by Dr. George Rand, associate professor of psychology, Teachers College, Columbia University.

Open discussion: "Physical Parameters of Defensible Space, Past Experience and Hypotheses" by Oscar Newman, architect and city planner, associate professor of architecture, Columbia University.

Open discussion.

6:30 p.m. to 8:30 p.m.:

Response to Conference Papers: Dr. Erving Goffman, University of Pennsylvania; Dr. Lee Rainwater, Harvard University, Joint Center for Urban Studies.

Open discussion.

Friday, November 14

9 a.m. to 12 noon:

"Study Methodology, Measures and Available Statistics" by John Zeisel, Bureau of Applied Social Research, Columbia University.

Open discussion: "Outline of Proposed Study and Nature of Participation of Sponsoring Agencies" by Newman and Rand.

Open discussion.

Concluding Remarks by Henry S. Ruth Jr., director, National Institute of Law Enforcement and Criminal Justice.

CONFERENCE PARTICIPANTS

U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice: Henry S. Ruth,

Jr., director; Irving Slott, assistant director, John Conrad, chief, Center for Crime Prevention and Rehabilitation.

U.S. Department of Housing and Urban Development: Ar Dee Ames, executive assistant to the assistant secretary for the Renewal and Housing Administration; William Brill, director, Office of Social Research.

New York City Housing Authority: Albert Walsh, chairman; Irving Wise, director of management.

New York City Housing Authority Police: Joseph Rothblatt, chief; Robert Ledee, acting deputy chief.

City of Newark: Donald Malafronte, director, Community Development Administration, Administrative Assistant to the Mayor; Joseph Sivolelo, director, Newark Housing Authority.

Metropolitan Cleveland: Irving Kreigsfeld, director, Cleveland Metropolitan Housing Authority.

Columbia University: Oscar Newman, associate professor of architecture; George Rand, associate professor of psychology; John Zeisel, Bureau of Applied Social Research.

Invited professionals: Erving Goffman, professor of sociology, University of Pennsylvania, Philadelphia, Pa.; Lee Rainater, professor of sociology, Harvard University.

Representatives of institutions: Milton Rector, director, National Council on Crime and Delinquency; Michael Barker, director of urban programs, American Institute of Architects; James P. McGuire, Member of the board of governors, Real-Estate Board of New York.

APPENDIX B. Tenant Statistics and Police Data

In order to assess the impact of physical design parameters on crime rate and type of crime, it is necessary to develop a conceptual model which accounts for major sources of variation from project to project. This is especially necessary in the current study because physical design parameters will, at best, have effects through interaction with other salient variables. To demonstrate main effects of "design" parameters on crime rate and type of crime would require a larger population of projects for classification into building and project-types that exists in the natural setting. Therefore, from the beginning a step-wise multivariate design is recommended. Most of the data necessary for these analyses will be available from N.Y.C.H.A. tenant information files and from the N.Y.C.H.A. police compilation of crime statistics.

1. Tenant Statistics. Samples of the *Transcript of Tenant Data* form and the supplementary form *Current Data,* used for annual updating, are shown on pages 183 and 184. Upon entry, project residents complete the tenant data form concerning their family characteristics, assets, background, previous residence, etc. This form is updated annually.

2. Police Data. For each reported crime a police incident report is completed. A copy of the police incident report form and the code-interpretation sheet are shown on pages 185 and 186. These data are available on "tape" for the period January 1 to December 31. Initial analyses will probably be restricted to "Reports of Incidents."

3. Project Design Characteristics. The physical characteristics of projects and their surrounding settings are drawn largely from Housing Authority compilations, and were also compiled in a format shown in sample form as Figure 5–16, page 118.

NYCHA 047.0018R (REV. 9/71)

TRANSCRIPT OF TENANT DATA

NEW YORK CITY HOUSING AUTHORITY

REPORT ON ADMISSION OF NEW TENANT

PROJECT NAME	Cols. 1-3 PROJECT #	Cols. 4-8 ACCT. NO.

Cols. 9-10 TENANT'S NAME *(Please Print)* LAST FIRST	Col. 11 TRANSCRIPT CODE	APT. SIZE *(No. of full Rms.)*
	4	

ITEM	CODE
DATE ADMITTED Month - Year	Cols. 12-15 /
RACE OR ETHNIC GROUP	Col. 16
White	1
Black *(Negro)*	2
Puerto Rican	3
Other Spanish American	4
American Indian	5
Oriental	6
Other Minorities *(specify)* _____	7
BASIS FOR SELECTION	Cols. 17-18
Former Site Occupant	01
Displaced from N.Y.C.H.A. Site *(Code X)* *Specify* _____	02
Displaced from URA, other Redevelopment Area or Public Improvement Site *(Code Y)* *Specify* _____	03
Displaced by Building Vacate Order *(Code O)*	04
Court Order Eviction *(Code 1)*	10
Health Emergency *(Code 1)*	11
Homeless Family *(Code 1)*	12
Vietnam Veteran or Serviceman	13
Extremely Substandard Housing *(Code 2)*	14
Extreme Hardship *(Code 3)*	15
Grossly Overcrowded Family *(Code 4)*	16
Health Hardship *(Code 5)*	17
Substandard Housing *(Code 6)*	18
Overcrowded Family *(Code 7)*	19
Doubled-up Family *(Code 7)*	20
Split Family *(Code 7)*	21
Rent Hardship *(Code 8)*	22
Other Substandard and/or Hardship Conditions *(Code 7)*	23
Former Tenant Readmitted	24
Resident Employee	25
TENANT ADMITTED ABOVE NORMAL ADMISSION LIMIT	Col. 19
Yes - Vietnam Veteran	1
Yes - Other *(specify)* _____	2
No	3
ASSETS	Col. 20
None or Unknown	0
Less than $1,000	Y
$1,000 - 1,999	1
2,000 - 2,999	2
3,000 - 3,999	3
4,000 - 4,999	4
5,000 - 5,999	5
6,000 - 6,999	6
7,000 - 7,999	7
8,000 - 8,999	8
9,000 - 9,999	9
10,000 or more *(specify)* $ _____	X

ITEM	CODE
PREVIOUS HOUSING	
BOROUGH	Col. 21
Manhattan	1
Brooklyn	2
Bronx	3
Queens	4
Staten Island	5
Out of Town	6
OCCUPANCY	Col. 22
Own Apartment	1
Apartment Shared	2
Rooming House or Furnished Room	3
Hotel	4
Janitor or Superintendent	5
Owner	6
Unknown	7
SIZE OF APARTMENT Number of Full Rooms	Col. 23
GROSS MONTHLY RENT FOR APT. Amount *(Dollars only)*	Cols. 24-26 $
RESIDENCE AT LAST ADDRESS	Col. 27
Less than 6 Mos.	0
6-11 Mos.	1
1 Year, less than 2	2
2 Years, less than 3	3
3 Years, less than 4	4
4 Years, less than 5	5
5 Years, less than 10	6
10 Years, less than 15	7
15 Years, less than 20	8
20 Years, or more	9
Unknown	X

(over)

ITEM	CODE
CURRENT DATA	
GROSS ANTICIPATED INCOME Amount *(Dollars only)*	Cols.28-32 $
NET INCOME FOR RENT Amount *(Dollars only)*	Cols.33-37 $
NET INCOME FOR ELIGIBILITY Amount *(Dollars only)*	Cols.38-42 $
MONTHLY GROSS RENT Amount *(Dollars & Cents)*	Cols.43-47 $
CLASSIFICATION OF NEW RENT	Col. 48
Basic Rent	1
Surcharge Rent	2
Maximum Rent	3
Public Assistance Rent	4
Brooke Rent	5
Resident Employee Rent	6
SIZE OF FAMILY Number of Persons	Cols.49-50
FAMILY COMPOSITION	Col. 51
Single Person	0
Husband, Wife, no Children	1
Mother, Father, and Children	2
Mother and One or More Children	3
Father and One or More Children	4
Sisters, or Brothers and Sisters	5
Other *(specify)* _____	6
Doubled-up Family	7
PERSONS CURRENTLY EMPLOYED Number	Col. 52
HEAD OF HOUSEHOLD EMPLOYED *(Male or Female)*	Col. 53
No	0
Yes	1
SPOUSE EMPLOYED	Col. 54
No or Not Applicable	0
Yes	1
MINORS CURRENTLY EMPLOYED Number	Col. 55
OTHER ADULTS CURRENTLY EMPLOYED Number	Col. 56
MINORS OUT OF SCHOOL WORKING PART TIME Number	Col. 57
MINORS OUT OF SCHOOL NOT WORKING Number	Col. 58

ITEM	CODE
AGE OF HEAD OF HOUSEHOLD Years *(as of last birthday)*	Cols.59-60
SEX OF HEAD OF HOUSEHOLD	Col. 61
Male	1
Female	2
AGE OF SPOUSE Years *(as of last birthday)*	Cols.62-63
DISABLED OR HANDICAPPED *(Circle first code which is applicable)*	Col. 64
Head of Household Disabled	1
Spouse Disabled	2
Head of Household Handicapped	3
Spouse Handicapped	4
Neither Disabled nor Handicapped	5
SOURCES OF CURRENT INCOME *(Mult.)*	Cols.65-69
Employment	1
Own Business	2
Dept. of Social Services: Family on Public Assistance	3
Individual *(Other than head of household or spouse)* on Public Assistance	4
Social Security: Old Age or Disability Ins.	5
Survivors Insurance	6
Military Allotment & Serviceman's Pay	7
V.A. Benefits	8
Other Benefits from Public Funds *(specify)* _____	9
Other *(Non-public)* *(specify)* _____	0
NUMBER OF PERSONS IN SPECIFIED AGE GROUPS	Cols.70-79
Under 2 years (Col.70)	
2 - 3 years (Col.71)	
4 - 5 years (Col.72)	
6 - 9 years (Col.73)	
10-13 years (Col.74)	
14-17 years (Col.75)	
18-20 years (Col.76)	
21-49 years (Col.77)	
50-61 years (Col.78)	
62 years and over (Col.79)	

Prepared by _____

Date _____

NYCHA 080.003&R (REV. 10/64)

INCIDENT REPORT

NEW YORK CITY HOUSING AUTHORITY • POLICE DEPARTMENT

1. REPORT	2. INCIDENT #	3. PROJECT (name)	IBM #	5. INCIDENT: ☐ FELONY ☐ MISDEM. ☐ OFFENSE ☐ H.A.R.R. ☐ AIDED	7. OCCURRED	DAY	DATE	TIME	9. INTRA-HOUSEHOLD ☐ YES ☐ NO
☐ INIT. ☐ SUBS. ☐ ADDIT.		4. PLACE OF OCCURRENCE (Bldg., apt., walk, etc.)		BLDG. PROJ. 6. ☐ IN ☐ OUT ☐ ON ☐ OFF	8. REPORTED				MGR. REPORT NO.

10. SECTION Ⓐ : COMPLAINANT(S) / WITNESS(ES) / AIDED

NAME (last, first, middle)	ADDRESS (no., st., apt., borough)	PHONE NO.	AGE	RACE (color)	SEX M	SEX F	TENANT YES	TENANT NO	C/PLT	WIT.	AIDED	
1												
2												
3												

AIDED DELIVERED TO: ☐ HOSPITAL (name of hospital) ☐ HOME ☐ MORGUE ☐ CLAIMED ☐ S.P.C.C.

DRIVEN BY: (name, licence no., relationship)

11. SPECIFY — CRIME, OFFENSE, VIO. H.A.R.R., AID — CODE #

12. SECTION Ⓑ : VIOLATOR(S) / ARRESTED / WANTED

NAME (last, first, middle, aliases)	ADDRESS (no., st., apt., borough)	OCCUPATION/ SCHOOL	TENANT YES	TENANT NO	AGE	RACE (color)	SEX M	SEX F	YD'ED. YES	YD'ED. NO	HT.	WT.	
①													
②													
③													

REPORTING OFFICER'S NAME, RANK | ASSIGNMENT | SHIELD NO.

SECTION Ⓒ DETAILS

(Give pertinent circumstances and conditions, property or objects involved and their values, seriousness of injury or illness, by whom aided person is claimed, action taken, etc.)

13. ARRESTS/ APPREHENSIONS SPECIFY CRIME OFFENSE OR VIOL.H.A.R.R.

	Ⓑ ① CODE #	Ⓑ ② CODE #	Ⓑ ③ CODE #
PRECINCT NUMBERS — UF 61			
ARREST			
AIDED			
GANG NAME			

P.D. PCT. # ☐ PICK-UP ☐ COMPLAINT

ARREST/APPREH. DATE | TIME ☐ AM ☐ PM | ARREST/APPREH. OFF. PROJ. ☐ | ON PROJ. ☐

ARREST/APPREH. OFFICER'S NAME, RANK

ASSIGNMENT | SHIELD #

D.O. ONLY — RPT. REC'D. DATE / TIME ☐ AM ☐ PM | INIT. | CODERS ONLY DATE | INIT.

NYCHA 080.021 (2/68)

CODE INTERPRETATION

NEW YORK CITY HOUSING AUTHORITY
POLICE DEPARTMENT

PLACE OF OCCURRENCE

Apartment
Basement
Community, Health or Child Care Center (Inside)
Commercial Establishment, Store, Laundry, etc. (Inside)
Elevator
Lobby
Hallway
Parking Lot
Project Play Area
Roof & Roof Landing
Stairway
Public Sidewalk contiguous to project
Project Locations unclassified (Inside)
Project Locations unclassified (Outside)
Off Project, Dept. of Parks Playground
Off Project, City Street
Off Project, Unclassified

FELONIES

CODE	
001	Assault, felonious
002	Assault, felonious, Peace Officer
003	Gambling, Promoting, Policy, Bookmaking or Lottery
004	Burglary
005	Incest
006	Stolen Property, Possession
007	Sexual Abuse
008	Drugs, Narcotics, Dangerous & Prescription forgery
009	Weapons, Prohibited use
010	Weapons, Possession
011	Grand Larceny, Purse Snatch
012	Grand Larceny, Person & Pickpocket
013	Grand Larceny, Acquiring lost property & unclassified
014	Grand Larceny, check from mailbox OVER $250
015	Grand Larceny, Auto
016	Murder
017	Homicide, Negligent - unclassified or vehicle
018	Manslaughter
019	Mischief, Criminal & Tampering, Criminal
020	Mischief, Criminal & Tampering, Criminal H.A. property ONLY
021	Rape
022	Rape, attempt
023	Robbery
025	Sodomy
026	Grand Larceny, H.A. Property
027	Felonies, other, unclassified

MISDEMEANORS

CODE	
100	Assault, 3
101	Stolen Property, Possession
102	Sexual Abuse
103	Drugs, Dangerous Possession & Hypodermic Instr. (Possession)
104	False Alarm Fire
105	Harrassment, Aggravated
107	Child, Endangering Welfare
108	Fireworks, Unlawful
109	Lewdness, Public
110	Menacing
111	Menacing, a Peace Officer
113	Vehicle, Unauthorized Use
114	Accosting, Fraudulent
115	Jostling
116	Weapons, Possession
117	Weapons, Prohibited Use
118	Mischief, Criminal & Tampering Criminal
119	Mischief, Criminal & Tampering, Criminal, H.A. Property ONLY
120	Mischief, Criminal & Tampering, Criminal, Mail & Mailbox
122	Burglars Tools
123	Larceny, Petit, Check from mailbox less than $50
125	Larceny, Petit, H.A. property, less than $50
126	Larceny Petit, H.A. property, $50 to $250
127	Larceny, Petit, Check from mailbox $50 to $250
128	Larceny, Petit, $50 to $250
129	Larceny, Petit, less than $50
130	Gambling, Promoting, Policy, Bookmaking or Lottery
131	Resisting, Arrest
132	Sexual Misconduct, Intercourse
133	Sodomy, Consensual
134	Trespass, Criminal
135	Unlawful Assembly
137	Misdemeanors, Other, Unclassified

VIOLATIONS

CODE	
200	Intoxication, Public
201	Disorderly Conduct
202	Criminal Trespass
203	Harrassment, Peace Officer
204	Harrassment, Other
205	Loitering, Deviate Sex
206	Loitering, Gambling
207	Loitering, Drug Purpose
208	Loitering, Unclassified
209	Truancy, Education Law
210	Glue Inhalation, Public Health Law
211	Fireworks, NYC Administrative Code
212	Violations, Other, Unclassified

INVESTIGATIONS

CODE	
300	D.O.A. Unclassified
301	Narcotics, Allegation
302	Fire
303	Foetus, Unclassified
305	Missing Person
306	Lost Property
307	P.I.N.O.S.
308	Suicide
309	Aided
310	Deadly Weapons
311	Arrest by Warrant (by Housing Police only)
312	Complaint, Unclassified
313	Tenant Disputes
314	Family Disputes, Process

BREACH OF HOUSING AUTHORITY RULES AND REGULATIONS

CODE	
401	Damage: Accidental
402	Damage: Non-Criminal
403	Damage: Cause unknown
411	Fireworks
412	Lingering

POLICE REPORT TO MANAGER

CODE	
304	Lockouts
413	Bicycle Riding
414	Playing - Prohibited areas
415	Unauthorized Parking
416	Other H.A. Breach of R & R
417	Noise complaints
500	Follow-up dispositions
501	Repairs
502	Project conditions

DO NOT USE FOR INCIDENT REPORT

PROJECTS IN FULL OPERATION

FEDERAL PROJECTS

LINE	PROJECT DATA	NY 5-1 RED HOOK	NY 5-2 QUEENS-BRIDGE	NY 5-3 VLADECK (FEDERAL)	NY 5-4 SOUTH JAMAICA	NY 5-5 EAST RIVER	NY 5-6 KINGS-BOROUGH	NY 5-7 CLASON POINT GARDENS	NY 5-8 JACOB RIIS (FEDERAL)	LINE
1	NUMBER OF APARTMENTS	2,545	3,149	1,531	448	1,170	1,166	400	1,190	1
2	NO. OF RENTAL ROOMS AVERAGE NO. OF R/R PER APT.	10,649 4.18	12,949 4.11	6,265½ 4.09	1,792 4.00	4,883 4.17	4,675 4.01	1,852 4.63	5,603 4.71	2
3	POPULATION (*Estimated*)	8,070	8,940	3,910	1,190	3,540	3,190	1,560	4,550	3
4	RESIDENTIAL BUILDINGS	25	26	20	11	10	16	46	13	4
5	NUMBER OF STORIES	6	6	6	3-4	6-10-11	6	2	6-13-14	5
6	TOTAL AREA — *Sq. Ft.* *Acres*	1,452,438 33.3	2,154,941 49.5	566,414 13.0	392,989 9.0	512,822 11.8	695,544 16.0	742,013 17.0	510,926 11.7	6
7	NET PROJECT AREA—*Sq. Ft.* (*Excluding Park*) *Acres*	1,452,438 33.3	1,510,368 34.7	519,124 11.9	392,989 9.0	466,607 10.7	665,526 15.3	742,013 17.0	510,926 11.7	7
8	ALL BUILDING AREA—*Sq. Ft.*	326,157	389,965	171,144	82,310	112,140	129,189	154,304	103,446	8
9	CUBAGE—*Cu. Ft.*	19,292,734	23,057,084	10,617,265	2,940,659	7,963,515	8,037,853	3,388,939	9,657,260	9
10	COVERAGE (*Line 8÷6*) %	22.5	18.1	30.2	20.9	21.9	18.6	20.8	20.2	10
11	DENSITY (*Persons per Acre*)	242	181	301	132	300	199	92	389	11
12	LAND COST (*Including Park*) *Per Sq. Ft. of Priv. Prop.*	*$1,650,416* *1.45*	*$1,969,060* *1.02*	*$2,006,025* *4.45*	*$328,696* *1.11*	*$1,246,736* *3.27*	*$1,254,582* *2.24*	*$260,300* *.42*	*$1,954,225* *4.12*	12
13	CONSTRUCTION COST PER RENTAL ROOM	*$10,368,424* *974*	*$12,501,660* *965*	*$5,828,592* *930*	*$2,628,543* *1,467*	*$3,733,493* *765*	*$3,791,195* *811*	*$2,032,684* *1,098*	*$9,674,409* *1,727*	13
14	SITE IMPR. & OTHER COSTS PER RENTAL ROOM	*$2,067,685* *194*	*$2,334,956* *180*	*$1,283,067* *205*	*$399,178* *223*	*$1,125,071* *230*	*$916,123* *196*	*$437,016* *236*	*$2,632,755* *470*	14
15	DEVELOPMENT COST PER RENTAL ROOM	*$15,365,325 (A)* *1,443*	*$16,805,676 (A)* *1,298*	*$9,117,684 (A)* *1,455*	*$3,356,417 (A)* *1,873*	*$6,105,300 (A)* *1,250*	*$5,961,900 (A)* *1,275*	*$2,730,000 (A)* *1,474*	*$14,261,389 (A)* *2,545*	15
16	AVERAGE MONTHLY RENT PER RENTAL ROOM	*$16.99*	*$15.87*	*$15.87*	*$16.73*	*$17.34*	*$17.43*	*$16.36*	*$16.75*	16
17	LOCATION	DWIGHT ST. CLINTON ST. WEST 9TH ST. LORRAINE ST. (BROOKLYN)	VERNON BLVD. 21ST ST. 40TH AVE. 41ST RD. (QUEENS)	HENRY ST. WATER ST. GOUVERNEUR ST. JACKSON ST. (MANHATTAN)	158TH ST. SOUTH RD. 160TH ST. 109TH AVE (QUEENS)	FIRST AVE. F.D.R. DRIVE E. 102ND ST. E. 105TH ST. (MANHATTAN)	RALPH AVE. PACIFIC ST. BERGEN ST. ROCHESTER AVE. (BROOKLYN)	STORY AVE. SEWARD AVE. NOBLE AVE. METCALF AVE. (BRONX)	F.D.R. DRIVE AVENUE "D" E. 8TH ST. E. 13TH ST. (MANHATTAN)	17
18	COMPLETION DATE	11-20-39	3-15-40	11-25-40	8-1-40	5-20-41	10-31-41	12-20-41	1-17-49	18

APPENDIX C. Consumer Survey

In addition to the attitude survey, see appendix D, which was utilized universally, various questions included in the consumer portion of the survey were asked at several, if not all, the projects involved.

A limited number of items could be said to have virtually unanimous support. Within this category are improvements to apartment interiors (closet doors, undersink cabinets) which are already included in the construction of newer projects. Four other items, highly and unanimously desired, are related to security (tamper-proof mailboxes, lock improvement, hall lighting improvement, and new apartment door interviewers).

In addition to these relatively direct attempts to enhance security, tenants also expressed nearly unanimous requests for more comprehensive approaches to improving security on project grounds and in building interiors. They persistently recommended the training and hiring of more policemen, making them more visible and assuring increased responsiveness to tenant fears and needs. They also advocated improvements to project design, especially lighting and planting, if it was thought these changes might enhance their ability to anticipate and detour around potential dangers. Following are the results of consumer surveys made at various projects.

1. *Highbridge*

Primary concern with security was indicated by both consumer survey (e.g. tamperproof mailboxes, police room relocation) and attitudinal survey (fear of elevators, stairways, and response to television monitoring). Redesign of entry and additional lighting were seen as being pertinent to improved security. Despite several comments mentioning rear doors as danger areas, the idea of converting much used rear doors to fire exits was received without enthusiasm. Questions concerning neighbor relations reflected a combination generational racial gap, with elderly white tenants and younger black or Puerto Rican families suspicious of one another (see number of persons who will accept package, desire for police rather than tenant surveillance).

Three specific ground improvements rivaled security item popularity: replacement of a neglected parking lot with a basketball teen area, redesign of central grounds and a picnic area. Apartment improvements were only mildly received, with the exception of those northerly apartments that are in need of weatherproof windows and requests for closet doors. Finally, elevator problems were mentioned, particularly by elderly tenants (see table 1 pg. 189).

2. *Bronxdale Houses*

Apartment interiors are a major concern, as indicated by such consumer items as closet doors and undersink cabinets. However, security items, particularly television monitoring (both as an attitudinal and consumer item) were received positively. Other means of improving police accessibility (elevator intercom, central police hut) were also supported. The responses indicate not only real concern for safety, but also a feeling that the community, as well as the police, can respond to the situation. This feeling is further demonstrated by the recent vote to install a buzzer-reply system at tenant expense and by the degree of support shown for tenant patrols.

There is apparent satisfaction with the current grounds condition. The question of rent collection brought no criticism of management in this area. However, comments did question the speed with which maintenance repairs were made to apartments. Possible expansion of either community or golden age centers was requested by those who use, or intend to use, these facilities (see table 2 pg. 190).

3. *Breukelen*

The choice of consumer items at Breuekelen indicate a high level of concern about security. Both direct security items (e.g. tamperproof mailboxes, lock protection plates) and indirect security choices (outdoor bus shelters, relocation of mailboxes) received strong positive reactions.

Table 1.—Highbridge Houses

[Ratings of value of suggested modifications: 1 = excellent idea; 5 = poor idea]

Item	Results of 40 interviews	
	Question No.	Mean score
Tamper proof mailboxes	145	1.3
Move housing authority police room	195	1.3
Basketball court and teen area to replace parking	200	1.4
Install door interviewers	188	1.7
Redesign central grounds	190	1.8
Remodel entry	192	1.9
Vandal-proof lighting	102	2.1
Picnic area on hill near W. 167th Street	201	2.1
Weatherproof windows	117	2.1
Additional lights on paths	119	2.3
Begin adult education program	161	2.3
Lights under canopies	118	2.4
Bubber-reply system	105	2.4
Provide sitting area just outside lobby	197	2.8
Convert rear exits to fire doors	127	2.9
Replace floor tiles	187	2.9
Add to elderly tenants' center	154	2.9
Redesign kitchens	134	3.2
Improve electrical systems	142	3.3
Remodel hallway	194	3.4
Re-surface hallways	130	4.1
Re-design numbering system	128	4.3

Self-presented items.—Rear-exits; closet doors; additional play space; elevator improvement.

Essential.—Plumbing and heating; drainage; elevator and cab door operators; police, 11,000; windows, 80,000.

These preferences correlate with the relatively high level of fear amongst Breukelen residents. Breuekelen high rise dwellers rated their interior spaces as less safe, and exhibited a lesser degree of neighboring than low rise dwellers at either Edenwald and Throgg's Neck. However, Breuekelen is not located in a high crime area. It is also interesting that a high degree of fear existed not only among white and elderly tenants, but also among relatively young Puerto Rican families.

In addition to security and security related items, interior apartment items such as floor tiles, closet doors and undersink cabinets were all highly desired. Finally, there was a minimum of comment about management and maintenance, that can only be interpreted as acceptance (see table 3 pg. 191).

4. *Gravesend Houses*

Results of the consumer survey at Gravesend reflect a variety of concerns. Along with security related items, improvements for apartment interiors, and efforts to improve facilities (commercial establishments, basketball and teen area) all received positive replies. Gravesend residents rated their interior spaces as safer than the residents of any other project in this survey. However, there was considerable concern about the character of the surrounding community which included at the time of this interview a partially occupied new NYCHA project, and a rundown neighborhood that is undergoing drastic urban renewal.

The condition of the area, coupled with the distance to subway stations, has resulted in some feeling of isolation.

Gravesend residents are interested in improving their community by adding facilities such as commercial enterprises (shopping in the immediate vicinity is minimal) and recreation areas for various age groups. There is some feeling that the management could do more in this area. Security

Table 2.—Bronxdale Houses

[Ratings of value of suggested modifications: 1 = excellent idea; 5 = poor idea]

Item	Results of 65 interviews Question No.	Mean score
Tamper-proof mailboxes	145	1.4
TV cameras for police to survey grounds	196	1.5
Place lock protection plates on doors	185	1.6
Closet doors	150	1.7
Install apartment door interviewers	188	1.7
Cover opening below sinks	181	1.9
New Lighting in halls	102	2.0
New lights on grounds/paths	119	2.2
Install TV so tenants can watch lobby, elevator	184	2.2
Intercom in elevator to housing association police	174	2.3
Install police hut in central area of grounds	159	2.3
Redesign entrance-breezeway	202	2.3
Physical development facilities for teenagers	132	2.7
Increase funds for tenant patrols	163	2.8
Redesign kitchens	134	2.8
Commercial facilities on grounds	140	2.9
Provide project maps on stands	133	2.9
Allow excess income families	173	2.9
Convert rear exits to fire doors	129	3.0
Add to elderly tenants center	154	3.0
Expand community center	103	3.1
Restrict and redesign project grounds	124	3.2
Ground floor toilets for children	127	3.3
Additional shade trees	136	3.4
Play area on grounds for 9 to 12 year olds	157	3.5
Convert lawn area to play field	123	3.5
Resurface and paint stairhalls	130	3.6
Open manager's office in evening for rent payment	160	3.7
Redesign numbering system	128	4.1
Basketball court on central grounds	149	4.1
Remove chain fences and open-up grounds for use	168	4.1

devices that rely on community participation (i.e. buzzer-reply system, self-monitored television) were favored (see table 4 pg. 192).

5. *Hammel Houses*

Tenants indicated a major interest with inner apartment items, (closet doors, undersink cabinets, kitchen floor tiles) and only a secondary concern with security.

Other facilities, particularly a day care center, but also an improvement of the community center program, were added by tenants as requested items.

Due to the relatively low level of fearfulness, except amongst the elderly, Hammel residents felt free to emphasize modernization items that would improve their standard of living in other ways. However, all security items, including tenant patrols, television monitoring and security hardware were received positively (see table 5 pg. 192).

6. *Throgg's Neck*

Tenants related through the survey their feelings of physical isolation due to the location of the project. This is reflected in their desire for commercial facilities, for outdoor facilities such as a swimming pool and amphitheater, and in the low number of friends or relatives who lived in the area. While security is an issue, it is less so than in other projects.

The major cluster of unusual items are concerned

Table 3.—Breukelen Houses

[Ratings of value of suggested modifications: 1 = excellent idea; 5 = poor idea.]

Item	Results of 65 interviews	
	Question No.	Mean score
Lock protection plates	185	1.6
Tamper-proof mailboxes	145	1.6
Undersink cabinets	207	1.9
Floor tiles	187	1.9
Outdoor bus shelters	146	2.0
Add new lights to paths and grounds	119	2.0
Move mailboxes; low rise	205	2.2
Unbreakable glass doors; low rise	204	2.3
Intercom system to housing administration police in elevators (high rise)	174	2.4
Lights under entrance canopies	118	2.5
Door interviewers	188	2.5
Air condition community center	114	2.7
Play area and benches around entrance—low rise	111	2.7
Replace elevator door openers—high rise	189	2.7
Exercise room for teenagers	132	2.8
Add space to elderly tenant's center	154	2.9
Add play equipment	121	3.0
Special basketball and teenager's area	107	3.1
Commercial facilities on grounds	140	3.1
New grounds-maintenance equipment	203	3.1
Electrical system for appliances	142	3.2
Vandal-proof lights in basement	153	3.3
Install shut-off valves in apartments	202	3.3
Convert lawn area to play field	123	3.4
Hallway partitions; low rise	208	3.5
Relocate police room	139	3.7
Plaster hall walls, floor to ceiling—high rise	209	3.8
Remove glass fire doors; low rise	206A	3.9
Increase glass areas in halls; high rise	210	4.0
Redesign numbering system	128	4.8

with the use of grounds to induce a greater sense of community and to enhance the type and amount of activity in the area. In addition to interest in grounds changes, there also was a demand for a more extensive community center program (see table 6 pg. 193).

7. *Edenwald*

Security, along with additional facilities, appear to be the major items of interest. In addition to specific security items (tamper-proof mailboxes, vandal proof lighting) tenants also perceived certain facilities (commercial enterprises, sitting areas, play fields) as desirable. These changes would both improve and contribute to the general welfare of the community. The attitudinal survey revealed a comparatively low degree of fearfulness, and a strong sense of community, especially amongst low-rise dwellers. In high rise buildings there was a relatively high willingness to utilize self-monitoring television equipment.

Certain apartment items, such as undersink cabinets and closet doors (but not apartment floor tiles or shut-off valves), were requested. In general liaison with management and maintenance seemed good, but there was a distinct lack of faith in the tenant patrols, and also occasional criticism of police services (see table 7 pg. 193).

Table 4.—Gravesend Houses

[Ratings of value of suggested modifications: 1 = excellent idea; 5 = poor idea.]

Item	Results of 40 interviews	
	Question No.	Mean score
Tamper proof mailboxes	145	1.65
Closet doors	150	1.85
Commercial facilities	140	2.05
Buzzer reply system (charge)	105	2.13
Retile kitchens and add undersink cabinets	134	2.15
Lock protection plates	185	2.22
Outdoor bus shelters	146	2.29
New lights on paths	119	2.32
Intercom system from elevator to housing police	174	2.39
Teenage areas such as basketball and sitting	107	2.41
Periscopic door interviewers	188	2.46
Imaginative play equipment	121	2.53
Shut-off valves on plumbing	202	2.62
New lights by entrance canopies	118	2.66
Vandal proof lighting in halls	102	2.68
Basketball courts in central grounds	149	2.83
Restrict community center area to project residents	124	2.85
Expand community center, elderly meeting place	103	3.00
Convert rear exits to fire doors	129	3.09
Convert lawn area to play field	123	3.09
Ground floor toilets for children	127	3.12
Relocate police room	139	3.35
Eliminate inspections	179	3.37
Redesign numbering system	128	3.46
Additional groundskeeping equipment	203	3.54
Shade trees and relandscape	136	4.00

Table 5.—Hammel Houses

Item	Results of 50 interviews	
	Question No.	Mean score
Bedroom closet doors	150	1.55
Undersink cabinets	207	1.69
Tamper proof hall lighting	102	1.72
Tamper proof mailboxes	145	1.96
Lock protection plates	185	2.15
New kitchen floor tiles	187	2.15
Apartment door interviewers	188	2.31
Buzzer reply system with charge	105	2.31
Elevator indicator light	256	2.48
Increase funds for tenant patrol	163	2.56
Kitchen cabinets, new surfaces	134	2.59
Redesign basketball court for evening activity	200	2.63
Allow excess income families to remain	173	2.77
Wading pool	201	2.84
Elevator intercom	254	2.88
Put exit alarms on rear doors	127	2.90
New tiles in halls	252	3.09
New lighting for grounds	119	3.17
Concrete paths	251	3.29
Remove cobblestones	250	3.36
Building directories	253	3.41
New shade trees	136	3.51
Redesign building entrances	192	3.59
Electronic "ear" on apartment doors	255	3.61
Plaster halls over	209	4.09

Table 6.—Throgg's Neck

Item	Results of 36 interviews Question No.	Mean score
Commercial facilities	140	1.66
Tamper proof mailboxes	145	1.71
Undersink cabinets	207	1.83
Apartment door interviewers	188	1.83
Lock protection plates	185	1.97
Outdoor swimming pool	270	2.03
Outdoor amphitheater	271	2.11
Vandal proof lighting in halls	102	2.15
Buzzer reply system at monthly charge	105	2.18
Convert lawn area to play field	123	2.19
New lights at entrance canopy	118	2.36
Add new lights to paths	119	2.40
Replace apartment floor tiles	187	2.47
Install shut off valves	202	2.56
Redesign kitchen	134	2.63
Relocate police room	139	2.71
Benches and play areas outside buildings	111	2.71
Purchase additional shade trees	136	3.00
Allow excess income families	173	3.02
Close off grounds between adjacent buildings	272	3.12
Convert rear doors to emergency exits	127	3.39
Increase funds for tenant patrols	163	3.47

Table 7.—Edenwald

Item	Results of 70 interviews Question No.	Mean score
Tamper proof mailboxes	145	1.91
Undersink cabinets	207	2.07
Vandal proof lighting in halls	102	2.16
Lock protection plates	185	2.16
Apartment door interviewers	188	2.17
Glass doors and sitting area in low rise	204	2.22
Add commercial facilities to East 229th Street	140	2.25
Convert lawn area to play field	123	2.33
Add benches and play equipment to low rise entrances	111	2.34
New lights outside entrances	118	2.34
Redesign kitchen	134	2.40
Allow excess income families to remain	173	2.41
Commercial zone, community center and mall on East 229th Street	262	2.41
Buzzer reply system with charge	105	2.43
Tenant-monitored TV in elevator and lobby	264	2.44
Relocate police room	139	2.40
Create low rise backyard with walls	261	2.60
Add space to golden age center	154	2.65
Elevator intercom	265	2.72
Replace apartment floor tiles	187	2.72
New lights on paths	119	2.74
Increase funds for tenant patrols	163	2.85
Combine small apartments	260	2.90
Install plumbing shut off valves	202	2.96
Convert rear exits to fire doors	127	3.00
Restrict high-rise area to building residents	124	3.02
Shelves and door in alcove near apartments	263	3.08
Relocate low-rise mailboxes to first landing	205	3.51

APPENDIX D. Attitude Survey: Project for Security Design

1. Housing Project _____

2. Address_____ 3. Apt. No._____

4. Name of Respondent_____ 5. Age (Approx.)_____

6. Ethnic B____ W____ PR____ 7. Years in public housing_____

8. Housekeeping (comments) _____

_____

9. Neighbors and Friends:

(a) Which doors in your building could you knock on to accept delivery of a package the next day?

_____ _____ _____ _____ _____ _____ _____ _____

Comments:

(b) Names of families on same floor?

Apt._____, Name_____ Comments:

Apt._____, Name_____

Apt._____, Name_____

Apt._____, Name_____

Apt._____, Name_____

Apt._____, Name_____

(c) Do you have close friends and/or relatives in the area? Where?

_____

_____

(d) How many good friends do you have in all excluding relatives?

_____

(e) Do you recognize people in the *building* you live in?

Almost all	Most	Some	Few	Almost none
1	2	3	4	5

Comments:

(f) Do you recognize people in the *project* you live in?

Almost all	Most	Some	Few	Almost none
1	2	3	4	5

Comments:

(g) What is your attitude about privacy? Do you want to know and meet your neighbors?

_____

_____

10. Television Monitoring:

(a) What is your attitude about having TV cameras in elevators, halls and lobbies monitored by Housing Authority Police?

excellent idea 1 2 3 4 5 poor idea

Comments:

(b) Would you be willing to monitor these areas if cameras were hooked up to your own TV set (Channel 3)?

very willing 1 2 3 4 5 unwilling

Comments:

(c) What is your attitude about having Housing Authority Police monitor grounds, paths, and lawns with TV cameras looking down from upper stories of buildings?

excellent idea 1 2 3 4 5 poor idea

Comments:

(d) On the average, how many hours per day do you spend:

Alone_____ Watching TV_____

11. Rate your fear of crime in the following areas:

a. Halls	safe	1	2	3	4	5	unsafe
b. Elevators	safe	1	2	3	4	5	unsafe
c. Stairs	safe	1	2	3	4	5	unsafe
d. Entrances	safe	1	2	3	4	5	unsafe

Comments:

12. When you move through these paths at night, what are the things you are most frightened of?_____

Comments:

13. Estimate the age and ethnic breakdown of the project:

(a) White___% (b) Black___% (c) Puerto Rican___% (d) 60+___

Comments:

14. Draw the route you normally take through the project: (see diagram)

a. to and from work

b. to and from shopping

c. to and from visiting a friend in the project

Comments:

d. Which areas of the project do you deliberately avoid (indicate on diagram)?

Comments:

EDENWALD HOUSES

102. *Install new vandal-proof lighting in halls.*

Comments: EX 1 2 3 4 5 POOR

105. *Install buzzer-reply system if a small monthly charge is added to rent.*

Comments: EX 1 2 3 4 5 POOR

119. *Add new lights to paths on grounds.*

Comments: EX 1 2 3 4 5 POOR

127. *Convert fire-exits of high-rise buildings into doors used only in emergency.*

Comments: EX 1 2 3 4 5 POOR

145. *Install tamper-proof mailboxes.*

Comments: EX 1 2 3 4 5 POOR

183. *Install apartment doors interviewers: where possible those which allow a periscopic view down hallway.*

Comments: EX 1 2 3 4 5 POOR

185. *Place lock-protection plates on apartment doors.*

Comments: EX 1 2 3 4 5 POOR

EDENWALD HOUSES

204. *Remove existing doors in low-rise buildings and replace with unbreakable glass doors set in at bottom of stairs to create a covered area for sitting.* (See Figure D–1, page 199)

Comments: EX 1 2 3 4 5 POOR

111. *Add benches around entry to low-rise units including play areas for tots. Redesign shrubs outside walk-up buildings to create a semi-private zone.* (See Figure D–1, page 199)

Comments: EX 1 2 3 4 5 POOR

205. *Remove mailboxes from present location in low-rise units, and reposition on wall of first landing.*

Comments: EX 1 2 3 4 5 POOR

EDENWALD HOUSES

261. *Create backyards around low-rise units restricted to residents only by walls or fencing.* (See Figure D–2, page 200)

Comments: EX 1 2 3 4 5 POOR

124. *Restrict some of the project grounds around high-rise units to residents of adjacent buildings.* (See Figure D–2, page 200)

Comments: EX 1 2 3 4 5 POOR

EDENWALD HOUSES

140. *Provide space for commercial facilities on East 225 St. and build-up entrance area to project.*

Comments: EX 1 2 3 4 5 POOR

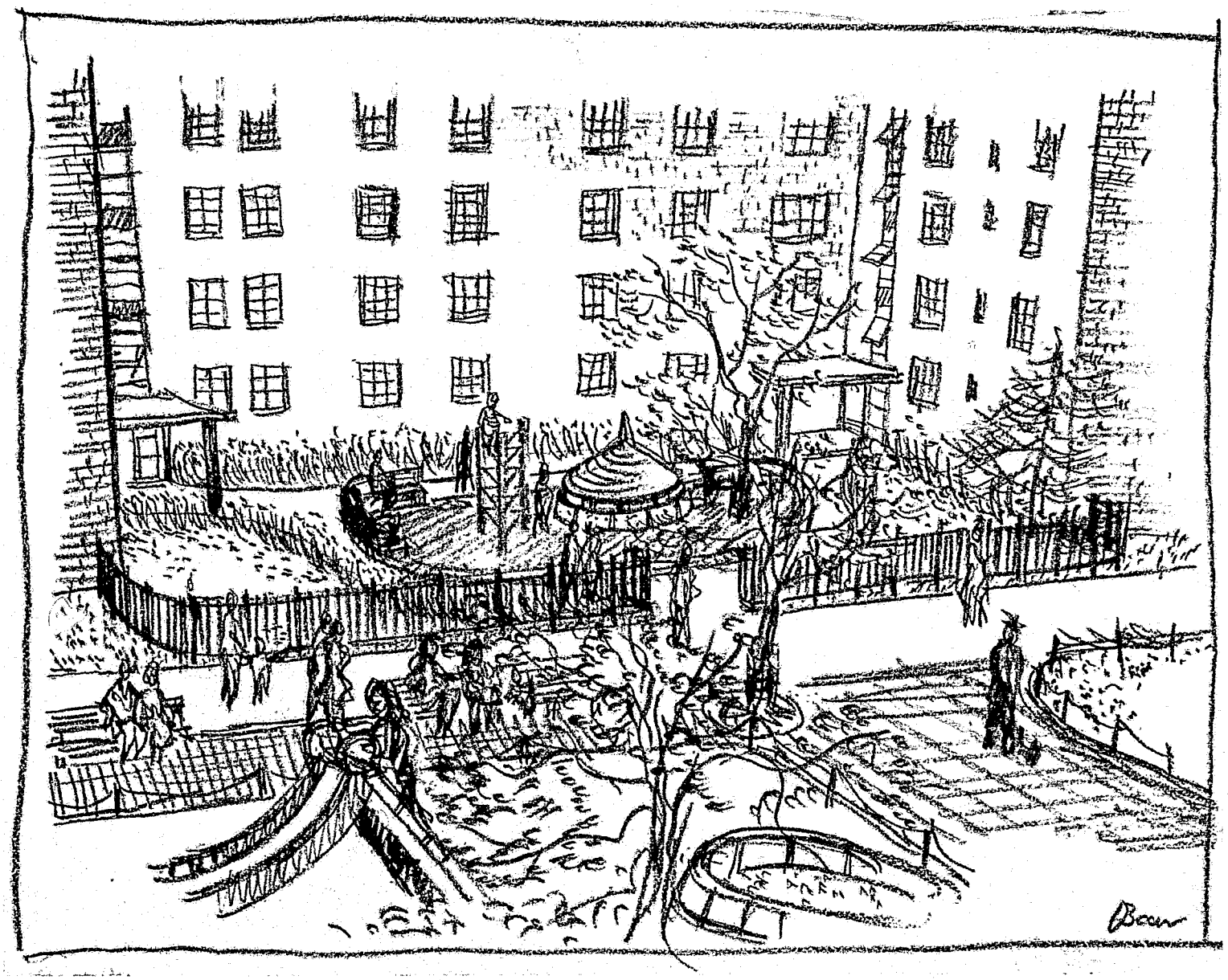


FIGURE D–1. Sketch of recommended improvements in grounds of Edenwald Houses.

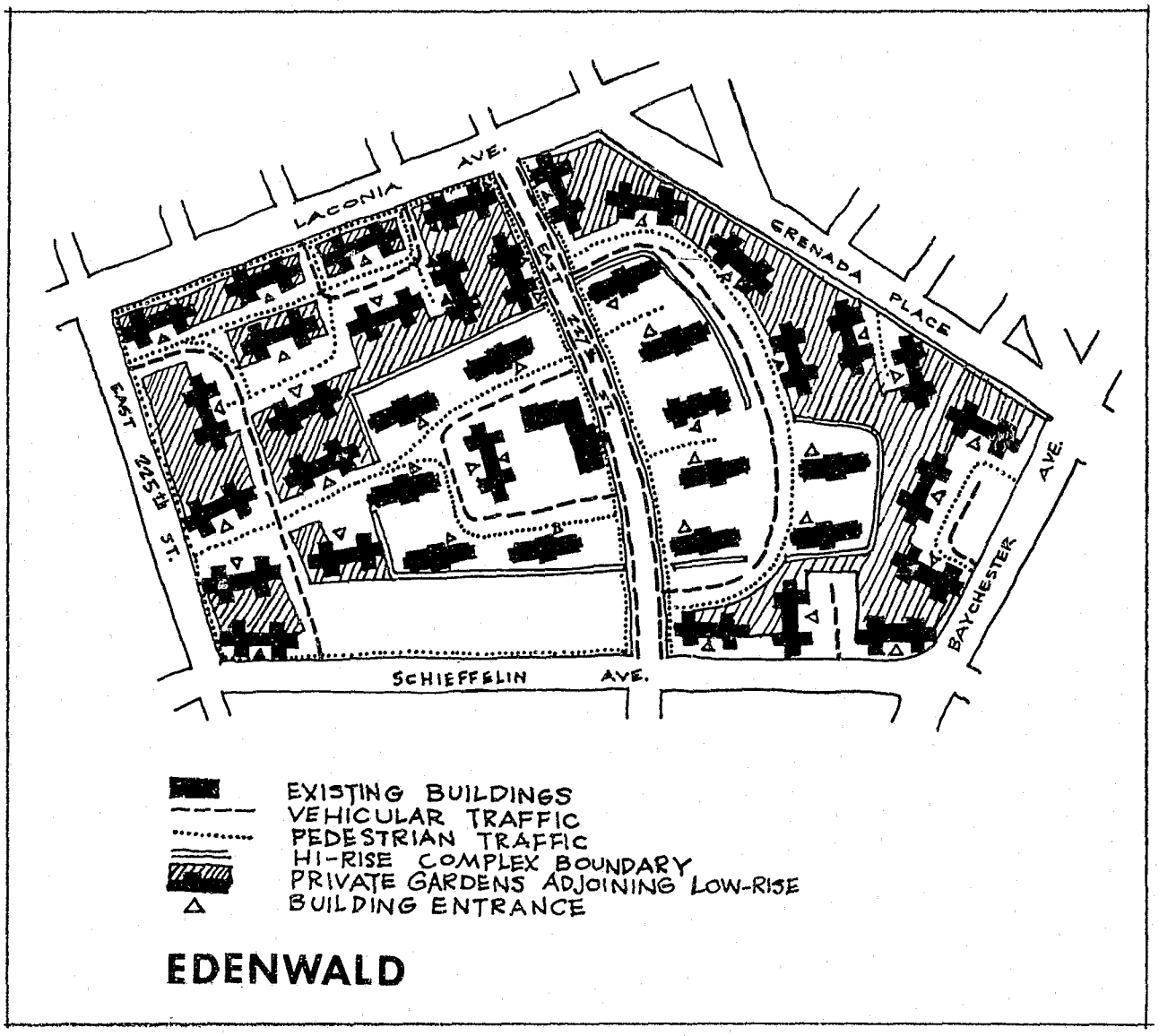


FIGURE D–2. Sketch showing recommended improvements in Edenwald Houses site plan.

262. *Convert project on both sides of the through-street into a community zone with commercial facilities, community center, Golden Age center, and project offices forming a common mall and sitting area.*

Comments: EX 1 2 3 4 5 POOR

EDENWALD HOUSES

139. *Relocate police room to central area of project.*

Comments: EX 1 2 3 4 5 POOR

163. *Increase funds for tenant patrols.*

Comments: EX 1 2 3 4 5 POOR

264. *Place TV cameras in elevator and lobby of high-rise buildings to be monitored by tenants on their home TV sets.*

Comments: EX 1 2 3 4 5 POOR

265. *Place intercom in elevator of high-rise units which transmits sound from elevator-cab to building corridors, and from nearby corridors to the elevator. This will allow people to converse between corridor and elevator with elevator door closed.*

Comments: EX 1 2 3 4 5 POOR

118. *Place new lights for outside of building entrances.*

Comments: EX 1 2 3 4 5 POOR

123. *Convert lawn area to play field (e.g., baseball and football for pre-teens).*

Comments: EX 1 2 3 4 5 POOR

260. *Combine some small apartments to create more large units for project families.*

Comments: EX 1 2 3 4 5 POOR

154. *Add space to Golden Age Center.*

Comments: EX 1 2 3 4 5 POOR

EDENWALD HOUSES

173. *Allow excess income families to remain in project.*

Comments: EX 1 2 3 4 5 POOR

134. *Redesign kitchens, cabinets, work spaces, sink covers.*

Comments: EX 1 2 3 4 5 POOR

202. *Install shut-off valves on apartment plumbing to permit turn-off in emergency.*

Comments: EX 1 2 3 4 5 POOR

187. *Replace floor tiles in apartments.*

Comments: EX 1 2 3 4 5 POOR

207. *Add cabinet to cover area under sink.*

Comments: EX 1 2 3 4 5 POOR

263. *Install additional shelves with door in alcove near apartment door.*

Comments: EX 1 2 3 4 5 POOR

APPENDIX E. Design Directives for Modifications to Two Existing Projects

A. Designs and Directives for Modifications to Clason Point Gardens

1. *Existing site*

Clason Point is a complex made up of 46 row-house buildings, providing duplex apartment units. The grounds area is 17 acres with approximately 21 percent land coverage by residential buildings. Although most apartment units have front and rear lawn areas identified with them, there is little indication of their boundaries and little distinction in design of front and rear entrances to buildings.

Individual buildings are made up of exposed cinder block which lends an institutional appearance to the project. Provision for play and recreation, especially for teens and preteens is sparse and existing equipment for younger children is stereotypical and underutilized.

Project residents are fearful of mugging and robbery, especially at night. Drug addiction and dealing are commonplace on grounds even during the day, and because there is little proprietal definition, residents feel they have no right to question the presence of strangers near their houses. The lack of definition of areas of influence, and the shortage of usable play facilities contribute to problems of the project. Children do not have bounded areas within which they can play; tenants frequently complain that unchanneled play activities of children make it impossible for them to care for their lawns, or to use the space outside their apartments comfortably.

2. *Design directives*

In order to address social goals through design modifications, a series of objectives was articulated to:

- Intensify surveillance of public areas of grounds.
- Reduce the perceived scale of the project and differentiate its grounds and paths into unambiguous zones of use.
- Create a hierarchy of public, semi-public and private areas and paths.
- Increase the sense of propriety felt by residents.
- Reduce the stigma of public housing and allow it to relate better to the surrounding community.
- Reduce intergenerational conflict.
- Intensify the use of grounds in predictable and socially beneficial ways.
- Enhance the overall quality of the environment.

3. *Design solutions*

These directives were answered through recommended modifications to grounds as follows:

- Sealing off rear yards of project areas into a common semi-private outdoor area shared by 8 to 12 families. These semiprivate areas are differentiated from the more public areas of the project by 6-foot high wrought iron gates and fences.
- Refacing buildings with stucco made to look like brick, and colored differently for pairs of apartment units.
- Differentiating front yards from the public path through use of low symbolic walls.
- Restricting and channeling pedestrian movement through the project along a limited number of unambiguous paths.
- Positioning new play equipment and sitting areas along public paths.
- Creating new outdoor recreation and gathering areas with separate facilities for adult, adolescents, preteens, and young children.

4. *Specific design proposals: Clason Point*

a. *Public paths and enclosed backyards*

A comprehensive design recommendation was made to differentiate grounds into a hierarchy of public-to-private zones of use.

These changes to grounds serve to: (1) limit the amount of available space over which surveillance must be maintained, (2) increase opportunities for natural surveillance of public areas by locating them in plain view of apartment units, and (3) eliminate ambiguity concerning use of grounds, increasing confidence of residents in supervising behavior of nonresidents.

The plan called for public areas of the project to be restricted, and aligned along a central pedestrian path extending full length of the project from Story Avenue to Seward Avenue. This public walk is to be augmented by a series of secondary public paths leading in to it from surrounding streets. In all instances, public paths will be faced by building fronts to maximize natural surveillance over passage of people provided by building residents.

(1). To highlight the public quality of the major pedestrian walks, designs called for:

- Widening of the path using colored and decoratively scored paving.
- Differentiating small private areas outside each dwelling with low, symbolic walls.
- Addition of seating in the center of this public path, located at a sufficient distance from private dwellings to eliminate conflicts over use, but close enough to be under constant surveillance by residents.

(2). At selected intersections of the primary and secondary paths, "playnodes" will be created for young children with seating nearby for mothers to maintain supervision over them.

(3). New and decorative lighting will be employed to highlight public areas at night and to extend feelings of security on the part of residents.

(4). Backyard areas shared by clusters of 8 to 12 families are to be differentiated from the public paths and play areas by tubular steel gates and fences. Entrance to these areas will require a key and be accessible only to residents of individual clusters. Visitors will have to use the front doors of apartments and approach them from the public path. The enclosed areas will be developed and maintained by residents of a cluster, working in association with one another.

(5). This system of organization of grounds into public paths and backyard clusters will be reinforced by use of a new address sign and directional system, including color coding of areas to highlight their individuality.

b. *Refacing of buildings*

Buildings were resurfaced with a stucco finish indistinguishable from brick work. This finish was applied in a range of colors. Row houses were divided into pairs of apartment units by alternating the colors of brickwork. This will, hopefully, provide residents with increased sense of individuality and proprietorship, and thereby induce: (1) increased watchfulness over areas adjacent to dwellings, (2) greater maintenance and care of lawns and paths, (3) increased range of association of residents with neighbors thereby enhancing their mutual dependency in event of crime or vandalism.

c. *Development of central play and recreation area*

A unique recreation area will be created on the route of the central public path. Its placement on the major public path will insure its intense use, and as a central facility it will receive continuous and active surveillance over its use.

This central play area is divided into three separate zones, designed to reduce intergenerational conflict:

(1) The adult area is designed for sitting, spontaneous gathering, and table-top games. The straight, geometric quality of the individual features is expected to invite use primarily by adults without the need of explicit signs defining or restricting activities within the area.

(2) The adolescent area is to be constructed out of rough-hewn wood, and arranged in a circular fashion especially suited to group use. It will be surrounded by exposed rock to accentuate its rugged character, and will be separated from the rest of the recreation area by a low wall. The design is expected to draw adolescents because of its primitive properties, without need of additional designation. Surveillance will be maintained over the area by neighboring apartments, and from the adjacent public street.

(3) The middle play area is designed for use by young children and pre-teens, and includes additional seating for parents to supervise play. It will operate as a buffer between adolescents and adults.

B. Studies of Clason Point Gardens

Extensive interviews and observations were performed at Clason Point Gardens, Bronx, N.Y., as a prototype of the current research-in-action model. Measures and methods were developed for examining the impact of architectural modifications on fear of crime and a range of related aspects of individual and community life style.

Clason Point Gardens is a rather lackluster low rise housing project occupied by four major tenant groups: White families (37 percent), elderly white families (15 percent), Puerto Rican families (21 percent), and Negro families (27 percent). Despite the provision of individualized front and

rear yards, and separate duplex apartments, the project bears a strong stigma of public housing. Prior to modifications, the public character of the project was easily recognizable from afar. The unfinished faded green cinder block buildings gave the project the appearance of an incomplete and hastily designed series of buildings and was in marked contrast to surrounding streets made up of individually owned red-brick row houses.

Wide gaps between buildings along the street edges of the project revealed a vageuly defined system of paths and yards within. The project conveyed the impression that entry by strangers would not be resisted, even though all paths and grounds areas were adjoined by (and in clear view of) residential buildings.

Our hypotheses focused on the impact these design features had on the ability and willingness of residents to maintain control and see to the security and use of areas near their homes. Preliminary interviews revealed that tenants were extremely fearful of being victimized by criminals, both during the day and in the evening; they had severely changed or curtailed their patterns of activity as a result of the atmosphere of heightened danger; they felt they had no right and were afraid to question the presence of strangers as a means of anticipating and preventing crimes before they occurred. Adolescents from neighboring projects used parts of the grounds as a congregation area, instilling fear and anger in many Clason Point residents. Because of the public character of the project, residents felt they had little recourse but to accept the omnipresence of strangers..

In public housing projects, strangers are only informally accountable to local residents. Since residents do not have legal proprietary rights, individual tenants cannot legitimately question the presence of strangers unless they are violating a public law or some housing project rule.

A variety of architectural modifications to buildings and grounds were undertaken in an effort to expand the domain in which individual tenants felt they had the right to expect accountability from strangers and other residents. Even though this manner of accounting remains largely social and informal, it was hypothesized that design modifications could lead individual tenants to watch strangers more diligently, with added clarity in their own minds as to the range of behaviors by strangers which are ordinary and expected, those which require an excuse or a reason, and finally behaviors which call for a response on the part of a tenant, a group of tenants, or ultimately the police. We hypothesized an isomorphism between spatial organization and social expectations; that informal expectations would become more exacting and differentiated if the organization of the physical setting provided clear, well-marked distinctions between public and private zones, and eliminated functionless, "no-man's land" areas over which no individual or group of tenants could demand accountability.

It is the sense that "strange behaviors require justification or explanation" which tenants feel lacking and see no means of creating for themselves in their current physical setting. If a tenant confronts a stranger about his presence, the intruder is likely to regard it as an affront to his personal right to linger on paths or grounds in the project.

Crime and fear of crime may be significantly affected by the erosion of clarity concerning behavioral guidelines tenants feel they have the right of strangers or neighbors. Interviews and observations were performed prior to construction of a variety of architectural modifications; these modifications were undertaken to achieve the overall objective of increasing the intensity and extent of territorial prerogatives tenants felt toward project areas. After modifications are completed, changes in tenants' conception of the sociospatial order of the project will be assessed, and extensive examinations will be made concerning positive behaviors and attitudes which were released as a side-product of the redesign.

The selection of Clason Point as a prototype project was done with the full recognition that it is not typical of NYCHA projects; its primary problem is fear of crime, rather than in extraordinary high incidence of crime; and the project already embodies many of the characteristics of physical design and social or community organization we would advocate as a means of controlling crime through individual tenant involvement.

Because it is a low rise duplex project, Clason Point exposes for view many aspects of the life style, friendship and neighboring patterns of New York Public Housing residents that would remain more hidden from view in high-rise structures. It already bears testimony to the tenability of our hypotheses, inasmuch as we have found it to be a vital, socially alive community, in contrast with

other public housing projects that have a similar population but are different in important design characteristics, e.g. high rise buildings.

An extensive effort in collecting data on Clason Point was needed for two reasons: to develop categories and methods of measurement; and to create an in-depth profile of the project to reveal the means or mechanism through which the impact of physical design modifications will be felt. Simple measures of achieved results without data on the intervening mechanism through which changes are brought about would not contribute to an overall theory of the impact of physical design on behavior and attitudes. The theory, not the discovery of specific design mechanisms with salutary consequences, will eventually allow for the generalization of principles to a wide range of instances.

C. Proposal for Improving Security in a Medium Density High Rise Project: Bronxdale Houses

1. *Identification of the problem*

Our work to date indicates that of all housing, high rise public housing projects provide special problems: a.) tenant populations are heterogeneous, with some families living in public housing as the housing of choice, and others as the housing of last resort; b.) policy specifically prohibits the use of doormen to maintain surveillance over building entrances, c.) tradition and law have resulted in building interiors being open to the public, d.) buildings are not restricted to use by residents proper unless they agree to finance the installation of buzzer-reply intercoms through additional rental charges and e.) limitations on police manpower restricts police capacity to patrol the interior of buildings. Private residential complexes can afford far more comprehensive systems of patrols and surveillance.

Crime data clearly indicate that the vast majority of offenses occur inside areas of the buildings which are blocked in sound and sight from nearby residents. The most dangerous areas of these housing projects are elevators and lobbies. Paradoxically, these essential circulation areas are designed with little concern for security. Typically, they are completely inaccessible to surveillance by police and by neighboring tenants.

The redesign of existing high-rise projects to enhance public safety is especially problematical because there is little opportunity to make effective physical modifications to the building interiors (such as increasing the visibility of public lobbies, corridors, and elevators); and building and fire code requirements governing public housing are highly stringent and uniform. Frequently, feasible design solutions for enhancing security are eliminated by the code.

2. *Solution of surveillance needs using electronic devices*

The installation of modern electronic equipment at Bronxdale was recommended in an effort to resolve a uniquely modern problem associated with the design of high-rise residential buildings. Because of their size and organization, high-rise buildings do not usually allow tenants to maintain surveillance over areas in and around buildings. Elevators and stairs are completely sealed from sight and sound. Floors are separated by unused fire stairs and soundproof fire doors. This design feature eliminates the benefits to surveillance provided by vertical organized low-rise walk-ups with exposed stairwells. These walk-ups allowed tenants to hear and respond to activities in the entire building.

A large number of tenants sharing use of a single entrance makes it impossible for an individual to distinguish his neighbors from strangers, or to determine whether adolescents who linger near the entrance reside in the building. The social rules governing behavior in low-rise tenements are less ambiguous; the presence of anyone inside the entrance can be questioned unless he is known to live in the building.

Finally, low-rise buildings have many windows facing the street, or near building entrances. High-rise public housing buildings have been designed with apartment windows on the ground floor at least one-half story above ground. Although this design feature has helped to reduce the incidence of ground floor burglaries, it has eroded an important surveillance function of first-floor apartments.

Electronic devices will be tested at Bronxdale Houses to develop methods for restoring to high-rise buildings the opportunities for surveillance and contact that are present in low-rise structures.

A major function of these experiments is to develop methods of using electronic equipment which maximizes the meaning they have to residents as a natural addition to the repertoire of mechanical and electronic systems, e.g., locks,

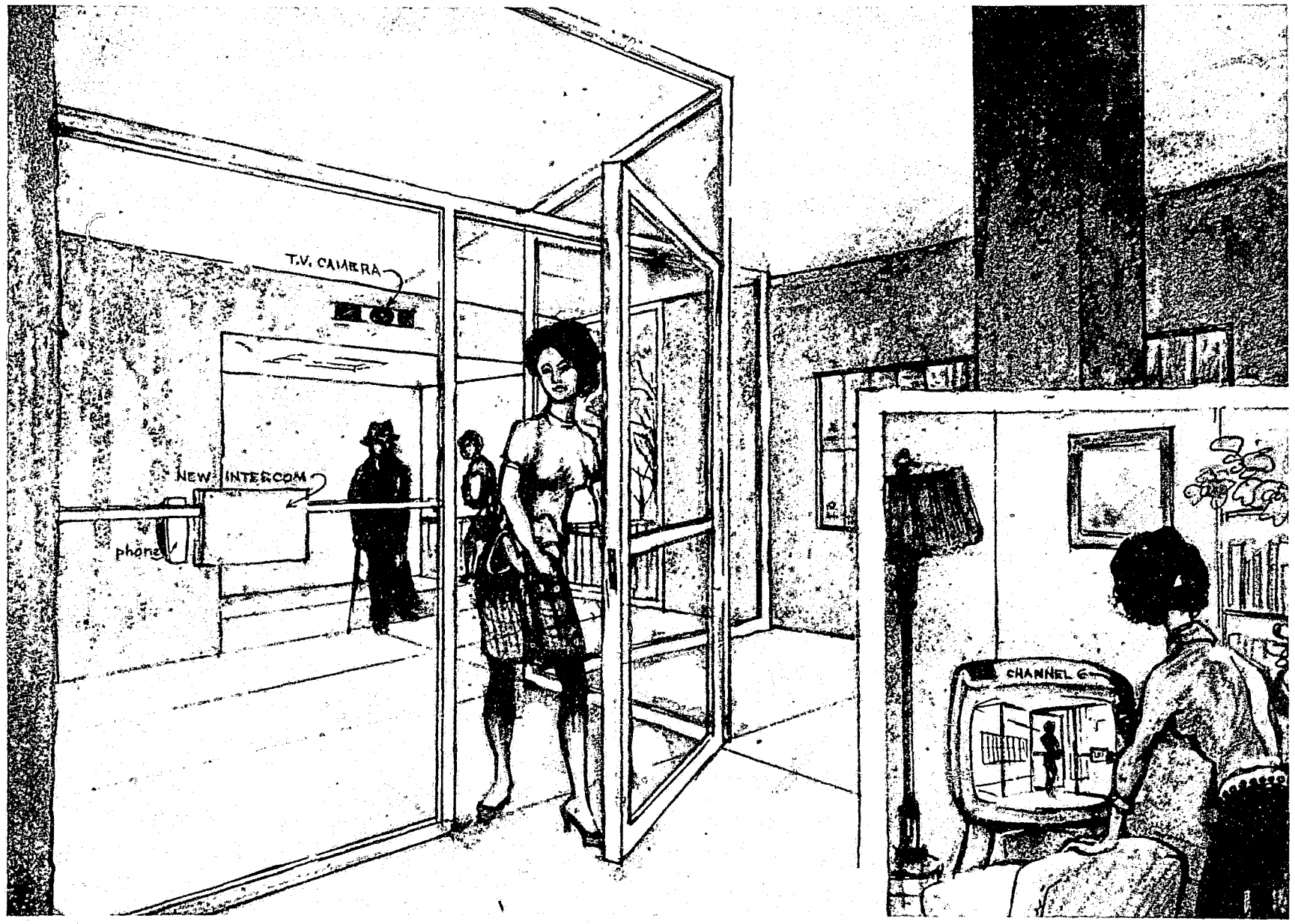


FIGURE E–1. Sketch showing resident monitoring lobby on closed-circuit TV.

buzzer-reply systems, telephones. Resident monitored TV pictures of their building lobby, elevator, and nearby grounds, if successful, should provide an additional window on the world (see fig. E–1, p. 207). Residents should use this picture to maintain surveillance over the arrival and departure of children and visitors, to watch over children at play, and as an added opportunity to come to recognize neighbors on other floors. Sound equipment will be employed to compare the relative benefits that can be achieved through enhancing auditory communication among apartments, and between elevators and halls.

Our proposals for the use of electronic devices are part of a coherent framework regarding the design of multiple occupancy dwellings. In each instance the electronic addition is oriented toward restoring the quality and amount of information about the areas outside their apartments naturally available to residents of low-rise buildings.

A second priority is to increase the ease with which residents can contact police and other authorities and to allow police more effective use of limited manpower by providing electronic assistance to their patrol of public areas of projects.

The purpose of the proposed test program is to examine the feasibility of electronically assisted surveillance and its potential for greater application throughout public housing projects. Experimental work on a limited scale is necessary to:

- Experiment with electronic systems and to determine their most effective and prudent use.
- Examine the effectiveness of electronic systems as a security measure and determine patterns and intensity of use by residents.
- Obtain detailed information concerning resident attitudes before and after installation, especially as it relates to questions of violation of privacy and civil rights.
- Eliminate technical deficiencies, create an operating procedure for dealing with breakdowns, vandalism, and other unanticipated shortcomings of the systems.
- Examine the relative benefits and failings of surveillance systems as operated by tenants v. systems operated directly by Housing Authority Police.

3. *Physical design proposals to improve security at Bronxdale Houses*

Experimentation with electronic equipment will be incorporated into a wide range of physical modifications to the Bronxdale complex, designed to improve security on project grounds and building approaches. A detailed description of the electronic system follows a description of these physical modifications.

Bronxdale is made up of 28 seven story buildings sited on 30.8 acres, divided into large blocks. The central areas of each of these blocks are largely undeveloped and under-utilized. Each building has an entrance arrangement with front and rear doors to each lobby which are virtually indistinguishable from one another. Where by accident of design a set of buildings forms a small cluster around a parking lot and play area, these semi-public grounds facilities are used with greatest intensity, and with least fear of crime on the part of residents.

The physical modifications we have proposed in the interest of security fall into three categories:

Modifications to building entrances to create a breezeway into building courts and to accommodate a telephone intercom.

Grouping of buildings into clusters around parking and play areas, taking advantage of natural opportunities which exist presently.

Development of central area of grounds for more intense use as a public path, and as facility for heavy play activities.

a. *Building entrance modification*

Entry redesign will serve to make the installation of telephone call-up, buzzer reply operationally effective, and to create a breezeway through buildings grouped around a central court. Figure E–2, page 209, shows the lobby entrance and the two-door entry; with the elevator waiting area around the bend and out of sight. Were the buzzer-reply system installed within the existing physical plan (see alternate 1), its effectiveness would suffer from the ambiguity inherent in the double door system. This problem can be circumvented by securing one of the doors (see alternate 2); however, experience has shown that when a door exists and provides direct access to a desired goal, it will be used continually and the locking mechanism made inoperative.

The solution we proposed (see alternate 3) involved the creation of a breezeway corridor between the front and rear doors, and the placement of the buzzer-reply system between the breezeway and the elevator waiting area. This permits residents to use the breezeway as a public passage and provides them with the ability to survey the elevator area before making a decision to enter the building door and lobby itself.

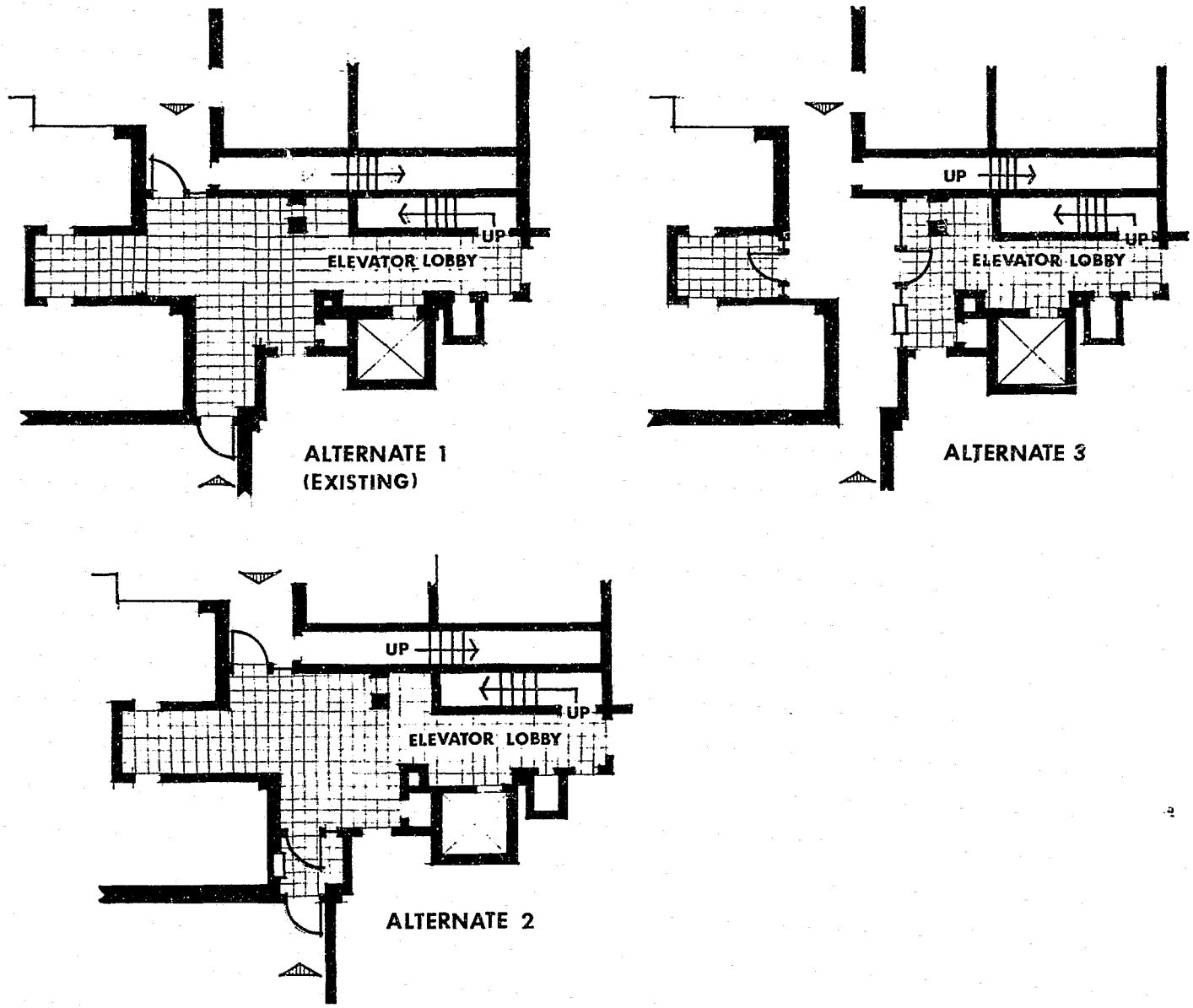


FIGURE E–2. Bronxdale: Studies for intercom location and entry redesign.

b. *Grouping of buildings*

A second proposal involved redefinition of grounds areas adjacent to buildings and the intensification of areas of use.

- Subdivision of grounds of the project into clusters containing three to four buildings is to be accomplished through the use of low, symbolic walls which allow for visual contact, and channel access routes by foot to limited paths of access to the entrance breezeways. See Figure E–3, page 211.
- Further intensification of activity within the subdivided grounds will be insured by locating new play equipment and seating areas in these zones. See Figure E–4, page 212. Mothers watching their children from their apartments will also serve to screen strangers and unusual activity within these subdivided zones.

c. *Development of central area of grounds*

The existing public path system through the project grounds is redundant and fails to channel pedestrians along predictable routes. The extent and persistence of crimes can be attributed in part to the ambiguity of the central grounds areas. Interviews with tenants reveal that these areas are least used and are experienced by them as being most foreboding. Our physical design proposals call for modifications of the path system to create a strong public route through the project.

Finally, although there are public play facilities for adolescents and pre-adolescents nearby, project youngsters were found not to be using them if they are not perceived as their "turf". Further physical design proposals call for development of the central grounds to be used for heavy play by project children. This proposal serves the twofold purpose of reducing intergenerational conflict within the project, and providing separate play facilities for older children living in the project.

4. ***Electronic surveillance proposals***

Proposals for use of electronic equipment are intended to augment physical design solutions to the special security problems of high-rise housing. In this project, unlike Clason Point, goals that can be achieved by physical redesign alone are more modest, e.g. elevators cannot be glazed, corridors inside high-rise buildings cannot be opened to external view or eliminated. Where extensive physical redesign is not possible, electronic equipment may have to be employed to fill the gap. The specific systems needed for an experimental program at Bronxdale Houses included:

- Video surveillance by residents of their lobbies, elevators and adjacent entry and play areas on individually owned TV monitors.
- Video surveillance of public grounds and along central paths by police or tenant monitors.
- Audio surveillance of elevators by residents.
- Audio interviewer intercom system through individual apartment doors.
- Direct communication system from tenants to police, including installation of broadcast system from telephone in local Police Room (in project) to walkie-talkie carried by patrolman.

Initial experimental work is expected to incur higher costs than later extension of electronic systems to other projects. Consequently, not all systems were proposed for project-wide trials at Bronxdale. Most systems will be tested on clusters of buildings and some require testing on only one or two floors of a single building. This conservative testing strategy is consonant with our belief that electronic technology should be assessed in detail to determine its effectiveness and its psychological and sociological consequences prior to large scale tests on a single project, or universal extension of some components to all public housing projects.

The following section schematizes the individual proposals for use of electronic equipment at Bronxdale Houses.

a. *Video surveillance by tenants*

A cluster of buildings was selected for experimental installation of tenant monitored video surveillance. Installation of this equipment is planned to coincide with physical modifications to grounds (e.g. installation of low walls, redesign of entrances) and installation of telephone call up and buzzer reply systems. The system necessitated: (1.) TV cameras in building lobbies, (2.) cameras in building elevators and (3.) roof-top cameras on buildings, looking down on play and parking areas.

b. *Video surveillance by police or tenant monitors*

A major use of video equipment at Bronxdale will be to allow tenant monitors or police to maintain surveillance over the public paths through the project and large central areas of grounds. See Figure E–5, page 213. Hopefully, this will help to intensify use of central grounds as a public street and this in turn will further insure the security of these areas. Monitoring by selected tenants, and restricting the areas under surveillance to public

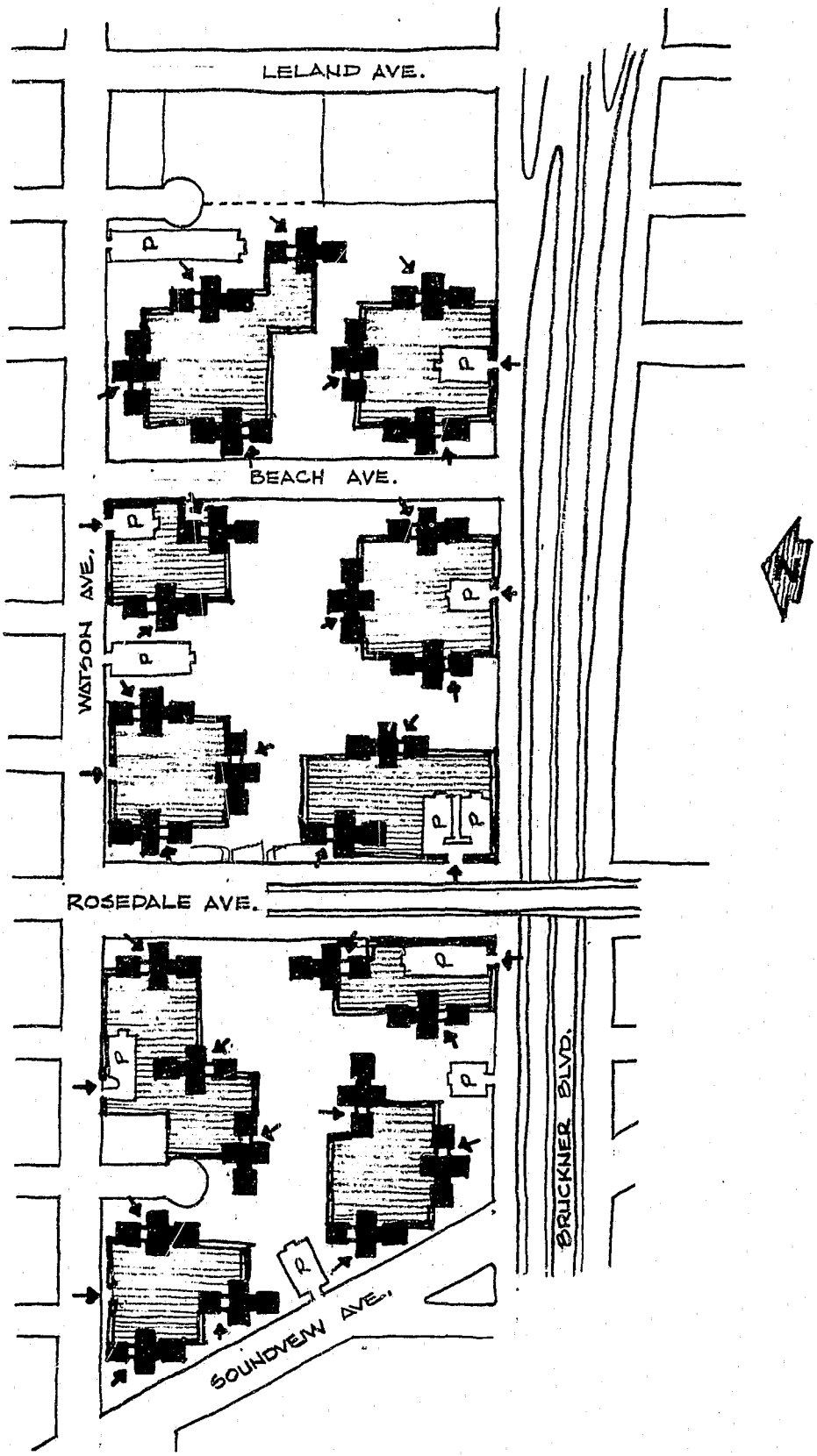


FIGURE E-3. Bronxdale: Proposal for the reorganization of grounds.

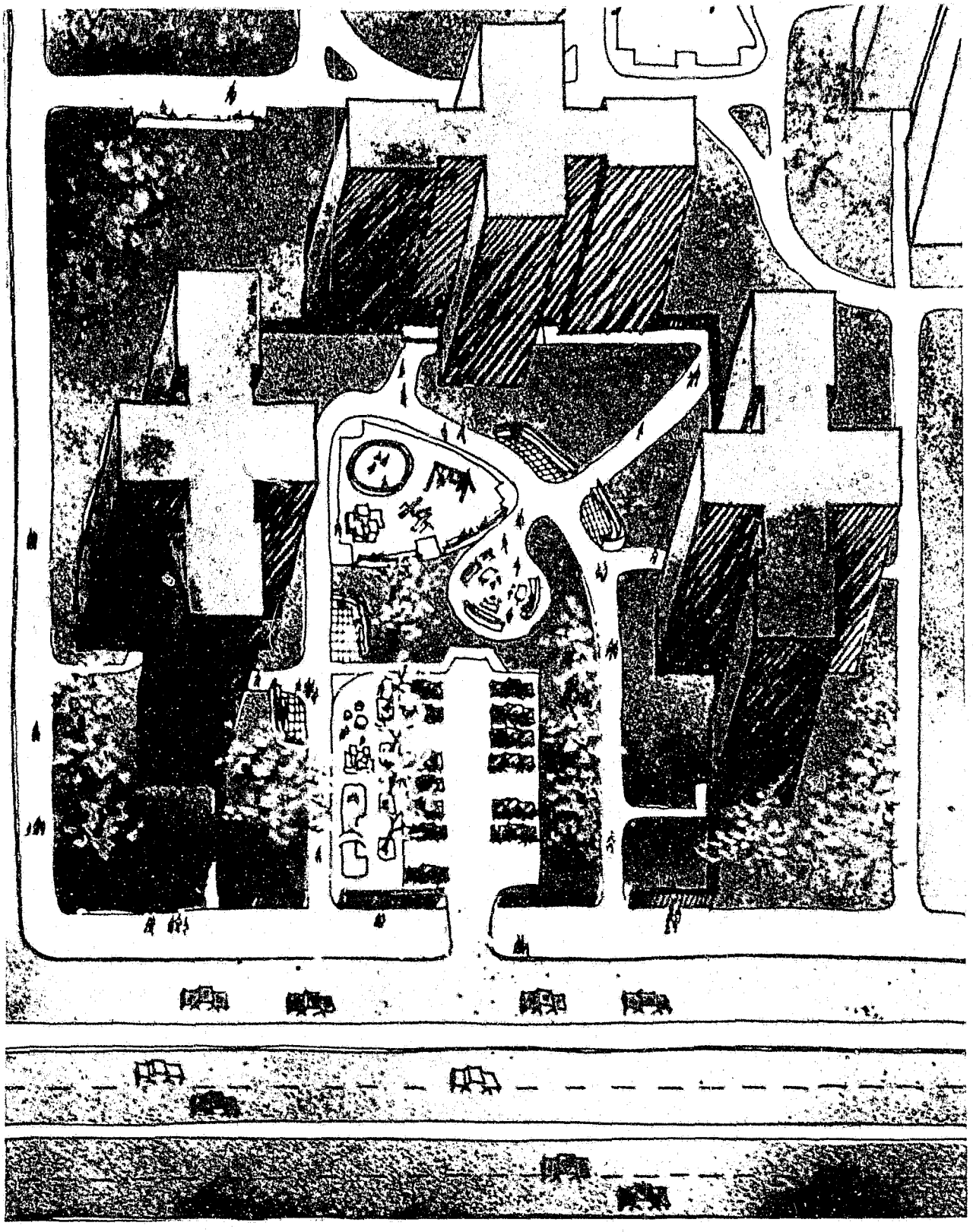


FIGURE E-4. Bronxdale Houses. Sketch showing proposal for locating play equipment and seating areas in reorganized grounds.

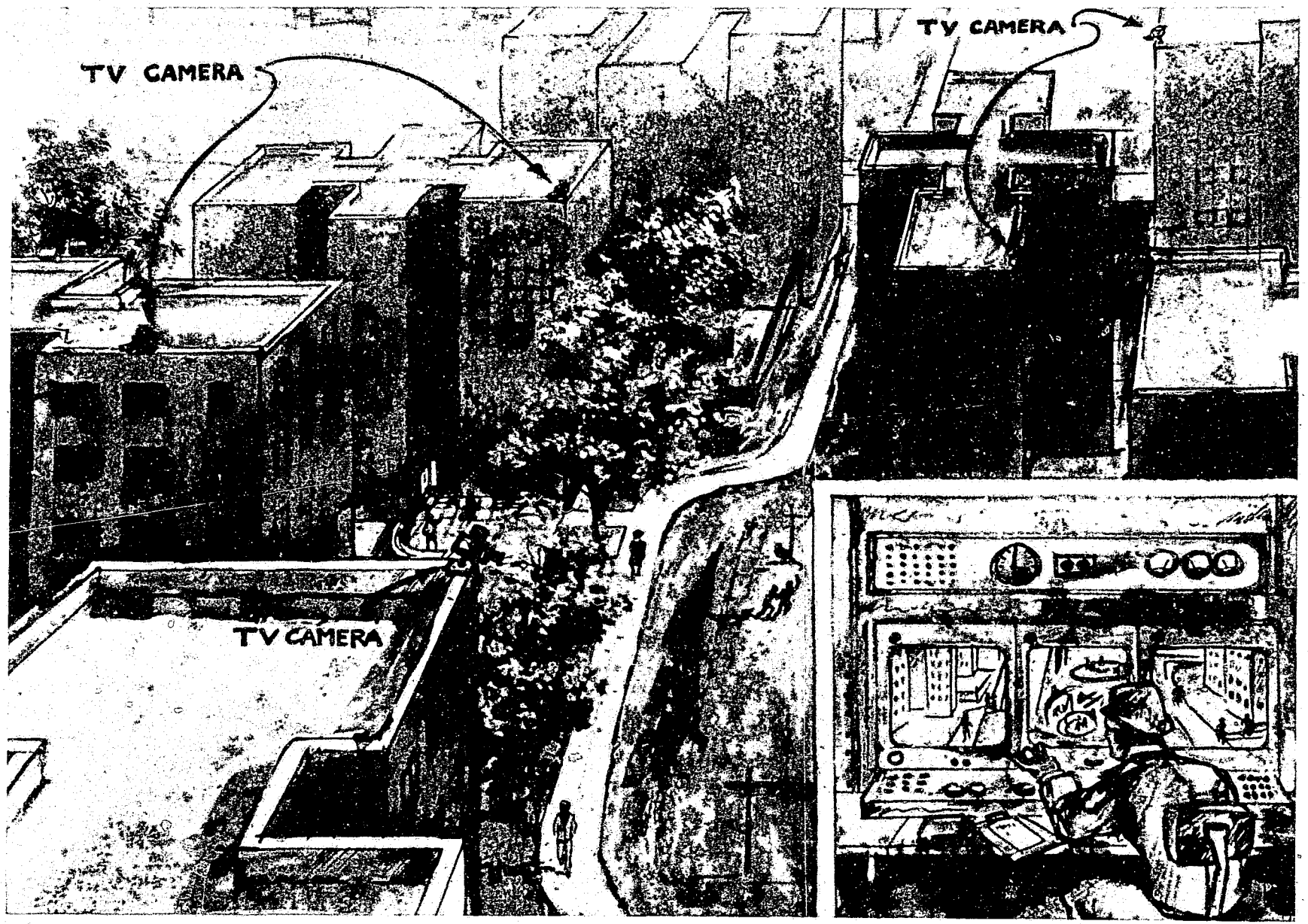


FIGURE E–5. Bronxdale Houses. Sketch showing proposal for monitoring grounds and paths through roof-top TV cameras.

zones was deemed desirable to avoid the possibility of invasion of privacy, or the use of TV equipment for previously unanticipated functions.

For maximum effectiveness during peak crime hours, the system was designed for primary reliance on cameras that can pan, zoom, and change focus based on input from a monitoring console. These cameras can operate during the day and at night without the need of vastly improved lighting.

c. *Audio surveillance of elevators by residents*

Limited experiments were proposed for the design and use of less expensive audio surveillance devices. This was necessary to determine whether the high degree of refined information provided by TV surveillance is actually necessary to achieve a substantial reduction in crime and fear of crime. If providing audio information yields similar effects it can be implemented far more rapidly and at a vastly reduced cost.

The system involves two-way transmission of sound from inside the elevator to each corridor in the building, and from the corridor nearest the immediate location of the elevator into the elevator. This self-contained electronic system is mounted on the elevator cab in a vandal proof container, with microphone pick-ups and speaker on each floor.

d. *Audio intercom interviewer for apartment doors*

A primary security design problem of public housing results from the sound buffer between hallways and apartment interiors. This sound insulation is partly intentional and in part a result of fire door design. While audio privacy may be desired by tenants, it may be operating as a contributant to undetected crimes where it provides excessive insulation of tenants from corridors outside their doors. If more sound from halls was audible to tenants in their apartments, they might respond more readily to the early signs of crime. Similarly, neighboring tenants might be more aware of one another's arrivals and departures, and come to discriminate strange from normal sounds.

The system recommended for experimental installation at Bronxdale involves fitting doors of individual apartments with an audio interviewer with the following features:

- Microphone and speaker in each door, operated off 120 V, designed for two-way communication, including "listen," "speak," and "converse" buttons, with volume controls.
- Design of the unit to remain "on" at all times, at low volume, where its lowest level of amplification is equivalent to sounds produced when listening through a window. At the highest adjustment, it allows tenants to monitor sounds the full length of the corridor with a high degree of resolution.

This system can also be adapted for use as an inter-apartment intercom among adjacent residents on a floor.

e. *Direct telephone communication from tenants to Housing Authority police at Bronxdale*

One of the primary factors influencing tenant attitudes about calling police involves the current system of dialing a central city-wide number, speaking with a dispatcher, who in turn notifies the local patrolmen to answer the call. We proposed a trial system at Bronxdale in which tenants could speak directly with the local patrolman by dialing a separate telephone number. As the local patrolman may be out on call, this required additional equipment to convert the telephone call to a broadcast band on his walkie-talkie. The patrolman receives the telephone call on his walkie-talkie and either checks with central command for a disposition on the case, handles the call over the telephone connection, or asks the caller to dial central command for assignment of another officer.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973 O—473–142

U.S. DEPARTMENT OF JUSTICE
LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
WASHINGTON, D.C. 20530

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE, $300

Postage and Fees Paid
U.S. Department of Justice
JUS 436

U.S.MAIL

SPECIAL FOURTH-CLASS RATE BOOK