Consider these two places: Walking into Green Acres, you immediately sense that you have entered an oasis—traffic noise left behind, negative urban distractions out of sight, children playing and running on the grass, adults puttering on plant-filled balconies. Signs of life and care for the environment abound. Innumerable social and physical clues communicate to visitors and residents alike a sense of home and neighborhood. This is a place that people are proud of, a place that children will remember in later years with nostalgia and affection, a place that just feels “good.”

Contrast this with Southside Village. Something does not feel quite right. It is hard to find your way about, to discern which are the fronts and which are the backs of the houses, to determine what is “inside” and what is “outside.” Strangers cut across what might be a communal backyard. There are no signs of personalization around doors or on balconies. Few children are around; those who are outside ride their bikes in circles in the parking lot. There are few signs of caring; litter, graffiti, and broken light fixtures indicate the opposite. There is no sense of place; it is somewhere to move away from, not somewhere to remember with pride.

These are not real locations, but we have all seen places like them. The purpose of this book is to assist in the creation of more places like Green Acres and to aid in the rehabilitation of the many Southside Villages that scar our cities.

This book is a collection of guidelines for the site design of low-rise, high-density family housing. It is intended as a reference tool, primarily for housing designers and planners, but also for developers, housing authorities, citizens’ groups, and tenants’ organizations—anyone involved in planning or rehabilitating housing. It provides guidelines for the layout of buildings, open spaces, community facilities, play areas, walkways, and the myriad components that make up a housing site.

Architects and planners who design housing schemes work under especially severe constraints. The most serious of these, and often the hardest to recognize, is the lack of input from the people who must live with their designs. The immediate clients are usually public or private agencies, not the eventual tenants.

Under such circumstances the ordinary giv and take between designer and user that seems a prerequisite to a satisfying design cannot take place. Architects usually are forced to fall back on their own experience and their perceptions of the future tenants’ needs. There is, however, an alternative. Architects and planners can also draw on the accumulated experience of people who already live in housing developments. Over the past two decades many designers and social scientists have asked residents to comment on the design of their living spaces. Such postoccupancy evaluations (POEs) provide useful information about what works and what fails from the residents’ perspectives.

Architects who have tried to unearth these studies complain with justification that they are hard to come by and to use. This book is the result of a concerted effort to examine and assess as many of these studies as possible from
the English-speaking, developed world. The guidelines that make up this book are the outcome of our analysis of nearly one hundred studies of what people like and dislike about their housing environments.

**The Emerging Need for Design Guidelines**

Long before people built houses, they had already evolved ways of living together that reflected their needs, values, and beliefs. When they began to build shelters and dwellings, these ways were unselfconsciously incorporated into the fabrics they constructed. Materials were what was readily at hand; construction techniques were commensurate with the builders’ skills. Form, layout, and decoration reflected what the residents deemed important (Alexander, 1979; Rapoport, 1969). Buildings reflected culture; if it were not so, archaeology and the social history of architecture would have no meaning.

<table>
<thead>
<tr>
<th>1 Primary phase: one actor in the design process</th>
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<tbody>
<tr>
<td>User-client-designer-builder are one and the same person</td>
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<tr>
<th>2 Craftsman phase: two actors in the design process</th>
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<tbody>
<tr>
<td>a. Wealthy client-user hires and communicates directly with</td>
</tr>
<tr>
<td>b. Master mason or builder who draws up plans and executes them</td>
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<tr>
<th>3 Early professional phase: three actors in the design process</th>
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<tbody>
<tr>
<td>a. Wealthy client-user hires and communicates with</td>
</tr>
<tr>
<td>b. Professional architect, who interprets needs of client, creates a design, and</td>
</tr>
<tr>
<td>c. Contractor who executes making any modifications to original design</td>
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<th>4 Later professional phase: multiple actors in the design process</th>
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<tbody>
<tr>
<td>a. Users are separate from fee-paying client; needs are filtered through client;</td>
</tr>
<tr>
<td>b. Client is often an institution represented by a committee;</td>
</tr>
<tr>
<td>c. Architect interprets clients’ needs, communicates with fellow professionals (engineers, landscape consultants, etc.); has to please client not the users;</td>
</tr>
<tr>
<td>d. Building contractor executes the design and is dependent on sub-contractors</td>
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<th>5 Contemporary phase</th>
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<tr>
<td>a. Users have increased in number and become more diverse in terms of needs;</td>
</tr>
<tr>
<td>b. Barrier in communication with client and designers created by space, time, economics, and politics. Recognition of barrier evokes new professionals of user needs consultant, environment and behavior researcher and design programmer;</td>
</tr>
<tr>
<td>c. User needs are filtered to designer via client and</td>
</tr>
<tr>
<td>d. Architect becomes process manager; balancing needs of many actors as well as fulfilling own professional needs;</td>
</tr>
<tr>
<td>e. Building contractor limited in interpretation of design into reality by manufacturers of building components, union regulations, materials specifications, etc.</td>
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Figure 1. Designer-user relations at different periods in history. From *The Form of Housing*, ed. Sam Davis (New York: Van Nostrand Reinhold, 1981).
persuasive arguments to the contrary (Alexander, 1977, 1979), most people probably do not want to build their own homes: The majority wants a ready-made dwelling, as long as it fulfills the functional and symbolic needs of "home."

The designer and his or her private client traditionally came from the same social milieu; they “talked the same language” and could at least communicate about the function and symbolism of a proposed new house or other building. Moreover the client and the eventual user of a new building were one. Today, however, the communication process is more complex: Fee-paying clients are often institutions, and they are represented by committees that frequently do not even include eventual (non-fee-paying) users. Time and budget pressures often preclude detailed, analytical consideration of the users and functions of buildings.

Design practitioners seeking a socially responsible approach find little of value in professional criticism. With few exceptions critiques in professional magazines focus either on building science and technology or on aesthetic principles and style. Rarely are buildings evaluated according to dwellers’ responses or the way the buildings fulfill daily functions. The Architect’s Journal in Britain and the American Institute of Architects’ Journal and Landscape Architecture in the United States have encouraged social assessments of buildings and open spaces, but even these exceptions are often not the “studies” they purport to be.

Figure 2. Postoccupancy evaluation studies can inform us of discrepancies between designers’ and residents’ perceptions. In this London scheme the architects wanted to create a stepped-down effect that would enable the development to “blend into” its surroundings. The residents affectionately named the scheme “Lego Flats” and “The Battleship.”
The general public is no longer content to take what is given it or to pay what is demanded of it. The past two decades have seen a phenomenal rise in the degree of public protest and in the number of groups (blacks, Hispanics, Asians, women, gays, the physically disabled) who are ready to fight for their rights. Property tax revolts in California, court cases against high-rise housing in Minneapolis, rent strikes in Liverpool and London, and “tent cities” of homeless youth in Australia demonstrate that people are prepared to take action against unreasonable housing costs or forms. In Britain in the late 1970s the image of the architect was perhaps at its lowest ebb since the Second World War. Media coverage of architectural bungling and ethics received wide coverage and generated considerable public debate. There was a BBC TV series in February 1979 entitled “The Way We Live Now” that dealt forthrightly with some of the questionable housing and planning decisions of the previous two decades. In the summer of 1979 a successful play entitled Can You Hear Me at the Back? opened in London’s West End. Its main character was the disillusioned chief architect of a fictional British new town.

Although designers have made avoidable mistakes (some of horrendous proportions) that people will have to live with for decades to come, the blame also lies with fee-paying clients, design programs, ways in which government standards are applied, social researchers unwilling to stand up and be counted, and bureaucratic departmentalism (passing the buck). Because of this last phenomenon, for example, we frequently find housing officials concerned only with dwelling mix and construction speed, government agencies concerned only with costs per dwelling and compliance with technical standards, and architects concerned only with dwelling design and overall image. Rarely is there a housing coordinator and rarely, except in the relatively unique situation of new town planning, are social services and physical facilities planned in an integrated fashion.

During the past two decades growing concern about the separation between designers and their eventual clients has led to the emergence of a new field of study known variously as environmental psychology, environment and behavior studies, environmental sociology, or architectural psychology. Both the need for a theoretical understanding of the relationship between people and their surroundings and immediate, pragmatic concern over mismatches between people, institutions, communities, and designed environments have provided impetus for this work, and a considerable body of research now exists. Britain led the English-speaking world in pragmatic, case study research in housing with government bodies initiating postoccupancy evaluations of prototype housing forms. Ironically, British schools of landscape and building architecture place little emphasis on the theoretical foundations of environmental psychology or sociology. In the United States virtually every leading school of architecture or landscape architecture requires courses in people-environment studies, but the federal Department of Housing and Urban Development...
(HUD) has barely begun to acknowledge the need for postoccupancy evaluations and a more user oriented approach to programming. Australia has tended to follow the American pattern, emphasizing teaching in departments of architecture and environmental design; government sponsorship of basic research has only recently expanded. The Canadian and New Zealand experience falls somewhere between that of the United States and Britain, with a limited role for the teaching of social science in design departments and an expanded and more influential role for a user-oriented approach to housing at local and national government levels.

The Use of POE Research to Generate Design Guidelines

If research on people-housing relations now exists, why are the design professions not using it? A recent U.S. study on the use of social science in architecture revealed that, although 96 percent of the designers surveyed believe that the environment influences behavior and 87 percent are aware of the existence of environment and behavior research, only 20 percent have ever used any in their work (Reizenstein, 1975, 28). Designers did not know where to find research; findings were frequently reported in jargon-ridden language; the design implications were not immediately obvious; and so on.

Designers would be more aware of this research if it had filtered into government housing standards, but little of it has, and most designers currently in positions of governmental authority were trained before it existed. Most official housing standards, which originated in the nineteenth-century public health laws, emphasize physical health and safety within dwelling units or building complexes and ignore both individual and community mental health and crucial aspects of site design. The U.S. Douglas Commission characterizes such codes and standards as “a combination of rule-of-thumb, personal experience, and professional judgment with limited supportive scientific data (National Commission . . ., 1969, 33).

Another kind of government standard has recently appeared in Britain: local authority “design guides” or policy guidelines aimed primarily at regulating the visual environment. These control exterior design and road layout in private housing developments. Growing concern for conserving local vernacular architectural styles and a townscape philosophy of urban design influenced the development of design guides, which range from the now-classic Essex Design Guide (County Council of Essex, 1973) to numerous less-ambitious pamphlets by local authorities. The design guidelines in this book differ greatly from these. Both address site planning issues, but design guides approach the quality of housing environments from a primarily aesthetic perspective, as defined by professional designers and planners; the guidelines in this book address the quality of housing environments from a social perspective, as defined by residents.

The most telling fact about the neglect of user-based housing research is that little has found its way into commercially published books, retrievable in libraries. Many of the studies referred to in this book are reported in government-sponsored research published as monographs, design bulletins, or academic reports. Some are theses or dissertations written by architecture or landscape architecture students. A few have appeared as articles in the design press, a few as papers in social science journals or the proceedings of professional conferences.

Of the approximately one hundred housing case studies used as the research base of this book, forty-seven were published in Britain, thirty-seven in the United States, five in Canada, five in Australia, five in New Zealand, and one in Ireland. Locating, reading, and synthesizing the results of these studies have taken many years. Often we discovered case studies almost inadvertently; in the course of visiting another university a question sometimes led one of us to a thesis or a local report of considerable relevance. In attempting to uncover this research in hiding, we were particularly aided by our own multicultural and interdisciplinary range. The authors of this book are a British geographer and planner, currently residing and teaching in the United States (Cooper Marcus), and a Canadian planner, resident for much of her career in Australia (Sarkissian). Co-workers and advisers on this long-term project include an American planner now resident in Australia (Perlmutt), a Canadian architect who did postgraduate work in the United States (Polsky), a Canadian sociologist now residing and working in the United States (Hogue), a British sociologist with research experience in criminology (Wilson), and an Aus-
tralarchitect doing postgraduate work in the
United States (Dovey). The illustrators were an
American architect/planner (Drake), a German
architect now teaching in the United States
(Bossmann), and an American landscape archi-
tect (Owens).

We considered only postoccupancy evalua-
tion studies of resident reactions to low-rise,
medium- or high-density family housing that
used recognized survey techniques of sampling,
interviewing, observing, and analyzing. We relied
more heavily on those using interviews rather
than mailed questionnaires because subtleties
and details are lost with the latter technique.
The most reliable studies used both attitude sur-
veys and behavioral observations; a few studied
behavior alone. We rejected “studies” that were,
in fact, only designers’ journalistic critiques.

Some of the studies utilized sophisticated
methods of multivariate and regression analy-
sis; others relied on simple, noncomputerized
cross-tabulations. The former offered interesting
data on correlates of satisfaction but often over-
looked mundane but significant site-specific data.
Less sophisticated analysis techniques may have
lacked a grand correlational conclusion but often
contained a wealth of human detail. We rejected
studies with small sample sizes, atypical popula-
tion groups, or dubious research methods.

As our research and literature review pro-
gressed, overlaps began to appear. Indeed, the
occurrence of similar findings in different loca-
tions first alerted us to the possibility of for-
mulating guidelines. If ten different studies of
comparable housing in different locations report
dissatisfaction with, say, unfenced backyards, that
finding is probably true for the majority of
people.

Although we relied heavily on evaluative case
studies, we also found valuable supporting mate-
rial in books or articles dealing with child devel-
oping, residential crime, housing management,
social networks, community analysis, and deviant
behavior, as well as in collections of guidelines
from more technical or aesthetic viewpoints
(County . . . , 1973; Department . . . , 1972b,
1972c; Department . . . Transport, 1977). We
used two other categories of materials. One
was common sense. Some facts about housing
design are so obvious and basic that they need
no research to prove them; we include them
because they are nevertheless sometimes over-
looked. The other was the authors’ ongoing
field observations in housing developments.

Sometimes a visit to a housing project led to
guidelines that would not have emerged from
existing research. For example, a guideline on
the need for an orientation map at entrances to
large, new developments stemmed from ob-
erving people using them on many greater
London council estates. Later, during field obser-
vations in new medium-density suburban hous-
ing in California, this guideline was elaborated
and made more specific, primarily because cur-
rent design and location details sometimes ren-
ders these maps inoperable.

The observations of existing housing initially
focused on public inner-city redevelopment and
private suburban housing in the San Francisco
Bay Area. This American bias was balanced by
an equally concentrated study of council housing
in London, Glasgow, Newcastle, and Liverpool;
public and private estates in Milton Keynes, Ste-
venage, and Runcorn New Towns; and selected
observations in Vancouver, Winnipeg, Toronto,
Ottawa, Auckland, Wellington, Dunedin, Christ-
church, Melbourne, Sydney, Adelaide, Stock-
holm, Copenhagen, and Amsterdam. Some
recent books on design guidelines were espe-
cially influential in our thinking; Changing Chi-
ldren’s Hospital Environments (Lindheim, Glaser,
and Coffin, 1972) is a fine example of the trans-
lation of observational research into clearly ar-
ticulated recommendations, with a set of design
review questions to use as a checklist at the end.

Low Rise Housing for Older People (Zeil, Epp,
and Demos, 1977) is an excellent example of
succinct guidelines, cogent illustrations, and stimu-
lating (although nondirective) possible design re-
sponses. This publication influenced our own
inclusion of a similarly titled section for each
guideline. Finally, A Pattern Language (Alexander
et al., 1977) somewhat influenced our organiza-
tion of the text and particularly influenced our
use of a shorthand name for each guideline.

**Changing Needs and the Housing
Environments**

Housing is designed and built and in that sense is
a product. But when considered as a sequence
from original contract, user participation, alter-
native designs, final design, and working drawings to construction, occupation, resident evaluation, management, maintenance, and replacements, housing is also a process (Turner, 1976). Too often designers focus on the product and withdraw their professional responsibility when buildings are completed. Contractual arrangements that would retain architects and landscape architects for several years beyond initial occupancy to implement changes and modifications requested by residents (Ministry . . . . , 1967a) would require considerable changes in the traditional designer-client relationship. We believe that these changes and new arrangements must be made.

A particular program, and the resulting built environment, may be well conceived to cope with the current daily needs of, say, families with young children, but what happens when the children become teenagers or when half the original nuclear families become single-parent families or groupings of unrelated adults? Design flexibility is often recommended, but an ambiguous space in year 1 is often equally ambiguous (and leads to equally serious problems) in year 15. Perhaps we need the architectural equivalent of the owner's manual supplied with a new car, something that stays with the housing (whatever the management, whoever the residents) and spells out how different spaces or facilities could be modified to meet changing needs. It might say, for example, "If the child population becomes predominantly adolescent, the sandbox could be boarded over to become a stage. If the demand arises, the flat next to the preschool play space could be converted into a day-care center. If a higher proportion of residents becomes car owners, the parking area could be decked over to double the number of spaces." If designers make these alternatives explicit from the start and suggest modifications in writing, the long-term usefulness of a project will be enhanced and designers will be forced to think about long-term flexibility.

Postoccupancy evaluation would become an integral part of the design process if specific time and money provisions for it were incorporated in the designer-client contract. We will start to see a systematic upgrading of multifamily housing only when clients and designers can be persuaded that objective user evaluations are essential to the improvement of housing design and the modification of government regulations. It is also essential that the residents themselves have some control over their home environments and can effect changes through tenant participation in management or through cooperative arrangements. This in turn will ensure a continuous reevaluation of design.

We have learned enough now to know that a move to better housing in a "good" environment cannot, by itself, improve the economic circumstances of deprived families, the emotional circumstances of disturbed families, or the general happiness of "normal" families. But we have also learned that the design of environments affects people in a multitude of ways and that, in terms of their well-being, it matters deeply. Because of this, we offer our design guidelines as a contribution to housing as if people mattered.

Clustered Housing: A Socially and Ecologically Desirable Form

Inevitably, when guidelines are based on existing POE research of a particular housing type (low-rise, high-density or clustered housing), those guidelines will tend to perpetuate that form. We firmly believe that this form of housing, when done well, can serve the needs of many segments of the population better than the other two density extremes—low-density, detached housing or high-density, high-rise housing. Our plea is for a more urban, ecologically aware, and potentially community-oriented residential form.

Low-density suburbia was constructed at a rapid rate after World War II to house newly formed families. The model was set of the commuting male adult returning tired to the serene dream house, whose physical and emotional maintenance was the responsibility of his wife. Home and garden, at least in the United States, were often large enough to represent a full-time maintenance job, not to speak of cooking, shopping, and chauffeuring children to music lessons and school. Built during a time (the 1950s and 1960s) when it was expedient to phase women out of the paid labor force, it was socially and economically convenient to perpetuate a housing form that supported the old adage—"a woman's place is in the home" (Eagar and Sarkissian, 1982; Hayden, 1980).
By the 1970s, however, women in every Western country had begun to enter the labor force in unprecedented numbers. By 1975, the two-worker family accounted for 39 percent of all American households (Hayden, 1980, S174). More and more women opted to work, and many—in single-parent families—found themselves the sole breadwinner. Inevitably, working women found themselves doing two jobs: the job for which they are paid plus unpaid home maintenance/child care/cooking. Recent surveys in affluent suburbs of “a large Midwest metropolitan area” (which included both employed and nonemployed wives) indicate that despite liberalizing sex roles and work women still do 80–95 percent of the approximately sixty household tasks investigated (Berk, 1980, 73).

The large split-level suburban house in the United States has become a burden to many employed women. Commuting is also a problem in segments of the city where low densities virtually exclude public transport.

In a comparative study of residential satisfaction in a low-density U.S. suburb (Levittown, Pennsylvania) and a higher density Swedish equivalent (Vällingby), sociologist David Popenoe concludes: “With the percent of gainfully employed women in the U.S. sharply rising, the relative disadvantages of a Levittown-type environment for the working woman are increasing. For the woman who can’t afford a second car, who has difficulty making child care arrangements, and who has specialized employment needs, Levittown can become a noose around her neck” (1977, 177).
Small wonder that attached or clustered housing, with smaller dwellings and more shared facilities, is gaining in popularity. Some families who can afford it are moving back to the city to be closer to more work opportunities, child-care facilities, public transport, and cultural facilities.

Children, particularly between the ages of six and twelve, need to have access to their peers, need to be able to explore and roam safely on their own, and need to have access to a variety of environments. All of this, and more, is available to children in clustered housing if shared landscaped spaces are designed sensitively. Inevitably, if children are safe and happy in their home neighborhood, their parents’ lives are easier.

Research shows that one of the most frustrated population groups in low-density suburbia is adolescents (Gans, 1967; Popenoe, 1977). When young people are entering a stage in which they are seeking more and more independence from their parents, they find themselves in an environment where getting together with friends is made difficult by distance, paucity of public transport, separation of housing from shopping centers, and so on. In his United States–Sweden study, Popenoe found American suburban teenagers more often bored and engaging in vandalism than their counterparts in Sweden living at higher density with easy access to shops, clubs, public transport, and so on (Popenoe, 1977). Teenagers in clustered housing are more likely to find others of the same age living within walking distance and may have access to shared facilities or hanging-out places where they can spend time together, out of sight of home, yet not far away.

The problems of high-rise, high-density living for families have been too widely discussed to bear repeating here. Low-rise, high-density housing can (potentially) offer residents some of the advantages of the high-rise flat or apartment (privacy, efficient maintenance, shared facilities) without its disadvantages (distance from ground, feelings of anonymity).

Not only does clustered housing offer some distinct social advantages; it also addresses some pressing economic issues. With rising energy costs, the costs of commuting are affecting all income groups. Clustered housing in the inner city allows people to enjoy a green and quiet environment within easy access to city jobs. Similar housing on the city’s fringes will, if repeated often enough, increase overall densities and render public transport more economical. As land costs continue to rise, clustered housing permits more dwellings on a given site. As ecological issues of natural drainage, solar access, and community gardens become more pressing, clustered housing permits the more rational use of any given site—the best soil saved for food growing, existing woodland preserved for play or windbreak, natural drainage patterns preserved.

In short, clustered housing, although not a panacea for all people, offers certain distinct advantages to population segments not previously given much attention in housing design (working parents, children, and adolescents). It also has distinct ecological merits. Thus we offer guidelines on what we predict will soon be the fastest growing housing type in our cities.