REPORT

Towards an Architectural Definition of Normalization:
Design Principles for Housing Severely and Profoundly Retarded Adults

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INTRODUCTION

INTENT

The following material is intended for designers and others working in an institutional-care field. Its purpose is to sensitize people to the architectural elements which affect creation of normalized living environments. Toward this end, distinct physical characteristics of a typical home are described and juxtaposed against those of a traditional institutional setting. This juxtaposition makes concrete the architectural implications of the normalization ideology, defined by Nirje as "providing the conditions of everyday life which are as close as possible to the norms and patterns of society's mainstream."[1]

The goal of this project is to transform into conscious choices the unconscious assumptions of what is appropriate for housing special groups. The very knowledge that housing is for a group commonly institutionalized can lead a designer to unknowingly imbue it with institutional qualities[2] that may negatively affect resident behavior. The information presented here does not provide design solutions. Instead, it is a tool for developing a way of thinking about housing which allows designs to respond to specific situations and sites.

While based on research for mentally retarded people, the principles described here are equally applicable to homes for other institutionalized or special groups, such as battered women or the elderly. They may also be applied to other building types, such as day care centers, where the need for a homelike ambience is well established.

After a brief discussion of issues related to designing for mentally retarded people, the design principles are presented in order from the largest, most general concerns of site and overall building layout, to the more specific aspects of activity patterns and room designs. Each principle is described and illustrated in terms of its extremes, the homelike and the institutional, so that the distinctions may be easily understood.

The substance of this material derives from a comprehensive literature review and a study of four residences for able-bodied severely and profoundly retarded adults. The four residences, representing a range of design solutions, were investigated by observing resident and staff use of spaces, by interviewing administrators and direct-care staff, and by analyzing the physical environment. Additional information on residences was derived from a review of six residential settings (one hospital, one dormitory, two apartments, and two single-family houses). The illustrations as well as photographs of the environments were then rated by uninformed subjects on a five-point scale between "institutional" and "homelike." Additional findings from the research will be published in the future.

The approach taken here has certain limitations that need to be made explicit. First, any definition of normalization will be culture-bound and climate-bound to the place where the research is done. This means that descriptions here may not be totally applicable outside the upper midwest region of the United States. Nonetheless, as regional differences within the United States are relatively minor, this should not greatly affect the validity of the descriptions.

Second, the design principles are based on two years of research. They represent a corresponding level of completeness and reliability. Futher research is desirable to substantiate these findings, and to develop even more definitive descriptions and measures.

Third, while significant physical disabilities are relatively common among mentally retarded people, design for physical accessibility is not specifically addressed here. There are already available some excellent sources on this subject[3] that may be used in conjunction with the principles presented here to create accessible designs that maintain the normal elements of housing design and minimize institutional qualities. The approach to accessibility that would most effectively mesh with the principles presented here is one of designing for specific people with specific disabilities rather than creating a building design for accessibility in general. By limiting the number and range of disabilities in a building, the need for diversion from typical housing solutions is minimized. For example, if only one resident needs a wheelchair, the corridor can be normal width since two wheelchairs will not need to pass.

Finally, our work addresses the normalization of solutions but not the design process. It is highly desirable, wherever feasible, to consult the residents to discover their concerns. Residents should have a major voice in the arrangement of their own rooms, especially in the selection of furniture and colors. Literature about consulting with residents has been developed by the Ohio Department of Mental Health.[4]

MENTAL RETARDATION

While normalization theory applies to any institutionalized people, including those with developmental disabilities (mental retardation, cerebral palsy, epilepsy, and autism), this report is oriented to design for people who are severely and profoundly mentally retarded, most of whom are dependent to some degree. The report does not prescribe solutions, however, but presents criteria for making design choices.

A person who is mentally retarded has both low intellectual functioning and weak adaptive abilities. While intellectual functioning as measured by IQ is not particularly helpful for assessing ability to perform normally, the following IQs may be used to

describe levels of intelligence: 0-20 profoundly retarded; 21-35, severely retarded; 36-51 moderately retarded; and 52-67, mildly retarded.[5]

Behavior, while more difficult to assess, is more informative for those interested in living environments. Severely and profoundly retarded people may have certain maladaptive behaviors, such as aggressiveness or self-stimulation. However, consistent with the ideals of normalization, even profoundly retarded adults have been found able to increase significantly their adaptive behaviors.[6]

Generally, a typical day for severely retarded adults begins early in the morning when they are awoken by staff members and assisted with basic dressing and grooming skills. These activities take longer when treated as teaching opportunities. Breakfast, under close supervision, is also a learning time. About 9:00 a.m., residents are transported to school during weekdays for more training. The day program is over mid-afternoon and they return home and usually follow activities programmed by the staff, such as laundry. The evening meal, preparation, and clean-up is a major learning occasion for basic socialization and eating skills. The evening is usually less structured, with occasional trips for sports, parties, or dinner. Bedtime is between 9:00 and 10:00 p.m. On weekends, the residents stay home from school, have other scheduled events, and more free time.[7]

NORMALIZATION

Background

Traditionally, institutions isolated certain groups from society and maintained them as special physical and social entities.[8] While in our culture it is considered appropriate to remove certain subgroups as dangerous, others are now being mainstreamed to eliminate the negative consequences of institutionalization (dependence and negative behavior, for instance).

One group unjustly isolated is the mentally retarded. Since the colonial era,[9] many of this group have been institutionalized and, even recently, considered subhuman, menaces, pitiable, diseased, objects of ridicule, and life-long children.[10] These attitudes toward the mentally retarded are at least in part a result of confining them in institutions. When ordinarily moral persons perceive a subgroup as less than human, they treat them "no better than animals."[11] Both society, as measured in additional costs, and the individuals inside the institution are needlessly harmed when the environment supports severely abnormal and sometimes dangerous behaviors.[12]

Fortunately, since 1970 the principle of normalization has become increasingly favored both theoretically and in practice. It has been mandated by both courts[13] and

codes.[14] This attitude holds that people should be integrated to live in as culturally normative an environment as possible.[15] The goal is not to make the developmentally disabled simply appear normal, but to assist them in actually becoming part of society. The emphasis is on eliminating the negative influences of institutionalization. Designers are especially important in this movement since the theory stresses that the physical environment plays an important role in supporting positive behavior.

Field research indicates that normalization of the social and physical environment is a promising approach. One study showed that after being moved to more homelike environments, even the low-functioning residents (with IQs averaging 20.3) improved in social and solitary behaviors.[16] Another study, using a representative nation-wide survey, found that community residential facilities were more homelike and encouraged more client autonomy than the larger public residential facilities.[17] A Minnesota study found that IQ levels actually increased in profoundly and severely retarded residents after they moved to a normalized group home and were reinforced in normal living patterns (a 16.7 percent increase in IQ was shown with the mean IQ increasing 9.9 points so that they were recategorized from severely retarded to moderately retarded).[18]

Models

Models for treatment of the developmentally disabled have changed over the years. Treatment applications, however, sometimes persist long after the model they were based on has been abandoned.

An early approach was the custodial model.[19] Individuals who possessed a similar, socially unacceptable trait were isolated for their protection or that of the community. A prison is the most illustrative present example, although some hospital wards for the mentally retarded are also clearly custodial. The emphasis of this model is on maintenance rather than improvement.

In the 19th century, as a result of scientific advances in medicine, the medical model[20] came to the forefront. In this view, the developmentally disabled are considered unhealthy and are isolated for treatment. This was an advance over the custodial model since it presents some hope for improvement. The emphasis is on the body. Hygiene is the primary focus and the patient as a person is virtually ignored. This approach frequently encourages psychological dependence and may not provide the instruction in self-help skills needed by most mentally retarded persons. Today it is accepted that the developmentally disabled cannot be seen as sick or ill, so there is no longer a valid reason for their isolation. Many building code requirements, however, still derive from the medical model and its undue emphasis on hygiene over mental well-being.

More recently, the prosthetic or enhancement models[21] have been adopted in some instances. In these ideologies it is considered appropriate to provide persons with special compensation for their behavioral or physical deficits. The advantage of this approach is that it supports the individual, helping people on a case-by-case basis rather than massing people together. Unlike the medical model, a person need not be considered sick to receive attention. A drawback is that this model may limit the possibility of improvement since the person may establish dependency on his or her prosthesis, letting it become a type of crutch.

As stated before, the normalization model holds that mentally retarded people should be "provided with conditions of everyday life as similar as possible to the norms of society's mainstream." These conditions include patterns and places of sleeping, eating, dressing, as well as routine daily activities such as school, work, and recreation. Normalization also implies the opportunity to develop skills in everyday living, including self-care (e.g. bathing and grooming), care of one's own belongings (e.g. washing and drying clothes), choice of leisure activities and competence in daily social interactions with peers as well as non-handicapped people.[22]

For our purposes, the custodial and medical models will be considered strictly institutional, not in its broadest sense, indicating any societal organizations, but in the sense of Goffman's definition of the total institution:

> The central feature of total institutions can be described as a breakdown of the barriers ordinarily separating these three spheres of life (work, home, friends). First, all aspects of life are conducted in the same place and under the same single authority. Second, each phase of the member's daily activity is carried on in the immediate company of a large batch of others, all of whom are treated alike and required to do the same thing together. Third, all phases of the day's activities are tightly scheduled, with one activity leading at a prearranged time into the next, the whole sequence of activities being imposed from above by a system of explicitly formal rulings and a body of officials. Finally, the various enforced activities are brought together into a single rational plan purportedly designed to fulfill the official aims of the institution.

The prosthetic and enhancement models will be included under the normalization model. These models, because of their emphasis on support, have a different intent than institutionalization. To the extent that they support skills and positive attitudes which are not dependent on the provided environment, but are generalizable to many situations, they are able to be incorporated into the normalization model. The concept homelike, then, contrasts with the concept institutional because home environments, unlike traditional institutions, encourage independent action and stimulate continuing growth on the part of the resident.

DESIGN ISSUES

The issues related to design of normalized facilities are only briefly discussed here. Interested readers are encouraged to refer to the bibliography for more extensive material.

RESIDENT INDEPENDENCE AND AUTONOMY

The single most significant factor that designers can influence, in creating housing that supports normalization, is the degree of control given to residents over their environment. Standing in opposition to the definition of institutions as described by Goffman, is the compelling idea that residents should have individual choice. While it is true that some severely and profoundly retarded people are unable to meet all of the responsibilities of life in society, this does not imply that they should be denied choices. Instead, it may be appropriate to provide a stronger framework within which retarded adults can made decisions for themselves. Many cues for behavior appropriate to participation in society come from the physical setting. If inclusion of mentally retarded people in the mainstream is a goal, the housing environment can be an instrument for learning to make choices.

The configuration of a residence can influence this. The design can provide opportunities for independent action in control of comfort, privacy, and socialization, and for learning to regulate these needs within the cultural expectations of our society. The architectural framework may provide for or inhibit this control. The ramifications of this can be seen not only in large scale concerns, but also in such details as an individual's ability to turn lights on and off, adjust the heat, open a window, and lock a door. In terms of layout, this can be seen in the importance of creating privacy for the individual in the bedroom and bathroom areas, or the provision in social areas of options for active or passive participation in groups. Whereas in institutions, living rooms are generally very large in scale with furniture at the perimeter, in ordinary housing a living room will be small with chairs variously placed, some at right angles for conversation, others isolated near a lamp for reading. The institution gives ambiguous cues. While the choice of living room furniture suggests intimate conversation, a large room indicates appropriate use for many people, and the placement of the seating at the perimeter indicates that it is inappropriate to interact. Thus rooms, in all their aspects, need to be consistently designed to encourage behavior which corresponds to society's norms.

STAFF REQUIREMENTS

A successful, normalized residence for mentally retarded people requires consideration of staff needs. The staff play by far the greatest role in supporting positive behavior, in that they interact with the resident on a daily basis, carrying out the program.[24] The architectural setting is one of the tools at the staff's disposal. Key to the effectiveness of the staff is their attitude toward the residents, their respect for the residents' dignity, and their encouragement of the residents' independence and autonomy.[25] One of the elements that influences how staff treat the residents is the environment in which they both live. In addition to the practical influence that environments have on carrying out tasks, the indirect influence of a homelike setting on staff can be assumed. This encourages staff to treat residents in a more normal fashion, because it tends to elicit from both, behaviors suitable to home which they have learned and have had reinforced previously in many similar environments.

The institutional model for care places primary importance on staff requirements, such as the custodial concern for ease of care, and the medical concern for sanitation that requires ease of cleaning. These requirements are often satisfied to the detriment of resident needs, such as independence and comfort. While it is important to meet the staff needs, this should be viewed as secondary to meeting resident needs. If staff feel that they are in the residents' home, attitudes toward residents are more likely to be respectful of such things as residents' needs for privacy and control.

Where the direct-care staff lives with the residents twenty-four hours a day, seven days a week, they certainly require their own separate dwelling unit to give them the same opportunities afforded to the mentally retarded residents. This can be done by combining an apartment with a larger house, or, where residents are given separate units, it could simply be another similar unit.

However, when the staff are in the residence on a part-time basis, the situation is different. Here, the direct-care staff are not in the role of neighbors or family, but more like paid helpers who come into the home. In this situation, staff need their own room for two activities: office work and relaxation. In a home environment, paperwork is usually handled in the kitchen at a counter or at the table, or on the dining room table, or in the den, where it takes place alongside other activities such as TV watching. By contrast, in institutions a separate office suite is created, and for break, a staff lounge where staff members are often tempted to be together rather than with residents. Providing a retreat place for staff is necessary because working with residents can be physically and mentally taxing, but this need must not interfere with the primary staff duty of working with

residents. The retreat and work place may be defined as exclusively staff territory, but it should not be big enough to physically dominate the design or to encourage staff to be together, away from residents. The retreat area should thus be small. Larger staff meetings, if they are necessary, can take place in the dwelling at times when residents are not present, or can take place elsewhere.

POTENTIAL ROADBLOCKS TO NORMALIZATION

There are things beyond the control of the designer that may make it difficult to create a homelike environment. These are discussed in this section.

ADMINISTRATORS AND STAFF

The attitudes of administrators, and their implementation of programs is the most important factor in the creation of a normal environment. The decisions made by an administrator can negate any attempts by a designer, builder, developer, parent, staff member, or resident to provide a normal physical setting. For example, choices in the size of the facility and the location are administrative and may either encourage or undermine the attempt to create appropriate housing. Staff hiring and supervision practices will support or inhibit normalization. Policies set in the running of a residence may either encourage or impede residents' personal growth, independence, and possible integration with the larger community.

SIZE

The size of a home, based on the number of residents, is critical to the physical design of a homelike setting.[28] While large state institutions have had, until recent times, hundreds of mentally retarded residents living together on one campus, in normalization, these people are being dispersed to existing communities in smaller residences. Yet to have the residences blend in with the community requires that the size of a residence be the same as adjacent housing. And to encourage appropriate activity within the home, no more than six residents per dwelling unit is desirable.

If, however, the designer is confronted with a size larger than a typical family, such as twelve or sixteen residents, institutional qualities can be minimized by breaking the residence down into smaller units of a more normal size (three or four people). In this way residents can have private bedroom, bath, living room, cooking and eating areas. Although some people defend large institutions because they allow economies of scale in providing services, this argument has not proven to be economically defensible.[28] An institutional life-style is not only detrimental to the mentally retarded, it is also more expensive. For example, it is both less expensive and a far richer experience to have to travel to school or to get a haircut than to have these services brought into the home.

MODIFICATION OF SETTINGS

While modification of existing houses in residential areas is a very reliable way to achieve a homelike setting, the modification of an existing large institution is least likely to result in success.[29] The very idea of large institutions implies a medical or custodial model where efficiency of scale is the primary reason for placing that number of people together in the first place. Second, it is unlikely that staff will be greatly altered in their attitudes toward residents, since they have come to associate this particular place with the institutional model for care. Third, it will be virtually impossible to eliminate a sufficient quantity of cues to make the institution's image change from institutional to homelike.

This is not to say that the situation in large institutions cannot be made less negative, but rather that it can never be made truly homelike, and should be thought of as a temporary measure in normalization.

RESIDENT MIX

In a typical household, people have a variety of abilities and disabilities. One person may need glasses, another may not be particularly well coordinated, physically. In this situation, people work together, compensating each other's disabilities. Ideally, mentally retarded people would live with other people who do not share their disability and would thus be able to cooperate with them in similar fashion. But presently, our society is not able to incorporate the mentally retarded into these normal life patterns. Nonetheless, when placing developmentally disabled people in residences, it makes sense to place people together not for their similarities in problems, but for their differences. If, for example, physically disabled people who are mentally retarded are located together, it compounds the difficulties of staff and eliminates the possibility that residents can assist each other. And in terms of the physical environment, it mandates institutional codes, and an increased number of institutional elements. Such a facility would not be designed to accommodate each resident in particular, but rather to accommodate all such residents in general.

FOOTNOTES

1. Nirji, B. "The Normalization Principle and its Human Management Implications" in R. Kugel & W. Wolfensburger (eds.) <u>Changing Patterns in Residential Services for the Mentally Retarded</u>. Washington: President's Committee on Mental Retardation. 1969, p. 181.

2. Wolfensburger, W. <u>The Principle of Normalization in Human Services</u>. Toronto: National Institute on Mental Retardation. 1972, p. 19.

3. For examples, see asterisked citations in the Bibliography.

4. Bakos, M., Bozic, R., Chapin, D., Gandrus, J., Kahn, S., and Neuman, S. <u>Group Home Bedroom Booklet</u>. 1981. <u>Group Homes: A Study of Community</u>. 1979. <u>Shared Spaces: Changing Your Group Home</u>. 1982. Ohio Department of Mental Health, Office of Program Evaluation and Research.

5. Overboe, C. & Wang, Y. <u>Behavioral and Physical Characteristics of Developmentally Disabled Individuals</u>. Washington D.C.: United States Department of Commerce and United States Department of Health, Education and Welfare. October 1978, pp. 10-15.

6. Carey, A. & Thompson, T. "Structured Normalization: Intellectual and Adaptive Behavior Changes," <u>Mental Retardation</u>. 1980, <u>18</u>: 4, pp. 193-197.

7. Adapted in part from <u>Design Standards: Intermediate Care Facilities</u>. Environment Design Group, Department of Mental Health, Massachusetts. 1976, p. 15.

8. See Chapter One of Goffman, E. <u>Asylums</u>. Chicago: Aldine Publishing. 1961.

9. Wolfensburger, op. cit. p. 14.

10. Ibid., pp. 12-25.

11. Ibid., p. 18.

12. Ibid., p. 143.

13. In Minnesota, for example, see Welsch v. Noot Consent Decree.

14. In Minnesota, for example, see 12 MCAR Sec. 2.034 (Rule 34) Minnesota Department of Public Welfare.

15. Wolfensburger, op. cit., p. 28.

16. Knight, R. Weitzer, W. & Zimring C. <u>Opportunity for Control and The Built Environment: The Elemer Project</u>. Amherst, MA: University of Massachusetts, Environment and Behavior Research Center. 1978.

17. Rotegard, L., Bruininks, R., & Hill, B. <u>Environmental Characteristics of Residential Facilities for Mentally Retarded People</u>. Project Report No. 15. Minneapolis, MN: University of Minnesota, Department of Psychoeducational Studies. 1981, pp. 13-15.

18. Carey, A. & Thompson T., op. cit.

19. Canter, D. & Canter, S. <u>Designing for Therapeutic Environments</u>. New York: John Wiley & Sons. 1979, pp. 12-13.

20. Ibid., pp. 13-14.

21. Ibid., pp. 14-18.

22. Carey A. & Thompson, T., op. cit., p. 193.

23. Goffman, op. cit., p. 6.

24. See, for example, Levy, E. & McLeod, W. "Effects of Environmental Design on Adolescents in an Institution," <u>Mental Retardation</u>. 1977, <u>15</u>, pp. 28-32.

25. See discussion in Intagliata, J. & Willer, B. "Reinstitutionalization of Mentally Retarded Persons Successfully Placed into Family Care and Group Homes," <u>American Journal of Mental Deficiency</u>. 1982, <u>87</u>, pp. 34-39.

26. Wolfensburger, op. cit., pp. 48-49.

27. Interview of Administrators. Also see Rotegard, et. al., op. cit.

28. Hendrix, E. "The Fallacies in the Concept of Normalization," <u>Mental Retardation</u>. 1981, <u>19</u>, pp. 295-296.

29. Knight, et. al., op. cit.

DESIGN PRINCIPLES

The design principles are presented here from outside to inside under the headings: Context/Site, Building, and Room/Space. The illustrations are paired to contrast homelike qualities with institutional qualities. The degree to which homelike qualities can be achieved is assumed to be related to the degree of normalization that can be created in the design. While the effect of any single architectural element may be important, ultimately the cumulative effect of all elements is what communicates the homelike or institutional quality. Thus, many ordinary houses have elements here defined as institutional but still communicate a homelike character. The relative significance of individual factors may be discovered with further research; it is not considered here.

The designer may find that there are instances in which certain features described here as institutional are required or even desirable. The format used here was set up to allow trade-offs to occur. When a certain feature in the institutional category is deemed necessary, it is important to try and incorporate as many as possible of the other homelike elements within that same area of the design, to minimize the impact of the required institutional feature. For example, in designing living room windows to respond to destructive behavior we find that from the exterior, window size and placement are important clues to recognition of housing (principle A-9). We also discover that, from the interior, windows provide views, and an easy way to control ventilation (C-6). Rather than relocating windows out of reach of residents, it would be preferable to replace the glass with plexiglass, thus maintaining the window's symbolic and functional role.

Institutional   Homelike

RELATION TO CONTEXT - BUILDING TYPE   A-1
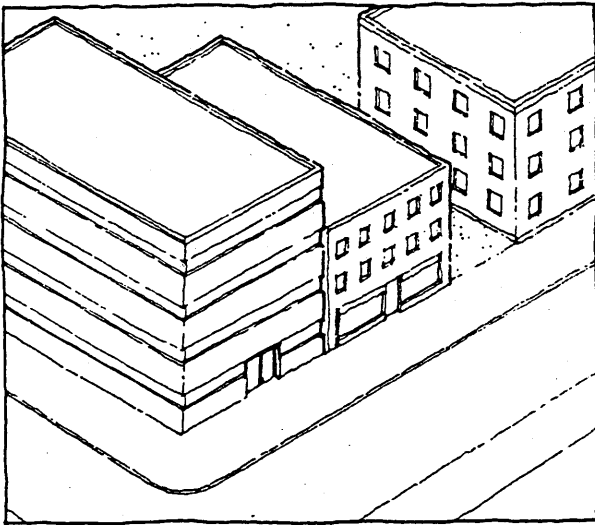

An urban area which is exclusively commercial or industrial is an unusual and thus abnormal residential setting.
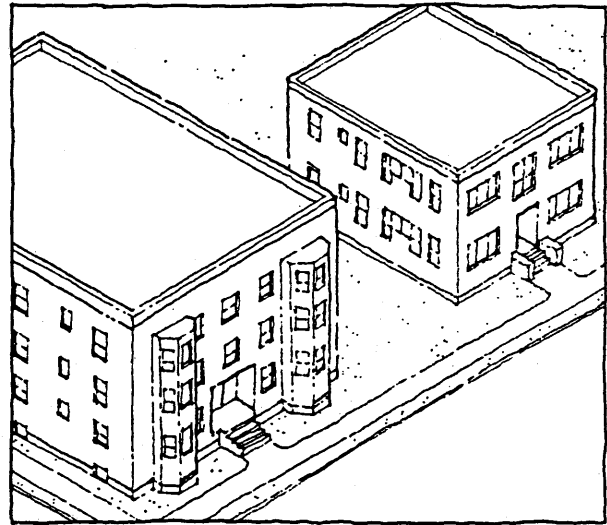
Sites for residences should be chosen in residential areas and buildings should be designed to match adjacent structures whether they are single family houses, duplexes, multi-unit buildings, or mixed use buildings which include housing.

RELATION TO CONTEXT - SITE IMAGE   A-2
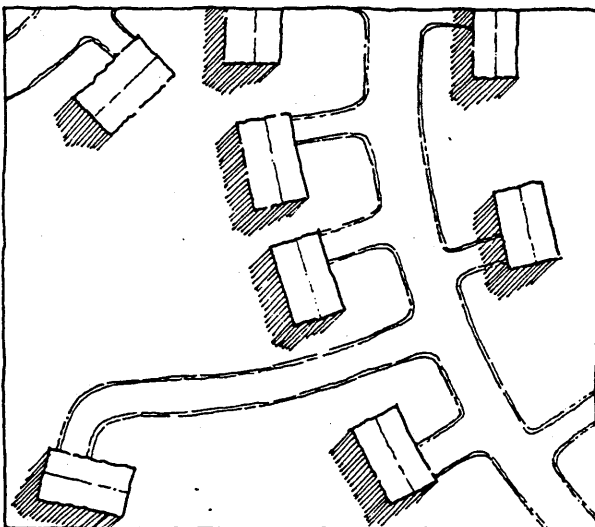
Institutions are usually isolated and easily identifiable. The residence should not be distanced from neighborhood people and activities by being located in a remote area or by being placed on large grounds.
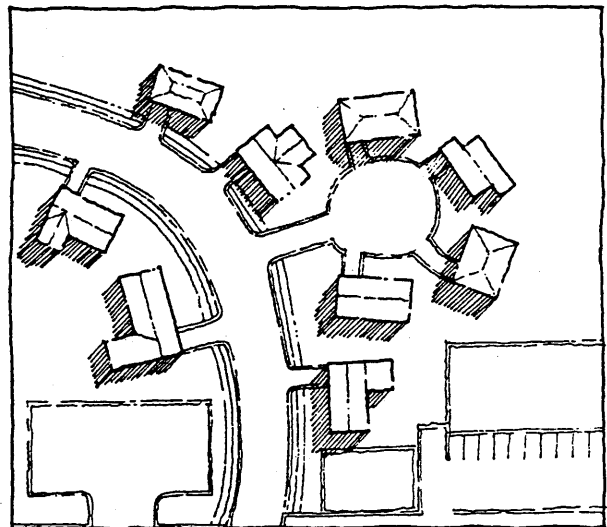
People who do not drive usually live within walking distance of stores, parks and other amenities, or of public transportation. Paved sidewalks permit safe pedestrian access. A site should be in scale with surrounding buildings, with spaces defined in a similar pattern of building and open area. Matching the local standards is desirable. Existing building mass, lot size, construction type, materials, and relation to street are some things to consider in siting a building.

Institutional | Homelike

PARKING AND VEHICULAR ACCESS A-3
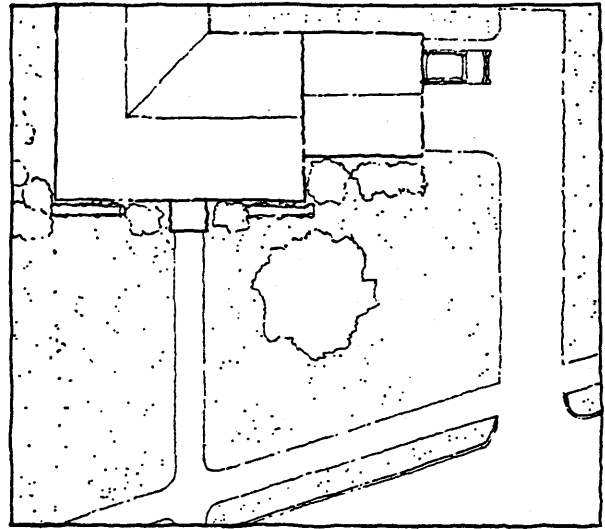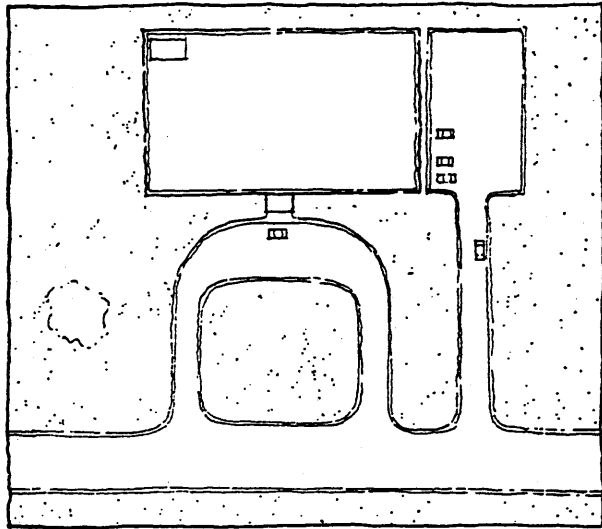
Parking lots, especially in front of a building, and large drop-off drives are clues that a building is an institution. Institutions need the access of large vehicles such as specially equipped vans, buses, and delivery trucks. The necessary large drives and parking areas create an institutional image. This type of building usually requires delivery of large quantities of items, so a loading dock is common. Trash is often stored in a dumpster.

A normal home doesn't require large amounts of parking or large vehicle access. In a residential area, parking is usually on the street. Small parking areas in less unobtrusive places will appear less institutional but use of onstreet parking is more normal, except in multi-family dwellings. A simple driveway and a garage for drop-offs is a residential feature. Access can be from the street or the alley depending on neighborhood patterns. In a residence most deliveries are made to the front or back door. Trash is stored in cans beside the house or garage.

YARD DESIGN A-4
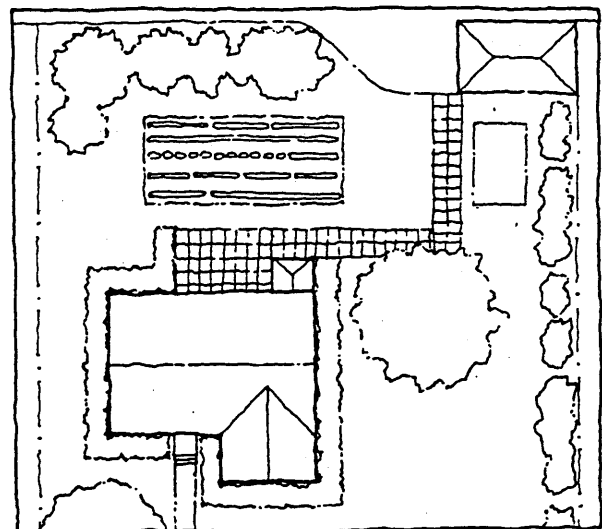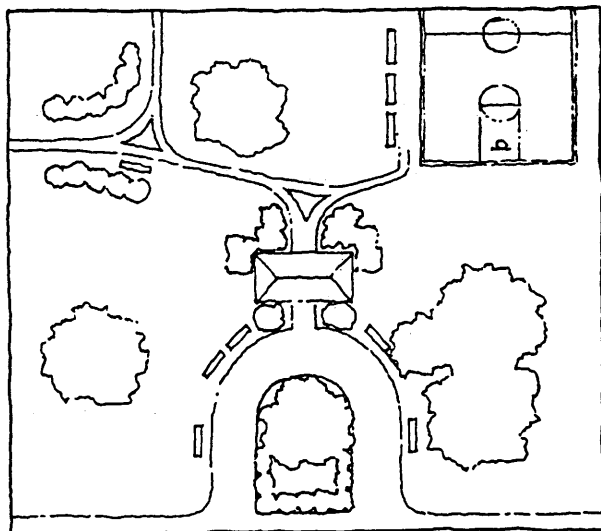
In large institutions, the outdoor area is usually set up like a park. Paths are defined, and benches line the paths. Areas are set aside permanently for certain games, which are of interest to the general public rather than tailored to the interests of particular people.

The yard of a house is laid out to accommodate the needs of a specific small group of people. Depending on the interests of the inhabitants, there may be a vegetable or flower garden, a swing set or sandbox, and a laundry hanging area. Often there is an open area where games such as croquet and badminton may be set up. Activities such as cooking, eating, or sitting and talking, may spill over into the yard from the house. Fences create privacy from neighbors.

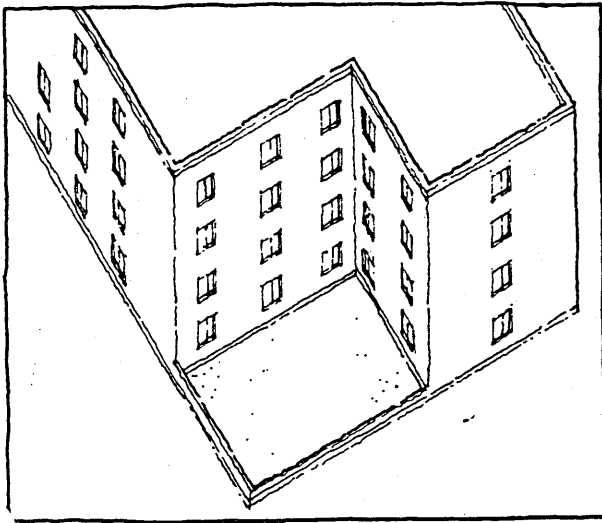Institutional   Homelike
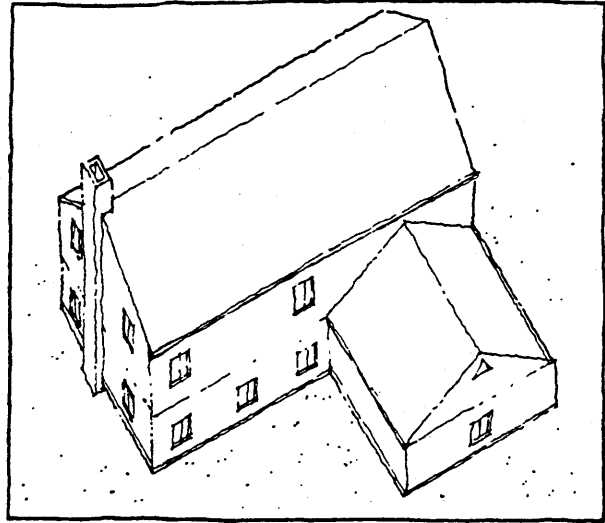
BUILDING VOLUME   A-5


The ratio of building volume to site area affects space perception. Too large a building can turn outdoor space into a fishbowl, depriving it of adequate light for vegetation to grow and enough space for it to be used with comfort.

A building volume of one or two stories creates an outdoor area that is more private and that has better sun access. But when private housing is taller, the treatment of the outdoor areas is similar to adjacent residential buildings.

STREET-ENTRANCE RELATIONSHIP   A-6
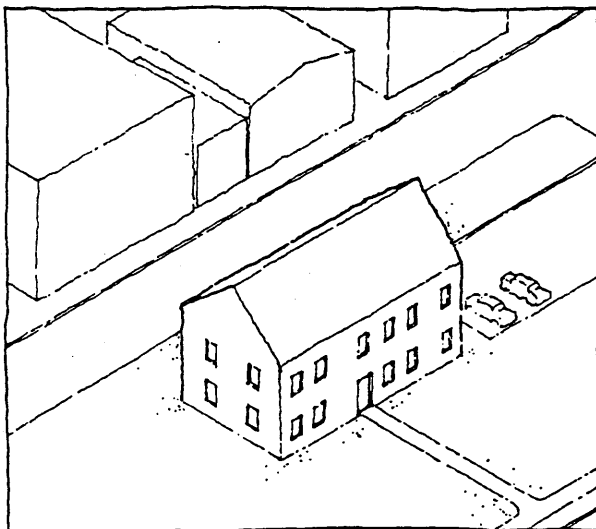
The street entrance to an institutional building is usually the shortest distance between two points. A business may even open directly onto the sidewalk. If there is space between entry and sidewalk, it is undifferentiated reflecting its totally public nature. Lack of transition space and lack of variety in landscaping are often cues to a non-residential building. The back of these buildings is usually unlandscaped.
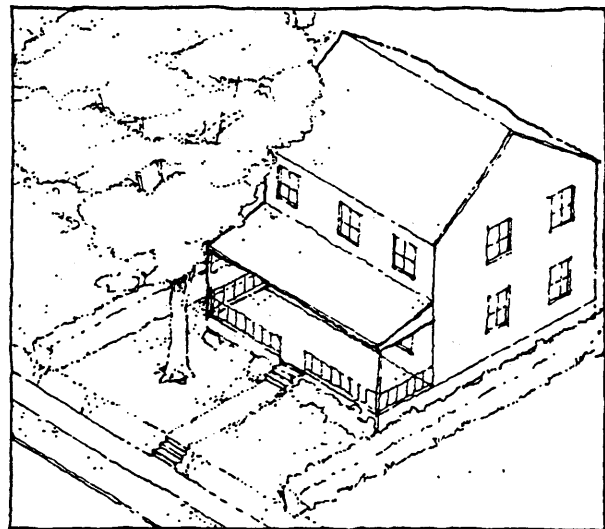
The approach to a residence presents several layers of increasing privacy to pass through. At a normal home the street and sidewalk are public and the walk is less public. The yard becomes more private as trees and fences define the points of transition. The stoop or porch marks the house entry, a private place. The vegetation and landscaping in front and back will be unique to each residence reflecting the tastes of the inhabitants.
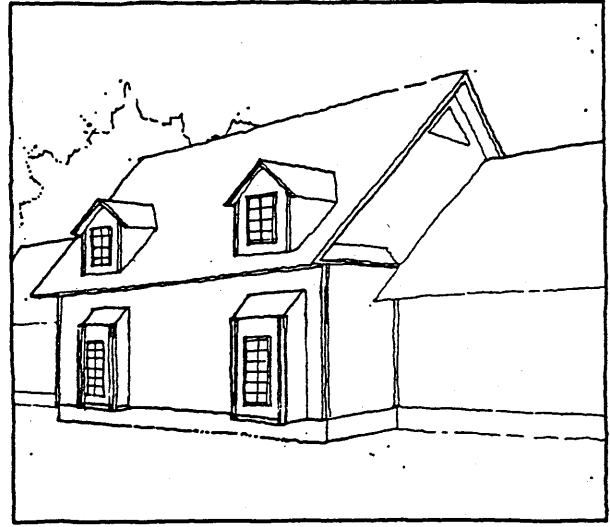
Institutional   Homelike

BUILDING FORM   A-7
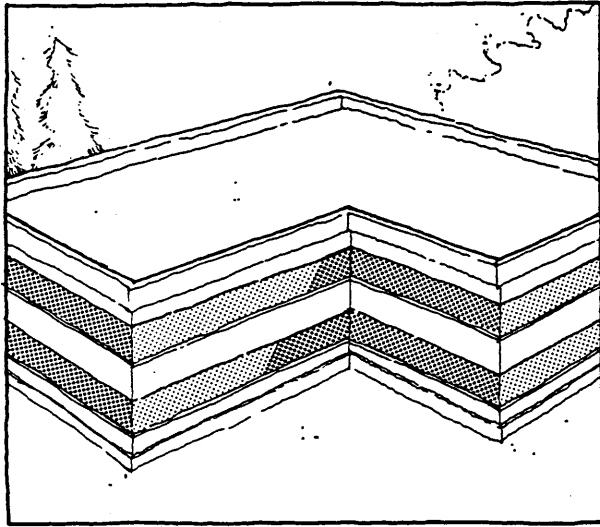

Institutional buildings usually have simpler massing than homes and flat roofs, expressing the value of maximum ratio of building volume to building surface.

A normal residence has a primary mass and secondary masses, such as roof gables, dormers, and overhangs. Most single family homes have pitched roofs, and they are in general, associated with residential buildings.

FACADE MATERIALS   A-8
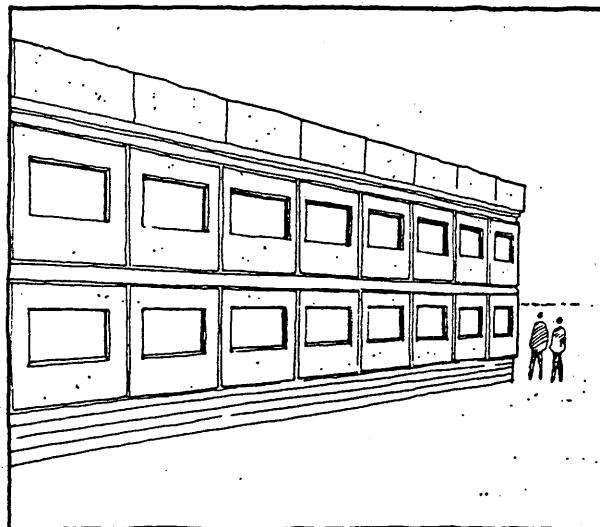
Not only are materials important, but how they are used affects perception. Large expanses of material, lack of detail, manufactured machine detail, and hard surfaces are characteristics of non-residential buildings. Materials generally include brick, concrete block, poured or pre-cast concrete, stone, and metal surfaces.
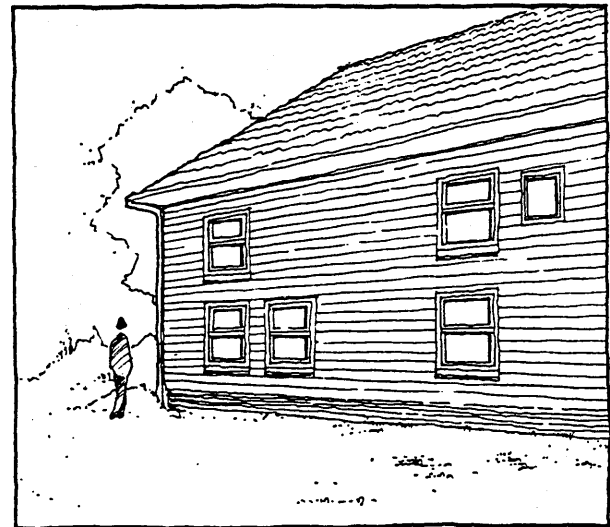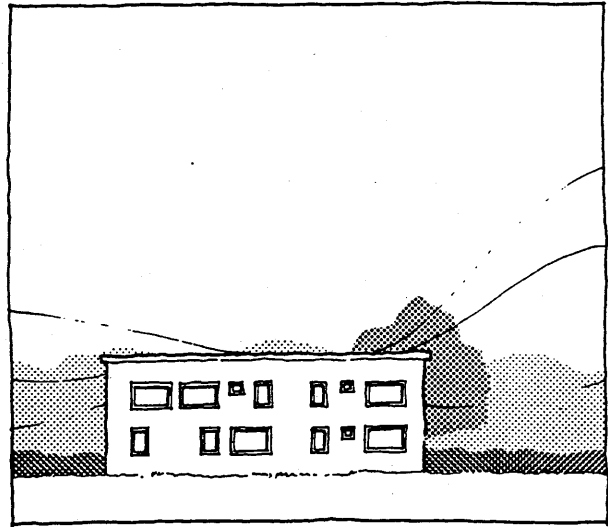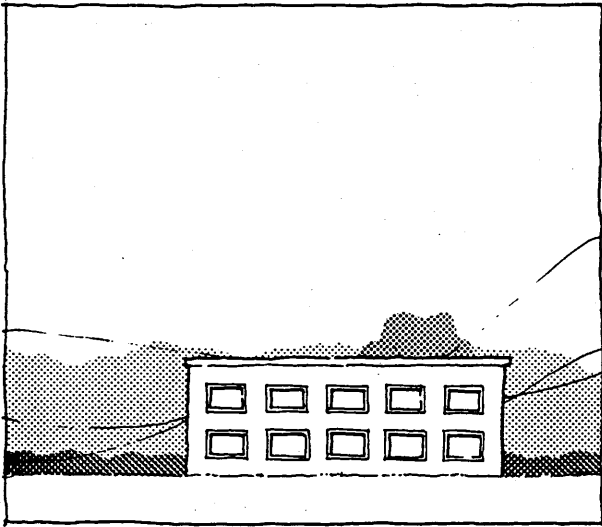
Softer, more manipulated, and intricate materials are characteristics of homes. Wood and stucco are the most frequently used residential materials. Decorative elements are usually incorporated in private dwellings.

Institutional   Homelike

WINDOW FACADE PATTERN   A-9

Facades that have a repeated window pattern (such as strip windows or windows all of one size) appear institutional. The repetitive pattern, chosen for economic reasons, has come to be associated with work places rather than dwelling places. It creates the impression that only work activity happens there. The material of window frames is likely to be metal.

A normal residential window pattern reflects the variety of functions and people contained in a home. The type and sizes of windows vary greatly, depending on whether the window is selected primarily for light, ventilation or view, and depending on the size and purpose of the interior space. Window frames are commonly made of wood.

BUILDING ENTRY - DOORWAY DESIGN   A-10
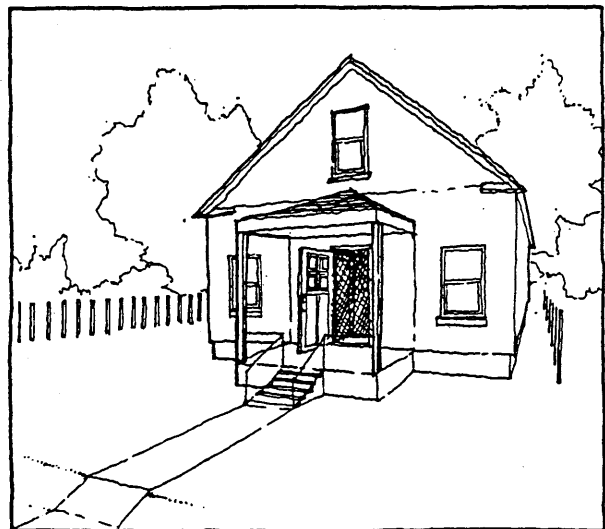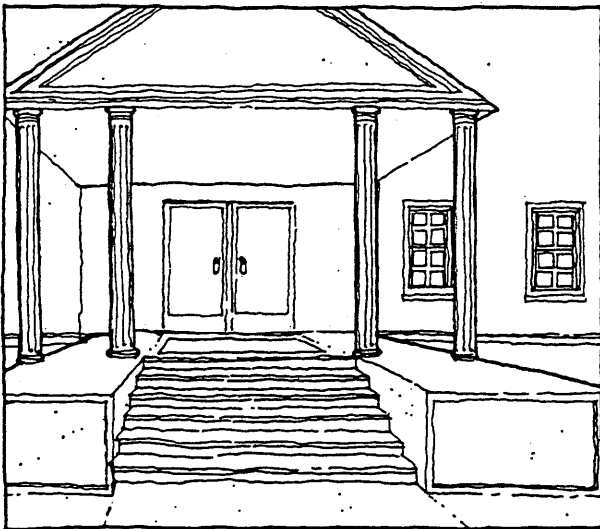
In the past, institutions were characterized by long, wide staircases that led up to monumental porticos with large heavy doors at the entrance. Taken from temple design, these entries were designed to impress the visitor. The formality which indicates a building is public is antithetical to the notion of housing as the intimate domain of the resident.

In the traditional house, the entry experience is characterized by the successive demarcation of movement from the public to the private domain. Most houses are not only at a distance from the street, but also separated by level. Almost all entries have steps up to a porch or small covered area, and a wooden door. The small scale suggests use by one or two people at a time.

Institutional   Homelike

ENTRY - TERRITORY DEFINITION   B-1
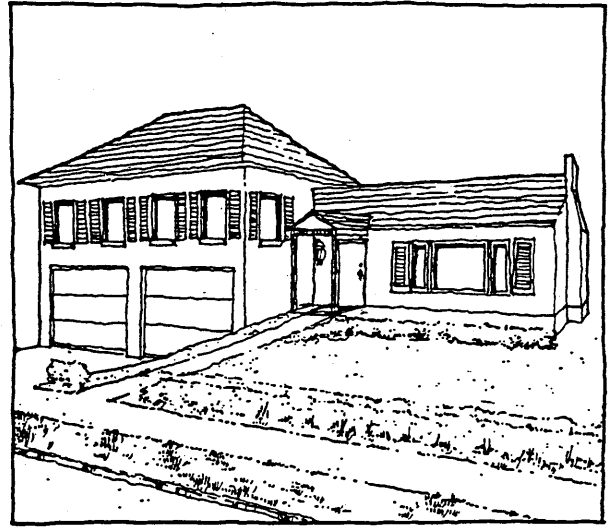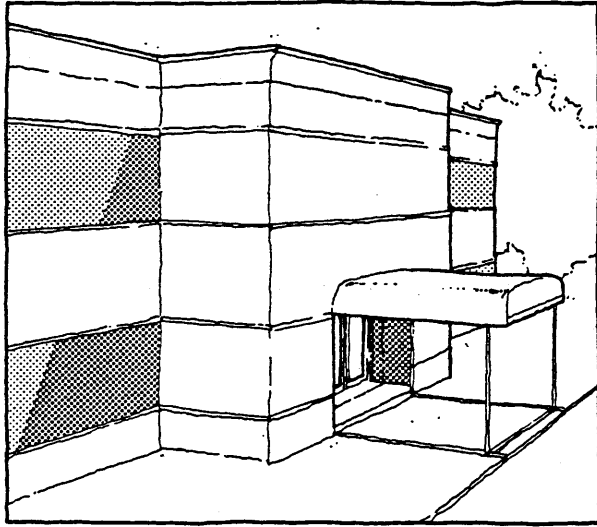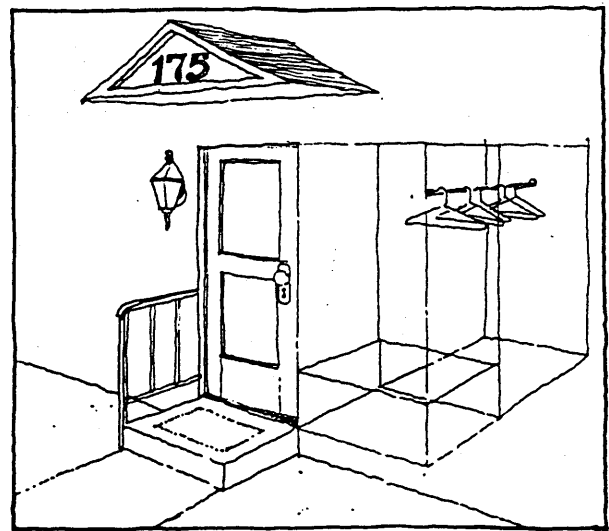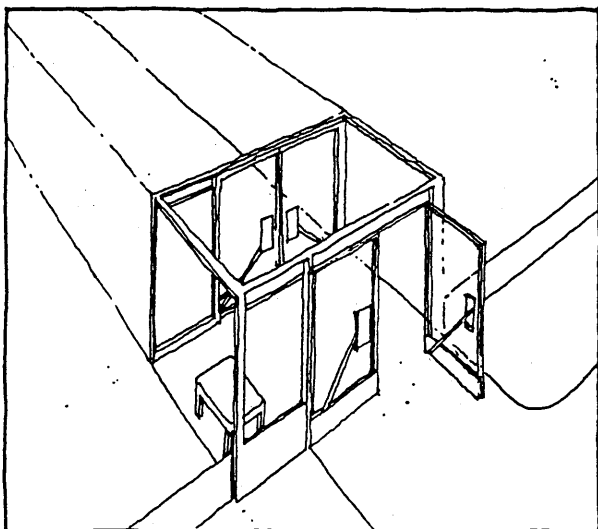

Today, institutional entries are usually on the same grade as the street. They are often covered with large canopies and are of much larger scale than residential entries. Because they are designed to accommodate large numbers of people, they are usually designed with double doors often revolving, and are of more durable materials, usually large quantities of glass, in a metal frame.

In contrast to public entrances which are open to all, residential entrances stop the public at the sidewalk. The front walkway becomes a semi-public area (equivalent to a corridor in an apartment building), the porch or portico by the front door (sometimes represented by a doormat in an apartment building) marks the area of semi-private domain, and the front door is the frontier of the private residence. The individuality of the resident may be expressed through decorative additions to pathway or entrance.

ENTRY - TRANSITION   B-2

Institutional entries are very simple. The door is often directly on the sidewalk and opens by pulling. Doors opening out into the street are required by law to facilitate emergency exiting. The entry is not personal, so closets are not included, and the entry space itself may be only the end of a corridor.

A residential entry provides for more than simple access. It includes a place to wait outside the door, an interior vestibule area with a closet, usually some horizontal surface for placing mail and parcels, and often a place to sit down to put on or take off boots. The door opens in and has a knob that turns. A residential entry is personal; it belongs to the people who live there, and is designed for control of privacy.

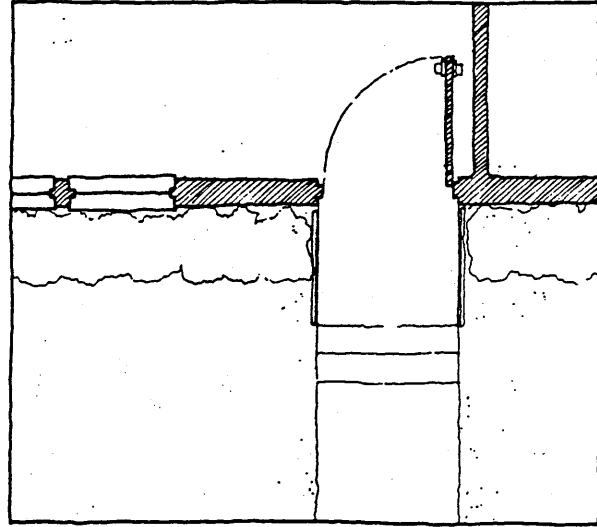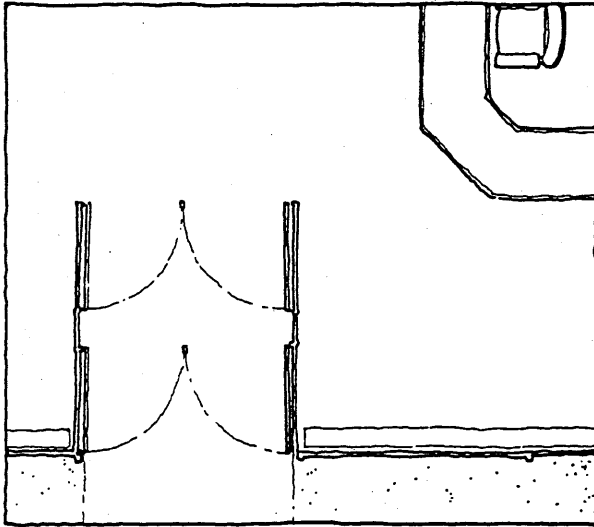Institutional   Homelike

BUILDING ENTRY - CONTROL   B-3

An institution has little concern for individuals' privacy and control of space. The entry indicates this institutional attitude by not using the place of entry as a control point. Anyone can enter, a formal control point occurs inside the building, generally at an information desk, an office, or a building directory.

A house has informal control, equal participation by all. The outside entry serves as the control point and is usually locked. A door bell or knocker must be used to notify residents who control access. Inside, the area is decorated with pictures on the walls, or decorative light fixtures.

ARRIVAL AREA   B-4
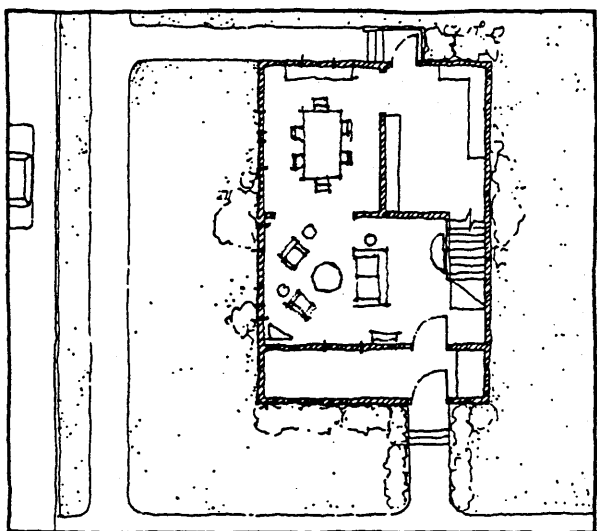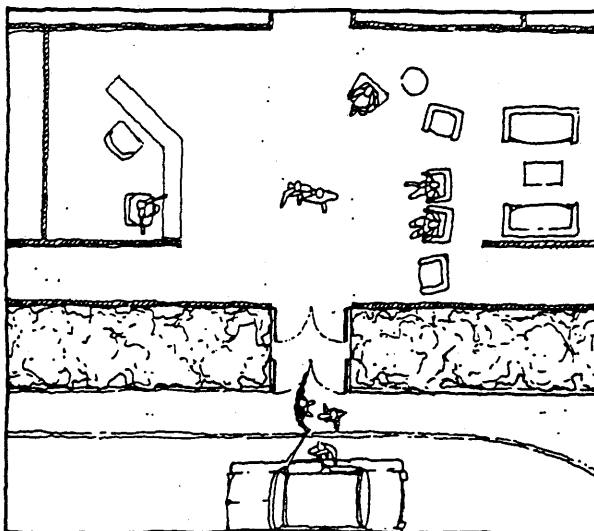
Institutions are likely to have special kinds of arrival and departure that require non-residential waiting and receiving areas. Large numbers of people can cause congestion at waiting points. Waiting may also occupy more time in institutions thereby increasing the problem. Waiting has a designated zone.

A home is usually small enough that when people wait, they can be called for and heard in any part of the house. If people gather, it is usually at the door or a street facing window. Because waiting is an individual activity, and residents are few, the number of people waiting is not so many that crowding becomes a problem at the door. Porches and stoops are also used for waiting.

Institutional   Homelike

UNIT ENTRY - CONTROL   B-5
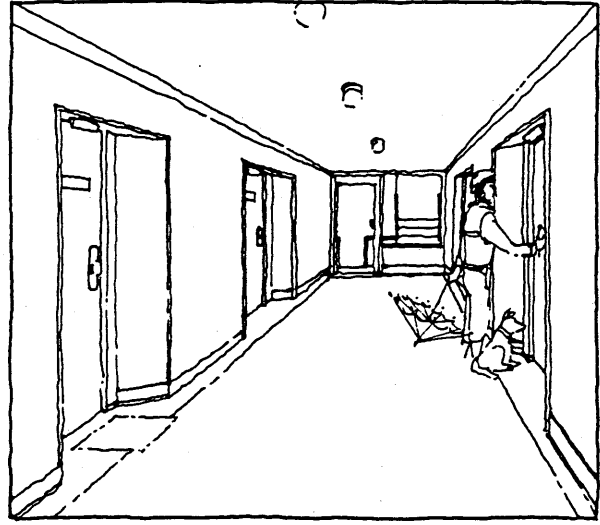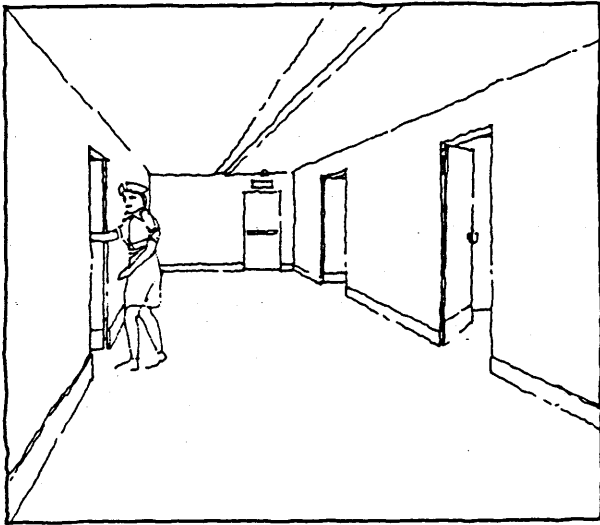

When large numbers of people are housed in institutions, their dwelling unit is their bedroom. Their bedroom door is thus the equivalent to the apartment entry. The hallway is a public part of the residence. Bedrooms differ from apartments, however, because the door is not controlled by the occupant. Supervision of the resident's activities is an important design element in the layout of the circulation space. And the staff may enter a resident's room at will. This diminishes the privacy and autonomy of the resident.

In private residences where large numbers of people are housed together, and the dwelling unit is an apartment, the corridor is not part of the unit, but outside the residence. There is, then, controlled access to the public domain, and the unit door becomes the point of control to the unit, accessible only to the resident, and invited guests. The lock on the door provides control of entry.

BUILDING ENTRY - MAIL   B-6
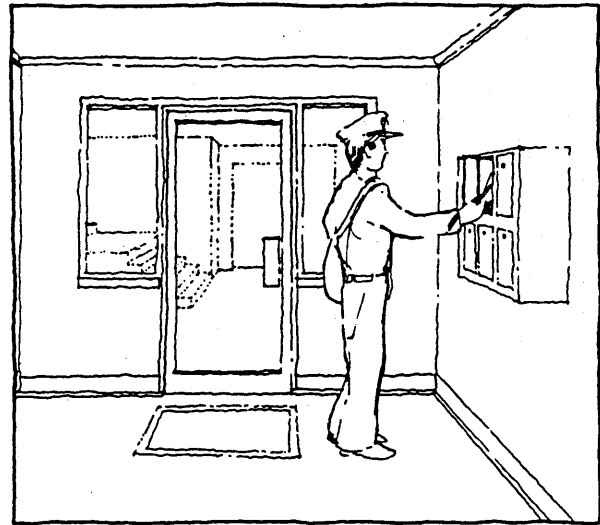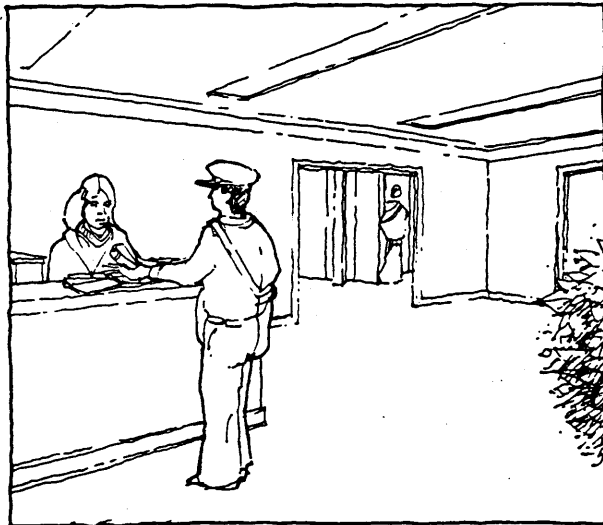
In most institutions the mail is delivered to administrators or staff who distribute it to the recipients. There are no mailboxes where mail can be delivered directly to the resident. Because of this, the institution may be aware of what mail is being received by residents. The control of the mail by the institution limits the privacy and autonomy of the resident.

In private housing there is a mail box provided for each dwelling unit in which the postal carrier directly places mail for the residents. There is no intermediary between the postal carrier and the recipient.
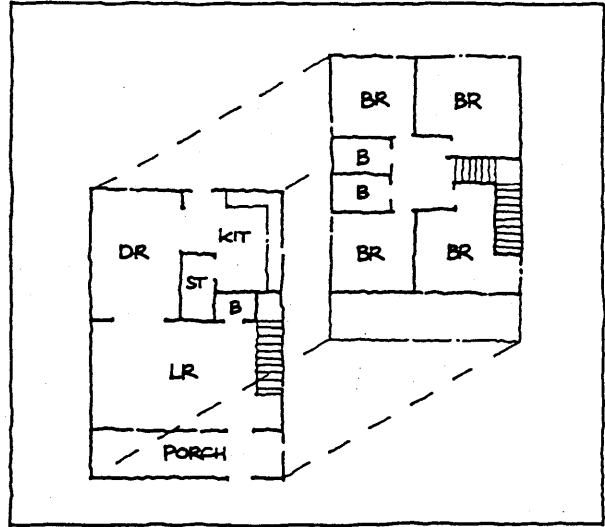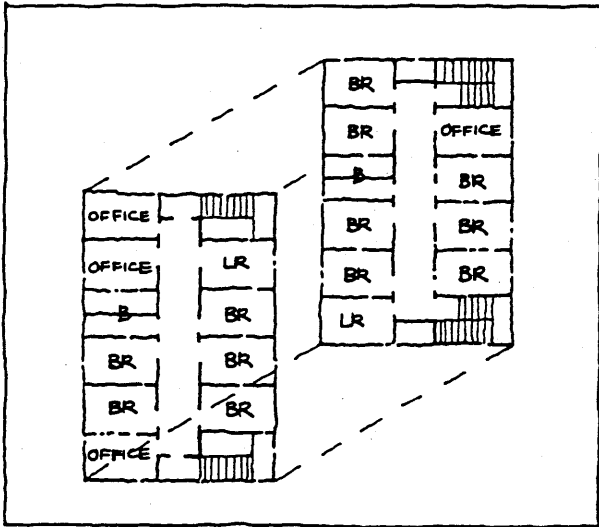
Institutional   Homelike

## PUBLIC-PRIVATE SPACE SEPARATION   B-7

An institution intersperses public and non-residential places with places that are normally private in a home. Thus, casual visitors may be exposed to very private activities when they are simply using the public circulation path. An office or information desk located near the entrance allows administrative control of visitors, but resident control is not provided in the physical setting. All spaces are accessible to the staff whereas residents have access only to some areas.

The traditional arrangement of rooms in a home puts the public rooms, if there is only one floor, in the front, or if there are two stories, on the first floor. More private spaces, such as bedrooms and bathrooms are thus separated from places where casual visitors may be by level change, horizontal distance or differentiation of the circulation path (narrowing of width, change in direction, etc.). This separation removes the possibility of visitors viewing into these intimate areas. While all spaces are accessible to residents, the house structure controls access to nonresidents.

ENTRY/HOME RELATIONSHIP   B-8
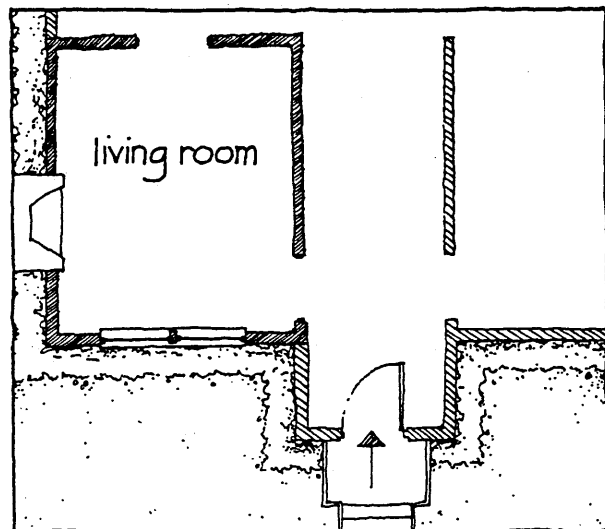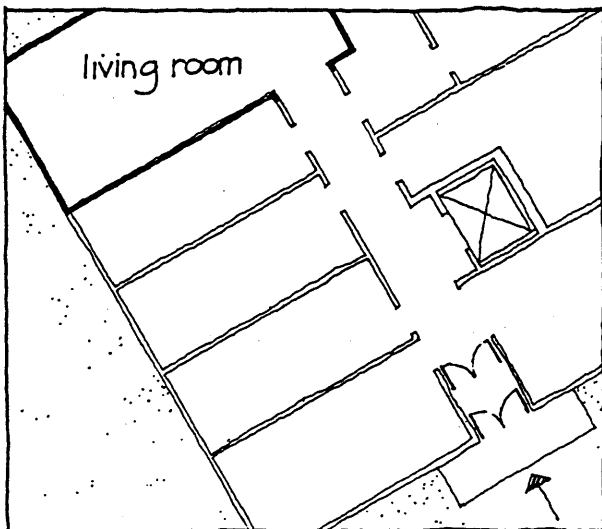
The main entry in institutional residences is often separated from the living room. While sometimes a lobby is located near the front door, the rooms used for entertainment of guests may be at great distances, separated by corridors. Informal transition between spaces is thus impaired, and zones of privacy are blurred.

A house has a formal living room where guests are received, close to the main entry. This supports the clear separation between the social areas and the private areas in the rest of the house. Open access between public areas in a house permits easy transition between rooms without the necessity of using a formalized circulation space or corridor.

Institutional   Homelike

## CORRIDOR/HALL   B-9
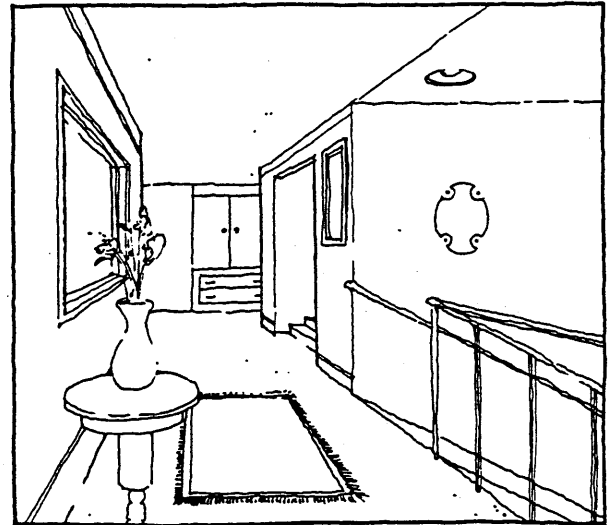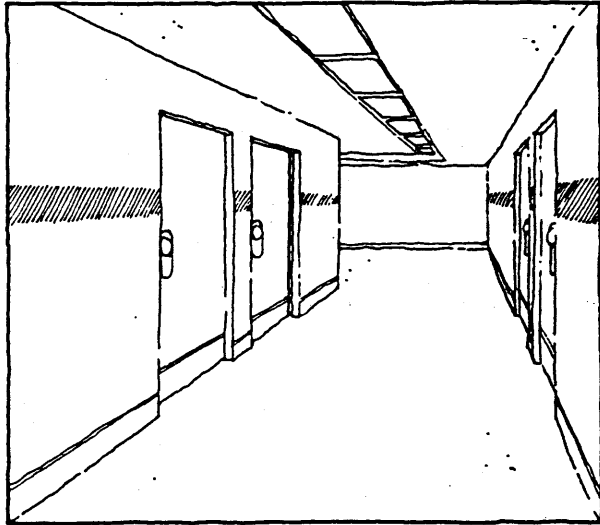
Institutional corridors are disproportionately long and narrow. Identical doors open into them. Institutional corridors are wide to meet fire exit minimum width requirements and permit carts and such to pass. Some characteristics of these corridors are low maintenance flooring materials (vinyl, linoleum, ceramic tile, concrete, terazzo or industrial weight carpeting), fluorescent lighting, exit signs, fire extinguishers, vinyl mouldings.

Within residences there is a great variety of circulation space. Few circulation spaces are long corridors. Hallways may be like rectangular rooms with furniture, different kinds of doors, windows, closets, and open stairs. These areas are likely to have wood or carpet flooring, incandescent lighting in decorative fixtures, wood mouldings, pictures on the walls, and furniture in the space.

ENTRY - CIRCULATION RELATIONSHIP   B-10
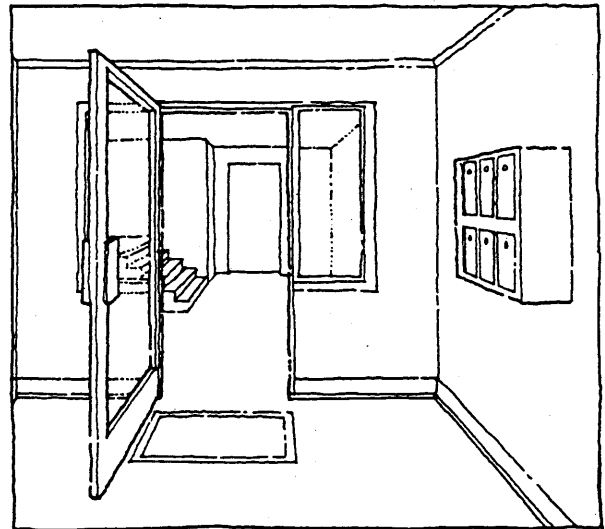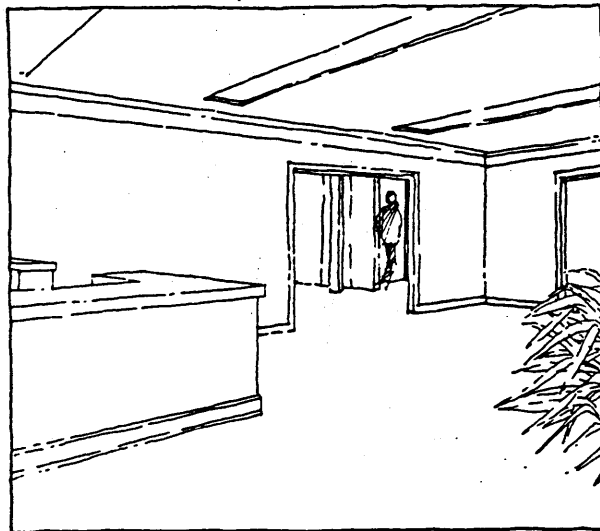
In institutions vertical circulation is frequently handled primarily by elevators. Stairs are in towers and are located peripherally. Often the elevator is at the center of the building and far from the entrance so that an indirect path to circulation points is required. This makes orientation to the out-of-doors and to the interior spaces difficult.

In dwellings other than high rise apartment buildings, vertical access is handled primarily by stairs which are located adjacent to the entrance. Where a residence is modified for a handicapped person, a lift may be attached to the staircase, or an elevator may be provided in an inconspicuous spot. In apartment buildings, elevators are usually placed a few feet away from the entrance, in an easily seen location.

Institutional   Homelike
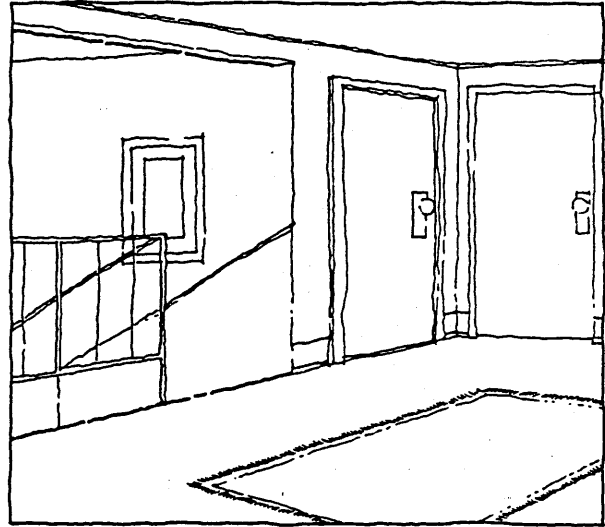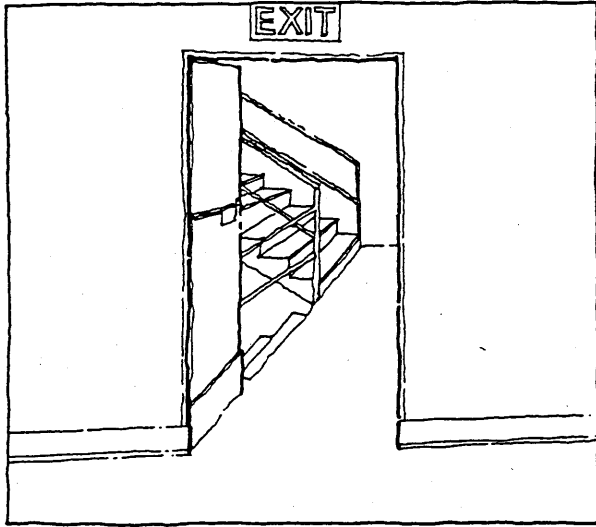
STAIRS - TYPE   B-11

Institutions, in responding to fire codes, have enclosed stair towers with heavy firedoors which are difficult to open. The stairs are designed to be segregated from other spaces so that a fire cannot travel from one floor to the next. This creates a separation between levels which does not exist in smaller dwelling units. Stairs may be located in building extremities in response to exiting requirements.

Within a residence, access to other levels is usually both visual and physical. A staircase is open, providing a spatial unit between upstairs and downstairs. The staircase is part of a continuous movement experience, and becomes an orientation device which invites passage. It is centrally located.

STAIRS - DESIGN   B-12
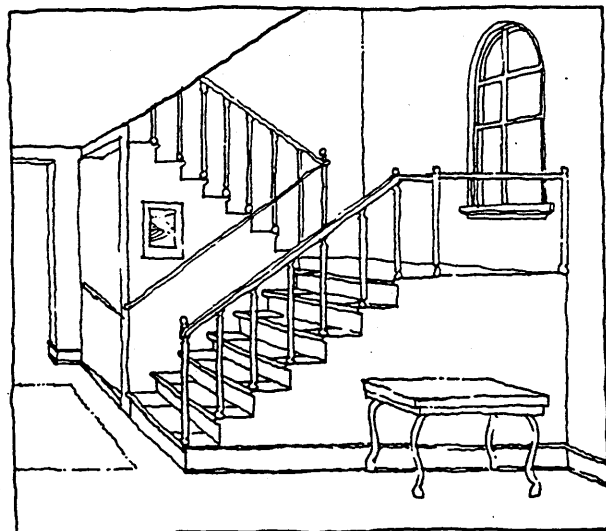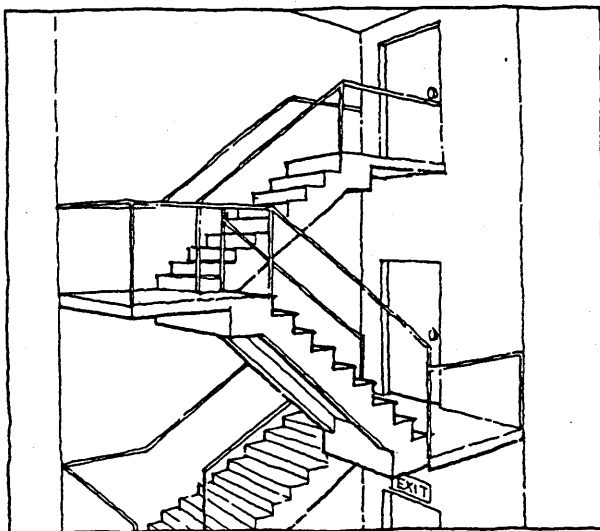
Stairs in institutions are designed to contain no materials that are toxic or flammable under extreme heat. In consequence, stairs are generally made of concrete or steel with a metal handrail and placed in a masonry tower. This produces an environment that is acoustically harsh and cold to the touch. In some instances, these stairways are lit entirely by artificial light creating a very gloomy effect. There are exit signs denoting egress points. The fire stair in one building looks like the fire stair elsewhere.

A residential staircase expresses the identity of the inhabitants. Paintings are placed on the walls, handrails are decorative (usually wood or wrought iron), the treads and risers are carpeted, usually the stair is lit by a window to the outside. The character of a residential staircase is personal and continuous with the rest of the dwelling. No two staircases in residences will be exactly the same.

Institutional   Homelike

YARD ACCESS   B-13
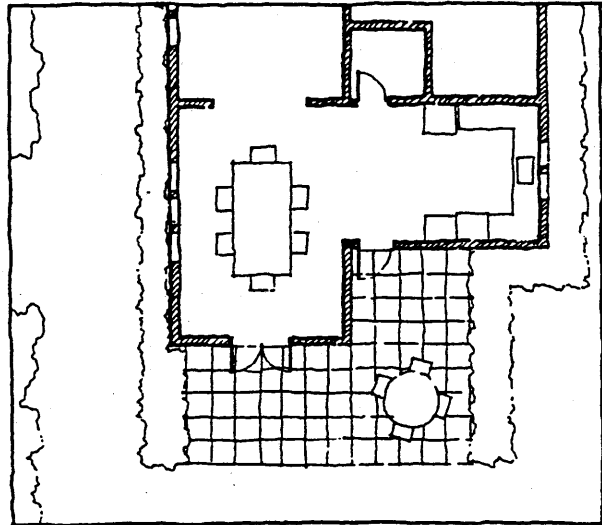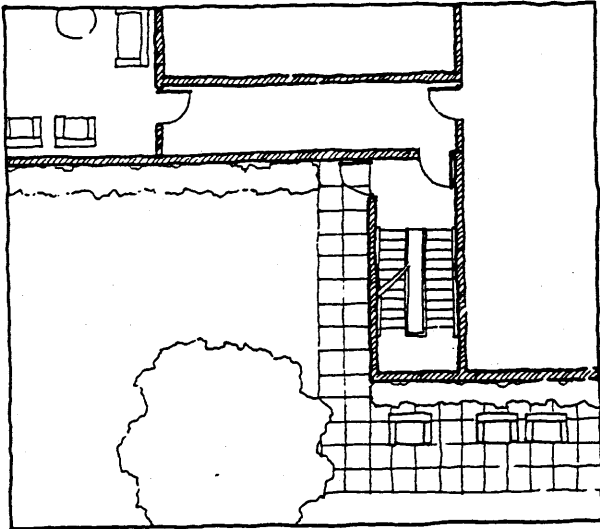
In many institutions, access to the out-of-doors is not direct from the main social areas. Often there is a separation by level, or by horizontal distance. In other cases, the doors to the outside are heavy, hard to open, or located in an obscure place. And once outside, the desirable places may be removed from the access point.

In a single family house, the access to the outside is easy and natural. The entry is usually at the front of the house, and in the back there are doors that open directly to outdoor activity spaces from kitchen, dining, and living or other rooms. In apartment buildings, balconies provide a way to have direct access to outdoor activity space.

LIVING/OUTDOOR RELATIONSHIP   B-14
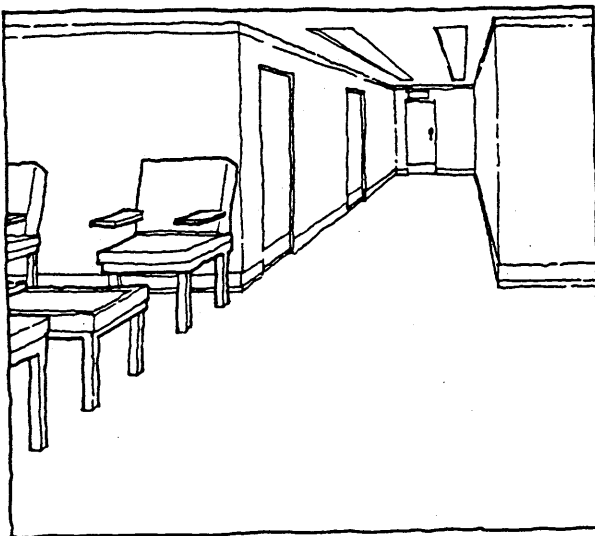
It is unusual to find outdoors areas in institutions that are near access points or visible from inside. Even when they are visible and in proximity, the design of doors and passageways inhibits carrying furniture, eating utensils, or other objects outside. This discourages informal use of the outdoor spaces.

In residences, the close relationship of outdoor areas to the indoors easily accommodates the moving of indoor furniture and other useful items outside. These outdoor spaces are both visible from the inside, and well-defined, either as semi-interior spaces, for example screened porches, or as exterior spaces, decks or patios.

Institutional   Homelike

SPACE/ACTIVITY RELATIONSHIP   C-1
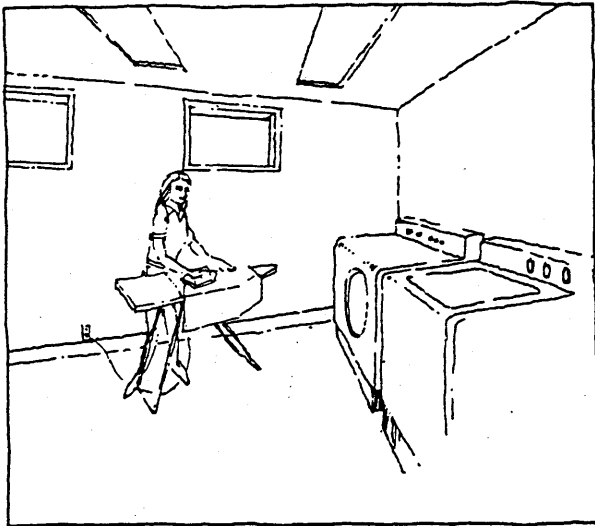
In an institution, activities are well-defined. Spaces are designated for specific purposes and designed to serve only these functions. When no space has been designated for an activity, it is often discouraged. In a dining room, for example, the furniture may be put away, and the space remain unused until the next mealtime or scheduled event. Because activity areas do not overlap, spontaneous activities are discouraged.
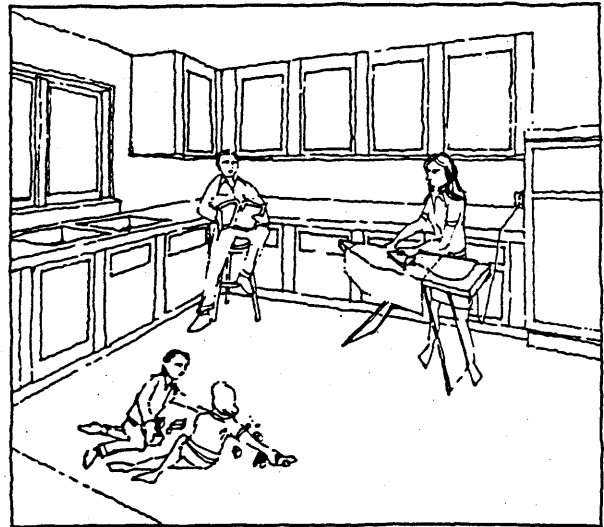
In a private dwelling, there are few formalized activities. While places have names associated with certain activities, they are used for others as well and often the activities which are supposed to occur in one place, in fact take place in another. Residents may eat in the living room, type in the dining room, and converse in the den. Thus, while a living room tends to be a passive quiet place, people will not move to another room simply because the activity has evolved from conversation to singing.

STAFF SPACE - WORK   C-2
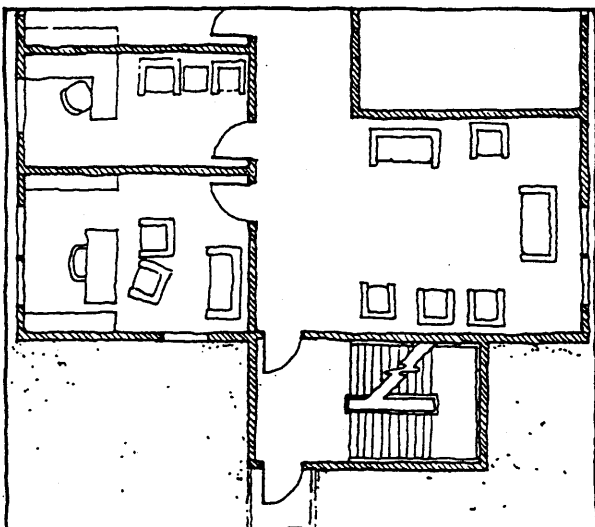
The specialized staff of an institution have tasks that require places to work in relative peace and quiet. Office suites are created, which distinguish resident and staff. Some people may be full-time office workers. This supports the impression that an institution is a workplace as much as a residence.
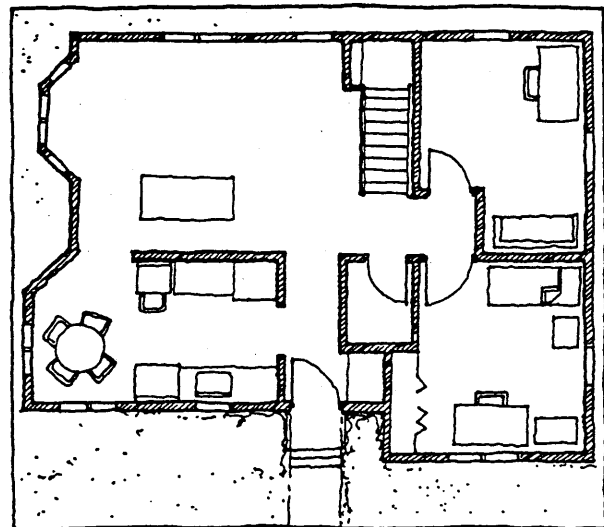
In a home, office-type activities usually are shared and take place in different people's places throughout the house--in the den, the kitchen, or the bedroom. Desk work can occur wherever there is an open surface because the activity is secondary for the worker. Office work is not a dominant home activity, and is not necessarily segregated into one space.

Institutional   Homelike

NUMBER AND SCALE OF SPACES   C-3
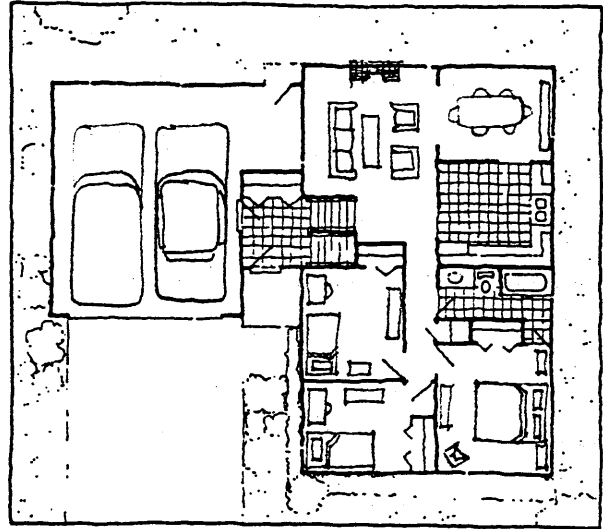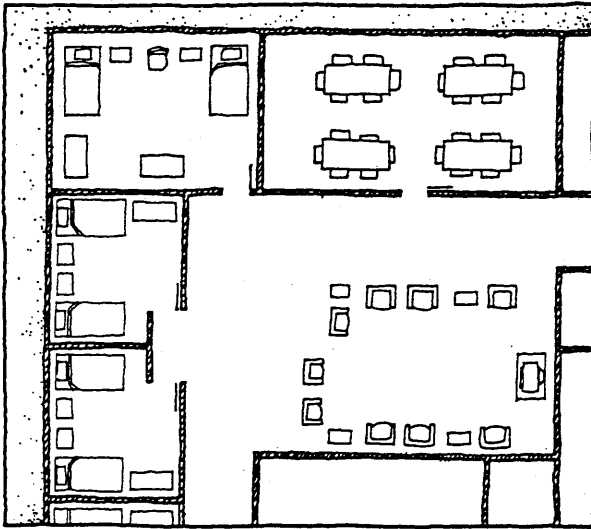
In a traditional institution, the attitude of custodial care is expressed by the large number of residents housed together to facilitate ease and efficiency of care. The building's design reflects a public character, with very large rooms and wide corridors sometimes enlarged to create lounge areas or lobbies with no windows. Fireplaces are considered too much of a fire risk and too impractical. Control of the environment is the responsibility of the staff, resulting in lack of easily operable windows and inaccessible thermostats.

The private residence rarely houses more than six people, and usually has four bedrooms or less. The small scale of the interior spaces indicates the small number of people who are expected to occupy them and an anticipated intimacy of interaction. The design provides maximum control over the environment through nonfixed furnishings, operable windows, convenient location of thermostats and devices such as fans. Fireplaces often provide a symbolic center to a house.

FIRE PROTECTION EQUIPMENT   C-4
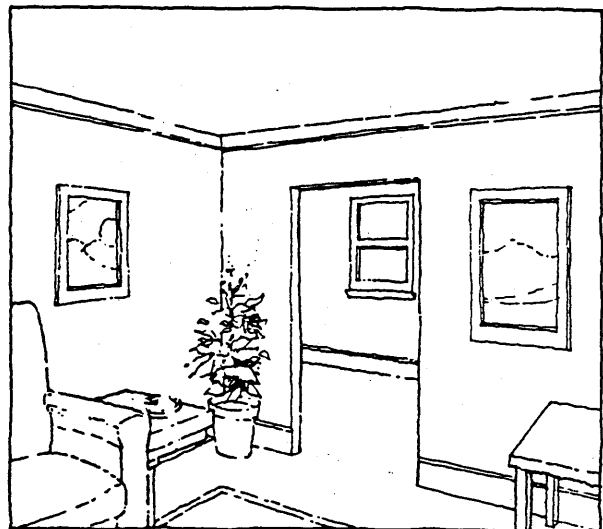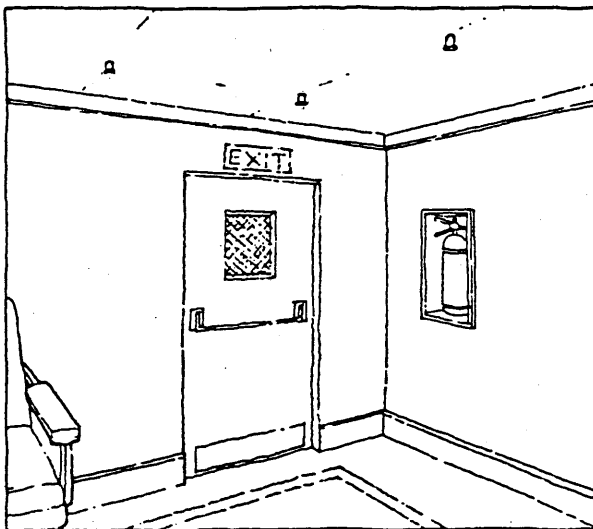
Fire protection is a decisively important consideration in the design of institutions. Sprinklers, fire extinguishers, and lighted exit signs are usually required elements. Their obtrusiveness is considered an important part of their function to permit quick extinguishing of potential fires. Often they are located in such a way that they dominate spaces in which the focus should be the human activities which take place there.

In private dwellings, because access to the out-of-doors is so easy, the requirements for fire safety which exist, center around distances to doors. In multi-family housing, public areas must have adequate fire stairs, exits, and fire equipment, and must meet regulations for materials. Fire equipment such as smoke detectors and fire extinguishers are visible, but placed unobtrusively.

Institutional   Homelike

VARIETY OF LIVING AREAS   C-5
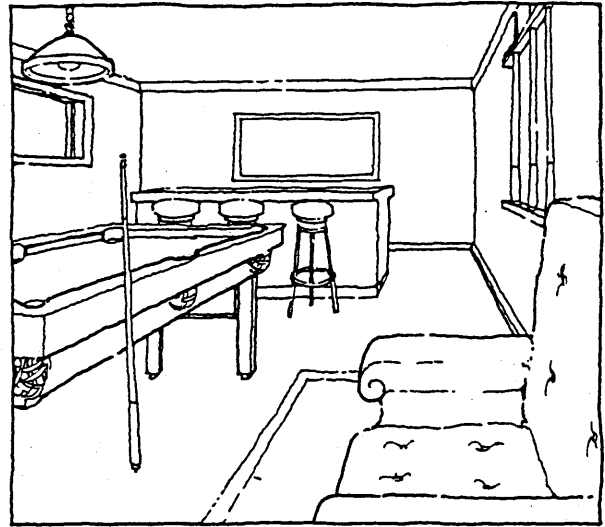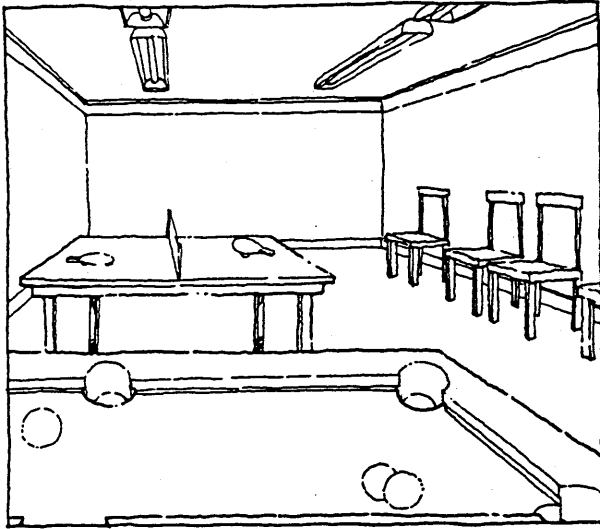
In an institution, places are designated as accommodating certain activities; nonetheless, materials, lighting and furniture throughout the building are generally the same. The tables and chairs in one room are like those in another room. So that while the proportion of certain types of furniture may vary, the level of durability and the style is likely to be uniform. Behavior cues may, therefore, be more difficult to read resulting in similar behavior in all spaces and the use of policy rather than character of setting to generate appropriate space use.

In a residence it is the high contrast in the character of the space which gives the cues to the appropriate behavior. Living rooms, which are formal, tend to generate more passive behavior. Kitchens are designed to be high activity areas, thus more noise and activity is usually found in that room. A den is furnished with bookcases and a desk, suggesting introverted behavior. A recreation room has durable materials, and game tables, and is acoustically separate thus encouraging boisterous activity. Rooms used for social purposes usually have windows to the outside.

LIVING ROOM – CONFIGURATION   C-6
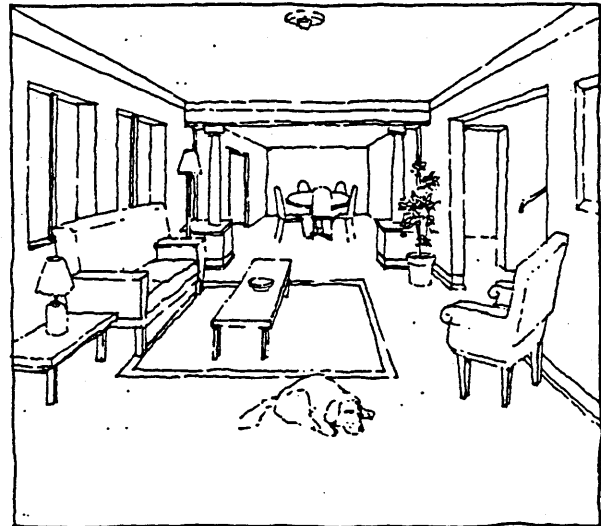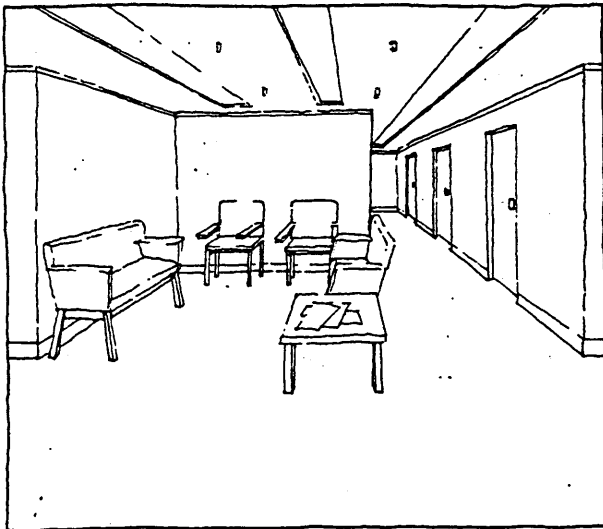
The institutional equivalent of living rooms are lounges. They are usually large spaces (over 300 square feet). Lounges are either totally enclosed rooms or an undifferentiated part of a hallway. They may be totally interior rooms without windows. The flooring is usually resilient tile. Lighting is generally fluorescent and part of a drop-in panel system. Sprinklers may be in full view. If the space has windows, they may be very large and difficult to open, or they may be inoperable if mechanical ventilation is provided.

Living rooms in residences are most often open to other spaces though they retain territorial definition as separate from circulation spaces. Living rooms are usually small (no more than 250 square feet). The open design allows for extension of the space to other areas if a large number of people come. Flooring is likely to be wood with area rugs or wall to wall carpeting. Incandescent floor or table lamps augment window light. Windows have views to the out-of-doors and are easily opened for ventilation. A thermostat is located here or in the dining room for temperature control by residents.

LIVING ROOM - FURNITURE ARRANGEMENT   C-7
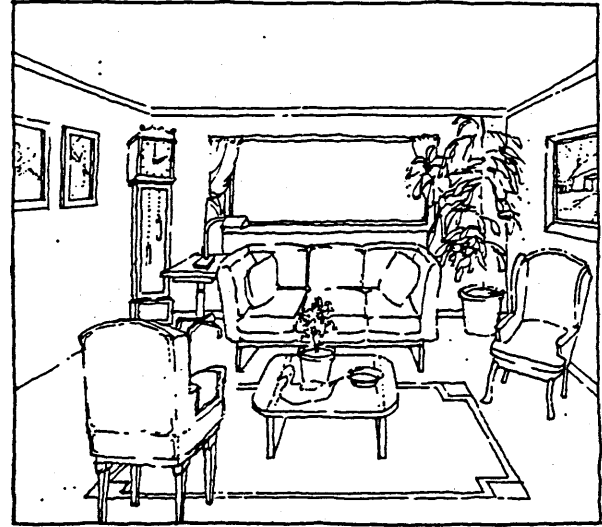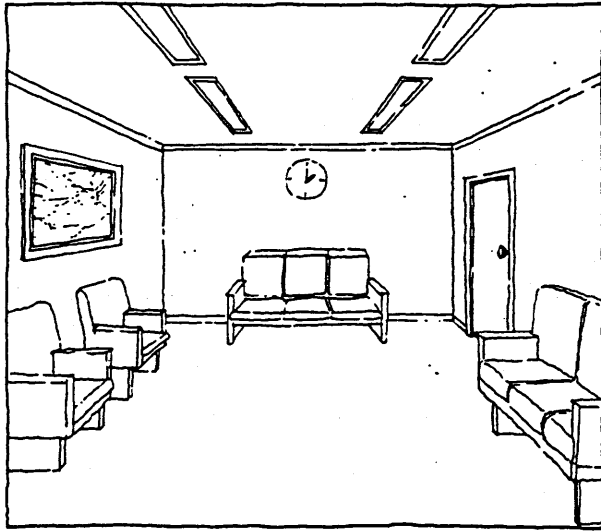
A lounge is a room in a public building where strangers must wait together without a reason for interaction. Thus the seating is placed at the perimeter of the room to prevent eye contact and for ease of cleaning. Seating for eight or more people is generally provided in the form of several sofas and a number of individual chairs.

In living rooms, the furniture is set up to seat four or five people. The furniture is grouped for easy conversation with all chairs within a 10-foot diameter. The sofa is the focus of the room, and the other chairs are arranged around it. When there is a large number of people, furniture is brought from other rooms, or cushions are used and people sit on the floor.

LIVING ROOM - FURNITURE   C-8
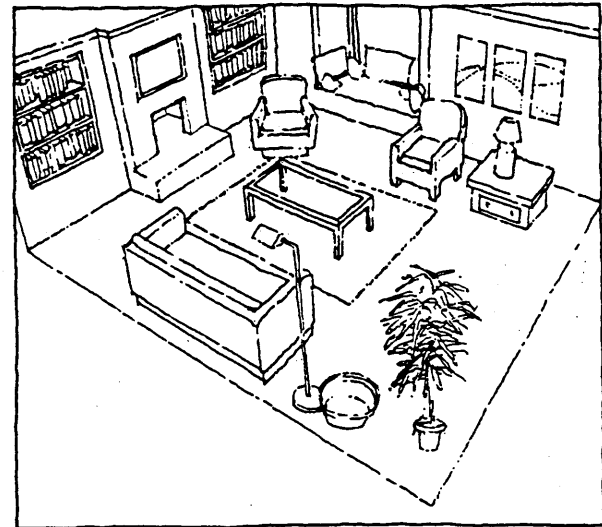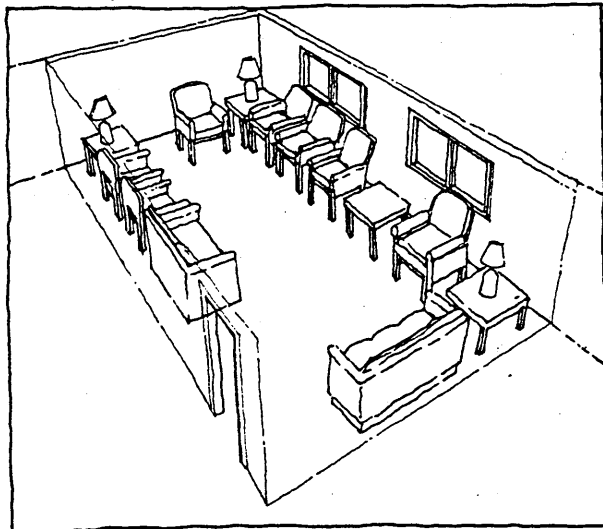
Furniture in a lounge is selected for maximum durability. It expresses the values of the institution, and thus tends to be conservative and impersonal. All furniture is likely to match in color, style and material. It is covered in vinyl or some other indestructible material, and is usually heavy and thus difficult to move. Coffe tables are rarely used as they impede cleaning. If there are pictures on the wall they are likely to be framed reproductions. Often a wall clock is in a prominent place. Windows may be bare or have metal or vinyl shades. These are used for control of light.

In a private dwelling, living room furniture is chosen to display the owner's taste. As pieces of furniture are often acquired at different times, the style of each item may be different, although the upholstery may match and colors are likely to be coordinated. Bookshelves and other storage furniture provides a place to keep records, books, and other activity-related items. Walls will have a variety of decorations, original art, photos, wall hangings, plants, etc. Bare walls are rare. Clocks found in this room will be ornamental as socializing takes priority over scheduling. Windows have fabric curtains or shades, used for privacy as well as control of light.

Institutional   Homelike

EATING AREA   C-9
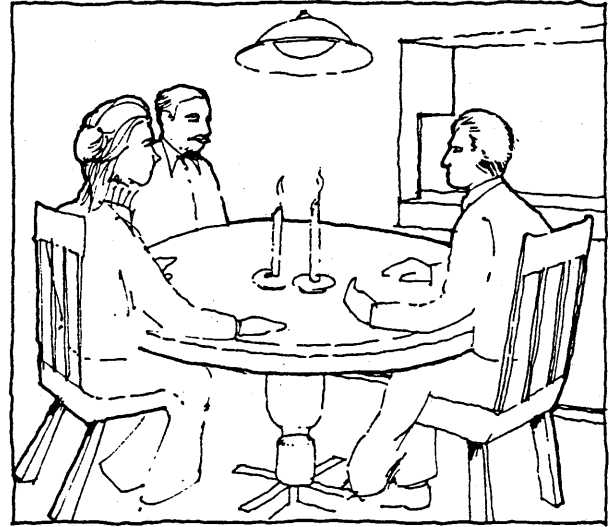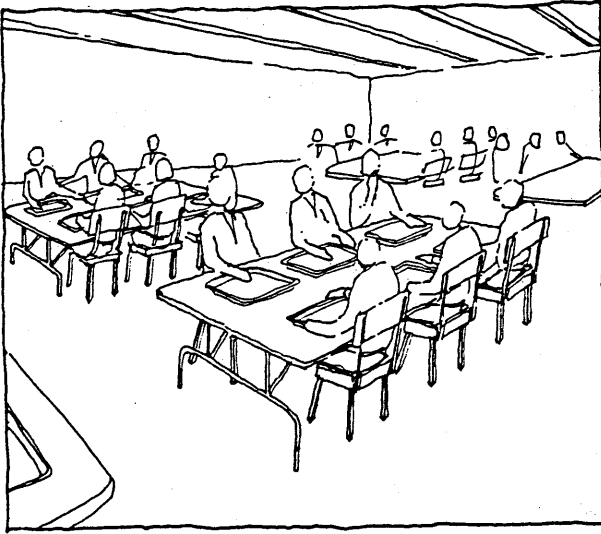
Institutional dining is depersonalized. Often food is served cafeteria style. Fixed portions and trays reduce individuality. The persons serving the food do not eat in the dining area. Many people at many tables creates noise and physical separation that makes socializing more difficult. A large dining room may be so big that it is intimidating. The room may be a space with no windows or visual access to the out-of-doors. Lighting is usually fluorescent, which may distort the color of the food.

Normal household dining fits the whole family around a small table, seating a maximum of eight. The intimacy of the meal is supported by the small space, generally under 150 square feet. The eating area has a window with a view to the outside which may be opened. Lighting is usually incandescent with decorative fixtures. Pictures, plants, curtains or other items decorate the area. In a dining room there is a buffet or cupboard in addition to the table and chairs.

KITCHEN CHARACTER   C-10
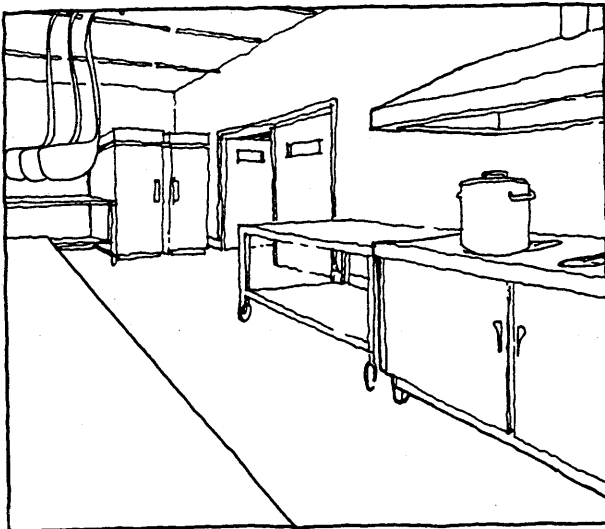
The sole purpose of a kitchen in an institution is to prepare and clean up meals. Its main features are efficiency and sanitation. As all surfaces must be kept sterile, they have durable finishes, frequently stainless steel. As such, a kitchen serves numerous people, the appliances are large and often there are several stoves and refrigerators. Big ventilators keep the air circulating; the space may be completely lit by artificial fluorscent light.

The kitchen has often been called the heart of a home. It is as much a social center as a place for work. Usually a kitchen has not only counters and appliances but also a table where quick snacks or informal meals may be taken. If not, it is right next to the dining room. The kitchen usually has a telephone. It is often the business center of a house, and may house activities as diverse as ironing and homework, in addition to cooking and dishwashing. An operable window with a view to the outside is an important kitchen element.

KITCHEN FOOD PREPARATION   C-11
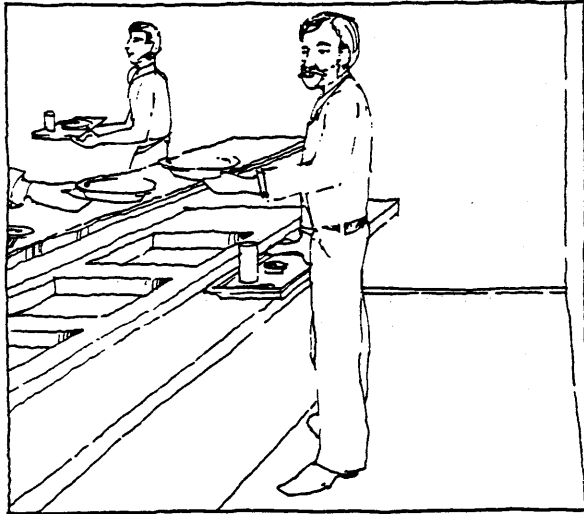
Institutional food is not prepared by residents, it simply appears before them. There is little or no opportunity to see how foods are prepared or to learn how to prepare food by oneself. The large appliances may even be dangerous for nonprofessionals to use. Little individual control or input are possible. The large number of people to be served makes it impractical to serve in the kitchen. A cafeteria line may be used to serve the meals. Often the people who serve the meal do not participate in the meal.
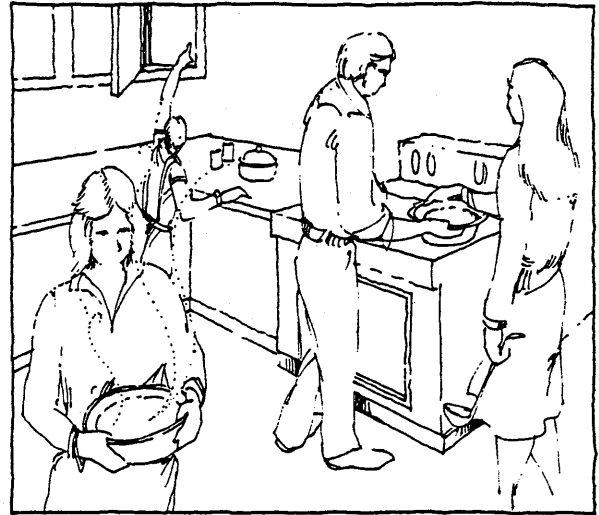
Normal household routine requires that everyone at some time be involved in preparing food. Snacking outside mealtimes is encouraged by such items as fruit and cookies. Food preparation is something that can be closely observed if not participated in. Kitchen size, including eating area, is usually no more than 200 square feet. Food is usually served at the table, and the people who prepared the food participate in the meal.

KITCHEN CLEAN-UP   C-12

Similarly, in institutions, clean-up after eating is an activity separate from the meal and undertaken as a specialized activity. Sometimes there is a special pass-through used only for clean-up and usually there is a large commercial-sized dishwasher.
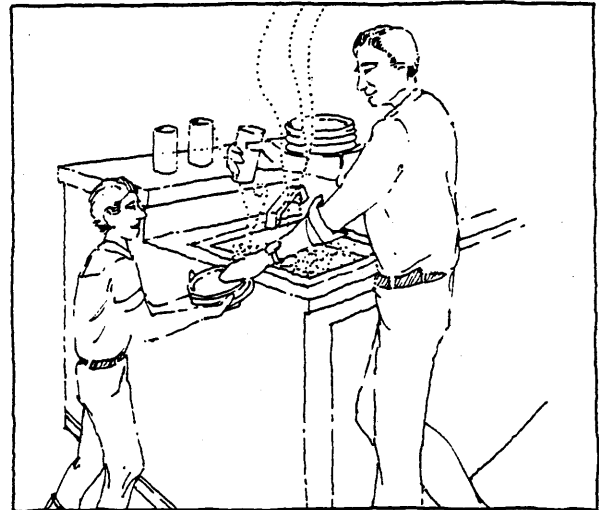
More often than not, clean-up is an activity everyone participates in at home. The people who clear the table and wash the dishes have participated in the eating of the meal. Mealtime becomes an event which integrates preparation, ingestion, and clean-up. The small number of participants creates an easy clean-up job necessitating small sinks or dishwashers.

HOUSEKEEPING   C-13
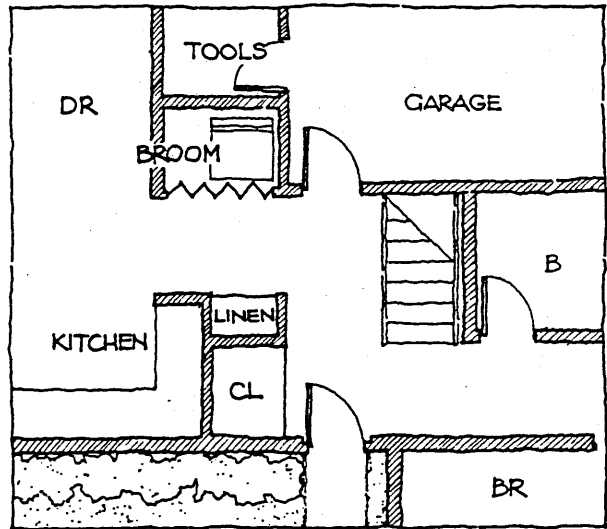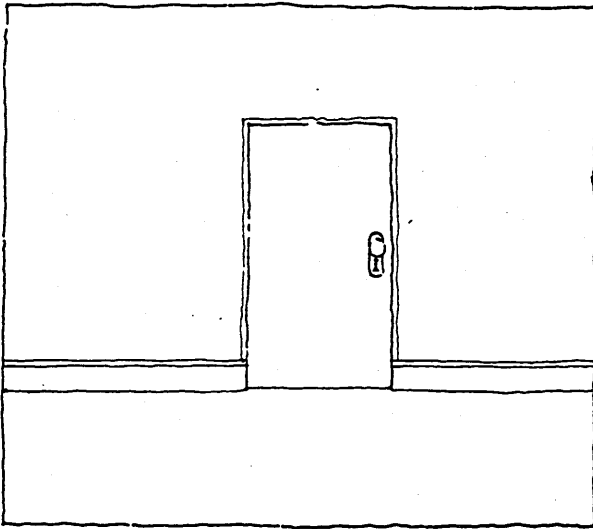
An institution is built of durable materials which can stand up to cleaning with strong chemicals and heavy duty machinery. Housework is usually done by special staff; residents have limited access to cleaning equipment and little responsibility to clean. Janitor's closets or other special areas are provided which store only cleaning-related articles.

Each resident of a home is usually responsible for some cleaning or maintenance. The variety of materials used in construction requires many types of cleaning equipment which is stored in locations throughout the house and close to the required task. And there is ample opportunity to learn all about housecleaning. The existence of discrete areas permits clearly defined responsibilities.

SECURE STORAGE   C-14
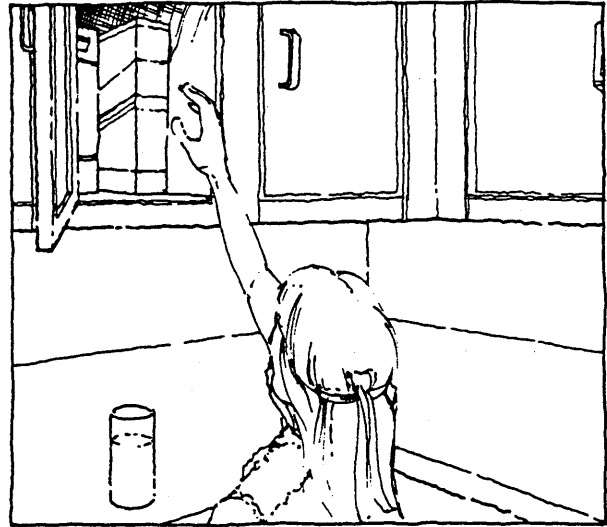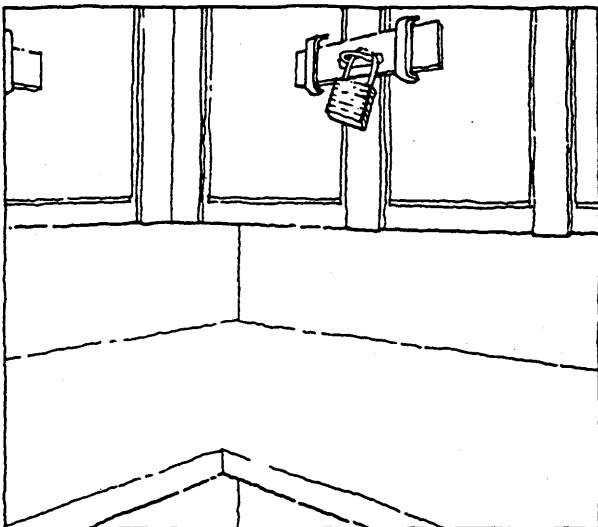
Theft and control of stored items is a concern in an institution, especially where things are kept in large quantities. Linen cabinets and kitchen cupboards may have locks. Even storage cabinets in lounges may be locked. To replace toilet paper, for instance, one must have staff participation.

In a dwelling, theft is not ordinarily a problem. The main reason for having locked storage is to keep chemicals or other potentially dangerous things out of reach of small children. Therefore, only one or two storage areas are locked, usually where kitchen or garden chemicals are kept or where drugs or alcoholic beverages are stored. Items like toilet paper are stored near to the place of use so individual household residents may replace them independently.

Institutional   Homelike

LAUNDRY ACTIVITY   C-15
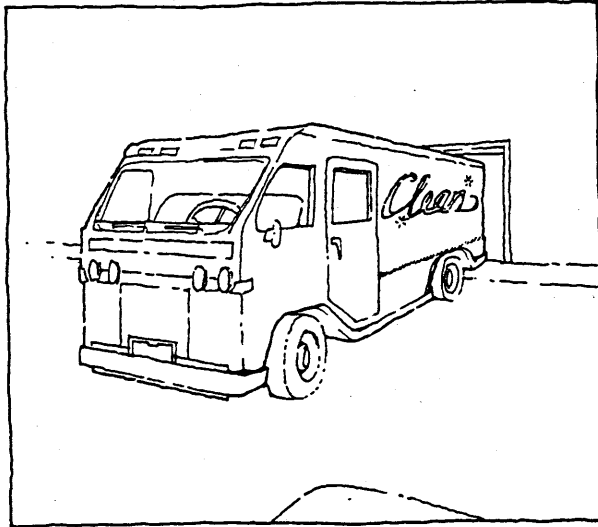
An institution often provides laundry as a service. If residents help with laundry, it is under the supervision of staff. The laundry room may not be open to free access. Laundry may even be done by a private company outside the building and be given to residents.
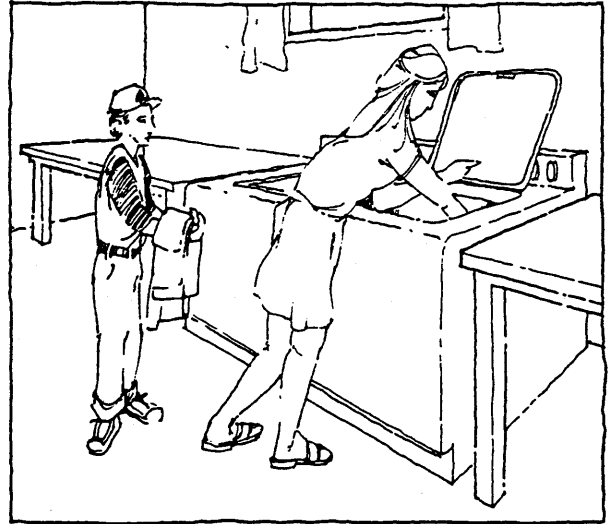
In private homes, laundry may be done by only one or two people yet the activity is always present. Where laundry space is provided it is accessible to all family members. When single adults live together, individuals are usually responsible for their own laundry. Sometimes older children in a family take care of their own laundry. Where there are no appliances for laundry, people most often use a laundromat.

LAUNDRY SPACE   C-16
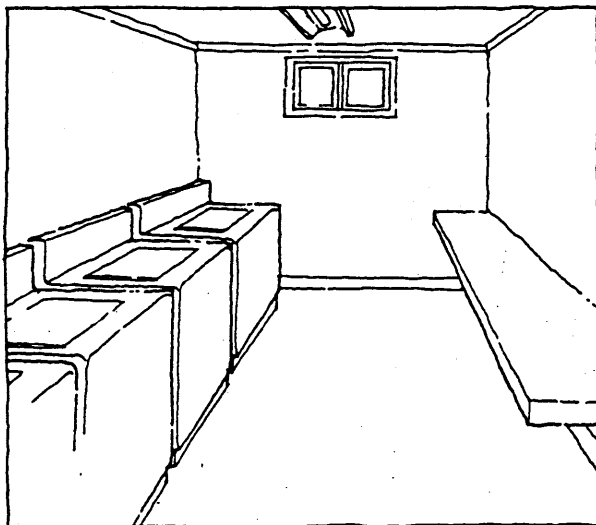
When laundry for residents of an institution is cared for by the institution, the laundering of clothing is done for residents by staff. In institutions, the large amount of laundry to be done requires that a special room be set aside which contains many machines, and which is designed to serve only the purpose of laundry. The room is often stark with a concrete floor and bare walls. The lighting is fluorescent.
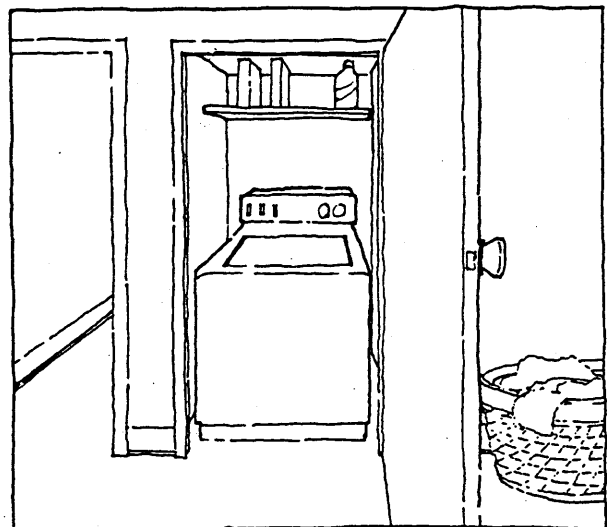
In houses, sometimes laundry equipment is placed in the basement, but just as likely, is placement in the kitchen or in an upstairs closet or bathroom which allows the laundry to be done simultaneously with other activities. Because the area is frequently used, it is decorated either with wallpaper, colored paint, curtains or items hanging on the wall.

Institutional   Homelike

BEDROOM CONFIGURATION   C-17
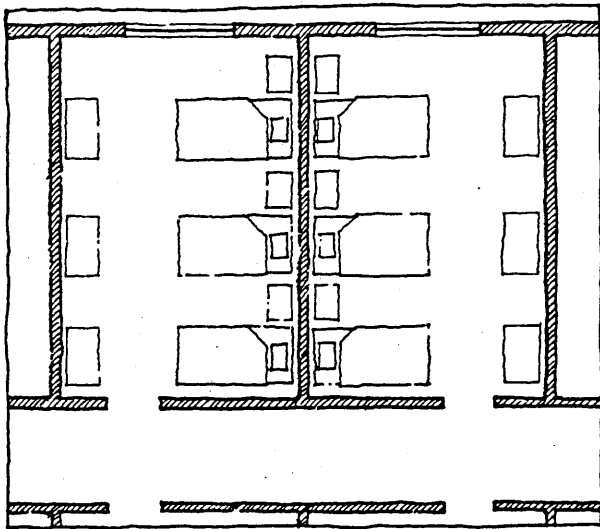
In many traditional institutions bedrooms are designed to be shared by three or more people, and thus tend to be large, often 200 square feet or more. The room is long and thin with the windows at one end and the entrance at the other. While this is a most economical design, the shape of the room makes it difficult to give all occupants good window access. The windows are generally all on one side and large, more than 5 feet wide. Sometimes privacy is provided by curtains hung on ceiling tracks. The large size creates an impersonal character.
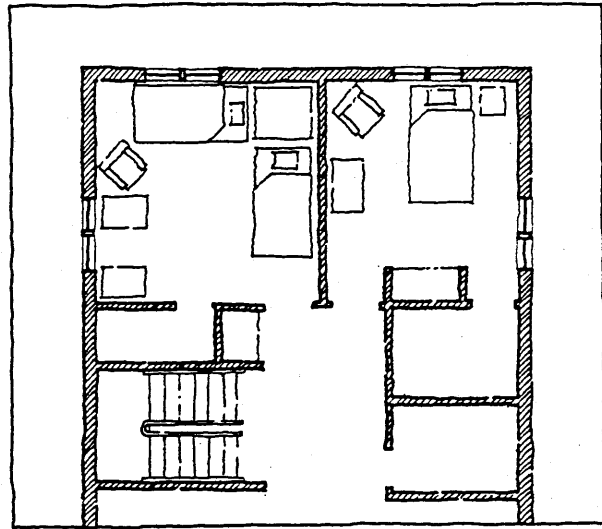
In residences, bedrooms tend to be square with width and length 15 feet or less and a total size under 170 square feet. Each bedroom has a different shape and orientation, and there are usually no more than four bedrooms. In general, no more than two people share a room. Often windows are on two sides. Because the room is small, it is rare that a bed is more than six feet from a window. Bedroom windows tend to be small, rarely more than 4 feet across. They are operable, usually double-hung, casement or sliding.

BEDROOM CHARACTER   C-18
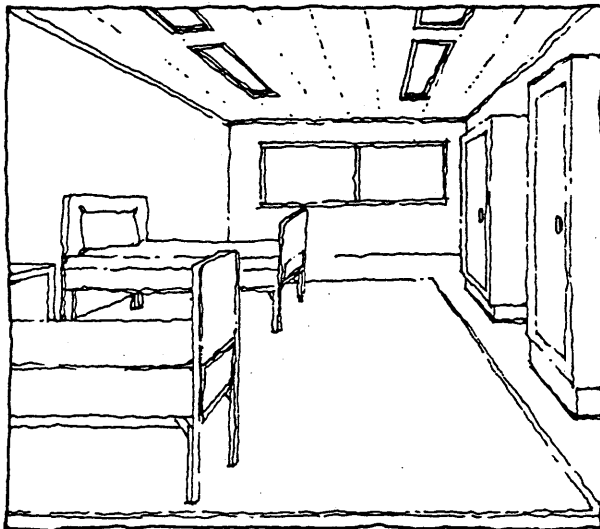
Closets are rarely built in institutional settings unless they are part of a totally fixed clothing storage unit, including drawers. In many instances, the main source of light is overhead fluorescent fixtures controlled by a switch at the door. Where task-oriented lighting is not provided, this discourages individual control and does not allow for variety in sleeping patterns. Ceilings often consist of dropped panels, flooring is resilient tile. The door has an automatic door closer and may be opened with handles or push plates. There may be a smoke detector or sprinklers in the bedroom.
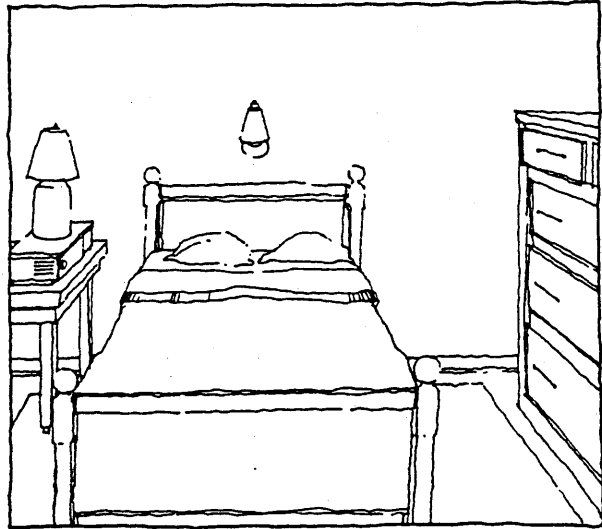
Closets for hanging clothes (with at least three feet of hanging space) are almost universally provided in residential bedrooms, but other furniture is usually free-standing. Overhead lighting controlled by a switch near the doorway is frequently used, but it is always incandescent and is generally a supplement to task-oriented lighting controlled at its source (table, wall or floor lamps at bed, dresser, chair and/or desk). Ceilings are plaster or gypsum board, floors are wood with area rugs, or are carpeted wall to wall. The bedroom door is usually opened with a door knob.

Institutional   Homelike

BEDROOM IDENTITY   C-19
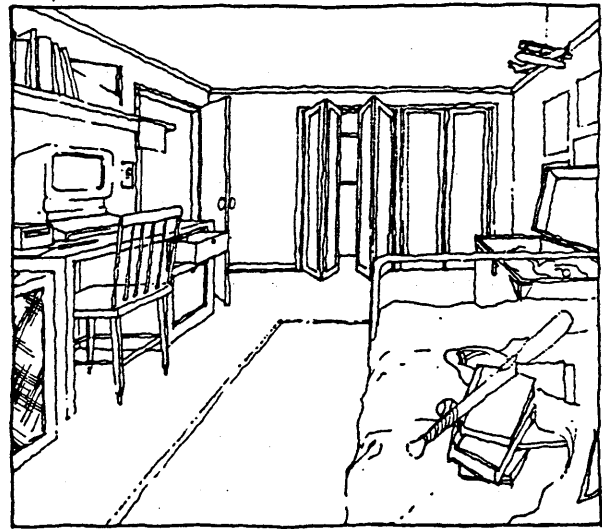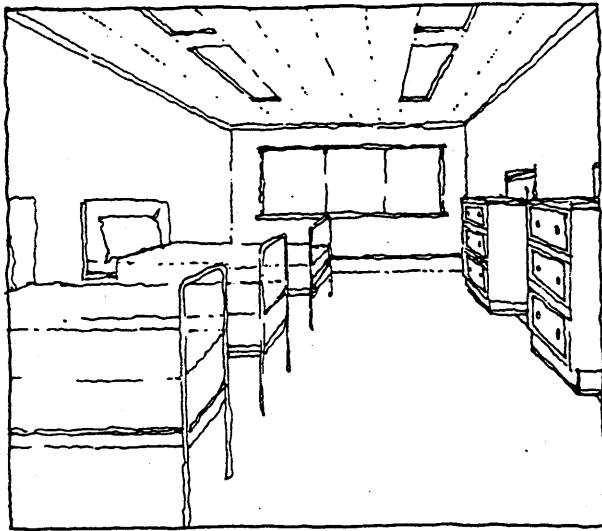
Traditional institutions are designed to sleep a large number of people efficiently. All bedrooms meet the same standards. For ease of maintenance, all rooms are painted a similar color, all curtains and bedspreads are, likewise, identical. All bedrooms are furnished with identical beds, bedside tables, chairs etc. This creates the impression that the individual identity is not valued. In some institutional settings window coverings are seen as being primarily decorative and may not actually perform a role in providing privacy and screening light.

In a private dwelling each bedroom is unique, reflecting its particular location within the overall house plan. The bedroom also reflects the taste of the person who lives there. The wall color or paper, the curtains and bedspreads, show personal preference. Therefore, in a residence each bedroom is special. Since the bedroom is a private domain, curtains, shades or blinds may be pulled to cover the window when needed. Bedrooms usually have fabric curtains or shades as a decorative element.

BEDROOM - ACTIVITY & DISPLAY DOMAIN   C-20
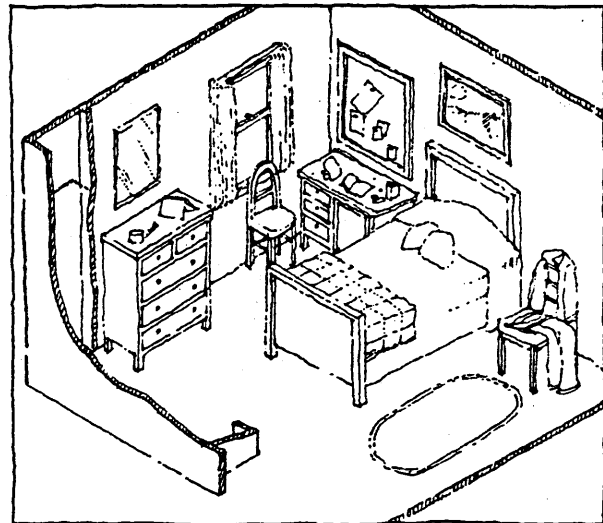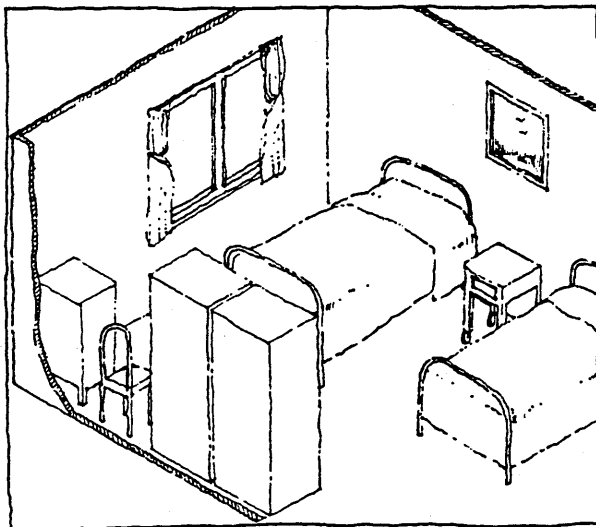
Often in institutional settings the bedroom is seen as predominantly a sleeping and dressing space. For this reason, only furniture related to these activities is provided. Adequate space for storage and use of other nonsleep activities items is omitted. Where there is art or other decorative material on the walls it is often selected by the institution, and thus not reflective of the individual.

Because a bedroom is the domain of the individual who lives there, it serves as an activity area in addition to being a sleeping area. Sometimes it is furnished more like a living than a sleeping room. But whether or not the bed looks like a couch, the room contains a free-standing dresser for each person, and shelves where nonclothing belongings may be kept. A desk or table may serve for writing or for hobbies. The walls are used to display pictures chosen by the inhabitant. There is a chair at the work surface and, often a comfortable chair for relaxation.

Institutional   Homelike

BEDROOM FURNITURE   C-21
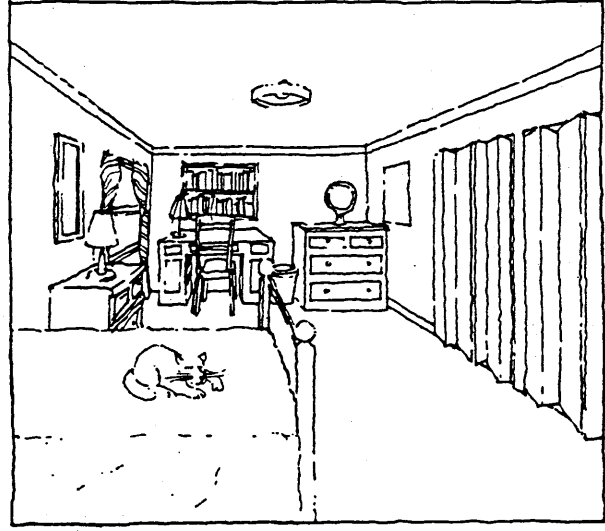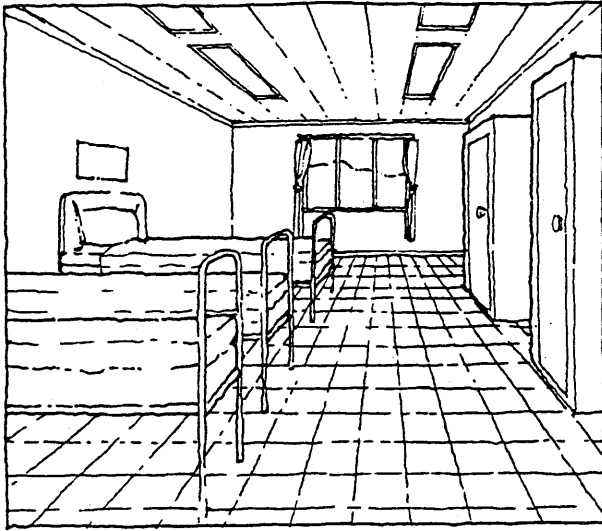
Institutional furniture for bedrooms is selected for durability and ease of maintenance. It tends to be uniform as it is all bought at one time in bulk. Beds usually have a metal frame and may be higher than typical residential beds or may even be hospital beds. Bedside tables may have casters or be fixed to the wall. Chairs are likely to be metal, and if upholstered, covered in vinyl. Wardrobes may be metal. If dressers are provided, they may be plastic laminate. Mirrors are usually found in the bathroom only. The bedroom will have a wall clock.

In a private home, the furniture will usually have been acquired at different times. Old pieces will be mixed with new. Many times a variety of styles is used in the same room. The bed, dresser, and desk or table will usually be of wood with a paint or varnish finish. If there is an upholstered chair it will be covered with cloth. There will be a mirror over the dresser and an alarm clock by the bed. There will be storage space for nonclothing items. Individuality will be emphasized more than order.

BEDROOM/BATHROOM RELATIONSHIP   C-22
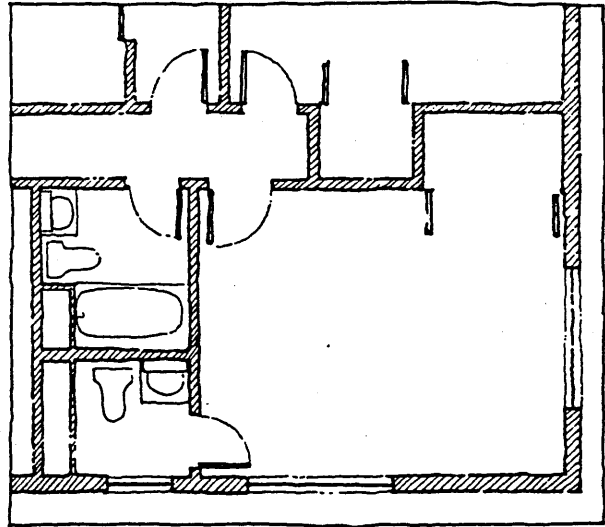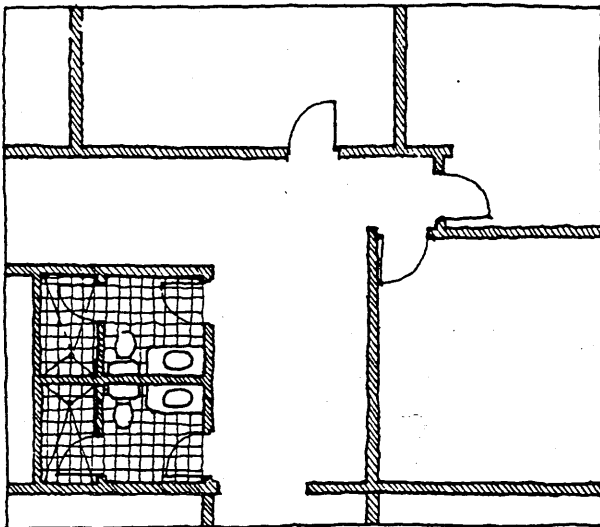
Bathrooms in institutions are located off of public corridors, and frequently are at a large distance, often 30 feet or more, from bedrooms. The path from bedroom to bathroom may go past social areas, thus compromising privacy. Within the room, there is sometimes no place for individuals to store their towels, toothbrushes, or other personal items. A trip to the bathroom then becomes an event which must be planned.

Bedrooms and bathrooms are immediately adjacent in homes (within 10 feet door-to-door), permitting private and quick access. Personal items are stored on a shelf or in a cupboard within the room, thus permitting spontaneous use. A linen closet within or near the bathroom allows easy substitution of a clean towel or washcloth for a wet or dirty one.

Institutional   Homelike

BATHROOM MATERIALS AND CHARACTER   C-23
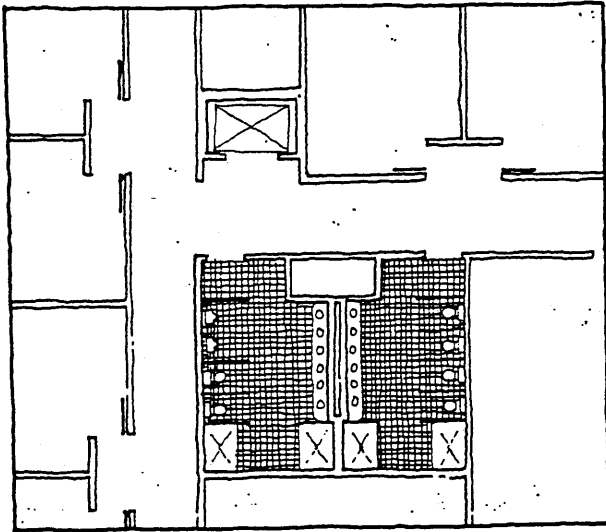
Institutional bathrooms are public, designed to be shared by many people, and are therefore large with toilet stalls, multiple sinks and gang showers. The distance between fixtures requires traversing the public territory. The lack of proximity between toilet, shower, and sink isolates each part of a normal hygiene routine. It is also difficult to keep normal privacy standards, therefore, requiring segregation by sex.
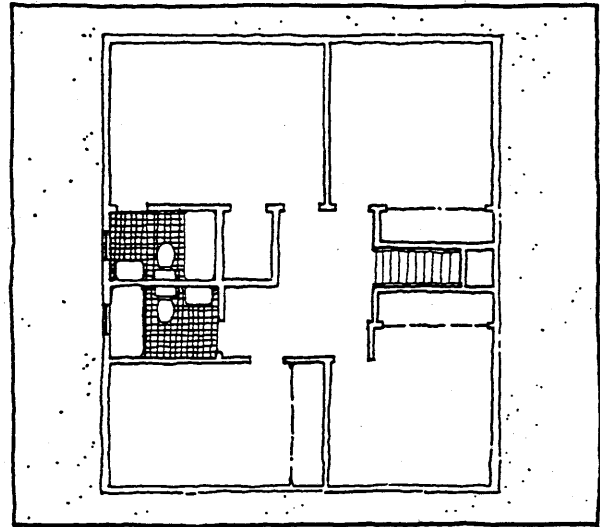
In a private residence, a bathroom is shared by a few people, usually no more than four. The room is small, generally no more than 70 square feet. The bathroom contains a tub (or tub and shower combination), a toilet and one sink -- all within easy reach of one another. The people who have bedrooms nearest the bathroom will share it regardless of their sex.

BATHROOM CONFIGURATION   C-24
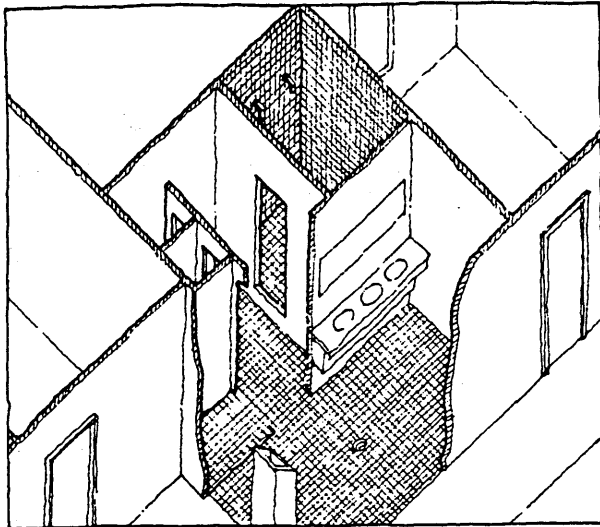
An institutional bathroom exists for purely functional reasons. It is designed for efficiency and ease of cleaning. The walls are usually completely surfaced in durable material like ceramic tile, or concrete block. Partitions are metal or stone. There is usually a floor drain toward which the entire floor is sloped. In men's rooms, urinals are provided, in women's rooms there are sanitary napkin disposal units. Toilet seats are u-shaped. There are paper towel dispensers and three feet tall metal waste baskets. The room may be a completely interior space lit only by fluroscent lighting.
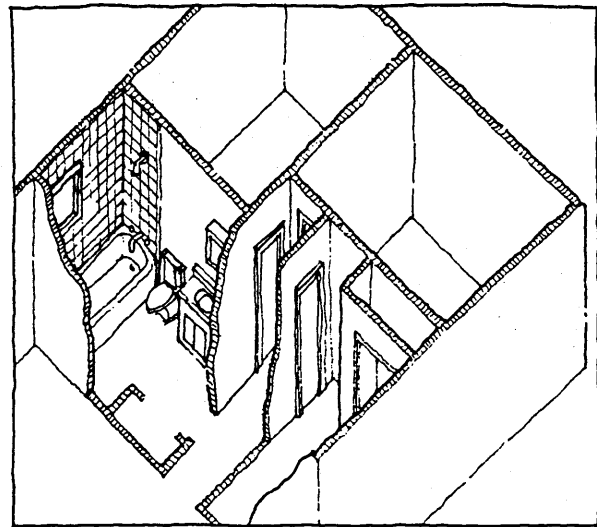
Bathrooms in private dwellings fulfill aesthetic as well as functional purposes. They receive less intensive use and can be finished in materials selected for reasons of beauty as well as durability. Where ceramic tile is used, it covers only some of the surfaces. A carpet or area rug softens the room, and walls are decorated with wallpaper, pictures, plants or other items. Curtains, shower curtains, and towels are used to add color to the room. The space is generally located on an outside wall with an operable window for light and fresh air. The window has a covering to allow for control of privacy.

CHECKLIST

A checklist has been developed from the design principles. Its purpose is to make the design principles more specific. The checklist uses the principle of inclusiveness, attempting to provide the most complete description possible based on the design principles. This is in contrast to other available checklists which use the minimum number of salient features needed to measure the degree of normalization provided by a specific design. Inclusiveness is used for two reasons. Firstly, an architectural settting provides redundant cues; for this reason, a measure based on selected items may well be inaccurate. Secondly, in developing a reliable assessment tool, it is sound procedure to develop the particular relevant features from a broad, inclusive set, rather than to make assumptions about which features are important. No empirical research has been completed that would defend the comprehensiveness, exclusiveness, or degree of significance of the individual factors that are enumerated in the list. The checklist is organized to cover the three broad areas of facility design described in the design principles: context/site, building, and room/space.

ROBINSON/EMMONS/GRAFF ARCHITECTURAL CHECKLIST*

	CONTEXT/SITE FEATURE	INSTITUTIONAL	HOMELIKE
1.	Adjacent ten buildings are at least 60 percent residential	no	yes
2.	Stores for shopping are	out of neighborhood	within walking distance
3.	Public parks or recreation areas are	out of neighborhood	within walking distance
4.	There are paved pedestrian paths	no	yes
5.	Lot size of building is	different from adjacent lots	like adjacent lots
6.	Distance of building from street is	different from adjacent buildings	similar to adjacent buildings
7.	Distance between building and those adjacent is	different from neighboring structures	similar to neighboring structures
8.	Front of building approx. same width as nearby buildings	no	yes
9.	Number of storeys of building is same as nearby buildings	no	yes
10.	Building depth (length from streetside to rear) is same as nearby bldgs.	no	yes
11.	Building material & color are similar to nearby structures	no	yes
12.	Driveway or other access point is similar in design to neighboring housing	no	yes
13.	Unlike nearby housing, on the site there is	a parking lot	no parking lot
14.	There is a loading dock	yes	no
15.	Trash is stored	in a dumpster	in cans near house or garage
16.	If adjacent structures have yard -- it has similar provisions for privacy (fence, shrubs, etc.)	no	yes

CONTEXT/SITE FEATURE	INSTITUTIONAL	HOMELIKE
17. If adjacent structures have yard -- the yard of this bldg. is designed to allow direct access from interior onto a patio, deck, or other place for social gathering	no	yes
18. Yard has	permanent courts for organized games	no fixed courts for games
19. Yard is	park-like with paved paths & benches	small, or large, with small areas for informal activities like cooking, eating, gardening
20. Ratio of building to open yard space is	different from neighbor-structures	similar to neighboring structures
21. Ground area in front of residence is similar in size & shape to adjacent residences	no	yes
22. Ground area in back of building is similar in size & shape to nearby buildings	no	yes
23. Design of path from street to entry is similar in material, length & configuration to adjacent residential buildings	no	yes
24. Entry path has	no distance between street & entrance, or straight path with no change in level	change in level between street & entrance, or a change in direction of path from street
25. Amount of grass and plants in front yard is similar to nearby housing	no	yes
26. Arrangement of trees, shrubs and flower plantings is different from neighboring housing	no	yes
27. Rear yard has as much grass, shrubs, & trees as adjacent residential buildings	no	yes

CONTEXT/SITE FEATURE	INSTITUTIONAL	HOMELIKE
28. Building is	built as one large mass	built as several masses or with more than one roof direction
29. Building roof is	flat	pitched
30. Building facade is	plain	broken up with balconies, bay windows, porches, window boxes, etc.
31. Building material is primarily	brick, concrete block, concrete, or stone or metal panels	wood or stucco
32. Building surfaces are	smooth and uniform	varied and have texture (e.g. foundation or dormer a different material)
33. Building windows	are all alike, or have continuous glass walls or strip windows	have a variety of size and shape
34. Windows are	metal frame	wood frame
35. Building entrance has a front entry stair over 5 feet wide	no	yes
36. Building entrance	has a large (over 30 ft) portico or no portico	has a small (up to 30 ft) portico, front porch, or recessed entry

BUILDING FEATURE	INSTITUTIONAL	HOMELIKE
37. There is	more than one door at entry	one door at entry
38. Front door is	sliding, revolving	hinged
39. Front door is made of	metal or metal & glass	wood or wood & glass
40. There is a designated area (recess or stoop) outside the unit entrance	no	yes
41. Unit entry area includes a coat closet or coat hanging area	no	yes
42. Unit entry area has space for furniture (table or chair) to set mail or possessions on	no	yes
43. Front door (not including storm door)	opens out	opens in
44. Front door opens with a	handle, grab bar, push stop, or automatic door opener	knob
45. Door at building entry is	open to public	usually locked & requires someone to ring doorbell before it is opened
46. There is	a building directory, and/or an information or security desk at building entrance	no information or security desk at building entrance
47. Inside, unit entry area has decorative light fixtures or wall decorations	no	yes
48. Inside, unit entry area is spacially defined as	an undifferentiated part of the circulation area	a distinct area for receiving or part of the living room
49. There is on the interior	an area especially designed for waiting, such as lobby or enlarged entry vestibule	no area designed especially for waiting such as lobby or enlarged entry vestibule
50. Entry point to individual dwelling unit is capable of being locked	no	yes

BUILDING FEATURE	INSTITUTIONAL	HOMELIKE
51. Mailboxes are provided at outside of building or in entry vestibule area accessible directly to postman	no	yes
52. Social spaces (kitchen, dining & living rooms, etc.) are	dispersed	grouped together
53. There is clear demarcation between social spaces & bedroom & bathroom areas, i.e. separation by level or a horizontal distance of at least 8 ft between openings and/or doors	no	yes
54. There is	an administrative office at entry area	no administrative office at entry area
55. Bedrooms are	interspersed with public areas and/or are not separated from public areas by level or a distance of more than 8 ft and/or have their interiors visible from a public corridor or public area	located together in area separated from the entry and public spaces
56. Bathroom interiors are	visible from public space or corridor between public spaces	not visible from any area defined as public (entry, living & dining rooms, kitchen, etc.)
57. Bathrooms	open directly onto a social space	open into a circulation space or bedroom
58. Building entrance is located near social spaces & away from bedroom & bathroom areas	no	yes
59. Living room is	not next to unit entry	next to unit entry
60. Living room interior is	not visible from unit entry	visible from unit entry

BUILDING FEATURE	INSTITUTIONAL	HOMELIKE
61. All hall or corridor continuous lengths (including turns & jogs) are	over 18 feet	18 feet or less
62. Corridors (linear circulation areas) are	over 5 ft in width & not room-like vestibules	5 ft or under in width or room-like vestibules
63. Floors of horizontal circulation spaces are	resilient flooring (linoleum, vinyl) concrete or terrazzo	wood or carpet
64. Horizontal circulation spaces are lit at least in part by natural light from windows	no	yes
65. Lighting fixtures in horizontal circulation spaces are	fluorescent	incandescent
66. Halls or corridors have exit signs	yes	no
67. In circulation areas there are	fire extinguishers	no fire extinguishers
68. Lighting fixtures in horizontal circulation spaces are	purely functional	decorative (consider shape, material, character of light)
69. In circulation spaces there are	exit signs	no exit signs
70. Horizontal circulation spaces are	plain, undecorated	decorated with furniture, pictures, patterned wallpaper or other elements
71. There is	an elevator	no elevator
72. If there is elevator, it is	not within view from front door and/or more than 15 ft away	located in direct line of vision of front door, or within 15 ft
73. Access between horizontal circulation spaces & stairs is	through fire door	open
74. Stairs within the residence are	enclosed	open

	BUILDING FEATURE	INSTITUTIONAL	HOMELIKE
75.	Stairs are	located at periphery of residence	located at center of residence
76.	Interior stairs of dwelling are made of	concrete or steel	wood
77.	Stairs are surfaced in	concrete, metal, or terrazzo	wood or carpet
78.	Stair rails are	metal, steel or aluminum	wood or wrought iron
79.	Stair rails are	plain	decorative or crafted
80.	Stairway incorporates a window	no	yes
81.	Stairway lighting fixtures are	simply functional	decorative
82.	Stairway has	no decoration	decorative things on walls
83.	In stairway there is	an exit sign	no exit sign
84.	Access to out-of-doors is	indirect from social spaces requiring traversing a corridor, level change, or other barrier	direct from a social space, kitchen, eating area, living room etc.
85.	A door from kitchen, dining area, living room, or other group space, opens directly onto backyard, balcony, deck or porch	no	yes
86.	Door to outside which is closest to both interior & exterior group areas is	difficult to open (heavy, or has fast-acting automatic door closer)	easy to open
87.	Outdoor areas are easily visible from interior social area from which there is direct access	no	yes

	ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
88.	Special rooms are designated for particular activities (crafts, music, games, TV)	yes	no
89.	In addition to kitchen and bathroom, two or more rooms are designed & equipped to specifically accommodate one purpose, with things such as electrical or mechanical games (game room), special plumbing (crafts), special acoustics (music, TV), special size (gym), etc.	yes	no
90.	There is an administrative office	yes	no
91.	Two or more rooms are used exclusively by staff	yes	no
92.	There are more than six residents in dwelling	yes	no
93.	There are four bedrooms or less in dwelling	no	yes
94.	All spaces are under 300 square feet in size	no	yes
95.	There is more than one space 300 sq ft in size or larger	yes	no
96.	Fireplace	no	yes
97.	Corridors are enlarged to create lounge areas that have no windows to outside	yes	no
98.	There are designated exit doors with exit signs	yes	no
99.	Some doors to outside are metal clad	yes	no
100.	Some interior doors to outside have crash bars, kickplates and/or automatic door closers	yes	no

ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
101. There are at least two and no more than three social areas in addition to the kitchen (e.g. living room, dining room, recreation room)	no	yes
102. Each social area has distinctly different treatment of wall, ceiling & floor	no	yes
103. Each social area has windows to the outside	no	yes
104. Each social area has distinctly different light fixtures	no	yes
105. Each social area has distinctly different types of furniture (chairs, tables, etc.)	no	yes
106. Living room is	300 sq ft or over	under 300 sq ft
107. Living room is totally enclosed room accessible by single doors	yes	no
108. Living room is open to other spaces, but still defined by walls, arches, etc.	no	yes
109. Living room floor is	resilient flooring (vinyl or linoleum) concrete or terrazzo	wood or carpet
110. Lighting is predominantly	fluorescent	incandescent
111. Lighting fixtures are predominantly	overhead	all floor, table and/or wall lamps, with switches on the fixture
112. Living room has windows with view to outside	no	yes
113. There are sprinklers in living room	yes	no
114. Thermostat is accessible to residents for control of heat within dwelling unit	no	yes

ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
115. Windows are operable in living room	no	yes
116. Habitually, living room will seat	more than five people	five people or less
117. There is a sofa, loveseat or couch in living room	no	yes
118. There are more than two sofas, loveseats, or couches in living room	yes	no
119. Seating is	placed against walls	placed variously within the room
120. Living room seating is covered with vinyl	yes	no
121. Living room seating is	all one color	a variety of colors and patterns
122. Living room chairs are	all one style	in varying styles
123. Windows in living room have	no covering or metal shades	fabric curtains or shades
124. Operable window coverings allow for control of privacy and light	no	yes
125. Coffee table or other low surface is in front of couch in living room	no	yes
126. Shelves for storing things are in living room	no	yes
127. Walls of living room are	undecorated, or decorated only with one type of object	decorated with variety of things: posters, paintings, hangings, photos, plants, etc.
128. Every wall segment over 4 ft long has decoration on it or furniture (table, shelf) against it	no	yes
129. There is	a functional wall clock	no clock or a decorative clock

	ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
130.	Eating area (dining room or kitchen) has more than one table (not including side tables)	yes	no
131.	Eating area has table that seats no more than eight people	no	yes
132.	Eating area is	over 150 sq ft	150 sq ft or less
133.	Eating area has window with view to out-of-doors	no	yes
134.	Window in eating area is operable	no	yes
135.	Operable window coverings allow for control of privacy & light in eating area	no	yes
136.	Eating area is lit with incandescent lighting	no	yes
137.	Lighting fixtures or fixtures in eating area are decorative	no	yes
138.	Eating area has decorative elements (pictures, plants, curtains, etc.)	no	yes

ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
139. Kitchen counters are	stainless steel	wood, plastic laminate (formica) or ceramic tile
140. Only one stove in kitchen is standard residential size	no	yes
141. Only one sink or double sink is standard residental size	no	yes
142. There is	more than one refrigerator or commercial-size refrigerator or walk-in cooler	one standard size refrigerator
143. Kitchen is ventilated by	large commercial ventilation system	window, small fan, or residential-size hood or fan
144. Kitchen is lit by	fluroescent lighting only	some combination of incandescent, fluorescent, and natural light from windows
145. Kitchen includes space for table for eating and other activities, or opens into nearby eating area or dining room	no	yes
146. There is a telephone in kitchen	no	yes
147. There is a window to see out-of-doors	no	yes
148. Window in kitchen is operable	no	yes
149. Kitchen size is	over 150 sq ft if no eating area, over 200 sq ft if there is an eating area	150 sq ft or under if no eating area, or 200 sq ft or under if there is an eating area
150. Food is served in	cafeteria line	kitchen or dining room
151. Kitchen has	passthrough used exclusively for serving or cleanup	no passthrough or a passthrough used both for serving and cleanup
152. No dishwasher, or only standard residential-size dishwasher in kitchen	no	yes

	ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
153.	There are janitor's closets	yes	no
154.	Cleaning equipment is accessible to residents	no	yes
155.	Kitchen cupboards have locks	yes	no
156.	Linen cupboards have locks	yes	no
157.	Living room storage areas have locks	yes	no
158.	Clothing storage areas have locks	yes	no
159.	Laundry service is provided	yes	no
160.	Laundry facilities are located in	specially designed area containing only laundry and/or ironing equip.	area used for several purposes (kitchen, bathroom, or basement general purpose area) or laundry is done in a laundromat by residents
161.	Laundry area is located in accessible location, within 12 ft of primary stairs or kitchen, or within general bedroom area	no	yes
162.	Laundry facilities	have more than one washer and/or dryer	include no more than one washer and dryer
163.	Laundry area has	painted concrete floors	floors which are carpeted, wood or tiled, or if concrete, have area rugs
164.	Laundry area is	plain	painted, wallpapered, or has decorations or curtains
165.	Laundry area is lit with	fluorescent lighting only	incandescent and/or natural lighting

	ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
166.	There is	more than one person per bedroom	one person per bedroom
167.	If bedrooms are shared,	more than two people share some bedrooms	no more than two people per bedroom
168.	Bedroom size is	over 170 sq ft	under 170 sq ft
169.	Bedrooms are, in general, (room proportions length: width)	rectangular (1.3:1.0 or greater) with short side the window wall	square (less than 1.3:1.0) or if rectangular, have windows in long side
170.	Windows are	over 4 ft wide	4 ft wide or less
171.	Bedroom windows are operable	no	yes
172.	Windows are	fixed, awning	double-hung, casement, or sliding
173.	Ceiling in bedroom	has track for privacy curtain	has no track
174.	There is a built-in closet for each bedroom occupant	no	yes
175.	Closet has	less than 3 ft of hanging rod per person	3 ft or more of hanging rod per person
176.	Bedrooms have	built-in clothing storage unit	no built-in clothing storage unit
177.	General light is provided by	fluorescent light on wall or ceiling	incandescent light fixture on wall by door or in center of ceiling
178.	Task lighting is provided by	no fixture, fixed lamp, or lamp switched else-where than on fixture	movable lamps with switch on fixture
179.	Task lighting is	fluorescent	incandescent
180.	Task lighting is controlled	at the door	at a lamp
181.	Ceilings are	suspended tile	plaster, gypsum board, plaster board
182.	Floor material is	resilient flooring, terrazzo, ceramic tile, conrete	wood or carpet

ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
183. There are area rugs	no	yes
184. Bedroom door has	handles	knobs
185. Bedroom door has	automatic door closer	no automatic door closer
186. Bedroom has	smoke detector or sprinkler	no smoke detector or sprinkler
187. Each bedroom is different shape	no	yes
188. Each bedroom has windows located in different place	no	yes
189. Each bedroom has different color wall, curtains and/or carpet	no	yes
190. Each bedroom has different styles and kinds of furniture	no	yes
191. Bedroom windows have	no window covering, or plastic, vinyl or metal shades or blinds	fabric curtain or shade
192. Operable window coverings allow for control of privacy & light in bedroom	no	yes
193. There is a free-standing dresser or chest of drawers for each person	no	yes
194. There is a bookshelf in the room	no	yes
195. One desk, table, or other work surface is provided in the room for each person	no	yes
196. Decorations are on the wall (pictures, photos, posters)	no	yes
197. There is one upright chair for each person	no	yes
198. There is an easy chair or other upholstered chair	no	yes

ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
199. There is a mixture of styles and types of furniture in each bedroom	no	yes
200. Beds have	metal headboard	wood headboard or no headboard
201. Bed height is	over 2 ft	2 ft or under
202. Upright chair is	metal	wood or molded pastic
203. Comfortable chair is covered with	vinyl	woven fabric
204. There is a wardrobe	yes	no
205. Bedrooms have	metal wardrobe	no wardrobe, or wooden wardrobe
206. Bedside table is	fixed or has casters	free-standing with no casters
207. There is a mirror over each dresser	no	yes
208. There is	no clock or a fixed wall clock	small alarm clock sitting on horizontal surface (or clock radio)

	ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
209.	Bathrooms are within 10 ft of each bedroom door	no	yes
210.	Trip between any bedroom & its associated bathroom	requires passing rooms such as living room, den, kitchen, office, etc.	does not require passing any room other than bedrooms or other private spaces
211.	Bathroom has a medicine cabinet or shelf	no	yes
212.	Linen closet is in bathroom or within 4 ft of door	no	yes
213.	Bathrooms are shared by no more than four people	no	yes
214.	Bathroom has	two or more sinks	one sink
215.	Bathrooms are 70 sq ft or under in size	no	yes
216.	Bathroom has	stand-up shower	tub or tub and shower
217.	Bathroom has	gang shower or more than one bathing fixture	single tub or shower
218.	Bathroom has	more than one toilet	one toilet
219.	There are toilet stalls	yes	no
220.	There are shower or tub stalls	yes	no
221.	Distance between any of the fixtures, toilet, tub/shower, and sink is	over 6 ft	no more than 6 ft
222.	Bathrooms segregated by sex	yes	no
223.	Wall materials are	ceramic tile up to 3 ft	plaster or wallpaper except around tub/shower
224.	Floor has	bare tile	carpet or area rugs
225.	There is a floor drain	yes	no
226.	Bathroom has	one or more urinals	no urinals
227.	Bathroom has sanitary napkin disposal units	yes	no

	ROOM/SPACE FEATURE	INSTITUTIONAL	HOMELIKE
228.	Toilet seats are	u-shaped	round
229.	Paper towel dispensers are in bathroom	yes	no
230.	Wastebaskets are	large, over 2 ft tall	small, under 2 ft tall
231.	Wastebaskets are made of	metal	wood, vinyl, plastic, straw, cardboard
232.	Decorative elements are on the walls (pictures, plants, wallpaper, etc.)	no	yes
233.	Curtains, shower curtains, and/or towels are colorful	no	yes
234.	Bathroom has window	no	yes
235.	Bathroom window operable	no	yes
236.	Curtains, shades, or other devices in bathroom window to allow for control of privacy	no	yes

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APPENDIX I
RESEARCH METHODOLOGY

The design principles presented here are a product of a study entitled Architectural Planning of Residences for Mentally Retarded People. The study was a response to the 1981 Noot vs. Welsch court ruling, in which the Minnesota Supreme Court ruled that mentally retarded people housed in existing large state institutions would have to be relocated in community-based residences throughout the state. By 1987 the population was to be reduced by 30 percent. Including past residents and present placements, the ruling affects approximately 1,200 people. The study was developed to understand the architectural implications of the normalization principle (see page 1) which is the premise upon which the court ruling is based.

While the concept of normalization has been the primary factor in the movement toward deinstitutionalization of mentally retarded people, there is still no systematically developed encompassing architectural definition of the term. Efforts have been made in this direction (Gunzberg, 1973; Wolfensberger and Glenn, 1973; Pratt, Luscz and Brown; MacEachron, 1983; and others), but the descriptions are not complete or conceptually consistent. Ideally, the process of creating environments suitable for implementing the normalization principle would be guided by environmental definitions based on careful research. The research project which forms the basis for this paper is aiming toward this long term goal. The design principles and checklist are a first step.

In this exploratory investigation a large number of issues were examined in depth using a small number of contrasting architectural settings (four residences for disabled people and six for nondisabled). In order to understand the architectural issues both behavior and setting needed to be addressed. To develop understanding of the behavioral questions, four residences were selected which housed severely and profoundly mentally retarded people, some of whom had behavior problems. The chosen settings represented a range of approaches to housing this group: a 16-bed remodelled ward at a state hospital, an 80-bed dormitory, a group home 5-unit apartment building, and an 8-resident group home family dwelling. These were studied using three techniques: interview, behavior mapping/observation, and photography of the settings. Administrators (one per residence) and direct care staff (two per residence) were interviewed. Behavior of residents, and incidentally of staff, was documented using a mapping/observation instrument. Selected areas of the buildings were documented in 20-minute intervals consisting of a 5-minute adjustment period, a 5-minute behavior mapping period, and two 5-minute directed observation periods in which two different individuals were followed. A total of 110 20-minute mapping/observations were done. Additionally, the physical character of the residences was documented in photographs.

For the development of the design principles, the interviews and mapping/observations served the purpose of educating the architectural researchers about two things: firstly, the substantial role played by the administrators and direct care staff, and the important related factors of setting, in creating a normalized environment; secondly, about the nature of the behavioral characteristics of severely and profoundly mentally retarded people and their relation to social and physical setting.

In order to understand the nature of the architectural factors of normalization, the idea of a polarity between institutional and normal behavior, which is implicit in the normalization principle, was applied to housing. Six housing settings for nondisabled people in the Minneapolis-St. Paul area were selected: two to represent the institutional pole (a hospital and a dormitory) and four to represent the normal end of the spectrum (two apartments, two single family dwellings). These were documented in photographs and using a bedroom inventory measure. The six settings were compared to each other and to housing documented in written resources (such as housing research, builders material, etc.). A measurement instrument developed for bedrooms, architectural inventory: bedrooms, was used to assess the four settings for mentally retarded people. The assessment of the four bedroom settings supported the idea that a continuum between the poles may exist in that they exhibited varying degrees of institutional and homelike characteristics.

Based on this preliminary indication that the idea of a polarity was worth pursuing, the development of principles for design evolved. Originally the idea of architecturally defining the parameters of normalization was conceived of as necessitating design guidelines. However, the potential variations within the mentally retarded population (a higher frequency of physical disabilities, of sensory loss, of behavior difficulties of various kinds) combined with the potential variations in philosophy (e.g. family-based care versus staff-based care, prosthetic models versus independence models) and the variations in setting (for example, suburban areas versus urban or rural areas, single family versus multi-family versus mixed-used areas) created a situation in which it would be impossible for guidelines to fully express the range of possible approaches. Instead, an approach was needed which would allow the selection of various physical characteristics to be combined with an explanation of their implications for normalization, resulting in the development of principles for design rather than prescriptive guidelines. The design principles were developed as a set of descriptions of the two already hypothesized poles, originally seen as institutional and normal, revised to institutional and homelike (following Rotegard, et. al, 1981).

The design principles are essentially descriptive. The principles were developed in response to the sets of physical characteristics for which the architectural designer has responsibility: the selection of materials and systems; the sizes, shapes, and organization of the spaces; the furniture and equipment of the spaces; the exterior form of the structure. They were organized in the way that a completed structure is conceptualized, from outside to inside, and from large scale decision to small scale decision. Once the elements to be designed were determined and organized, each element was described as it would be found in an institution and in a home. The first description was done with a drawing. Based on the photographs of the six settings for nondisabled people, and on the researchers' own cultural expectations for institutions and homes, two contrasting drawings were made of each architectural element. The differences between the two settings were then explored and their behavioral implications developed based on the then completed behavioral research and other readings. These implications were expressed in annotations to the drawings. The written explanations led to the development of subsequent illustrations to express ideas which had only been implied in the first set. Thus, illustrations and annotations educated each other. Finally, when the set of principles was essentially complete, the specific features of each drawing were documented in the architectural checklist, once again requiring further refinements of both drawings and annotations. The resulting tripartite description uses the illustrations to provide a holistic description of the elements of setting, uses the annotations to describe an hypothesized relation between setting and behavior, and uses the architectural checklist to provide an atomistic description which is the basis for an objective measure to be developed in further research. (See Appendix II for correlation of the Design Principles and the Architectural Checklist.)

The illustrations were tested individually in an evaluation by twenty-nine self-selected psychology students. A Q-sort test with a five-point semantic differential scale between the poles of institutional and homelike was used for assessing slides of 104 drawings. The slides were randomly ordered and each slide was shown for ten seconds. The student assessments showed a high level of correlation between the aggregate assessment of the drawing pairs and the pole they were illustrating (p $0,05$). Subsequently, in response to the student ratings, certain of the drawings were revised, and others eliminated. (Appendix II indicates which of the illustration pairs were rated, ratings and subsequent revisions.)

APPENDIX II
DESIGN PRINCIPLES:
ASSESSMENT RATINGS OF DRAWING PAIRS AND
CORRELATION WITH ARCHITECTURAL CHECKLIST

DESIGN PRINCIPLES:
ASSESSMENT RATINGS OF DRAWING PAIRS AND
CORRELATION WITH ARCHITECTURAL CHECKLIST

	Design Principle	Ratings* (NR=not rated)	Revisions	Correlated Checklist Items
Context/Site	pp 14-18			pp 39-41
	A-1	.001	minor	1
	A-2	NR		2-11
	A-3	NR		12-15
	A-4	.007		16-19
	A-5	NR		20-22
	A-6	.000	minor	23-27
	A-7	.000		28-30
	A-8	.000		31-32
	A-9	NR		33-34
	A-10	NR		35-36
Building	pp 19-25			pp 42-45
	B-1	NR		37-39
	B-2	.000		40-44
	B-3	.000		45-47
	B-4	.118	redrawn	48-49
	B-5	NR		50
	B-6	NR		51
	B-7	.000		52-57
	B-8	.044	redrawn	58-60
	B-9	.000		61-70
	B-10	NR		71-72
	B-11	.000		73-75
	B-12	.000		76-83
	B-13	.041		84-85
	B-14	.000		86-87

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*NOTE: All drawing pairs which are rated over $p = .001$ are plans.

	Design Principle	Ratings* (NR=not rated)	Revisions	Correlated Checklist Items
Space/Room	pp 26-37			pp 46-56
	C-1	.000		88-89
	C-2	NR		90-91
	C-3	NR		92-96
	C-4	NR		97-100
	C-5	.000		101-105
	C-6	.000		106-115
	C-7	.000		116-119
	C-8	.000		120-129
	C-9	.000		130-138
	C-10	NR		139-148
	C-11	.000		149-150
	C-12	.000		151-152
	C-13	.000		153-154
	C-14	.000		155-158
	C-15	.000		159-161
	C-16	.000		162-165
	C-17	.000		166-173
	C-18	NR		174-186
	C-19	NR		187-192
	C-20	.000	minor	193-196
	C-21	.000	minor	197-208
	C-22	.005	minor	209-212
	C-23	NR		213-222
	C-24	.000	minor	223-236