Architecture of Institution & Home:
Architecture as Cultural Medium

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Thesis

Presented for the degree of Doctor
at Delft University of Technology
under the Authority of the
Vice Chancellor, Professor Dr. Ir. J.T. Fokkema
Chairman of the Board for Doctorates
To be defended in public on 15 March 2004 at 13:30 o’clock
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For Richard,
who made this possible
Foreword

My interest in architectural research began during my professional studies when my study of the public housing residents influenced the design thesis for my architecture degree. That project exposed me to the potential of research to inform design.

My early years of architectural practice convinced me further of the need for research on the viewpoint of the building user. Thence came my pursuit of a Master of Arts in Anthropology ---a discipline I chose for its compatibility with architectural investigation--- for which I completed a thesis on lay people’s perception of housing. During my anthropological studies I began to instruct architecture students, becoming a part-time faculty member in the Department of Architecture at the University of Minnesota. In 1980, when I became an Assistant Professor the initial phase of this work was my first research project, and I continued to develop it, although I have worked on many other projects as well. A book prepared and accepted for publication in 1993 was never actually published and the work was set aside. In 2000, when the opportunity came to complete a dissertation, I recognized a chance to bring this project to fruition.

Thus this dissertation is the culmination of many years of architectural research. Although the work began as advocacy project, it now takes the form of cultural description and analysis. The design principles developed in the first phase of work were disseminated within the State of Minnesota and elsewhere as a guide to the design and construction of residences for de-institutionalization of people with developmental disabilities. It is difficult to know if they were particularly influential on architectural practice, although I served as consultant to several projects that were constructed using them.

But I remained fascinated to learn more about how people understood housing, how design influences perception and use, and how architectural form can be investigated relative to that understanding. As a designer I realized that I brought a particular physical form-oriented approach to research that would complement the vision of the traditional social scientist. After receiving funding from the National Endowment for the Arts matched by the University of Minnesota in 1984, I and my many research colleagues pursued the work little by little for fully 10 years with a concern to develop research methods that would contribute to the study of architectural design.

Along the way so many people have influenced my thinking that I cannot name them all. The names of four research collaborators, however cannot be ignored, psychologist Travis Thompson, and architects Myles Graff, Paul Emmons and Julio Bermudez, then research assistants. Additionally other research assistants made essential contributions. With the exception of Julie Brand, who assisted with the preparation of this document, they are listed in footnotes and illustration headings. I have also received valuable comments, suggestions and psychological support from numerous colleagues, especially those from the Environmental Design Research Association, the International Association of the Study of Person-Environment Relations, the Space Syntax group, and of course my colleagues at the University of Minnesota. I thank all these contributors.

But key to turning my earlier work into a dissertation were the many insightful discussions with my promoter Professor H. Jurgen Rosemann and committee members Stephen Reed and Herbert van Hoogdalem whose advice I have tried to apply and whose challenges I have attempted to meet.
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This dissertation addresses how architecture functions as a cultural medium. It does so by investigating how the architecture of institution and home each construct and support different cultural practices. By studying the design of ordinary settings in terms of how qualitative differences in architectural environments affect those who use them, this study exemplifies architectural research directed toward constructive cultural change.

In the United States, ordinary people often describe housing as in a spectrum from homey to institutional. For example, hospitals are more institutional and less homey than apartment buildings, but apartment buildings are more institutional and less homey than single family detached dwelling. This dissertation examines the terms institution and home, exploring the hypothesis that they form an oppositional pair. The two ideas are studied from many different perspectives: The way that ordinary people evaluate photographic images in semantic differential and free sort studies is compared to architectural form as documented in sketches, words, photographs, inventory and plan. Analyses reveal that different housing types reflect different degrees and kinds of domesticity and institutionality.

The investigations pertaining to this were completed during the 12-year period (1981-1993), and followed by Phase 3, substantiating research concluded in 1996. Motivated by the normalization principle, that citizens with disabilities have the right to dwellings as similar as possible to that of society’s mainstream, the Phase 1 studies (1981-84) developed guidelines for the alternative housing for disabled adults, including a checklist of architectural features. Phase 2 (1984-86, explored the lay understanding of institution, home, and other related qualities, tested the validity of the checklist guidelines and refined measures for home-likeness and institutionality in living rooms.

In addition to normalization, several other theoretical positions inform this work. Architecture is conceived as a cultural medium that communicates cultural ideas, attitudes and expectations thereby tending to produce patterns of behavior. Culture is seen as a shared and evolving vision of the world manifested directly in behavior and indirectly in artifacts. Culture is understood as produced in its practice, being a collective process that evolves or changes as particular practices are discontinued, modified or replaced.

A first corollary to the conception of architecture as a cultural medium is the conception of architecture as a medium for conscious cultural change. If culture is produced through practice, then it is susceptible to change by conscious practices as well as by unconscious ones. From this perspective, when applied to the design of buildings, normalization or de-institutionalization can be seen as an intended cultural change, although not fully conscious. For cultural change to be fully conscious, the change must be well considered, with clear identification of both the change that is needed and the method of change. Furthermore, in order to be what is here called conscious cultural change, the change not only needs to be implemented, but also evaluated and adjusted.

A second corollary to the conception of architecture as a cultural medium is the implementation of an architectural reception theory. In addition to considering the design and making of an artifact, reception theory emphasizes how it functions socially and symbolically for the people who experience it. This research addresses how the design of different residential settings affects the people who will use and inhabit them.
**Phase 1 Research**

The purpose of the Phase 1 study was to develop guidelines to design housing for developmentally disabled adults that would be as close as possible to mainstream housing. To understand the overall parameters of the present housing, and to see what seemed to work best for residents and staff, we decided to study a variety of residences.

Phase 1 began with a study of 4 contrasting residences, all housing severely and profoundly disabled men and women (state institution, dormitory, apartment, and detached house). We documented the physical character of the residences was documented using photography and floor plans; we conducted interviews with administrators and staff; and we observed and mapped resident behavior. The initial analysis identified very great differences in the physical design between the 4 residences that we characterized as degrees of institutionality or homeliness. Our observations of the behavior of the disabled people and staff at each setting indicated that the less institutional the character of the setting the more normal the behavior of the residents.

In order to discover whether the degrees of difference in design were anomalies of residences for developmentally disabled people or were more widespread, we photographically documented and analyzed the design of six additional settings for non-disabled people (hospital, dormitory, apartments, houses). Further analysis revealed that these additional settings represented a similar pattern of variation in design indicating a continuum between institution and home.

For the design guidelines we initially created a rough 3-part matrix description that identified degrees of differences in institutionality and home-likeness for different aspects of exterior and interior design. With such a small sample, and realizing that a less complicated approach that would be more accessible to designers, we then developed a set of design principles presenting the distinction as an oppositional dialectic between institution and home. The principles were presented as a paired set of drawn images related to pairs of annotations, as well as a checklist of paired items representing the two concepts.

Using a semantic differential test, psychology students evaluated the individual drawn images and photographs of the 10 settings. Analysis of the drawings indicated that almost all the drawing pairs were found to represent opposites. A high level of correlation was found between the aggregate assessment of the drawing pairs and the pole they illustrated (p ≤ 0.05). In the diagram of the mean evaluations of the photographs, the residences fell on a continuum between institution and home.

**Phase 2 Research**

The Phase 2 research addressed questions raised in the first study regarding the institution and home, as places and as terms including:

a. The validity of the continuum of housing between institution and home;
b. The validity of the opposition between institution and home;
c. The validity of the two words institution and home to stand for the ideas we were studying;
d. The validity of the items in the architectural checklist
The identification of those architectural variables associated with the qualities institution and home.

The identification of the values and attitudes reproduced, reflected and communicated by the two types of environments.

To research these questions we studied 29 buildings in a Midwestern United States city. The buildings exemplified a wide range of housing in 10 categories: hospitals, nursing homes, dormitories, rooming houses, group homes, mid-rise apartment buildings, public housing projects, walk-up apartment buildings, row houses and single-family dwellings. Again we documented the settings in photograph and plan. But in this study we also used additional descriptive tools including the architectural checklist developed in the first phase as well as a new measure, an inventory of architectural elements. To investigate people’s understanding of housing design, as before, we studied students’ response to photographic images using both semantic differential evaluations of slides and sort studies using photographic prints.

Relating the responses to photographs to physical design posed a challenge. We sought to compare the evaluations of photographic images to details of the physical design. This would enhance our ability to identify those physical features or architectural elements that were correlated to the assessments, as well as to validate the architectural checklist from Phase 1, and in future research to identify features that would correlate to activities and behaviors. To describe the physical design in a way that did not rely on observation and hypothesis of what is salient in particular settings, we developed an inventory of architectural elements using the traditional specification format as a guide. The specification approach, identifying and describing all of the items that could make up the setting enabled us to create a relatively “complete” description independent of observation. In this way we could discover new relationships that we hadn’t observed.

In order to analyze the spatial relationships between rooms and other spaces, we created plans of representative examples of each building type. Using space syntax analysis diagrams we compared the plans of the different building types.

Analysis & Findings

Visual examination of the diagrams of the mean institution-like/home-like evaluations of the slide images in Phase 2 supports the notion of a perceived continuum between institution and home. The continuum is not completely smooth, however, but seems to fall into three sectors. Discriminant analysis of the checklist assessment of settings confirmed a tendency for 3 sectors: those buildings that exhibited degrees of homeliness, those buildings that exhibited degrees of institution-likeness, and those buildings with a more ambiguous quality. Analysis of the architectural dimensions indicates that in terms of physical design the relationship between institution and home is not on a continuum. A distinction was found between how people understand settings to be and how they are physically. Detailed hierarchical cluster analysis of the evaluations of slides indicates that while a clear distinction was made between institution and home, the relationship is not one of opposition, but rather one of contrast. While comparison of the evaluation of slides using public and private independently of each other reveals they are opposed at a .005 level of significance,
the level of significance of the opposition for institution-like and home-like is much weaker, at only the .10 level. Thus the terms institution and home can not be said to be true opposites.

This is further supported by the rotated factor matrix analysis of the checklist items in relation to the terms institution-like and home-like. We found that the buildings rated as homelike are highly correlated to each other, but those rated as institution-like are increasingly negatively correlated as they are increasingly institution-like. Thus the two poles do not seem to have the equivalent structure one would expect in a true opposition.

From the sort studies, we found that when images were being categorized into opposite categories 23 participants categorized 28 of 34 images consistently as opposite to each other. This suggests that people shared certain mental categories for the photographs. However the participants inconsistently assigned names to the opposite categories indicating that the categories’ terminology was not shared. However, the names applied in 24 of the cases were related to ideas that we found related to the institution-home distinction (e.g. home/non-home; private/public; personal/impersonal, places to live/ places to work, single person or family/many persons or families, desirable/undesirable, warm/cold). Moreover, 2 participants employed the institution-home terminology. This indicates that the ideas represented by institution and home resonate as distinguishing categories, even though the categories do not have a consistent, shared nomenclature.

Although people seem to conceptualize the ideas represented by institution and home (or the ideas they represent) as in an oppositional structure, the terms do not appear to be truly opposed. Furthermore, the power of home/non-home and institution/home to organize images of housing into a coherent structure was demonstrated by the free sort, as well as by the relative consistency with which images were ordered along the original institution-home continuum. We conclude that the institution / home pair are not in clear analytic oppositional relationship like public and private, but, are paired as two nonparallel concepts in the dynamic relationship of a dialectic. The dialectic is a view that encapsulates reality without reducing it.

Comparison of data from two architectural descriptions of the 29 settings, one using the architectural checklist from the Phase 1 study, and the other employing a preliminary inventory instrument, resulted in three major findings. We found that 193 (or 82%) of the 236 checklist items were valid. Comparison of the preliminary inventory data from the living rooms to the institution-home ratings of the same settings permitted the refinement of an earlier 3-scale living room assessment that had been created based on informal observations of living rooms. Validating some of the items from the earlier instrument and adding new ones found by means of the inventory, we created a new 32-item, 5-scaled instrument, Institution-Home Assessment Measure for Living Rooms. Items in the measure correspond to patterns of variation that were identified across all 29 settings. The third finding was a new inventory measure. As a result of difficulties and opportunities we experienced in applying our preliminary measure we developed an improved inventory measure that aims for a complete description of architectural setting: The Architectural Inventory Measure. This new inventory measure was successfully utilized in the Phase 3 study to link observed behaviors to elements of architecture.

The final discovery is that there seem to be degrees of domesticity and institutionality that relate to different building types. Following upon the observation that institutional settings do not form a unified category, we analyzed them using space syntax analysis and also studying the relation between physical design features an the attitudes they represent, including statements from interviews in Phase 1. We found that the different syntactical arrangements were linked to sets of ideas and attitudes that seem to be produced by home and institutional settings. From these we developed a scale from domestic (relating to single family houses and row houses), domestic with institutional characteristics (various kinds of apartment buildings), partial
institutions (dormitories and rooming houses), complete institutions (hotels, hospitals, nursing homes), and repressive institutions (prisons, barracks, and open multi-bed shelters for homeless people). These different kinds of domesticity and institutionality not only have physical differences but also exhibit related differences in their social structure (term of stay, type of surveillance, social roles of residents and others). The various architectural forms of residential settings are thus bound to purpose and administration.

The research methods employed in this investigation show how people’s cultural perceptions of settings can be related to the physical design of environments, and by implication, how it is possible to relate perceptions of environments and actions that take place in that environment to elements of architectural design. If architects can learn how particular attributes of design contribute to cultural effects, it may be possible to create designs which, if linked to community-wide shared motivations and administrative systems, can support desired changes in cultural patterns, thus contributing to constructive cultural change.
Introduction

Architecture is a cultural medium. By studying how the architecture of institution and home constructs and supports different cultural practices in each type of setting, this dissertation explores what it means to understand architecture as a cultural medium. It shows how architecture -- both the ideas that generate buildings and the buildings themselves-- may play a pivotal role in cultural change.

The role of architecture is studied relative to the normalization or de-institutionalization movement in which thousands of residents of large, state-sponsored institutions have been and are being relocated into smaller residences in towns and cities in the United States and elsewhere. A body of empirical research documents the effects of architectural form on attitudes and behaviors. By demonstrating how architecture performs as a cultural medium, this dissertation expands the view of architecture beyond primarily being an art, arguably the approach normative in architectural education and professional practice. Thus the thesis opens to a discussion of the fundamental changes for the architectural profession that are implied by the premise that architecture is a cultural medium.

The investigations pertaining to this dissertation were completed during the 12-year period from 1981 through 1993, and were followed by substantiating research finished in 1996. Throughout the 1970’s social science research oriented to social change was one of the central approaches taken in the study of architecture in the United States. However, during the period of this study, the focus of mainstream architectural research had evolved away from documenting specific behavioral effects toward the study of the character of the architectural object. Canonical works focused on social and cultural critique. They did not use social science methods to study popular perception or use of buildings, but studied architectural artifacts as narrative or discourse using techniques based in the humanities. In approaches parallel to textual analysis in literary theory, such descriptions and interpretations of existing environments were allied more closely with those of art history, geography, cultural anthropology and archaeology than with psychology and sociology. These works did not offer explicit options for design, but addressed design implicitly. Utilizing the lens of cultural criticism, this project augments the humanities’ focus on architectural narrative with the investigation of use and perception of architecture and with explicit proposals for design practice that supports intentional, conscious cultural change.

This work is fundamentally architectural scholarship. It is profoundly influenced by environmental design research, the social science approach initiated in the 1960’s and early 1970’s and developed since then. It is architectural because the built environment is the central focus. Architecture is described, analyzed and interpreted; peoples’ perceptions and actions are described, analyzed and interpreted relative to architectural design. In distinction from much of the early environmental design research, which relied on psychological

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2 During the period of this study little of the U. S. work focused on documenting actual behavior (some exceptions being Marcus & Sarkissian 1986, Altman & Werner 1985, Carpman 1986, Farbstein 1986, Cohen and Day 1983), nevertheless some excellent work has focused on cultural criticism and social change during this time, including such work as: Franck & Ahrentzen 1981, Hayden 1984, McCamant and Durrett 1989, Sprague 1991, Regnier 1994.
4 Some examples related to this study are Hillier and Hanson 1984, Moudon 1986, Kent 1990, Markus 1993, King 1995, and Cieraad, 1999.
5 In focusing on the architecture of building type, here housing, this work meets Guido Francescato’s definition of architectural scholarship that uses social science research (1994).
6 Founded by such people as Jane Jacobs, Edward Hall, Robert Sommer, Amos Rapoport, Christopher Alexander, and Oscar Newman, and further developed in the 1970’s, 80’s and 90’s by numerous others.
7 Some important exceptions being Hall, Rapoport and Cooper Marcus.
methodology, the social science approach taken here, employs psychological methodology in part, but is rooted finally in anthropology. The overriding theoretical structure is that of the cultural context of architecture. The particular model of culture is parallel to that espoused by such authors as Bourdieu, Lefebvre and de Certeau for whom culture is created and sustained through performance, and architectural space is produced by means of social practices as well as by conceptual design and physical space. The approach to architecture is influenced by numerous authors, but most fundamentally by Rapoport, Cooper, Zeisel and Lang who see the built environment as a context for human activity with designers responsible for creating settings that support the building user.

Cultural criticism of historical and contemporary places has illuminated many of the values and ideas behind our environments through description, analysis and interpretation. Here we extend the methods of cultural critique to address social change and and anticipation of the future. Combining the methods of text analysis from the humanities with methods of study of human perception and use from the social sciences provides the increased power of an argument based in empirical evidence. Whereas cultural critique by itself only theorizes what might be the effect of an environment, this work documents environmental effects and hypothesizes how design can support social change. Here, the methods of the humanities and the social sciences complement and mutually enhance each other, tying the study of the architectural artifact to the study of how people understand and use architecture.

This study cannot be said to be “objective” since it was clearly biased by the emancipatory goal of the normalization movement: to engage as much as possible in mainstream life those groups formerly institutionalized. In this case, we are especially concerned with the developmentally disabled. This research explores the role that architecture plays as a cultural vehicle to empower people who were previously seen as “other” and were thus denied opportunities for “normal” housing. In order to develop validity and reliability in our findings, we have employed research methods defined as “objective”. At the same time, we acknowledge that the findings raise as many questions as they answer. We draw conclusions for design with the goal of elucidating the complexity of the questions rather than providing pat answers.

Neither are the findings universally applicable, since the original work is clearly based not only in the American context of the United States, but in a region with a severe climate and with a majority population of people of European extraction (although that is changing). How many of the findings are particular to these location remains to be discovered. However, in the substantiating studies, we found the work largely transferable to Tennessee, a very different context within the United States. Universality of a different kind is implicit in this approach; the purpose is to reduce or eliminate marginality of a dependent group by maximizing what it has in common with the majority group. The purpose is not at to erase difference, but to offer equal opportunities for independence, positive identity and respect.

This project is linked to a great number of important issues, some of which I have already briefly addressed, others that I will develop further in this introduction and still others that are discussed later in the dissertation. Because of the complexity of the topic, and the limitations of a single scholar, many issues that are relevant and important will undoubtedly be omitted, and for this I apologize to the reader.

A number of concepts frame the realization of this work: architecture, culture, normality and deinstitutionalization, ordinary architecture, building type, architecture as culture and architecture as art. Each of these concepts will be discussed briefly below. The introduction then concludes with a short description of the organization of the chapters of this book.
**Architecture**

To say that architecture is a cultural medium is not an attempt, in the words of Paul-Alan Johnson, to create a Grand Theory that will “align architects with inexorable universal forces and make them fit to govern their newly founded world by design, as Platonic philosopher-kings” (1994: xviii). It is instead an attempt to make sense of what I have observed the best architecture to be and to do, and to bring to the surface assumptions that seem to be held by the ordinary architectural practitioner, the ordinary client, the ordinary building user, and the ordinary architectural researcher. Although I will confess to a desire to see architecture as a unified whole, the approach taken here is straightforward rather than elaborate, dynamic rather than static, open-ended rather than hermetic. Instead of creating simplicity by reducing the myriad complex positions held by architects to a single view, it advocates coherence by bringing focus to the assumptions architects make.

What is architecture, when seen in the light of culture? Architecture consists of the mental and/or physical structures by which we inhabit the world. It is simultaneously art, science, and technology. Architecture is both a process and a product that consists of the mental structure of the ideal, the proposed and the received artifact, representations of the artifact, as well as the artifact itself, that is the built environment.

If the cultural perspective is so encompassing, how does it provide any advantage over the present diverse positions of the field? In conferring validity on difference, this perspective provides a way to meet the integrative necessity of the field, for an environment is to be constructed in the end. Simultaneously, the cultural perspective acknowledges the valid identities of the plurality of sub-fields and approaches to architecture. Further, the cultural view permits critical analysis of the artifact in the context of change. The contingency of culture requires a constant reaffirmation through practice that complements the future orientation of the field. Finally, the cultural perspective links architects to daily life, to the enactment and production of culture, to the people who create culture in the quotidian world and to the responsibility for creating environments that support the constructive aspects of culture rather than those that are destructive to individuals and groups.

**Culture**

Culture is a shared and evolving vision of the world, a mental construct (Hoebel, 1956) that is reproduced and manifested directly in behavior and indirectly in artifacts. Culture is a collective process, maintained through practices, but supported by artifacts and by memory. Collective memory is fundamental to culture, and artifacts serve to cue collective memory. Since every culture contains contradictions that are also shared, these may create important divergences among the members of the group.

Individuals generally function unconsciously in their daily life within what Bourdieu calls the “habitus” (1977:1984). When we see the habitus as cultural patterns that persist only insofar as they are performed, that places great importance on each one of us individually and all of us collectively as enactors of culture. Furthermore, insofar as we are aware of our cultural patterns, the concept of performance implies that we can consciously change our culture by changing our actions. While the issue of conscious change of culture is theoretically problematic, practically it is a given. It is taking place every day.

In other words, these shared cultural conceptions are not fixed, but evolve over time as circumstances change and contradictions or new opportunities become apparent. In the context, or

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8 I have written previously about the relations between culture and the discipline of architecture, see especially Robinson 2001.
interpretive community (Fish, 1980) within which this study takes place, that of United States society, cultural ideas are perpetuated or changed in many ways. At the level of local and national politics certain laws are passed and policies are implemented. The media---such as television, radio, newspapers, advertising, books, or music,---support or alter cultural ideas through sound, visual images and texts. These changes occur between individuals as certain people insist on some things and other people acquiesce. They take place as individuals collectively invent, accept or reject ways of doing things. The process of cultural sustenance or change is so diffuse and made up of so many individual actions that cultural ideas have a kind of life of their own beyond the direct influence of any one person or group.

But in every case cultural ideas happen in the context of memory. Each cultural action takes place in the context of others, whether replicating or altering known patterns, for culture is a pattern or set of patterns. Happenings that occur without reference to that pattern cannot be called cultural in the same sense. If we are studying culture, we are studying memory. The physical setting has powerful associations with remembered activities, often engendering them, as the doorknob engenders the act of turning to open the latch. Architectural design has an important potential role to play in cultural perpetuation or change.

If built architecture generally expresses existing cultural patterns from the past, including their contradictions, proposed buildings or changes to buildings either serve to reinforce old conceptions or to support new ones. This is evident in the tendency to build new buildings to express new ideas, or to tear down old structures that no longer seem to reflect our current ways of doing things. But of course, new buildings are also likely to express current cultural contradictions, like new shopping malls designed to look like colonial buildings or office buildings with a fancy new facades that are laid out in the same old way.

As we shall see, the hypothesized dialectic of institution and home like every other cultural concept, has certain inherent contradictions and inconsistencies. Furthermore, it is likely that these two conceptions about buildings, which are both operative in our society, may have once been understood to apply to two discrete, non-overlapping realms of building. The approach is a kind of heterotypology in its detailed comparative analysis and reading of the home as a kind of utopia and the institution as a heterotopia of deviance (Foucault 1993[1967]), but anti-Foucaultian in its concern to apply the knowledge to improving housing for the dependent person (McLeod 1996). Here, applying the conception of culture as evolving, I explore these two notions in order to discover how they were understood in 1984, and how that might provide insight into design today.

Architecture is a cultural medium that exerts a force on the cultural fabric, a force for cultural continuity or change. Bourdieu asserts that the most powerful cultural effects are those that are silent, because we are not aware of the force that they exert upon us. As we will discuss later, the apparent silence of architecture as a cultural force should only serve to make us more interested in its operation. Insofar as we ignore and do not challenge the cultural messages sent by architecture, we maintain the cultural status quo.

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9 This work is concerned with the culture of everyday life and ordinary places more than with the memory of “high” architecture. In this sense, it resembles the work of Christopher Alexander and parallels approaches taken by urbanists and other thinkers, including J.B. Jackson, Dolores Hayden and Christine Boyer.
Normality and Deinstitutionalization

In every culture, maintaining social structures requires conformity to shared expectations or norms. Any individual who is not able to comply with the social rules is marginalized within day-to-day cultural practices. In and of themselves, norms are not necessarily a problem, but what may be a problem is how we define norms, how we determine when they are met, and how we address those who do not fit within our norms. The emphasis in Western society on the use of statistical description to assess the status of individuals in the society (official poverty levels, IQ tests, etc.) has reinforced the use of abstract, quantitative norms as a relevant description. Previously, groups who did not fit mental, developmental or income norms were ostracized to places away from the daily life of so-called normal citizens, either in institutions or housing ghettos. Now such rigid descriptions and their rigid application have begun to seem unreasonable and are no longer accepted as appropriate. However, for many, this segregation remains an ideal. Even today in the United States we do not find adequate means for housing and otherwise accommodating certain people. This speaks to a continuing, profound fear of the differences between people and a corresponding self-imposed blindness to the needs and the dignity of people who do not fall within these defined social norms.

Using norms as a source for comparison is a double-edged sword. Although norms can be used to create conformity when it is unnecessary, so can norms be used to raise the standards of life for people who are in a group presently stigmatized. When norms are used to restrict alternatives or to stigmatize people perceived as non-normal, they become an impediment to productive change, but when used as a basis for providing human rights to people, they become a useful locus of comparison.

Rather than assess the way individuals fit or do not fit social norms, or the way that social norms are developed and applied, in this study we are primarily concerned to understand and critique architectural norms, the norms we use to construct environments for particular purposes. In an egalitarian society, the respect for human dignity requires that all people should have access to basic needs, among them housing. By using the idea of norms to assess housing in American society, we find that it is common practice for "normal" people to have apartments and houses as long-term dwellings, and to inhabit dormitories, barracks, hotels and other institutional settings only for short-term use, while those perceived as non-normal have traditionally inhabited institutions on a long-term basis.

In order to transcend our present housing patterns we need to understand what we are doing presently. In the process of reevaluating our housing in terms of "non-normal" groups, we have found that institutional forms of housing have not always proven effective. Taking Goffman’s analysis of institutions as a starting point (1961) this research supports the normalization or deinstitutionalization movement, which advocates housing for everyone that is as close to the mainstream as possible (Nirje, 1969). If we are to choose to provide “normal” rather than “institutional” housing for all citizens, however, we need to be able to know what these two terms mean architecturally. This study explores the relationship between these terms and their broader relations to architectural design.

In parts of the United States, it has taken only about 25 years for normalization to effect the legal, and increasingly the cultural, acceptance of handicapping conditions as non-stigmatizing. Architecture has played a significant role in this accelerated, conscious, cultural change. Since the inception of this research in 1981, I have seen normalization of housing for dependent populations become accepted practice in much of the United States. Thousands of residents of large, state-sponsored institutions have been, and continue to be, relocated into smaller residences in towns and cities in the United States and elsewhere. Additionally, other institutional settings are being held to new standards of design, such as institutions for the elderly, from independent living facilities to nursing homes for dementia patients. For the
architect and others, the question of how architecture can or should contribute to such change is fundamental, but the ubiquitous role housing design plays in normalization is not yet well understood. This work elucidates in great detail how architecture may support or frustrate the goals of normalization.

The deinstitutionalization or normalization movement has identified a link between the social organization of the large institutional residential setting, its physical form, and the lack of "normal" behavior of its residents. The normalization principle of providing social and physical environments as close as possible to everyday settings implies an oppositional relation between institutional and ordinary or "normal" ways of living. However the architectural character of the settings associated with these two living styles, while assumed to be an important support mechanism, is only beginning to be carefully described. That was the original purpose of this research.

In addition to having norms, every culture has institutions. The term "institution" has several meanings. Mary Douglas describes institution as a "legitimized social grouping" and goes on to discuss the possible types of institutions (family, game, ceremony) and their legitimating authorities (personal or diffused: based on common assent or a founding principle) (1986: 46). While acknowledging the validity of a broader definition, in the context of this book we will more narrowly define institutions as bureaucratic organizations and the buildings that stand for them. Thus, while in the widest sense the family is an institution and the dwelling is the building which stands for the family, the narrower definition will allow us to distinguish between the architecture of family and that of bureaucracy.

Institutionalization is pervasive in our society, and what are here called institutional values are used in the design of just about every place other than the single family dwelling, including the workplace, schools, commercial buildings, and daycare centers. Part and parcel of the largest sector of our construction industry, institutional design is reinforced by typical development and financing procedure as well as by law, in the form of things such as zoning and building codes. Characterized by a primacy of economics over human aspiration and need, the institutional approach to design that is taken for granted results from culturally sanctioned values that we do not have to perpetuate.

**Ordinary Architecture, Building Types**

To study the role architecture plays in daily life, one must focus upon the ordinary building. The ordinary building is an atypical architectural topic; architects tend to focus their interest on the special building. But if architects are to play a central role in affecting cultural change, as I argue they can and should, it is necessary to understand the powerful role that ordinary buildings play in affecting everyday activities, a role perhaps more important than that played by special buildings. Appreciating the ordinary building also implies a different kind of architectural aesthetic, one derived from inhabitation and daily life rather than from the symbolism of economics and power.

Cultural conceptions take form in the memory as associations of memories. Places play a central role in memory since experiences occur in time and place. Places not only affect what we do instrumentally, but, of equal significance, they symbolically affect our actions by the associations we have with previous experiences. Such associations are not simply individual recollections related to singular experiences, but are communal, in the sense that a group of people who over time share common experiences in common places develop shared categories of places and experiences. Place types are such a cultural category (Francescato, 1994).

In this study we focused on housing as a category of place. We were initially concerned with housing for developmentally disabled adults in general, and with group homes in particular. We discovered that group homes could only be understood in reference
to many housing types, because at that time the group home was evolving as a housing type and was still in many ways undefined. Our challenge became to understand the nature of housing relative to issues of empowerment for developmentally disabled people. We were especially concerned to follow the normalization principles that acknowledged the special needs that such a group might have, but also advocated that housing be identical to mainstream design or as similar as possible.

The range of housing that existed for developmentally disabled people in 1981-84 led to the dichotomous pair, institution and home, as an underlying conception for categorization. In the course of the research we explored the relation between these two categories and the types of housing that might be found generally in any urban area. At first, we applied familiar architectural notions of building type, such as “single family dwelling” without any particular critical perspective. However, when the terms had to be operationalized in research, it became clear that the definitions between housing types as used informally in design were ambiguous and overlapping. All apartments were not equal; “walk-up” apartments had different connotations than “high rise” apartments. There were inconsistencies in criteria between, for example, public housing (a term defined by the source of funding) and row housing and apartments (terms defined by the physical relationship between dwellings). Similarly, many of the ways that designers categorized housing type (such as by plan arrangement, distinguishing the atrium house from the shotgun house) initially had little obvious relation to our work.

Investigation of housing from the viewpoint of empowerment gradually yielded several interesting results. First, we discovered that building types were perceived somewhat differently that we had assumed they would be. Secondly, we discovered that architecture communicates the categories of institution and home in two ways: symbolically, through building image and character of space and instrumentally, through the organization and arrangement of spaces. Housing design, especially in the form of building type, was found to play an essential role in the communication and support of habitability and the development of personal and community identity.

The issues of institution and home became a vehicle for exploring differences between housing types. The different housing types are described in terms of the cultural ideas that they embody. We identify particular differences between the forms of the housing (whether the housing unit is directly or indirectly accessible to the street, whether a building is small or large, whether an inhabitant has their own apartment or merely their own bed). These forms are linked to the cultural memories of experiences that happen within these types of places, and thus to the expectations for what will happen there. We explain how the forms contribute to critical distinctions between the types of housing that we use in design. In this way, we elucidate architecture’s role in the creation of the patterns of daily life.

**Architecture as Culture, Architecture as Art**

The difference between understanding architecture as a cultural medium or an artistic medium may not be immediately apparent, but it raises fundamental questions about which buildings are to be called architecture, what the role of the architect is, and where the ultimate authority for the form of buildings lies. To provide an oversimplified summary, the proposition that architecture is an art limits the appellation “architecture” to those buildings built by architects that embody an aesthetic synthesis of issues of context, technology and human needs. This synthesis is defined as an achievement of artistic expression by the designer. Here, ultimate authority for the form of the building, defined as its artistic expression, is the designer-artist, and historical reference is used for legitimization. But the Cultural community--- capital letter used advisedly to denote a limited sense of the word “culture”--- determines which buildings are defined as architecture. This Cultural
community, an architectural elite, consists of: (1) the different groups who publicize buildings and identify the avant-garde designers (critics, journalists, museum curators, film makers, etc.), (2) clients who pay for buildings and give opportunities for designers to build, (3) academics and publishers who create the architectural canon (art historians, architectural academics, publishers of architectural books), and (4) the profession of architecture whose representatives serve on award committees and speak on behalf of the field. While it is true that the general public plays a role in this process, through such means as public meetings, election of governmental representatives, and public outcry over publicized proposals, the role is responsive, indirect and usually occurs after a design is complete. When architecture is defined as an artistic medium, at least as presently operative, there is no delineated place in the design process for the role of the lay audience.

An alternative view, again oversimplified, is less exclusively oriented to the profession and paying clients. As a cultural medium, architecture incorporates all human constructions, not just those made by architects. Defined as a cultural process, the creation of buildings is a broad societal responsibility in which architects play the role of specialist. To participate effectively, architects must be competent in the ordinary cultural language of their time and place. They must understand the existing cultural ideas, critique the existing patterns of building, improve the existing buildings, propose new patterns that better represent societal ideals, exemplify these ideas in new buildings, and educate society about the new ideas. It’s a more complex role than that of artist; it includes artistry, but places the architects’ role as central to rather than at the margins of society. In this capacity, the artistry of architecture is not limited to aesthetics of architectural form, but is essentially bound to the aesthetics of daily life.

As a cultural medium, architecture is not limited to the architectural form of a building design, but in addition to addressing its functioning as an art object, architecture includes responsibility for the ideas embedded in the form, for the methods of construction, for the actual functioning of the building, and for its long term maintenance and alteration. Such a view acknowledges that ideas about societal values and how to represent them in architecture change over time, and that it is possible to take a critical perspective about them. At the same time, it locates the ultimate authority for building content where it actually should be, in society. Society, in this view, has a role in the design process in addition to the process of response to proposals.

There are many ways to incorporate the aesthetics of daily life and the cultural views of a society in the design process; all of them imply interaction with the cultural audience and a concern for the reception of architecture. The need to work with the cultural ideas of individuals and groups leads to the proposal for a reception theory that addresses the role of the lay person in making architecture. Such a theory is discussed in the conclusion of this text. The approach of this research is but one of a variety of methods by which the ordinary person can contribute to or participate in the design process.

In professional practice architects normally have clients and sometimes user groups to whom they respond, and the personal artistic expression of the architect is muted by practical circumstances and by societal attitudes. From the artistic perspective, these practical circumstances are often interpreted as undesirable interference, whereas from a cultural perspective they are seen as important sources of architectural content and expression. This difference changes the position of the architect from one of personal controller to that of mediator or interpreter, actually a position closer to that found in many architectural practices.

The conception of architecture as an art may simply be a contradiction to what in fact occurs in the field. Many architects may actually practice architecture in a cultural mode, but because of the dominant vision that architecture is an art, they may not understand their practices for what they are. Without an alternative description that matches their actual
practices, they may simply assume that their way of doing things is a variant form of practicing architecture as an art. Delineating what it might mean to interpret architecture as a cultural medium may empower these architects to enter into a more completely cultural practice and into a discussion of how to reconceive the field to respond more effectively to cultural issues.

In the academy the situation may be similar. Certainly many, perhaps most, architectural educators have a great veneration for vernacular architecture, and are fascinated by cultural patterns and norms, yet they haven’t known how to incorporate these ideas into mainstream architectural design. Kirshna Menon emphasizes the dangers of the imposition of the Western focus on the avant-garde on cultures such as those in India where traditional practices have much to offer (2001). Even writers such as Alexander, Rapoport and Brand who have been understood as significant contributors remain at the margins because mainstream academic architectural theory, which valorizes the concept of architecture as avant-garde art, has had no good way to incorporate their ideas.

In a single dissertation, the implications of practicing architecture as a cultural medium can only be presented in a very limited way. This case study will illustrate just one approach. Furthermore developing such an idea is the work of a community, not a single person. So here I will build on the work of others and propose a vision of what practicing architecture as a cultural medium might mean, especially for architectural research.

Structure of the Dissertation and Presentation of Ideas

In addition to the Introduction and the Appendices, the dissertation is structured into two parts that address theory and research.

Part I: Theoretical Structure consists of three chapters. Chapter 1 lays out the fundamental assumptions about architecture as a cultural medium. Chapter 2 discusses how concepts of cultural change relate to architectural theory and Chapter 3 addresses the analysis and interpretation of housing design from the perspective of cultural change.

Part II: Research and Conclusions presents the research findings. Chapter 4 explains the architectural research methodology in terms of the general findings. Chapter 5 presents the normative concepts institution and home. Chapter 6 analyzes the living room as an example of semantic representation and expression. Chapter 7 explores ideas about territory derived from a syntactical analysis of institution and home, and Chapter 8 explicates institutionality based on syntactical analysis of residential building types. Finally, Chapter 9 draws conclusions about the research method and findings.

Part III: Appendices provides detailed information on CD-ROM about research methods, and research instruments and findings that may be of interest to the scholarly reader.
Places set the stage for daily life. Because they are backdrops, most people take them for granted and are not aware of the profound effect that they exert. Although this investigation emphasizes housing, and focuses on buildings, it is equally true for other types of places as well. In the monotony of the typical hospital environment, or the excitement of the well-designed theater, the physical environment becomes so allied with the individual and social experience that people usually see personal, social and physical settings as identical. The role of physical environment thus remains undetected.

The complexity of physical environment impedes perceiving its influence. Physical elements of settings affect us in so many different ways, through so many different stimuli, that that it is impossible to identify the source easily. In the hospital, the sound of the ventilation system, the smell of the disinfectant or the floor wax, the even temperature throughout the many spaces, the generalized character of the fluorescent light, the interaction with the hospital workers, and the thoughts of the reasons for being there, all bend together in a single, complicated experience. Even when comparing the hospital experience to that of a radically dissimilar place, like a theater’s (with its contrasts in dark and light places, temperature change between lobby and performance space, lavish materials, perhaps ornate decorations and light fixtures, crowds, with colorful and dramatic clothing, smell of cigars and perfume), it is hard to pin down the contribution of the physical environment per se, to either experience.

Yet, when we see the hospital from the outside, or when in broad daylight we see the theatre building, these places conjure up rich past experiences. Parts of the places, like ribbon windows or marqueses, come to stand for the totality of the experiences we have had in them. And we begin to be able to generalize from our experience with one theatre, to other theatres. We learn what "hospitals" and "theaters" look like, and expect to be able to go inside and find predictable things happening.

The buildings communicate social position and roles that are known. We will approach the building in a different place and be received in a different way depending upon whether we enter the hospital as patient, visitor or staff. Different staff positions have differing spatial placement within the building as well. In theaters even before we go in, we anticipate that a salesperson will be at the box office, an usher at the entrance will take our ticket, at the concession stand a different person will sell us food. Equally, we know the clothing these people will wear, their posture and what particular actions they will make. This cultural knowledge is embedded in our cultural conceptions of buildings, in a metonymic relation in which one aspect stands for the whole.

Moreover, buildings also come to stand for social structures. The White House, for instance, represents the entire presidential administration. When someone discusses the public library or mentions a corporation, if its building is known, we often think of that as the organization's embodiment.

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1Mintz and Maslow's research in the 1950's on the effects of room aesthetics on performance, found that the participants were not aware that the environment was the source of the differences (Maslow and Mintz 1956; Mintz 1956).
While buildings are but one kind of place that we experience (another being landscapes: streets, parks, orchards, fields, mountains, rivers), at least in our culture, buildings are probably the most specific in the kinds of behavioral expectations they generate. From the small town to the large metropolis, and within what is called a system of settings by Rapoport (1990:18),2 buildings create a common set of assumptions that help to define our American way of life. Movie theatres, school buildings, religious buildings, supermarkets, post offices, houses, all stand for certain social organizations and are structured to support and engender specific actions and attitudes on the part of those who see and use them.

Experiencing Buildings

When one enters a traditional institution for the mentally ill or a cathedral, the physiological sensations- the feel of the cool floor and walls, the echoes of the footstep and the spoken voice, the contrast between the bright outdoors and the dark interior- all register to make this a special and different place, one which registers acoustically every action and movement occurring within it; one which only gradually becomes fully visible as the eyes adjust to the darkness. All architecture affects us at this physiological level. Although the sensations are likely to be similar for all people (assuming that all of their perceptual abilities are functioning), the associations that they have with the physical perceptions may be very different, depending on their personal histories and cultural background. Some people may experience the cathedral as a mystical evocation of the presence of god, while others may find it repellant, akin to a damp cave and suitable only as a good place to sit on a hot day. The institutional building may be seen as benevolent or repressive.

Yi-Fu Tuan shows how the interpretation of sensory data is affected by experience in the example of Colin Turnbull's experience with the Pigmy, Kenge. Upon coming out of the forest for a rare encounter with the open savanna and seeing a huge buffalo at a distance, Kenge identified it as a fly. In the forest, this man had had no occasion to identify distance with decrease in apparent size of objects (Tuan [1974] 1990: 80). Perspectival perception, which we Westerners take for granted, can thus not be assumed to be a universal human experience, and therefore the interpretation of even the physiological aspects of buildings can not be assumed to be universal, even among those who have no physiological impairments.

The shared cultural associations with buildings derive from these personal experiences as well as indirect ones. If by direct encounter with a cathedral, or by an indirect encounter (book, television or other media) we know that in such a place people normally sit quietly, certain kinds of music are played, and certain rituals are held at regular times, we will expect these when we come there. To the initiated, the physical character and arrangement of the place enhances the likelihood of a given behavior. The stone setting enhances certain kinds of speech and music and makes others unintelligible. The culturally initiated visitor can “hear” the sermon or hymns that may later be spoken or sung. While it might be physically possible to hold a basketball game in such a place, it is unlikely that anyone would think of doing so. From this we can see what a close relation exists between an environment, previous experiences with similar places and the activities which occur there.

On the other hand we all know of places designed for one purpose but used for another (Brand, 1994) such as old row houses now used for offices. Compared to a new office building, the small, naturally lit, ornamented spaces are a marked contrast, but often

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2Rapoport discusses the relationship between activities and architecture, finding that it is important to consider these within systems (activity systems and systems of setting) and not in isolation.
function as well as or better than the purpose-built office. It is not impossible, then, to adapt places for unforeseen activities.

But especially important is that the office activities may be affected by the different, domestic, setting. The small spaces may support different kinds of office behavior than a more open setting. Physiologically, we are apt to have different experiences of sound, light, heat and moving air. Psychologically we may respond to the smaller spaces as more intimate and more amenable to control. With less visibility of the entire group of workers at once there may be a greater sense of privacy. If several people work together in these separate areas, the overall office group, no longer visible at once, may be sensed more as an agglomeration of smaller groups than as a unified whole.

Even thought the setting may dispose us to certain expectations, the quality of the overall group functioning is not determined by the effects of the space only. Depending on the nature of the individual workers, and on the office philosophy, employees could either feel isolated by the separation, or could feel a more intense sense of teamwork because of the increased emphasis on the small working group. The interpretations of the character of the setting, and the social context of the experience mediate the behavioral outcome of the environment. In addition to the effect of the organization of space on individual and group behavior, the symbolic associations with the renovated town house may alter the perceptions of what a work place can be. In response, the selection of furniture, or the lighting and materials selected may extend to include residential styles as well as typical office styles. If residential elements are included, this may in turn encourage a wider range of behaviors as well, so that what is considered "businesslike" may be less rigidly defined. The physical character of a place may therefore be found to limit or extend the range of possible activities thus providing “affordances” (Gibson, 1977), but cannot be said to "determine" them.

The link between buildings and behaviors is not unidirectional, or coercive, but when layers of experience of settings are built up, and we act unreflectively, buildings serve as important cues to the behavioral patterns that make up a culture. It is primarily this cultural role of buildings, rather than simply the physical built form that makes buildings appear to have a causal impact on behavior.

In a given cultural context, then, the environment may have a direct effect on the people who come into it, cueing certain behavior. This behavior, in turn, engenders a secondary effect on others in the setting. That is to say, the social message conveyed by means of the environment may cause people to act toward others in anticipated patterns. Thus, for example, a young child entering a cathedral having had no previous associations, may not know how to behave, but imitates others or may be verbally instructed. In this situation, the environment is having an indirect effect on the child, one that is mediated by the social context.

Architecture thereby, does not simply have a momentary physiological effect, but it also cues our memory of other experiences (often without our being conscious of it), and by means of its effect on others engages us socially as well. In the design of residences for dependent people, this is how the environment may directly affect the residents or indirectly affect them by means of the staff, visitor, outsider or other residents' attitudinal responses (Wolfensberger, 1977: 141). Even when the physical presence of others is absent, the social context present in the architectural forms sends a potent social message. The power of architecture as a vehicle for communication of culture derives from its pervasiveness, both in terms of its almost constant physical presence and in terms of its ability to tap memory and thereby cue behavior.
The Cultural Setting

Like clothing, the features of the architectural setting become cues for the expected behavior, as well as props to support it. The information desk at the entrance to the hospital suggests that information is needed. The locked door at the apartment building causes us to seek the doorbell or the intercom. If you are a staff worker at a nursing home, the work desk separating staff and resident allows you to keep your record-keeping tasks separate from your care-giving ones. The locks on doors serve to remind us of residents' vulnerability, and our responsibility to protect them.

Architecture, in cueing a role, also taps the associated behavioral expectations. From past experiences with places, as discussed above, we learn the range of possible roles, and the suitable ones to take. The nature of these roles and behavioral expectations is taken for granted, and is part of the implicit architectural character of the place. It isn't until we are in an ambiguous or unusual situation that the rules of behavior reveal themselves to us. When we are a patient rather than a visitor we may become irritated about having to wear the hospital gown that restricts us from going for a walk outside. When we thought we were coming to a party at someone's house and it turns out to be at their place of business, we may discover that there are different dress codes associated with the two settings.

Barker and Wright, in their research on a Midwestern American town, noticed the close tie between places and activities, and called the combined physical and social outcome a "behavior setting" (1955). Since from the perspective of a designer it is more useful to separate the behavior from the role of the environment in cueing it, the use of Barker's term would be misleading. It would also be misleading to use any one of the terms proposed by Lefebvre in his discussion of the character of modern space: social space, representational space and representations of space (Lefebvre 1991[1974]: 36-46), because the physical environment of a culture is simultaneously perceived, conceived and inhabited and yet retains its importance as a spatial configuration (Doxtater 1989). Instead we will use the term cultural setting to refer to the physical features and their symbolic content as made and understood through perception and use, by an acculturated individual, that is a person within a given interpretive community. That is to say the cultural setting is the communicative context and therefore includes the physical setting (the space, the material place-including qualities such as light- and its furnishings) as well as its implied behavioral expectations (or implied purpose), but excludes the behavior that is produced by the communication. 4

The cultural setting is “cultural” in that it is understandable within a particular cultural context. The identical physical context, within a different culture may be understood differently or totally misconstrued. Furthermore social position within a culture such as class, ethnicity or gender affect the ways an environment is understood and used as does context, e.g. social, temporal and spatial. Subcultural groups, too may have unique cultural patterns not understood by all members of the larger interpretive community. 5

There are different kinds of architectural cultural settings, depending on scale and role of the setting. From one perspective, every place is a setting in and of itself, and a sub-setting of somewhere else. A hotel bathroom can be seen as a particular type of room, in the hotel, in a district, in the city, etc (Lynch, 1960). In terms of this research, however, it becomes defined as a basic cultural setting named “bathroom” if the people within the

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3Amos Rapoport makes a similar argument for the importance of identifying physical setting as distinct from activity, pointing out that meaning is what links an activity to a setting (1990:12-13).
4 Lefebvre’s social space is not a physical space, but a space constructed solely by social interaction. Such social space may be produced in part by what is defined here as a cultural setting.
5 Some of the failings of modern architecture are due to the assumption that “good design” can be understood cross-culturally. “Function”, when understood to mean the narrow assumptions that designers make about how something will be used, has become a disreputable term.
interpretive community who look at it call it a bathroom and it is the sub-setting of the hotel if called a hotel bathroom.

Cultural Communication and Architectural Form

While the communicative force of the building message is directly linked to the past experience of the user, the information is encoded in the form of the building. The overall message is understood in the context of a myriad of small experiences and associations each tied to individual physical details. Our cultural knowledge of buildings is incredibly rich, and one which we tap continuously, although usually unconsciously.

For example, we not only recognize what a door is in a general way, but also when faced with a particular door, even out of context, can distinguish between the door to a church, to a store, to a bus, to a house, to an apartment building, etc. The original selection of a door to a particular place is made due to a variety of factors such as: tradition, building codes, cost, durability, visibility required, the numbers of people who pass through. But when we see the door, we do not consciously dissect the reasons the door is the way it is-although we might respond with some of them if asked - we simply "know" what building it goes to. We have, in psychological terms, a gestalt that allows us to reconstruct an entire complex of experience from one part of the physical setting, such as a door (Koffka, 1962[1932]: 342; Schmidt, 1957:200-202).

Moreover, a building is made up of thousands of parts or elements (Habraken et al 1976, Habraken 1982) many of which, like the door, engender for us the cultural settings they come from. This layering of communicative features is called redundancy by architectural theoreticians, who theorize that this is a result of the weak message-carrying ability of individual architectural elements (Norberg-Schulz 1963:151; Rapoport 1982: 51, 149-15). Single elements may be associated with many settings (marble fireplace or Georgian portico), but a particular combination of elements elicits a more focused association (marble fireplace, Eames chair, ornamental carpet, wood floor or Georgian portico, hinged glass door with metal frame, steep formal stair, yellow lawn, picnic table).

By and large, a building's character is conveyed not by one part, but by a complex of parts each of which adds to the chorus singing in harmony with the same identifiable theme. And concordance with the theme keeps the individualingers in the background. If, however, there is one part which is strongly out of synchrony with the others, like a U-shaped toilet seat in a friend's house, we are inclined to become conscious of that part, or to call into question our assumption that we know where we are. This environmental dissonance allows us to perceive what has heretofore been taken for granted. Nonetheless, certain single elements may be so strongly associated with one particular place that they, in and of themselves, evoke that place, such as the hospital bed, which seems incongruous out of its conventional setting (and which, may by itself form the theater set). But for the most part it is not the individual element or part -the doorknob or the carpet - which is linked to a kind of place, but a set of elements, and just as the set may evoke the kind of place, the name of the place evokes the set of elements.

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6Colleague and psychologist Travis Thompson advises me of the negative connotation psychologists give to the term redundancy. According to Norberg-Schulz (citing C. Cherry On Human Communication, New York, 1957 p 305) this use of the term comes from information theory. Architectural redundancy is simply a descriptive term denoting the concept that architectural form communicates most effectively when more than one cue for a given meaning is present.
Communication and Determinism

Any particular aspect of reality is understood in various ways depending on the questions being asked about it. From the perspective of the behavioral sciences, architecture and environment in general have been seen as a dependent variable that affects human behavior. But for designers the physical environment is the subject of focus whether as a medium for artistic exploration, as a tool for action or as a communicator of intentions. For users the environment is a place of habitation, the context within which they operate, and a tool for action, one of the things which makes life easier or more difficult. Environments that have an ambiguous character are uncommunicative and may create confusion. Those with a clear structure and unmistakable meaning may allow better orientation and more control to the users of the environment. The best architecture may have layers of meaning that can be understood by the user, some that permit the user to operate effectively, others that address attitudes and values, others that communicate associationally and symbolically.

Because architects manipulate environments, they tend to emphasize the making of the physical form of environments over their effects such as on human behavior (human behavior is here understood to include human cognition, intentions, and overt action). Behavioral scientists have often criticized architects for what they call architectural determinism, seeing architecture as a force for social change without understanding how social forces often inflect its effect. On the other hand, many social scientists, perhaps confounded by the complexity of architecture's effects, or unable to account for it because of the lack of reliable descriptive measures, have underestimated its contribution, tending to see environment as completely constrained by social forces rather than as having a complex effect.

On the other hands, the label of determinism was sometimes appropriate, as particular designers have assumed that what they intend to communicate through design will be understood automatically and will affect behavior. But the problem identified by behavioral researchers and called architectural determinism was not so much behavioral determinism, for architects did not see architecture as necessarily directly affecting behavior, but communication determinism, for many designers have not realized that the message they intended to inhere in architecture was not necessarily understood. The fallacy of communication determinism is a point developed clearly by Juan Bonta, who points out that the relationship between intention and communication is complicated by the fact that intended messages may be misunderstood, and unintended messages may be incorrectly inferred (1979:28).

But the important point, as Franck notes, is that behavioral researchers, by seeing environment as a dependent variable, tend to simplify its very complex effects on behavior. Not only do environments have direct and indirect effects, but also these effects may be felt at either a conscious or at an unconscious level.

Furthermore, environments may be communicative or uncommunicative, and as manipulators of overt behavior they may be unrestrictive, suggestive or coercive. Therefore, once in a coffin, as Stanford Anderson's describes, one's actions are severely limited.

Even the conforming use of a coffin is not determined by its physical form alone. Humor and horror movies remind us that one may sleep or lurk or eavesdrop or be smuggled in a coffin. Yet there are limits to the range of events that may occur in that environment. Its physical size and proportions, and the accretion of culturally constrained choices of materials and colors and symbols, assure that this environment will be selected only under certain unusual conditions of danger or radical gesture or madness--- and will be understood by others as such. (Anderson, 1978:2)
While the coffin environment is severely constrained, it is nevertheless, a communicative one, in that its shape and nature as a cultural icon communicate its use. Like a coffin, a corridor restricts action, in this case, restricting movement in one of two directions. For instance, subway tunnels may not only be physically restrictive, permitting movement in only two directions and, at least when crowded, permitting no possibility of stopping, but also may be uncommunicative and thus disorienting if the end points of the path are unknown. Conversely an open plaza in an unfamiliar city may physically be almost infinitely permissive, and may be equally uncommunicative and disorienting if its placement in a larger context is not known or revealed.

While particular environments may restrain or liberate behavior in a physical way, what may be just as important is their communicative role, since an action in an environment takes place at a single moment in time, whereas memories and anticipations recur continuously, and in the context of the accumulated actions that create cultural expectations. These expectations enable the "reading" of cultural meaning in environments.

**Architecture as Communicator of Cultural Roles**

Social roles are created by social prerogatives, but they are communicated and reinforced by environments, as we have seen above. the Murray Edelman distinguishes between roles defined in formal and informal social interactions. In formal organizations rigid roles call for clearly defined actions and internalization of organizational objectives rather than calling for personal knowledge and judgement (1977:86). Foucault shows how environments themselves are instruments of “discipline” that not only cue overt behavior and roles, but communicate the discipline itself so that in an act of social confirmation we discipline ourselves (1979:102).

Like Edelman, Joseph Bensman and Robert Lilienfeld distinguish between public and private roles, seeing institutional structures not as a backdrop but as the medium through which these ever-changing roles are formulated (1979). Although Bensman and Lilienfeld, do not discuss architecture as important or relevant factor in communicating or sustaining social roles it seems to be a key factor in defining these roles.

Intimacy is a safety valve for the self. But there are many kinds of intimacy. Some kinds are imposed upon individuals by the very structure of social life—a kind of intimacy that individuals may not want and may resist but for which they have little choice. The prison, the army barracks, the hospital ward, and the dormitory are large-scale administrative organizations which rearrange the life of the individual so that privacy is not possible.... the culture of the barracks is crude, vulgar, obscene. That which is normally hidden goes on public display and is the object of derision, assault, buffoonery, and sadism. Within barracks life almost no other form of expression is possible.... The intimacy of the barracks is not based on the voluntary exchange of personal confidences, of trust, of affection and warmth. It might, in modern society, be considered a form of pseudo-intimacy. (Bensman & Lilienfeld 1977:93)

If the "structure of social life" creates the problems inherent in the "large-scale administrative organizations" it seems highly probably that architecture contributes to "rearrang[ing] the life of the individual."

As we examine the physical environments of institution and home, we will see how the values of the culture are reflected in the anticipated roles and the expected behaviors associated with and communicated by the cultural settings.
The Silent Messages in Architecture

Architectural messages demonstrate a variety of silences. Some messages that seem very overt to an outsider may be so taken for granted and so associated with that cultural situation that a suggestion to change them appears ridiculous to an insider. One such example is the stereotypical location of the secretarial pool, as compared to the executive’s corner office, away from views, natural light, in tight spaces, which seems so antithetical to job performance that you wonder why the spatial arrangement persists. Another example is the conception of the hospital as a health producing place when its difference from normal environments communicates dis-ease so strongly: having the patient’s room so alien and different from the normal healthy bedroom, with a constant invasion of privacy, an enormous difference from such normal patterns of daily life as evidenced in meals (getting unfamiliar food at the times you wouldn’t normally eat in a place that is isolated from other people) newspaper reading (hard to get the newspaper, and hard to read it lying down), or even brushing your teeth (no space to park a toilet kit on the bathroom sink, let alone keep a toothbrush permanently handy). These messages are perfectly perceptible physiologically, and only silent because they are normal.

Some of these silent messages are communicated through spatial structure, which communicates directly by means of the movement of the body, like the physical placement and spaciousness of the executive office, compared to the cramped secretarial space. Others are communicated symbolically by the character of the space, through the associations we have made with spatial forms, such as the quality of the materials assigned to people with different status, whether the expensive plush carpet of the executive, or the linoleum bedroom floor in the hospital.

But the most silent messages are not overtly architectural. These are the role assignments we accept through the architectural references. The nature of an institution that is communicated by association with an architecture can persist even if the architecture changes. Although a particular mentally retarded or elderly person may be relocated from an institutional setting into a regular house, that may not be enough. If such individuals are discouraged from using the house in its normal way, and are in the care of a person who sees them as helpless and incapable of any judgement, the messages of the architecture will be overridden. The hospital operates because we accept the roles we are assigned, as patient, visitor, or staff. If these roles are familiar and therefore comfortable to us, they are resistant to change. While these roles are communicated in an important way through the physical place, they exist outside the architecture in our mental constructs. Understanding how architecture communicates these, which associations may be linked to which architectural elements or ensembles of elements is far more difficult. This is why for instance, it is difficult to analyze architecture’s role in communicating gender roles. By and large these roles are not embedded in the architectural forms, but only communicated by them. Although the traditional rectangular dining room table sets up a potential hierarchical position at its head, there is nothing in the architecture that assigns the head position to the male of the household, and a position along the side to the female. These positions are assigned by non-architectural cultural expectations.

When using architecture as a vehicle for certain kinds of cultural change, it is important to understand which architectural changes can be effective in a particular context, and to what extent the architectural changes must go hand in hand with changes in cultural conceptions. The power of architecture to coerce derives from a complex web of physical and physical

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7 See especially contributions of Bourdieu 1977 and Foucault 1979, discussed later in this text.
cultural relations. To the extent that we would reduce this coercive effect, we must address both the physical form of the architecture and the cultural content it communicates.

**Architecture as a Vehicle for Cultural Analysis of Western Society**

In anthropology, many investigators have felt that the role of cultural outsider was essential to their work, as was their attempt to be simultaneously, as much an insider as possible. Those of us who study our own culture, find ourselves in the reverse position, where the challenge of being an outsider is the greater of the two.

In the case of the anthropologist examining a foreign culture, the unconscious structures of culture are all new. Therefore these structures are learned one by one, to a large extent in a conscious way rather than the normal way of learning a culture where learning is enmeshed in and integral to daily life. In a different culture, the unfamiliarity of what takes place makes everything stand out. The problem is that of no ordinariness, nothing to take for granted. The challenge is to understand the structure of the knowledge from the elements and their apparent juxtaposition as compared to the structure as described by the native.

When one is the native, seeking an understanding of the structure of one's own cultural knowledge, identifying the elements becomes one significant challenge. A second challenge is to perceive the latent structure. A third challenge is to be sufficiently critical of one's personal understanding to allow the evolution of one's perspective in response to new and challenging information.

Architecture provides a concrete reference for cultural expression that is outside of the self, and therefore offers opportunities to see values fixed in time and space, as it were. Examination of the artifact on its own terms, out of its normal context of use, juxtaposed to a different set of ideas, opens it to alternative interpretations than the normative ones. Once wrenched from a normative pattern of perception, the artifact's relation to the existing cultural context becomes more visible.

In accepting architecture as the evidence for cultural attitudes we must be clear about an important paradox inherent in this approach, and how it is being dealt with here. This paradox derives from the relationship between intentions and outcomes. It is obvious that the relationship between architectural intentions, those purposes for which a building is built, and the architectural outcome, the way the building actually performs, is very loose. Its looseness occurs not only at the point of interpretation that we have mentioned earlier, but also at the point of creation. Whatever idea a designer or builder has in mind, the particular circumstances existing at the time and place of construction and subsequently during use, create great differences between the abstract intended idea and the concrete reality.

On the other hand, if the possible corrections and adjustments are not made between architecture and intentions, we must assume that the concrete manifestation has been accepted as sufficiently close to the expectations that it represents. And certainly, if the same kind of building is repeatedly built, and if possible adjustments and corrections are still not made, the building can be said to be a manifestation of the intentions of the group that repeats a given pattern. Thus, for example, buildings constructed in the past which impede handicapped people from entering show that ablebodiedness was a societal norm, whereas newer construction manifests the broadening of the definition of what it means to be normal.

Interpreting the attitudes of one's own culture may seem to be a search into the obvious, for we know our culture so well that once stated, we usually recognize both the message and the device for communicating the message. On the other hand, it is a challenge to see one's views afresh and to be self-critical. In this interpretation while the message, and the architectural devices used in communicating are important, even more so are the
operation of communication and the match of the architectural forms to societal aspirations. By such critique we may better understand how to create settings which represent our ideals rather than our history.

**Architecture & Human Identity**

The spatial world in which we live tells us who we are. We find ourselves within it, we respond to it and it reacts to us. By manipulating it we affirm our identity. And, in observing our ability to affect the world outside we gain what Halowell calls self-identity and self-continuity (1955:94). We learn not only that we exist in place, but that we exist in time.

Spatial perception, linked as it is to movement, touch, and all of the other senses, is perhaps the most fundamental ability of the human being. It can even be experienced in the womb prior to birth as the sensations of the body movements of child and mother. Early spatial experiences and the mental representation of spatial structure, preceding linguistic skills in time, seem to lay the foundation for linguistic structure. Prior to developing language skills, spatial structure is certainly bound up in the ways we experience ourselves, identify ourselves as separate from our mother, begin to see ourselves as continuous in time, and experience our social world.

The very young child's bodily experiences of sensation and movement are inherently spatial. Even before being able to move, the child attempts to vicariously manipulate space by crying for the mother. This overcoming of spatial separation may be the first opportunity for an infant to see that s/he is powerful. As the child learns to manipulate objects and therefore to change the spatial configuration, the environment reflects the identity of the child. In actions like being able to shut a door, the visible alteration of environment becomes a symbol for the self, a reaffirmation of the child's identity.

From spatial displacement, whether in the arms of a caretaker or using newly developed motor skills, children discover that while the external place may change, they remain essentially stable. This sense of continuity becomes experienced as located within the self.

The social context within which we live is purely time-bound if considered to be occurring only when other people are present. The world of space creates the sense of continuity of the social context in the evidence of social contact observed directly (objects moved, footprints, odors remaining), in the indirect evidence (spatial shape or furniture implying certain uses) or in the memory associations of social contact in the setting. Thus space becomes a mnemonic device, but one that we use so effortlessly and so continually that we are scarcely aware of its universal impact (Julio Camillo's memory theater applies this principle by inscribing "knowledge" in spatial representations (Yates 1966)).

Even though spatial perception is fundamental, it reaches its full potential with the addition of linguistic skills. The first sensations of the mouth, while initially oriented to spatial understanding may be a precursor of speech, and the first manipulations of objects to understand formal qualities may be the precedent for putting words together into verbal structures. But it is the linguistic representation that seems to allow the development of complex symbolic relationships. Nevertheless, the schema also exists independent of the words associated with it. Neisser points out that schemata combine image and action into

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8Piaget and Inhelder discuss the inherent link between perception of space and action in space "The 'intuition' of space is not a 'reading' or apprehension of the properties of objects, but from the very beginning, an action performed on them. It is precisely because it enriches and develops physical reality instead of merely extracting from it a set of ready-made structures, that action is eventually able to transcend physical limitations and create operational schemata which can be formalized and made to function in a purely abstract, deductive fashion." (1967[1948]: 449).
one unit (1968), and Piaget and Inhelder remind us that spatial concepts, more than being mere images of external things, are internalized actions (1967[1948]).

We can distinguish between physiological perception and what Gibson calls schematic perception (here seen as encompassing personal and cultural perspectives).\(^9\) As defined here, physiological spatial experience is not tied to language, whereas schematic perception, although not bound to language, is closely associated with it. Physiological memories, vast and complex, remain unconscious because the conscious memory cannot contain all the details. While we may often use direct memory unconsciously, conscious access to direct memory seems to be relatively rare.\(^10\) It may well be that consciousness of one's existence is directly related to the development of schemata, those evolving mental patterns that allow us to interpret the world around us. Physiological memories that are consciously accessible seem to be linked to schemata. Present experiences that are similar to remembered elements of experiences associated with a schema may evoke it. Although our conscious mind may only hold elements of a schema in our mind at a moment in time, assuming we know the schema's structure, we can call other parts of it to mind. Therefore events we have experienced that fit a schema can be manipulated and remembered. Schematic perception may be evoked by incomplete parts of environments, by such things as words or names of places, or by calling into consciousness associated ideas.\(^11\)

Physiological perception generates large amounts of data that seems to lie in our memory only structured in a time sequence. The limitation of the human mind to consciously manipulate these data seems to engender the creation of the more efficient schemata.\(^12\) Schemata vary greatly. Some are more structured than others. Some are more consciously accessible while others seem largely unconscious. Some are personal while others are shared. Whereas personal schemata may serve an individual effectively, their very particularity makes them difficult to share without reference to more widely held schemata.\(^13\) Cultural schemata are especially efficient for communication to self and others because their frequent use creates more familiarity and predictability.

As we mature, cultural schemata, which in the case of environments are commonly linked to place names, seem to supplant links to the remembered physiological perception for most habitual purposes. Only when there is dissonance between present literal experience and expectations based on cultural schema, does the physiological perception become accessible. Martin Krampen has found (1985) that children both in Germany and Turkey distinguish buildings based on different cues at different ages. Young children tend to use geometric cues such as roof shape, or building size to identify housing, work places or religious buildings, whereas older children use culturally based cues such as religious

9As described by Halowell (1955:184-5) Gibson distinguishes problems concerned with (a) "the perception of the substantial or spatial world", "the world of colors, textures, surfaces, edges, slopes, shapes, and interspaces", what he calls literal perception, from (b) "the perception of the world of useful and significant things to which we ordinarily attend." He calls the latter schematic perception (Gibson 1950:10). I do not use the term “literal” because it implies the use of words. The term physiological, which expresses a similar idea, is free of that implication.

10 Autistic people such as Temple Grandin seem to have more direct access to their physiological memories than others, and yet to have difficulty forming certain cultural schemata. It may be that highly developed cultural schemata actually interfere with access to physiological memory.

11 According to Neisser (1968), schemata combine image and action in one unit.

12 Oliver Sacks notes that memories can be very unreliable (1996:175). I argue that the unreliability stems not from the lack of a physiological memory, but from the difficulties the conscious mind has to gain access to it.

13 Many designers rely on their personal schemata to create innovation. Cultural schemata can be restrictive for innovative thinking but are more likely to be used to reproduce known patterns. A challenge that designers sometimes ignore is that innovative ideas not referenced to cultural patterns can be disorienting and experienced as alien.
symbols or window and door types. The supplanting of more physical, geometric cues by cultural ones are an example of the increased use of cultural cues for conscious thought as we become mature.

**Building Types as Schemata**¹⁴

Types are categories that we use to define the world around us. They are schemata with generally agreed-upon names that stand for a set of concrete objects. Associated with each idealized form and name are concepts and physical elements that characterize the type.¹⁵ According to this usage, within an interpretive community any group of objects that possesses a mental image and name is a type. Since the act of communication involves reciprocity between name and object, the type name generates an idealized physical object and a consistent set of characteristic elements, and conversely, the object of a given type generally conjures up the type name.¹⁶ ¹⁷

Since types are ubiquitous in our thinking, we tend to take them for granted. Whether or not we choose to become aware of them, type categories seem to form and reform in our minds unconsciously as patterns of thinking, and then to structure our subsequent thought. An example of the power of type to influence the perception of buildings within an interpretive community is demonstrated by the work of Danford and Willems (1975). Four groups of people were asked to evaluate the character of a particular place based on one of four different kinds of cues: a guided walk, a slide presentation with knowledge of the building type, a slide presentation a slide presentation without knowledge of the building type, or the name of the building type as the only cue. Although the article on the study makes a different case, the reported data make it clear that regardless of the form of the informational cues given on the building, a law school, the cues generated a consistent response. In this particular instance, when the building must have been a clear example of its type, the name alone generated the same response as the representational cues. This suggests that in many situations a type is so powerful that it may dictate how we interpret what we see. It is easy, by extension, to see that types contribute to the structure of expectations for places, cueing normative patterns.

Types seem to emerge in one of two ways: relatively unconsciously, as a human response to the need to order objects for functioning in daily life, and more or less consciously, in response to the need to describe and analyze an object for a specific reason. In architecture, the basic type, what people ordinarily use, represents a way of understanding architecture as sets of generalized, identifiable objects. What I term classificatory type (Robinson 1994) represents the professional endeavor to make distinctions and clarify relationships. In the first approach, basic type represents a point of convergence of objects (house, apartment); in the second, clasificatory type is used to differentiate between objects (single versus multiple dwelling or masonry versus steel construction). In the terms used by Amos Rapoport (1990:70-72), basic types would be polythetic because they have many

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¹⁴ The rest of this chapter of the dissertation is adapted from three texts published previously, Robinson, 1994, 1991 and 1989.

¹⁵ The nineteenth century architectural theoretician Quatremere de Quincy distinguishes between the type and the model as used in architecture ([1825] 1977). As pointed out by Francescato (1994:257), this view characterizes the type as vaguely defined, which if followed in design does not lead to replication. In contrast, the precisely defined model is intended to be copied accurately.

¹⁶ The studies that we have done indicate that in the architectural context the reciprocity between object generating name and name generating object may not be equal. Objects seem to be more ambiguous than names, so that a person may recognize an object but not be able to name it, whereas the opposite is less true.

¹⁷ There is a long and fascinating history of the study of type in architecture, beginning with the 19th century work of such writers as Durand and Quatremere de Quincy, and re-engaged in architecture in the 1960’s in Europe and in the 1970’s and 80’s in the U.S. For brief summaries see Moudon, 1994 and Francescato, 1994.
defining characteristics, while what we are calling classificatory types would tend toward being monothetic. The polythetic basic categories or schemata are defined by their central conditions, and therefore have ambiguous boundaries, thereby remaining relatively open to change and redefinition. In contrast, the classificatory type or schemata tends to be monothetic and defined by strong boundaries, thus relatively clear and fixed. Due to this difference the more fixed classificatory types enable analysis of the more flexible, variable, loosely defined and polythetic, basic types.

The words used to represent building schemata vary depending on the context and the purpose of the discussion. We can identify various levels of spatial schemata: place types (cities, streets, valleys), building types, and room types (living room, entry). But categorizing places by building type is one widely accepted practice within our culture, and these types have certain agreed upon names, church, synagogue, mosque, office building, store, school, warehouse, hospital, house, apartment building, factory, etc. Each name evokes an image, and implies activities and behaviors. Building types, like other basic types (see discussion later in this chapter) are associational schemata, and therefore rich with content. The name of the type is linked in the mind to many other attributes.

The cultural schemata or stereotyped conceptions we have about places allow us to identify not only the kinds of people probably be found there (factory workers, nurses, priests), but also the probable arrangement of the rooms, the furniture, and the kinds of construction materials, etc. Such conceptions are both reinforced by daily experience (whether actual or vicarious through media), and are negated by it (when we find that the factory building has been converted to housing). Furthermore, certain innovations originally found in one setting are often discovered to be useful in others as well (such as the modern movements’ application of industrial windows to residential environments), so that the tendency to make distinctly different environments is counterbalanced by a tendency toward uniformity of environments.

The making of architectural artifacts is by its nature extraordinarily complex. As will be developed more fully later, the sheer number of elements that go into a built structure make conscious control of every detail impossible. In our society’s complex tradition of building, the design process is managed by developed, consistent methods of design and construction. As a first step, the kind of building to be constructed is identified by type. The set of types from which any culture may select will vary, but the notion of type is a common way of managing information.

Type in this way controls the construction process. The hierarchies of choices represented in the notion of type allow conscious manipulation of a great many factors at once. In industrialized societies, this is evident from the way that building professionals, utilize basic types to collect unite different specialized classificatory conceptualizations that represent a variety of ways of seeing the same object (e.g. “hospital” frames structural type, mechanical type, stylistic type, functional type, etc.), and in the way that the classificatory types direct decision-making. The selection of a building type structures subsequent decisions. Thus there is a difference between those choices which are consciously made (e.g. the decision use a steel structure rather than a concrete one), and the unconscious outcomes embedded in the system (the code requirements for a building types imply particular organizations of space, choices of systems and materials, etc.).

The polythetic categories developed by Rapoport to describe ideal types are neither basic nor classificatory in the sense developed here, but rather seem to combine the two in a new analytic form. This suggests that in addition to the two type categories discussed here, others not presently found in architectural thinking may be useful to develop. Rapoport (1990) rejects monothetic categories as not being useful, but as we have pointed out, monothetic categories seem to play a useful role as boundary creating categories that permit comparison with the complex polythetic basic types.
Unlike traditional societies, in which the lay person's view of type coincides with that of the builder/designer, in Westernized society, the industrialized way of thinking has led to the design professional seeing the building differently from the lay person. For the professional, the building is understood as segmented into different professional classificatory schemata (relating to areas of knowledge, or sub-disciplines such as history, materials, building systems, human behavior). For the lay person, however, building type is understood associationally, that is, it still primarily represents the notion of purpose linked to personal and cultural experience, and is only secondarily associated with other ideas. Designers are thus confronted with the challenge of addressing both their own and lay people’s understanding of the building.

In the application of type to a given circumstance, a dissonance with the type icon may be set up by the inability to apply the type directly (putting a house type designed for a flat site on a hill), or by the desire to express uniqueness. These dissonances call into question the generally accepted characteristics of the type, enabling innovation and change. In the case of an ongoing situation of innovation and modification, the type loses its power to focus the conscious decision-making process and the power of the original type to communicate a widely understood meaning can disappear, (design of banks in the U.S. today is more driven by an office prototype than by its 19th century prototype –stone with classical columns- so that the modern bank is hardly recognizable as a particular type).

Classification and Categorization of Environments

As discussed earlier, schemata link experiences of forms, spaces and places to other aspects of experience. Although architecture is only a small part of the cultural schema in which it participates, we focus here on those processes of schemata that reveal how architecture affects culture and the reverse.

The process of classification and categorization is basic to the creation of schemata. In categorization of places, it is a combination of the context and the character of the place that determines the basic category. For instance, when Tversky and Hemenway (1983) showed images of building exteriors to subjects, the subjects tended to assign to them words representing the building type category (basic type): store, restaurant, etc., rather than superordinate categories of: inside/outside, or subordinate categories of: grocery store, drug store. In our work when people were asked to sort into groups images of interiors and exteriors of housing types mixed together, exteriors tended to be grouped by building type, whereas interiors tended to be grouped by room type (Robinson 1986c).

The process of classifying the world about us is not a simple thing, for we are usually placed in a situation where there are not simply different kinds of apples, but a variety of other fruit as well. If we consider the case of housing as a building type, its boundaries are not as clear as one might initially think. While in many people’s minds the center of the category seems to lie at the single-family house, the category can also include hospitals, summer camps and rooming houses. Furthermore, we can classify housing by attributes such as its material (brick, wood) by its residents (elderly, sick people, students), or by its style (modern, Georgian).

The complexity of architectural form has resulted in a myriad of classifications. This is but one indication of how many different variables must be taken into account. There seem to be four ways to classify environments19 the first three derive from a generative mode (how

19We have expanded upon Morris's list of three divisions of architectural type: (1.) functional or programmatic taxonomy; (2.) formal or configural taxonomy; and (3.) imagerial or iconic taxonomy (Morris, E.K. 1980), by referring to Wallace (as interpreted by Rapoport) who identifies 3 scales used for classification: epistemic (concerned with the properties of phenomena), genetic (concerned with presumed causes of phenomena) and functional (referring to presumed effects of phenomena) Wallace 1983).
architecture is made), and the last comes from a responsive mode (how architecture is received by the audience). The first way represents what normally comes to mind when typology is discussed in architecture, the classification of environments by their physical properties; the second way deals with how environments are made; the third way deals with how environments are used; and the fourth way responds to how environments are understood. The professional categories that have been developed use these approaches both individually and also combining them in ambiguous, overlapping ways. These four ways are not pure groupings, but raise interesting contrasting purposes, and reveal something about the nature of architectural categories.

Basic Types, Etic and Emic Perspectives

When people are asked to name objects, within a given culture or interpretive community there seems to be a certain agreement about what the objects are called. Eleanor Rosch and colleagues call this level of categorization basic (Rosch 1978; also Rosch et al. 1976). Following Rosch, we find that there are architectural places within our culture that have the character of a basic category. When images of these places are shown to people, there is one name commonly associated with each of them, as well as particular behaviors, and also particular environmental characteristics, all understandable within the given cultural context. As mentioned earlier, we call architectural categories at this level basic types.

Categories need to be specific in order to contain useful information, but too much specificity creates unmanageable numbers of categories. Roger Brown points out that the most common name of something is at "the usual level of utility" (1958:16) and is concrete, as opposed to an abstract, name (1958: 17-19). He postulates that cognition "does not develop from the most abstract ideas to the most discrete, nor in the reverse fashion, but that "a hierarchy develops in both directions from a middle level of abstraction" (1958:19).

The basic level category balances the need for informative categories with the need for small numbers of categories. What is basic, of course depends on context, so that the framing of a question may generate a different set of "basic" categories. For the sake of this discussion, basic architectural types will be assumed to be the generally used names for architectural forms, and to be articulated by superordinate and subordinate categories (in the case of building exteriors for instance, apartment is basic, housing is superordinate, walk-up, midrise, or highrise are subordinate).

The power of a basic architectural type derives from two sources: it is shared within a given cultural context, and it encompasses multiple modes of categorization. Schön, apparently referring to basic types, argues that type is a powerful design tool precisely because it packs so much information into one icon (1988). Parallel to the ways of classifying environments, basic type simultaneously represents:

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20Wallace's epistemic mode, Morris's formal or configural type.
21Analogically related to Wallace's genetic mode, a category not proposed by Morris, but warranted by common use of construction and other techniques as a way of categorizing buildings.
22Wallace's and Morris's functional mode.
23A symbolic or associational mode, similar to Morris's imagerial or iconic mode, perhaps a subcategory of Wallace's functional mode.
24Rosch's work on categorization (e.g. Rosch, E. (1978)). indicates that people tend to call things predominantly by one name, which is the basic category, although these same things may be categorized in other ways as well. Therefore an eating utensil with tines is usually called a fork, although it may be also classified as silverware (superordinate category) or salad fork (subordinate category). This work has been followed up by at least two of environmental categories that I am aware of which provided similar, but not identical findings (Tversky and Hemenway 1983) (Price. & Blashfield 1975).
1. a set of architectural elements which can be described,
2. a set of rules for design (for construction and for organization of space),
3. a set of functional activities, behaviors and defined roles which take place within it, and
4. a set of qualities it should exhibit that support the activities, behavior and roles.

It should be noted that while the basic architectural type normally carries the functional name of the building or space, it does not solely engage the functional characteristics (criterion #3). The functional term, when linked to the basic type, becomes the token, which then refers to the complete set of characteristics.

In architectural design, basic type is commonly used to denote the normative physical form of built environments. In delimiting the design context, architects use basic categories such as factories, schools, stores, churches, nursing homes, hospitals, hotels; superordinate categories like educational, recreational and commercial, institutional, industrial and housing; and at the subordinate level, categories like highrise, lowrise and midrise, or cancer, heart and children’s. Categories such as these are not clearly defined or overlapping, but seem instead to follow normal cultural usage.

Anthropologists differentiate between the native perspective, called emic (after the linguistic term phonemic, language as spoken by a native speaker), and etic, the professional perspective (after phonetics, the abstract description of a language) (Pike 1967; Goodenough 1970). We follow that usage here to distinguish between the architect's professional view, the etic, which and the emic general cultural perspective (Moudon 1988; Robinson 1986a &1991)two distinctly different perceptions of architecture. But, unlike the situation of the anthropologist studying a Nonwestern native, in the case of the architect and the lay person, the two different perspectives exist within the same culture. For the basic types used in architecture while there is apparent convergence between the approach of designers and lay people since these terms are culturally shared, what is meant to each group is not identical. While the difference is not enormous, it is important to be explicit about what the difference is. When lay people think about a basic type, such as a dormitory, their emic view may be cued by a formal icon, but the icon generally represents a set of human issues first, and a set of physical forms second. To the designer, however, the type is first a set of physical building forms, and a set of human issues, second. This impairs communication between the two groups. These differences need to be examined and understood so that designers can better respond to the emic view. For example, a common reason lay people do not readily accept innovative design is that the buildings look unfamiliar. A sensitive designer discovers innovative forms that retain enough familiar features that people will find them interesting rather than alienating.

The basic category also demarcates the place where professionals and users who share a culture can agree upon what is normally done. An American house, for example, has certain necessary ingredients such as: being freestanding and containing at least a living room, kitchen, bedroom and bathroom. While architectural styles have changed radically, basic building types have remained far more stable. Since basic categories require informal consensus they usually change slowly. Even when interests like that of the modernism focused on substantial reconfiguration of building forms, the basic category remained a force for cultural continuity. Le Corbusier's houses, for example, retain the same basic public-private organization of spaces as traditional houses, and even have most of the same kinds of

25This third criterion, activities, behaviors and roles, is the primary one used by Barker and others who use the concept behavior setting. Price and Blashfield find taxonomies of settings which are both clearly related to place types (such as local business settings, religious settings, government settings, elementary school settings, high school settings), and not directly related to place types (women's organizational settings, adult settings, etc)(1975:345).
room divisions. As such, however, the basic type provides a locus for critique and improvement of the fit between cultural ideals and the design of architecture.

A basic type is at the same time a rich classification and an ambiguous one. Building type is at least a word, an image, a building purpose, a set of construction norms, and a set of behavioral expectations. But the name or the image will not consistently evoke a particular context, because the potential contexts or meanings are so diverse. It is the subordinate categories that allow us to focus on a particular issue relevant to a basic category, and the superordinate categories that define the context within which types are to be considered. The identity of an exemplar at the category level of basic, superordinate or subordinate depends upon its context at the moment of perception, both the external context of place, time, etc. and the internal context of the perceiver, that is the location of this perception in the sequence of thought.

As we examine the superordinate categories institution and home, we find that they tend to determine the subordinate categories that will be looked at. Since we are investigating two qualities, we tend to discover subordinate categories that relate to qualities. When we try to link building materials, for example, to the two categories, we find that they present a competitive, nonparallel structure. While materials could be seen as subordinate categories of any given building type e.g. brick hospital versus stone hospital, materials can also be seen as a superordinate category (brick hospital, brick dormitory). In other words non-basic structures of type exist alongside basic types in contrasting relationships. It is precisely their nonparallel structure that makes them valuable, for if they were parallel they would be redundant. The nonparallel structure allows a greater diversity in thinking at the same time that it tends to make conscious control of ideas more difficult.

It is useful to link the lay person's understanding of buildings to the professional's so that communication is improved. Basic types that are culturally understood provide the point of common understanding, but are not sufficient to describe the nature of buildings. While the etic categories are not directly parallel to the emic categories, since they were developed for design of environments rather than for ordinary daily use, the professional categories offer a way to gain perspective on the lay categories and to provide options to the normal ways of doing things. Thus the modern movement architects' investigations of new materials led to the application of new choices of materials such as the metal windows mentioned earlier. This nonparallel relation of material with basic type enables the "seeing" of basic types as susceptible to change. Categories other than basic types, then, are sources of innovation and criticisms.
Chapter 2

Conscious Cultural Change & Architectural Reception Theory

A society is responsible for its culture and also for the buildings that express and reproduce it. Examination of the messages communicated through its buildings can provide critical insight into cultural content. Furthermore, the design of buildings can support positive cultural change, negative change or cultural stasis. In this investigation, the comparison of two kinds of building---institution and home---exposes the deeply embedded character of these two ideas in our culture and raises important questions about the way we build and the ways we might build.

The cultural patterns inherent in the concepts institution and home frame conceptualizations of the world that are expressed predominantly in the ordinary architecture that is the background of everyday life. While architects conventionally have looked at "great" architecture, the examination of ordinary architecture demonstrates that it embodies subtle and powerful ideas that affect actions of everyday reality.

The power of ordinary architecture reveals how cultural construction and the support of cultural attitudes and patterns are primary purposes of architecture. The influence of ordinary architecture also raises fundamental questions about the processes by which architects traditionally conceive of and construct buildings. These two issues form the basis for the development of an architectural reception theory that argues the necessity of involving both professional and lay people in the design of environments.

The previous chapter described how culture is a mental construct that is shared by a group of people and is reproduced and manifested directly in behavior, and indirectly in artifacts. It explains how environments can perpetuate or negate cultural ideas. In this chapter we present the way that architecture can support conscious cultural change, and the role that architects can and should play in that process.

Culture is not uniform. Certain contradictions inherent in cultural ideas are emphasized more or less by different individuals and sub-cultural groups. Culture is an evolving construction because people's ideas change in response to given circumstances. Since cultural ideas are conveyed diffusely, through social relationships and different media, they are not easily or ever fully controlled by a person or group. Moreover, as they are largely held in the unconscious mind, they are not easily understood or controlled (The physical environment is an important means for understanding and controlling cultural ideas.). Cultural ideas and patterns are pervasive: they persist over long periods of time, and supported by environments and other means. Yet their future continuity must be seen as contingent, and their potency across subcultural groups is open to question. In creating physical environments, designers are responsible for cultural replication or change. Therefore, it is incumbent upon designers of environments to identify the cultural ideas to be expressed in and constructed through each, particular design. The applicability of this, or any, research to a given context should be rigorously questioned and understood.

While in the past, architects may have assumed that their clients correctly represent the cultural ideas that a building should express, today we know that clients may not be aware of alternative views, or of the attitudes of the people who will actually use the building. Additionally, many clients may be interested in challenging and expanding their own perspectives. This obliges the architect to be informed about the range of cultural perspectives that exist beyond his or her own perspective and beyond the perspective of the client. Architects are not simply responsible to their
client, but to society at large, and they have the responsibility to critically respond to cultural ideas and patterns.

Design of environments plays an important role in constructing, communicating, perpetuating and transforming cultural ideas. And, because architects and other designers of environments play a central societal role in constructing environments, they must understand the cultural messages these environments convey. The last chapter showed how architecture is a vehicle for the communication of cultural ideas. This chapter discusses architecture’s role in cultural change. How can people create environments that haven’t existed before? What psychological and cultural structures enable people to understand their world in new ways? What do such possibilities imply for architectural practice?

Spatial Perception and Transformation

The creation of spatial schemata is fundamentally tied to action. As described by Piaget and Inhelder, "spatial concepts are internalized actions and not merely mental images of external things or events—or even images of the results of actions" ([1948] 1967: 454). The young child forms memory images in a process Piaget and Inhelder call assimilation, and then, in a phase they call accommodation, the child tests them out in action and alters them. The schemata are constructions that are accommodated and they assimilate the image and action into one unit, or “organized mass” (Neisser 1968: 357). From the beginning of each person’s development, schemata are formed in a process of assimilation, a process of testing and altering.

Piaget and Inhelder describe the gradual transformation of our perceptual understanding as taking place in developmental phases represented by four types of spatial thinking: sensorimotor, preoperational, concrete operational, and formal operational. Hart and Moore (1973) loosely assign each developmental phase to a different type of mental representation: prepresentational, representational, fixed systems of reference, and coordinated systems of reference that are related to kinds of mental reference systems and topographical representations. Muntañola (1974) relates the type of mental construction to the experience of space that occurs at these different phases. The construction and synthesis of perception alternate in itinerant and radial phases. During the first 2 phases, perceptions and conceptions are constructed with the self as the central point of reference, and in the third and fourth phases they are constructed relative to systems outside the self. The itinerant mode relates to associational thought which Muntañola sees as more linear and sequential. By comparison, radial understanding relates smaller structures to larger ones, and depends on logical systems of thought.

These theories effectively explain how perceptual schemata are constructed: they explain what Vygotsky might call conscious awareness of physical reality. They neither rule out, nor explain, to quote Vygotsky, “…the production of new images, images that have never existed in consciousness or in past experience.” (1987[c.1934]: 342), or

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1I am grateful to Julio Bermudez for bringing Muntañola's Spanish work to my attention. To a great extent, I have relied on his interpretation of Muntañola's work, as my reading of Spanish text is rudimentary at best.

2Using the semiotic distinction between “langue” or language and “parole” or speech, Stephen Read points out that new conceptions do not necessarily require a change in the rules, or grammatical structure. He uses the example of radical changes in the city that can happen within the existing structure to demonstrate the possibilities of new patterns within a given structure. But in analyzing institutional buildings, Stephen Weeks and I agreed that there is a fundamentally different type of structure than the urban structure. Here, new conceptions seem to require new rules, so that for certain types of environments, the rules and their structure are a critical issue.
“consciousness of consciousness (Zinchenko, 1985:114). The ability to consciously produce radically new conceptions— as distinct from the creation of new conceptions that operate within the existing frame of reference, or the employment of new, unidentifiable rules to create a new conception— seems to require two additional developmental phases, or phases of perceptual understanding. One phase identifies the possibility of making new rules, and the other conceives how to make them. One could call the first phase relativism, and the second transformation. These are requisite for those examples of Norberg-Schulz’s expressive space (1971:10) wherein the self-conscious manipulation of space and of spatial representations permits spatial transformations of existing space and mental transformations of the schemata themselves. In the transformational phase, what presently exists is not taken for granted, but remains open to critical examination and change.

Alterations in perceptual schemata affect the understanding of cultural schemata. Culture is continuously produced or remade each day by the people who enact it. Simultaneously, it is also being re-formed by those who ignore it, who break its rules and who create new rules, either consciously or unconsciously. If breaking the rules, or being aware of such a possibility, is essential to cultural reinterpretation, the ability to make new cultural rules may be essential to conscious cultural change. To the extent that cultural schemata are shared, we can justifiably assume communication is possible. When the context is jointly understood, the communicated idea becomes the pertinent information. When the interpretive context is altered, ambiguities or miscommunications of various proportions distort or confuse the communication. Transformations in cultural schemata are often very disruptive because they create distortions, gaps and inefficiencies in communication. When the shared background to the discussion can no longer be assumed, the daily items in the foreground become open to question as well, because they now exist in a new context. This explains why large cultural transformations, or shifts in paradigm, are resisted. Cultural changes, changes to the cultural schemata, offer risks as well as opportunities.

**Transformation of Cultural Schemata**

Within a particular cultural context, shared schemata develop and reflect the values of the cultural group. They provide a context within which members of a cultural group can interact. Since buildings are actualizations of what is considered appropriate in our culture, buildings can be considered manifest cultural schemata.

Schemata of learned information form domains, or groupings, of knowledge. We learn things in a particular context, and tend to develop our schemata based on experiences in contexts. These contexts form domains, in which small aspects of knowledge that are consistent with each other form into larger schemata. Schemata develop as we learn new things, but usually remain within the established structure of the contextual domain. These domains tend to each have their own rules and often exist side by side without interrelating. Thus we build up knowledge in mathematics or art while developing independent knowledge about shopping and religion. The coexistence of multiple domains in a culture is a locus of cultural contradictions. Because circumstances usually go unquestioned, these inconsistencies remain invisible and accepted parts of one’s cultural condition. For example, many people apply social rules according to a particular context. What might be acceptable behavior at work may be unacceptable in a recreational situation:

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3 Vygotsky, so far as I can discover, does not directly addresses conception of the built environment, but his action-based ideas are directly relevant to it.

4Norberg-Schulz, however sees the manipulation of expressive space as “the task of specialized persons, that is, builders, architects and planners” (1971,pg. 10). By contrast, the transformational mode of creative manipulation of space is understood as a way that anyone can potentially operate vis a vis the environment.
at a bar, for example. Because these associations take place in different contexts, unless for some reason we see them juxtaposed, the differences and contradictions may not be evident to our conscious attention. And even if they are, their contradictory nature may be seen as normal and desirable. Architecture supports such contradictions by its ability to define and distinguish places. Spatial encapsulation can keep contradictions hidden.

But not all of our schemata are distinct or fully formed. The various aspects of any experience may be embedded in myriad overlapping schemata that allow us to associate experience both as discrete segments and as whole experiences. Ability to consciously access schemata varies as well. Partially formed schemata are less easily accessible, in a way analogous to the earlier description of physiological perception (the vast amounts of our memory apparently linked in sequential schemata, but otherwise without form). When we visit an unfamiliar environment, such as a friend’s new apartment complex, we may draw upon other similar buildings to orient ourselves. We are likely to have fully formed or partially generalized schemata of other apartment buildings that allow us to make predictions on how we should proceed in the new place. If we discover our predictions are incorrect, we may refer to broader, culturally agreed-upon schemata, such as apartment numbering or typical parking lot configuration to allow us to find our destination. The tension between the normal expectation and the actuality may open our consciousness to some aspects of our schemata and the building referents that form them. These processes may take place without any awareness that we are referring to particular buildings.

The conscious and unconscious minds interact to create knowledge. As we have discussed, a particular place may be not only associated with actions that one knows have occurred there, but also with emotions that were felt there, with the people known to be located there, and with numerous other things associated with a place. Furthermore, we may actively attempt to call into consciousness schemata we know we have---remembered experiences that have been schematized---such as deliberate recall of our childhood locales. If these are associated with an emotion or memory that is not amenable to conscious manipulation, it may open up an avenue to the unconscious memory. Comparing the same place or event as remembered in two different schemata, especially when schemata contradict each other, can trigger the unconscious physical memory or unconscious schema. A room that seemed scary in childhood and is experienced as friendly in adulthood can make one conscious of the long-buried physical memory or schema. Occasionally, a particularly powerful experience triggers this unconscious memory, as happens when we unexpectedly smell odors that we remember from childhood. These may permit us to recall a long-forgotten person, place or event. The apparent associations between remembered things and things we know unconsciously make the mind a powerful storehouse that is, to a great extent, in the hands of the unconscious. The memory has apparently stored schemata we are aware of, fully formed schemata we are not aware of, and whole experiences (physiological perceptions) stored in a kind of sequenced sensory record. Places can then serve as external, indirect storehouses for experiences, since they can be used to cue the memories associated with them.

Language and image structures seem to play a key role in mediating between the conscious and the unconscious by means of schemata. We know that when we are given a new idea and a name for it, we often envision past experiences in new light and form new structures with them. Additionally we use language and images to tap into our schematic memories and perhaps indirectly through our schematic memories we reach into our physiological memories. Even though we can access our schemata given the right circumstances, most of these schemata do not operate at a conscious level. As we have described earlier, culture’s power arises from its unconscious operation. However, in opposition Foucault’s assertion, I contend that we are not completely subject to cultural
influence; we have the ability to become aware of and to restructure our unconscious mind to make use of new ideas.

By comparing different remembered experiences we become capable of critiquing our previous understandings. We can challenge the structure of our schemata when we perceive a particular experience from different cultural schemata, or from both personal and cultural schemata, and we register the dissonance between our various schemata. For instance, if I walk into a building of my own family’s religion, but at the same time I look as an architect, the physical features that have engendered religious attitudes and behaviors, reveal how they operate and invite speculation about how they might operate differently. Upon looking at parallel pews all facing in the same direction, I may ask: Why pews? Why parallel? Why facing that direction? When norms are not just unconsciously accepted, but are seen outcomes of decisions, they become less coercive. Even when no viable alternative is immediately seen, the coercive power of the cultural and personal schema is reduced when schema are known to be subject to questioning and critique.5, 6, 7

Neisser describes the process of accommodation that modifies the coercive power of the cultural and other schemata as having three modes: absorption, displacement, and integration (1968: 359-360). Absorption is the process by which a schema is formed. We construct reality and form links between experiences. Displacement occurs when we unconsciously develop a second schema for a situation alongside an existing schema for that situation which does not fit, and then realize that the second one explains the situation in new way. In many instances, the second explanation replaces the first, and the first disappears in what Neisser calls "displacement amnesia." In the integration mode, the two schemata are both held as alternative explanations. As he describes, "...sustained instances of displacement are common among social scientists, who are able to react to a social situation either "personally" or "professionally"..

By and large, however, cultural contradictions are not consciously perceived, especially when they don’t appear to be related. For example, we can hold ideas about equality in the political realm that we fail to carry through to the way we house people. But when these contradictions become apparent we can, through accommodation, restructure the way we think. Design professionals, through their familiarity with environmental issues, have the opportunity and ability to perceive such contradictions, and have a responsibility to expose them and address them in the designed environments.

**Associative and Structural Thinking**

It is useful to imagine schemata along a continuum where associative schemata and structural schemata occupy the points at each end of the continuum. Associative schema come out of experience where memories are linked to each other to form cultural or personal thinking patterns. The unconscious mind structures associative schema. Structural schema

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5Halowell (ibid.) cites Gibson to make a similar point "What Gibson argues against is an extreme form of perceptual relativism: 'that perception is inevitably a constructive process which creates the world to suit the perceiver; that we see things not as they are but as we are' While 'it is perfectly true,' he says, 'that perception can be fluid, subjective, creative, and inexact ... it can also be literal ... the student of human nature and society needs to remember this when he is in danger of assuming that men are the passive victims of their stereotypes and perceptual customs.'" (Halowell 1955:210-211).

6 Oliver Sacks notes that memories can be very unreliable (1996:175). We argue that the unreliability comes not from lack of a physiological memory, but from the difficulties the conscious mind gaining access to it.

7 This may also explain why cultural self-consciousness is such an important part of Western culture. Western culture has developed so many different types of places and segments of society, and has thereby created the possibility of more cultural dissonance.
develop from thought ordered by a culture or subculture, or, less frequently, by the individual. In structural schema, the rules of thought and hierarchies of ideas are frames within which experiences are placed by formal or informal education. In general, I contend that the lay, or emic, view of the world is primarily associative, and the abstract, professional or etic perspective (that held by the professional), is predominantly structural. The categories of knowledge that comprise structural thinking are typically accessible to conscious thought.8

The associative way of thinking is embedded in experience, and is often linked to particular places or activities. It is rich with emotional content. This has been the quality of experience typically expressed in the arts. It has the power to move us to action. In associative thinking, information linked with a schema is stored in the unconscious, and brought to mind in ways that evade conscious control. Structural thinking, on the other hand, tends to be descriptive and to focus on relationships between parts. Its power is subject to conscious manipulation. Structural thinking, which is based on rules, organizes ideas by making rules that define relationships. In structural thinking, experience is abstracted and associations are marginalized as they are based on memories and not on rules. The power of structural thinking lies in its abstraction and removal from experience. Structural thinking may indicate a plan, but, once action is taking place, associative thinking comes into play.

Arguably, these two ways of thinking are never found in their pure forms, for it is likely impossible for the human mind to think completely freely of associations. However, it does seem that in American culture, our thinking process tends to privilege either of these two ways.

Culture as Mediator between the Conscious and the Unconscious

The human mind can consciously manipulate only a very few ideas at a time; some research suggests we have an upper limit of about seven ideas (Miller 1956). This implies several things: (1) When manipulating large numbers of variables, the role played by the unconscious mind is significant, since it is the unconscious mind that structures memory. (2) There is constant interaction between the conscious and the unconscious. (3) People consciously deal with large quantities of information by creating associative schemata to reduce them to manageable wholes, or by creating rule-based structural schemata which allow retrieval of information by logical thinking. And therefore (4), there is an interaction between individual memory and culturally held memory in the form of cultural patterns that serve as schemata that manage large quantities of information. In architecture an important associative schema is building type, by which one name serves to organize many diverse ideas into one set. A specific example of a logical structure is that of structural type in which the methods of construction are organized by rules relating to materials and construction techniques.

These two types of schema can be illustrated and understood best in relation to specific architectural processes. For instance traditional societies have a long heritage of building in a limited geographical area, with techniques transmitted either orally, or by example (by Alexander’s “unselfconscious process” 1964:46-54). In such societies, builders might “know” that the front door should face south, but they may not be able to explain why this is so. Similarly, they might know and be able to describe a distinction between the decorative elements on a community building and the decoration on a house without knowing

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8 Implicit or tacit knowing (Polanyi, 1967) and explicit knowing are differentiated by their accessibility to conscious thought. Associative knowledge tends to be implicit, whereas structural knowledge may be either implicit or explicit. That professional knowledge that can be formally taught, is therefore accessible to conscious learning and is generally explicit. That professional knowledge learned by doing, as in a design studio or apprentice situation, it is largely tacit or implicit and is harder and sometimes even impossible to access or generate through conscious thought.
how the difference originated, or what the symbols mean. Although the historical sources and/or symbolic referents may be remembered by a few or may be rediscovered by some, if the choices are simply made as a matter of custom or habit, then these schemata can be considered to be associative, and to rest predominantly in the unconscious mind. In fact books which recount the reasons, and books in general, serve as a storehouse for the cultural unconscious.

In a complex society such as ours, where the sources of the building tradition are myriad, the persistent selection of a given proven schema--- such as hospital, as discussed in Chapter 1---demonstrates the continued role of associative thinking and the unconscious. At one point, each of the separate decisions about materials, room organization, and the like were consciously made. Eventually, patterns of successful choices accrued to become a set of normal hospital characteristics that cease to be used from the basis of logical response to human need, but are employed from because they satisfy expectations based on association. Because the modern design process permits conscious decision-making (Alexander, 1964:, pp. 55-70) , it has the potential to attend to and address normative decisions. But such critical review is very time-consuming . Unless there is a radical change in the way to do things, or a significant failure of the normal choices, we do not typically indulge in review, We will continue to build the hospital that we know will function acceptably by following the stereotyped idea of hospital and making the choices within its prescribed limits.

Sometimes in the past we have envisioned culture as a pre-existing entity that shapes our life. As envisioned in this work, culture itself can be hypothesized as an overarching schema; we have created it and we can change it (Wallace 1961, Douglas and Wildavsky, 1982). Theoretically, through analysis--- and the design process involves analysis--- we can identify the structure of those things we seek to change, bringing them to consciousness. Simultaneously, we can continue to deal unconsciously with those things which we believe should remain the same. The danger exists in architecture, as in advertising, that people manipulate cultural forms without the taking on the attendant responsibility for the positive contribution to culture of such changes.

We are thus brought to what has been called "the postmodern condition," prefigured by Vygotsky as consciousness of consciousness (Zinchenko, 1985, pg. 114). We may now be aware of some of the schemata we hold and that we are capable consciously of holding multiple, apparently mutually exclusive schemata, as in Neisser's integrative mode. At this moment we must ask under what circumstances we should use each or any of the schemata we hold. We also must ask when we should be self-conscious.9

Architecture is one roadway into the realm of our unconscious structures. Examination of the architecture surrounding us can lead to awareness of some of our not fully conscious ideas. Unconscious knowing does not seem to hinder the application of the unconscious ideas, so that when they are made conscious, because of their familiarity they may seem, in one sense, obvious. Nonetheless, making tacit knowledge explicit changes our relationship to the ideas in a fundamental way, allowing us to question them and to find new relationships between them. It also has the dangerous potential of making them available to a knowledgeable few for manipulation of others who are ignorant. This is often why those in power do not want an open discussion of ideas. This risk is significantly reduced when the ideas are disseminated widely, so that the knowledge becomes culturally shared.

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9This may be the underlying purpose of Donald Schön's concern to educate reflective architectural practitioners who are not only aware of what they are doing, but are also conscious of how they are doing it and how else they might do it (1984; 1987).
Looking on culture as a process of decision-making, we have seen how assigning large amounts of information to unconscious structures reduces our everyday choices from an infinite to a manageable number. Rather than having to belabor the details of daily life, we develop a routine or habitus, which defines appropriate patterns. The patterns may change in response to variations in circumstance, but having a pattern gives us stability.

We have seen how decisions about making buildings are also structured culturally. Cultural conventions, such as methods of construction, usually evolve slowly and are the result of a sequence of trial-and-error experiences, whereby the best solutions for the range of problems become absorbed into the "correct" pattern. But cultural schemata often contain things that are no longer directly germane, but have merely been associated over time with the pattern or with particular parts of it. Existing cultural categories derive from a combination of purpose-linked response to values and perceived needs and arbitrary selection and holdover of forms. While values and perceived needs change over time, architectural forms are rarely questioned, and often remain unchanged or are only partially altered. As a result, architectural form cannot be assumed to represent accurately current beliefs, ideals and needs. That said, insofar as a culture has not seen fit to change the forms in response to evolving beliefs, ideals and needs, it has, in fact, reinforced and perpetuated old and perhaps undesired ones.

The cultural setting is a temporal thing, but change to the environment is expensive and therefore slow. Thus there is a long-term consistency in built environments. For instance, a photograph or drawing of an American bathroom made within the last 100 years may be dated, but is still likely to be recognizable as a bathroom. Certain kinds of sinks and toilets are made during a limited time, and certain colors of porcelain are fashionable at a given era. These help us to identify the time of the making of the image. While the bathtub, which originally gave the room its name, may not be found in a present-day bathroom at all, the presence of a sink and toilet, towel bars, a medicine cabinet and a mirror in a bathroom have been relatively constant.

Popular resistance to new things contributes to slow change. Porcelain and steel became associated with bathtubs, so a fiberglass tub just doesn't quite feel like a real tub even though as a material, it may be better suited to its purpose in many ways. Therefore, as new materials, like fiberglass, are introduced, their shape, texture and color may be made to resemble materials used earlier. When changes are made incrementally, one at a time, in response to situations--- for example texturing and coloring of fiberglass to look like porcelain--- the original reason for a change is often lost, and it becomes arbitrarily associated with the original form, which represents what a thing is "supposed" to look like. Changes in design can also affect sets of culturally, economically or politically related things, such as the soap industry. Since scouring is not good for fiberglass, people who make old-fashioned cleanser may lose their jobs if fiberglass replaces porcelain. Change thus creates both potential loss and opportunity. We resist such changes because we unconsciously realize that they are socially disruptive and costly.

Although consistency between cultural patterns and built patterns powerfully reinforce one another, their interplay also may create various kinds of flux and ambiguity. Cultural ideas may change without requiring a change in the built form (such as when we eat dinner in the kitchen, where it is large enough, instead of the dining room). Or changes in

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10 Bathtub shape also responded to the way the tub was positioned within a tight space. Recently fiberglass tubs have taken a greater range of shapes, partly because people are willing to pay for luxurious bathrooms. It is also because bathroom size has increased and a tub is no longer limited to a tight position between two walls, but may be placed in a corner or even the center of a very large room.
built form may cause restructuring of cultural expectations (reduction of the size of the kitchen may cause us to abandon it for another place to eat). Changes in cultural attitudes may cause us to depart from structures that are no longer suitable (if formal eating becomes unfashionable, the dining room may be used for other purposes or eliminated in future buildings). And new cultural ideas may engender the creation of new forms that are responsive to altered values (building kitchen counters with high stools rather than an area for table with chairs). Designers are often called upon to imagine new possibilities, and designers have the potential to act as cultural critics and promoters of cultural change. But even when designers set out with a concern to consciously address the cultural outcomes, it is impossible to fully predict the result of the changes they initiate because of the complex relationship between built form and cultural patterns.

In most traditional cultures the unconscious or vernacular process of design is used, a process which has essentially stabilized the building form and construction technology, the relationship between building types and the activities, and the expectations for the activities that will occur there. The changes that occur in the vernacular process are generally incremental, and in response to particular problems (as in our earlier example of adapting a house to a hilly site).

The association between architectural forms and particular social expectations builds up over time: this causes difficulty when cultural ideas change. Formal attributes that originally directly related to a purpose (the church tower that held the bell to call parishioners to worship), are often retained in symbolic association long after the functional tie has vanished. Nevertheless, these associations often continue to be considered necessary parts of the formal structure of a schema as represented in an ideal type. For example, we may retain the tower but substitute an electronic chime for bell. This ideal type defines the cultural standards for an underlying set of values, even when the formal ideal is contradictory to other ideals. In a democracy the city hall type often expresses power more than accessibility for all citizens.

Eventually, the apparent inability of certain standards to reflect values leads to a perceived need for change. This results in a tension between the architectural form as symbol of values and set of standards and the altered values and standards. The architectural forms may cease to characterize the ideals of a society in flux, but the society’s investment economically and psychologically in the architecture may make alteration or elimination of the existing built structures difficult.

The discrepancy between new standards and old forms must be widely understood as negative before change is politically viable. Yet it may not be enough to recognize that an ideal type ought to be revised; its alteration or elimination may only occur with the development of an alternative type to replace it. Moreover, in designing a new type, the features of the existing one must be carefully understood, as past forms become the context against which new ones are read.

**Challenging Cultural Patterns**

The architectural forms within a given culture play a conservative role; they tend to reinforce past values and standards and support cultural continuity. Societies may react in a variety of ways when architectural forms represent old attitudes and ways of doing things that are antithetical to current ideas. Margaret Archer (1988) posits different kinds of response to contradiction. These include\(^\text{11}\): (1) *reformulation*, attempts to "correct" or reinterpret the ideas that contradict normative practice so that their contradictory nature is

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\(^{11}\) Archer’s typology of actions is far more complex than what I present here; I may apply her terminology differently than she intended it to be used.
obscured, (2) elimination, in which not only is a contradictory idea expunged, but the people that attempt to point out the contradiction are denied a voice or are eliminated from the discussion in some way (like having their reputation damaged), or (3) containment gives lip service to an idea but fails to implement it. Another possibility described by Archer is that the new ideas are seen as an opportunity and society engages in correction in response to them.

In a society of the size and ethnic diversity of the United States, cultural unity cannot be taken for granted. Cultural consistency only exists in those shared fundamental ideas that serve to bring the society into a cultural whole. Furthermore, because of their complexity and history, cultural practices often contradict the values that are supposedly shared. A society which professes to achieve its highest goals, as ours does, must be vigilant in challenging whether the architecture it maintains is appropriate to the ideals it holds. Where it does not, citizens and architects must engage in constructive change. At the same time, when contradictory ideas and practices have positive effects on citizens, it may be important that different perspectives co-exist.

Architecture speaks to us about our standards and values in living. What is architecture telling us about how we should live? Do we agree? If not, we need to change. This study shows how the architectural forms of institution and home perpetuate cultural ideas. The attitudes embedded in the architecture of culturally-designated building categories become explicit by comparing them to culturally professed ideals. If, as a society, we are not representing the ideals we hold, this process offers not only a method for cultural criticism but also simultaneous potential for making constructive change to our architectural forms so that we are able to better achieve our ideals.

Culture, Criticism & Politics

Architecture is a design discipline, and is therefore a discipline in which the future is projected in terms of both past and present. The purpose of the profession of architecture is to serve the society in which it operates, by envisioning and constructing environments. Architecture is then fundamentally a social endeavor, and architectural artifacts are social constructions. In this social role, these artifacts are both social products and social instruments (Guidoni 1975:11). Within a given culture, architecture can be seen as an expression and a vehicle for cultural ideas: it is thus a medium for cultural continuity and cultural change.

This view of architecture as essentially cultural with a little “c”, rather than architecture as an expression of High Culture (with a big “C”), contrasts to mainstream architectural theoretical views of architecture as either primarily an art form, (which is canonized based upon its aesthetic content), or as technological (and canonized based on artistic expression of technology). The aesthetic sensibility used in architectural criticism is not broadly held within the culture but is held by the intellectual and artistic elite. As presented in the introduction, the typical process of evaluating architecture reinforces the separation from broadly shared ideas. Typically, the lay person, as user or as general public, is not part of this process.

Architecture is "de-politicized" and commodified by the existing system of employing elite aesthetic criteria to evaluate and canonize architecture. If and when architecture is evaluated based on actual performance, its political content is explicit. On the other hand, the political factors the artifact responds to remain hidden. When architecture is evaluated as "art for art's sake," or for its iconographic value as a corporate sign, when it is evaluated

12 Neisser uses the term cultural amnesia in any case where one of the idea or set of ideas is repressed or replaced and forgotten.
independently of its impact on the human communities within which it exists, The "how" (materials, construction methods, etc.) is dealt with but the "what" (what should be done) and the "why" (why it is justified to do it) remain unaddressed. Avoiding discussion of the political content of architecture, maintains the status quo: the political character of the built artifact and the control it exerts on building users remain unchallenged. As Kim Dovey describes:

Free-floating signifiers which do not signify a lived future are thereby depoliticized and insulated from social critiques. Architects and students alike are inducted into a kind of commodity fetishism, a focus on formal imagery and away from the site, program and social context (Dovey 1999:35).

This may be why the cultural nature and effect on human behavior of Western architecture has not been explicitly dealt with in practice or in education, despite the extensive discussion of it in theory by such writers as Rapoport (e.g. 1969, 1982), Lang (e.g. 1987) and Broadbent (e.g. 1973, Broadbent et al., 1980; and by historians who are increasingly evaluating the cultural content of buildings such as Kostoff (e.g. 1985), King (e.g. 1980) or Markus (1993). Architecture supports the habitus by representing and producing cultural ideas and attitudes; it is inherently cultural. Yet the existing process of architectural criticism inhibits the critique of cultural patterns. Through reformulation, elimination and containment, current architectural criticism focuses attention away from the politically charged consideration of architecture as a cultural medium.

**Etic & Emic Perspectives in Architectural Practice**

The designer creates for and within a cultural framework; this is perhaps the most important implication for the conception of architecture as a discipline. Even though culture has always been an integral part of design, it has usually been dealt with unconsciously. However, as designers become aware of the cultural content of their designs, there is the potential for cultural introspection and constructive change.

In traditional architectural practice, the architect participates in a professional role that is distinct from that of the lay client. The architect attends to form-making questions, and presumes the client to be the representative of cultural content, fully capable defining intended purposes and attitudes and endorsing their manifestation in the final design. The clients, usually members of the financially powerful class, are thus in a position, indeed, are expected to, inscribe in architecture their attitudes and values. The norms reinforced in design tend to be those of the economic elite, not the norms of the building user.

Even though the importance of meeting the distinct needs of both the client as commissioner and the user has long been known, the design process, at least in the United States, still tends to perpetuate the client's role as sole cultural representative. Since the commissioner pays the bill, architects who seek to incorporate user ideas can encounter resistance since it entails extra time and may involve ideas contrary to client self-interest. The lack of standard design procedures that include reliable methods for integrating user ideas further marginalizes the architect who aspires to cultural competence. The existing

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13 This passage applies Rapoport’s critique of architectural instruction (1987) to architectural criticism.
14 Political critique has not been given the centrality it deserves in architectural theory. The work of theoreticians and critics like Kim Dovey, Tom Dutton, Diane Ghirardo, Ada Louise Huxtable, Spiro Kostoff, and Bruno Zevi remains marginalized.
15 These ideas have been developed in several articles (e.g. Robinson 1986a, Robinson 1989) in tandem with Anne Vernez Moudon (1986).
methods for creating a design are economically driven; it is more advantageous to uncritically perpetuate existing building types than to engage in a process of critique and constructive change.

Additionally, most clients do not see the value in engaging in a critical examination of design issues. As a long term investment, it is relatively inexpensive, but it seems costly at the time of the building design. Furthermore, most clients seek buildings that function predictably and are not expensive to design and construct. When clients want "innovative" buildings, they are generally not interested in exploring real social change, but desire a building that appears unique but makes only minimal adjustments to the normal pattern. Many of the most radical-appearing buildings, such as Frank Ghery's Art Museum in Bilbao, Spain, or Rem Koolhaas's Kunsthal, replicate common organizations of spaces and established building types, and perpetuate existing cultural modes of action. While the building may appear radically divergent, the perpetuated cultural patterns remain invisible, unchanged. Dovey, citing Bourdieu (1984: 469) notes that role of the avant-garde is to ‘enliven the field without disturbing the foundations” (1999, 37-8). McLeod points that many, if not most, leading designers’ work excludes consideration of people considered “other” (the old, the handicapped, the sick, minority populations, women, etc.) and fails to address the ordinary citizen by designing to support patterns of daily life (1996).

The architectural profession emerged as a social institution in the nineteenth century 16 from a long history of individual architects serving powerful political figures. The professional approach to design has developed from its historical foundations in the construction of "monuments -buildings of the grand design tradition- [which] are built to impress either the populace with the power of the patron, or the peer group of designers and cognoscenti with the cleverness of the designer and good taste of the patron" (Rapoport 1969: 2). This directly contrasts the process of constructing buildings that are not architect-designed. In Rapoport's words, the "folk tradition, on the other hand, is the direct and unself-conscious translation into physical form of a culture, its needs and values--- as well as the desires, dreams and passions of a people.... The folk tradition is much more closely related to the culture of the majority and life as it is really lived than is the grand design tradition, which represents the culture of the elite" (Rapoport 1969:2, see also Alexander 1964).

These two broad design traditions can be said to express the etic and emic perspectives that originate from different relations to design (Moudon 1986, Robinson 1989). The professional is concerned with making built form (design and construction), while the lay person is concerned with using built form. As we have discussed earlier, these two perspectives are distinct in another way as well: the professional or etic perspective, engages in conscious decision-making and justification and relies to a large degree on abstract criteria (structural schemata), while the etic perspective is largely unconscious and based on experience (associational schemata).

It is instructive to draw a parallel between these two perspectives and the institution-home conception that we have been describing in order to discuss issues of power and control. 17 The conception of home can be understood to spring from the emic view; it represents the collective aspirations of individual societal members. While it encompasses rules, conventions, and a defined order, these have evolved from daily practices. Despite the increasing control of house production by developers and others, the design criteria and

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16 Although the first formal architectural education (since the Greeks) was begun in France in the late 17th century with the founding of the Académie Royale in France (Perez Gomes, 1983), the development of professional education in the modern sense was realized in the 19th century (Draper, 1977).

17This parallel is overly simple in that many dwellings are constructed based upon etic, abstract principles. However, the reverse is rarely, if ever true, for institutional buildings are by their nature constructed by professionals, and do not derive from a vernacular design approach.
process for the design of the architectural manifestation of home remain generally understood by all, and all participate to some degree in the making of home settings by furnishing and modifying the designs. By contrast, the criteria and process for designing institutions, exclusively represent the etic view that professional designers are trained to understand and to apply. These come from an attitude of designing for people rather than with them. They come from the tradition of governments and individual entrepreneurs designing environments to accomplish a specific aim, a purpose not necessarily shared by the people inhabiting the building. In contrast to the order of the home, which is derived from daily life, the orders in institutional design are to different degrees imposed on daily life.

As we have pointed out, evaluation of the architectural artifact has been largely based on the etic perspective. The architectural artifacts that are held in highest esteem by the profession meet etic criteria that are often wholly different from emic criteria. Literary critics, such as Leslie Fiedler, point out that canonized works of literature are for the most part authored by the elite, and are not necessarily the works that are loved and admired by ordinary people (1982). Selection of the architectural canon is similarly hermetic. The architectural design process exists separate from the concerns of ordinary people. In fact the concerns of architects can be criticized in the same way that Jauss criticizes Marxists and formalists (Items in brackets substitute "architectural artifact" for “literary artifact” and “architecture” for “literature”):

Their methods conceive the [architectural artifact] …within the closed circle of an aesthetics of production and of representation. In doing so, they deprive [architecture]… of a dimension that inalienably belongs to its aesthetic character as well as to its social function: the dimension of its reception and influence (Jauss 1982[1970]).

Applying this criticism of literature to architecture reveals how the understanding of architecture as a cultural artifact leads logically to the engagement of a new definition of architectural aesthetics, one based upon its reception, a reception theory. In the terms of this theory, then, the built environment is judged in terms of its reception by the lay audience in addition to the architectural critics, obliging architects to be cognizant of, and to participate in, the culture for which they are designing.

Architects' Understanding & Knowledge of Culture

At present many architects have been to trained to understand and practice architecture in a way widely divergent from the lay person's understanding. Unfortunately, in many architectural schools, instead of fostering both a professional and a lay perspective, the process of design education devalues the existing lay view held by an entering student and actively replaces it with a professional perspective (Robinson ,1990). The practice of architecture, as we have said, also separates the role of designer, as maker of culture, from that of client, as interpreter of culture. The architect who follows a traditional process "abstains" from the role of social critic, and relies on the values of the client. However, as with any passive participation, the architect who engages in design without actively participating in critique is still responsible to society at large for perpetuating the client's values; insofar as the client ideas manifest in the building are non-altruistic or socially destructive, the architect is accountable. Few clients or architects are intentionally engaged in socially destructive design, and most envision their projects as contributing to a better world. Yet the normative design process does not effectively address the audience of the broader cultural context or provide culturally critical design. Not only do we have no clear process for determining what is a negative or positive architectural contribution, but our ability to
ascertain the values implicit in a given design solution is limited by the opacity of architecture to cultural analysis. This dissertation not only argues for the need to develop techniques for cultural analysis, but also offers an example of one way it can be done.

An architectural reception theory is paradoxical because the relationship between the audience and the professional is problematic. Certain architectural theorists, such as Christopher Alexander, and Amos Rapoport, assert that the architectural profession no longer has an important role. In this view, society already functions perfectly well without designers, and lay people ought to take design matters into their own hands; professional intervention only confuses the issue. On the other hand, architects have a specialized knowledge that is not widely shared, and takes time to learn. If lay people had to spend the necessary time to learn about the building process and the integration of all the different considerations before they built, construction would take an inordinate amount of time. Because lay people don’t tend to build often, and because construction is a very complex and error-laden process, lay builders would have little opportunity to learn from their mistakes. Alternatively, relying on commercial builders proves problematic when their profit motive compromises their ability to represent the consumer’s best interest. In our in specialized society, architects’ influence could be productively expanded if we took it upon ourselves to understand and implement the lay persons’ perspectives in design.

My advocacy of methods for becoming attuned to the lay perspective described in the following paragraphs does not abandon the traditional architectural knowledge base. It simply expands it, adding a cultural knowledge that permits a wider and more sensitive architectural field of knowledge. As in the example of the professional who questions the arrangement of the church pews, the architectural perspective taken in a cultural context, offers new ways of understanding normative situations. At the same time, the ordinary lay person does not want the pews changed just because the architect tells them that a new design is better. The lay person wants to have the knowledge and explanation of why that is so, so that the choice to change is made jointly, with an understanding of all the ramifications. The lay person wants the architect to truly listen to the reasons for the present pattern, and to understand them so that changes are not made arbitrarily, but in the context of the desired cultural patterns. In the past, the architect’s role as expert intimidated and inhibited the forthright discussion of issues. In the end, decisions were made that violated the desires and needs of the user. The following paragraphs propose methods of tempering the role of assumed architectural expertise with the awareness of the need to develop cultural knowledge and understanding.

There are several possible ways for architects to act in concert with their cultural context. First, architects can tap our own lay perspectives. As acculturated members of professional architectural society, architects can access the normal cultural repertoire of actions and thoughts, norms and aspirations. To the extent that architects can re-engage our lay experience, we architects can supplement professional perspective with a powerful alternative view. This research undertakes to do just that by describing the normative ideas of institution and home. Although no one can assume to share this inner understanding with all members of his or her own culture, remembering one’s lay perspective provides a basis for appreciating culturally-derived ideas, and links designers to their experiential knowledge. Ideally, current architectural education would promote rather than ignore or discourage this mode of knowledge. At the same time, it is important to reassert the opacity of architecture itself ---its ability to keep cultural values hidden --- so that when we use our own cultural sensitivity, we must simultaneously question it. Designers can assume neither the wider

18 Related to the scholarship of typology, Guido Franscescato identifies a role for architect’s use of personal memories and experiences when they are not simply “private and idiosyncratic application of historical precedent”.
cultural applicability of their own cultural tendencies, nor the absence of hidden political motives within them. Even in this study there are attitudes, such as individualism, that are not fully disentangled.

A second way of addressing cultural issues is through analytical research, as in this investigation. Study of the culture within which one acts, can permit discovery of the shared and unshared aspirations and aesthetic values of the group. This is true if one studies one's own, culture, as in this book, and if one studies another culture, which involves documenting and analyzing the choices and preferences of group members. Discoveries about aspirations and aesthetic values must be tested in practice, but inquiry of this sort can sensitize designers to the differences and similarities that may exist between architects, clients and users.

A third way of engaging cultural ideas is through direct interaction with users in decision-making. This can be problematic both because the architect is in possession of knowledge that the average lay person can only understand superficially, and because the architect habitually addresses in a conscious way the environmental issues that the lay person habitually deals with unconsciously. Without the expertise of the architect, the lay person is unable to make certain choices because he/she does not know that they exist and does not understand their implications. Conversely, architects who have been trained to value their professional perspective and to devalue the lay perspective may have difficulty understanding the principles implicit in lay people's ideas, and their spatial implications. Nonetheless, this is a proven method of design; participatory design has had a large measure of success.

In a recent discussion of participatory architecture, Johann Albrecht points out the difficulties inherent in the process of a professional designing with the building users. Perhaps most poignant is the difficulty of the relationship between participants and the expert. How can the expert engage and lead a decision process without being coercive?

A theory of participation in architecture must include the notion of authority; so far the practice in participatory design has been to see authority as a remnant of elitist circumstances and therefore declare it unacceptable. But architecture as a profession cannot function without authority, it has a right to claim sincere understanding of its métier, and it is this understanding which legitimates the authority of architecture . . . authority comes from being a conscious and knowing actor with a commitment . . . . What is important is that the architecture (sic) principles in use cannot be of an absolute nature, they must be arrived at in open discourse, and so must architecture's understanding of its métier and the human condition. The power of architecture indeed can only come from convincing argumentation and not from claiming to be a privileged social institution. (Albrecht 1988:29)

Traditionally, architects have held authority because of their extensive personally-held knowledge of the field. The etic professional view has traditionally been passed on in a master-apprentice system. Knowledge was held by the individual and passed on through one-to-one sharing. The values of practice were implicit and the knowledge itself was not codified. The power of the architect resided not only in the architectural knowledge itself, both explicit and tacit, but also in the restriction of access to that knowledge by particular personal relationships. The post-industrialized, empirical approach to building study has increased the amount of explicit knowledge necessary to design buildings and

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19 Cultural research of lay perspectives has a long history in architecture (see for instance Sanoff, 1974, Cooper, 1975, Rapoport, 1982, Canter and Groat, 1985, Perianez, Séchet & Marchieri, 1985).
opened access to it. This knowledge has become codified in writing. It appears to the outsider that any literate person with access to a library can be as knowledgeable about buildings as can an architect. Of course this ignores the enormous amount of tacit knowledge that it takes to actually put a building together, which is the true source of the architect’s authority. Consequently, it is not the access to knowledge as much as its appropriate use and integration that provides authority.

An architect's power derives from his or her ability to transmit knowledge to others at the suitable time and in a suitable form, and from his or her ability to work with others to create from the many different issues that a building must address a built form that expresses and supports the defined client’s best interests. Cultural savvy enhances an architect’s critical perspective on the design of space. It is my personal experience that architectural knowledge of form comes from the design and comparison of alternatives. When the designer is confronted with particularities of a given situation, exploring alternative designs can reveal cultural patterns and motivations that are otherwise hidden. However, the designer must be sensitive to and interested in the discovery of such cultural issues in order to be able to see the implications of competing formal choices.

**Cultural Development & the Role of the Avant-Garde**

Stanford Anderson gives us a useful model for describing the action of designers in the environment. He proposes three categories of environment: exploited potential environment (places we currently use); recognized, but unexploited potential (places we know about but don't use); and possible unrecognized potential (places we don't recognize as useful) (see Illustration 2.1) (1979:, pg. 6). Applying this model, we can define the role of architects and designers as improving the use of the already exploited potential environment, discovering how to use the unexploited potential and transforming the unrecognized potential environment (the third category) into places we can recognize and use (the first or second category). In this way designers can increase the effective use of environments and improve their cultural context. However, they can only achieve this by seeing beyond their cultural.
schemata, which circumscribe their perception and limit their ability to transform the potential and latent environments.

Earlier I described how the professional, etic perspective provides categories that allow one to see the environment in ways different from the everyday cultural schematic view. Abstraction is one part of our cultural view, but, at the same time, particular abstractions seem to provide non-culturally-bound, focused glimpses of aspects of environment. For example, the ability to geometrically describe paraboloids and account for the structural forces of membranes allowed us to see and use fabric structures in a new way, thereby extending the boundaries of the usable, or in Anderson’s terms “exploited,” potential environment.

We find that different architects extend cultural boundaries in different ways. Referring to Illustration 2.2, the central circle stands for the emic understanding of architecture, or those architectural ideas that are generally understood in our culture. The areas outside the circle represent the ideas not widely understood. Various architects are
theoretically positioned relative to the central circle. The distance from the circle represents the degree to which their work is understood by lay people. In this diagram, Peter Eisenman’s early work which is shown well outside the realm of the generally known and understood. His work is represented as extending professional boundaries into previously unrecognized potential, without effect on the understanding of ordinary people. Christopher Alexander works within the realm of the known, improving the way we exploit the already recognized potential. Leon Krier expands the presently known by developing new environments using rules from history. Robert Venturi extends the professional ability to see the cultural known by presenting it out of its normal context, and in the etic context. Michael Graves (especially in his Library at San Juan Capistrano) takes etic ideas and represents them in ways that can be understood by the lay person, thus extending the lay person's potential environment.

As has been discussed by others (Eco 1980 [1973]; Rapoport 1982), the problem of too radical divergence from accepted patterns is that existing cultural categories (or “codes”, to use Eco's terminology) become unintelligible. The negative associations many lay people have with International style architecture (e.g. Krampen 1979) Krampen justifiably attributes to a lack of complexity. Arguably, popular rejection of International Modernism could also be attributed to the discomfort of too much diversion from the known, to too great a disruption to cultural continuity. Indeed, why should citizens put up with projects they consider ugly? There is certainly value in working beyond the culturally known, but that if one seeks to expand cultural thinking, it is necessary to communicate to the lay person so that they can appreciate what is being done. In some instances cultural acceptance or understanding is not required, especially when projects are privately commissioned for restricted private use (as Eisenman’s early houses were). For public projects, however, cultural acceptance and understanding are essential.

Figure 2.02. Different Designers’ Approaches in Relation to Culturally Shared Ideas as Exemplified by Selected Architects (Illustration drawn by Carlos Naranjo)
Architectural innovation in the context of reception theory requires a different understanding of the criteria by which aesthetics are understood and different criteria by which architecture should be evaluated. When cultural reception is valued, aesthetics are grounded in daily experience within the culture, and respond to its highest ideals; it is no longer exclusively defined by the taste of the elite. Instead of focusing on form alone (whether stylistic or technological), the design brings together purpose and form as an architectural expression of activities and attitudes. The role of architecture is to transform habit into ritual and to create a sense of something special from the ordinary (as distinct from creating high contrast with the ordinary). To paraphrase planner Tunney Lee (1989), architecture should be so ordinary that it is extraordinary.

The architect’s role is also changed. Instead of transmitting client ideas into form, the architect represents in form the shared cultural ideals of society. In this approach, architecture is not mere personal expression, but it becomes the expression and interpretation of cultural ideas, either perpetuated or altered. Architects must know and understand how buildings are actually perceived and used by particular people within a given interpretive community (Fish, 1980[1975]). Architects must be aware of ideals and contradictions represented in the built environment. They must be willing and capable of working with all of the people who will inhabit the building to create designs that positively affect people's lives. The professional must neither be alienated from the ordinary lives of other people, nor a conduit for the lowest cultural denominator, but rather a cultural critic who addresses ideas from within the culture.

**Argument for an Architectural Reception Theory**

Reception theory comes out of literary criticism as represented in Fiedler’s observation that the literary canon (that body of works considered to represent our culture's highest achievements) is chosen by an elite group of primarily academicians, and does not usually represent those works most beloved by the majority of people who read literature. In architecture, the canon is selected by a homologous group of experts: architectural critics, architectural historians and designers. Thus the values of a few are inculcated in the next generation of writers and architects, and what is read and built tends to perpetuate the values of these experts, rather than the vast numbers of people who read and inhabit books and buildings.

Reception theory posits that what is made ought not to simply respond to "the closed circle of an aesthetics of production and of representation" but must also respond " to its social function: the dimension of its reception and influence", in other words to "[r]eader, listener, and spectator-in short, the factor of the audience" (Jauss, 1982:18). There is a concern to understand, address, and engage the reader in creative ways (Eco, 1984). The architectural canon must reflect what ordinary people know, think and prefer.

In literary reception theory, the community is defined to include reader, writer and critic. This group together participates in identifying good literature, presumably through the marketplace. Community is similarly defined for art history, although in the art marketplace the patron may also play a role (Gell 1998). A parallel community in architecture would go beyond the architecturally literate, to include everyone who is affected by buildings. The exact process by which this would take place is obscure. A book or visual art object, however, has a much simpler impact on its generally self-selected “reader” than does the architectural artifact on the building user. Gell describes a theoretical structure for linking the reception of the visually perceived art object to its making which, adjusted to the complex effects of architectural artifacts, might lend itself to application to architecture. Earlier I described possible architectural practices to engage the public, but a formalization of the parallel role of the public remains to be conceptualized and developed. The present structure
of the marketplace excludes substantive public participation in most decision-making, and neither exemplifies nor accommodates this possibility. Addressing the hidden cultural implications implies joint participation with professionals. In a democratic society, decision-making that affects everyone's cultural life should be distributed more effectively.

This concern for including the lay perspective maintains a central role for the professional expert, who is responsible for identifying important ideas and precedents and is a necessary catalyst in educating the lay person and in correcting lay misconceptions. Such education, however, cannot be one-sided. The expert has much to learn from the lay and must not fall prey to the temptation to manipulate the lay person by withholding information or controlling decision-making, as is common and current practice.

We inhabit a post-structuralist, post-deconstructivist world, where we are not simply self-conscious, but have become conscious of the ways in which we can be self-conscious. As members of a global society, we can no longer accept our native culture as necessarily the "right" way to do things. That implies we are no longer subservient to cultural patterns as we once were, and that we have the potential and responsibility to engage our cultural norms and patterns and to recreate them in ways that more closely match our current ideals.

As discussed earlier, when architecture is viewed as an art, and as the architect's object of expression, the artistic process calls for the artist to express, the critic to interpret and the audience to appreciate. The artist gives meaning to the work of art. It is the job of the critic to explain both what the meaning is and how the artist's meaning is conveyed. Most critics assume that the architect/artist's stated intention is embodied in the work; their interpretation is limited to explaining how the intention is expressed relative to the temporal and social context and excludes important questions about whether the specified intention or some other meaning was actually manifest in the artistic product.21

When architecture is viewed primarily as a business, it is the client who pays the bill, it is the client who determines what is built, and it is the client whose values are expressed in the design. These client determinations are only modified by the need for the building process to meet health and safety requirements and local and national construction codes. Client determinations respond to societal issues only to the extent that a client has concerns broader than self-interest.

The architect's artistic expression in the medium of architecture must somehow incorporate other needs. The professional ethic shared by most designers requires that business and artistic requirements are met. But, professional ethics also dictate that broader society be served, and that cultural ideals are not simply met, but are met well. A professional designs not only to meet client's interests, but also to serve those people who do not pay the bill: people who use the building, people who pass by the building, and people who are affected by the building in myriad other ways.

If architecture is a cultural medium, then the method by which architects come to understand society's values and expectations is critical. The role of the architectural audience/user who is not necessarily the client is central to the critique of a cultural object, in a way distinct from the audience of an art object. The approach taken is concerned with how lay people understand architecture and with the use of that understanding in design. This investigation exemplifies an application of architectural reception theory; the lay person's

21In fields of literature and music, this view is undergoing a major revision in response to the work of Adorno, Jauusss and others. Nonetheless, mainstream architectural theory has thus far remained essentially unaffected (with the possible exception of the works of Rapoport [1969], Broadbent (1974) and Bonta (1974)). Discrepancy between intent and content has, however, been a central concern of the field of environment-behavior research as reflected in the proceedings of the Environmental Design Research Association, in journals such as Environment and Behavior and Architectural Psychology, and in the many books published in this field.
understanding, a culturally critical perspective, and shared cultural values are key factors that generate the design of architecture.

Designers must actively engage the lay person's views, rather than passively reproducing them. As responsible professionals, designers work together with lay people to exercise judgment so that misconceptions are addressed, and so that environments can support and express current, vital cultural intentions. In the traditional view of architecture as art, innovation in form is the desired outcome. In the view of architecture as culture, architecture contributes to daily life. The mundane purposes of architecture, such as its role as a promoter of ordinary cultural continuity, are valued as much as formal or cultural innovation.

Neither innovation nor cultural continuity is inherently valuable, but innovation is sought to improve or enhance daily life, and cultural continuity is sought to maintain what is good about the existing culture. The role of fashion and the expression of the temporal in architecture are not ignored, but are subordinated to long term values. The design problem is envisioned as responding to particular people in a given situation who exist within a local, regional, national and international cultural community.

Reception theory fundamentally changes how the aesthetic is conceptualized. Architecture practiced as an art form responds to the aesthetic judgment of the architect/artist. In a reception theory, architecture must also respond to the aesthetic ideas of the people that will be affected by the building. Reception involves both the appearance of a building (that semantic22, associative experience presently attended to in avant-garde design) and its actual functioning (the “audible” and “silent” messages that spatial structure communicates). Eagleton points out that the aesthetic is a contradictory concept. It is an "emancipatory force" that invests the individual with the right to develop an aesthetic judgment that may diverge from the norm; at the same time that it is a potentially repressive force, since the criteria for judgment are inculcated by a society that may significantly determine the individual's aesthetic evaluation (Eagleton 1990:28). Cultural ideas tend to be conservative and to dictate preferences based on what is already known and understood. Such cultural conservatism may cause new possibilities to seem less satisfying than known conditions. The role of designers is to create a better future, but designers cannot do it single-handedly. Hence, a reception theory must involve education of the public.

Architectural practice needs to continually engage public participation in the design process, as a process of mutual education about the desirability of innovation. Cooperation with user-clients has taken place over many years and has taken many forms, including (1) working directly with community groups, either government sponsored or private, (2) designing systems and guidelines for self-build, (3) designing individual units within a larger structure designed to accommodate it (often called “open bouwen” or open construction), (4) anticipatory design that uses research and observation to predict user needs and (5) using a sequential approach that involves successive research, building and evaluation (a more recently developed approach).

There are many built examples of architectural design that engages community groups. Government-sponsored projects include: Frankenhalter Strasse Housing Association competition project in Berlin by Architects Heinrich and Inken Baller, c 1979 (Fassbinder, 1986); Medical Facility at Louvain, Belgium, 1970-71 (Kroll, 1987[1983]) by Lucien Kroll, the Byker redevelopment at Newcastle upon Tyne, 1969-77, by Ralph Erskine, V Gracie, R.Tillotson, B. Ahlquist and others (Egelius 1980a & b). Community-engaged private projects include Moore, Turnbull and Yudell’s St Matthews Episcopal Church in Pacific

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22 “Semantic” is used in this text to describe symbolic architectural meaning laden with emotional content. Because architectural meaning also seems derive from the way spaces are arranged --- from its syntactic structure--- there is a tension between the way the terms, semantic and syntactic, are normally understood and the way that they function in architecture.
Palisades, California (Johnson 1986), or the Cohousing movement as exemplified by Drejerbanken in Skalbjerg, Denmark, sponsored by a nonprofit agency, designed by Arkitektgruppen and completed in 1978 (McCamant and Durrett, 1988). Examples of self-build housing based on architect-designed systems and or guidelines such as those developed by Walter Segal (e.g. Broome 1995) or Christopher Alexander’s Mexicali project in Mexico (Fromm & Bosselmann 1984). Two government-sponsored projects that exemplify open construction, or design modifications of individual units within larger structures, are a housing project in Rotterdam, by John Habraken and Frans van der Werf (Van der Werf 1984, Kendall 1986) and an apartment building by Jacques Bon, Christian Droual and Jens Freiburg in Evry-les-Aunettes France, (Architecture d’Aujourd'hui, 1984). Private projects include Moore, Turnbull and Yudell’s St Mathews Episcopal Church in Pacific Palisades, California (Johnson 1986), or the Cohousing movement as exemplified by Drejerbanken in Skalbjerg, Denmark, sponsored by a nonprofit agency, designed by Arkitektgruppen and completed in 1978 (McCamant and Durrett, 1988). Examples of self-build housing based on architect-designed systems and or guidelines such as those developed by Walter Segal (e.g. Broome 1995) or Christopher Alexander’s Mexicali project in Mexico (Fromm & Bosselmann 1984). Anticipatory design is exemplified by Moore & Turnbull’s Kresge College, Santa Cruz, California, 1973 ---a project based on dormitory research by Sim Van der Ryn at Berkeley--- and by the overall approach of Herman Hertzberger, (Hertzberger, 1991), for instance, Centraal Beheer Insurance Company, Apeldoorn, c 1972. Finally, examples of research, build and evaluate projects are the first two of a set of about 20 Area Offices for Minnesota Department of Natural Resources in conjunction with the Center for Sustainable Building Research at the University of Minnesota. The office in Tower, Minnesota was designed by LHB Architects and the other in Windom Minnesota was designed by Kodet Architectural Group (LeFevre, 2003). These examples are just a few, mostly early, versions of each approach.

A reception theory must not only engage the lay person's understanding, but must also engage the professional's critical ability. How is this to be done? The answer is through architectural design exploration and research (Robinson and Weeks 1984; Robinson 1986; Robinson 1990a). One would think that it is possible to build an architectural product that responds to people's needs with practical knowledge about what works and what doesn't work, what people like and what people don't like,. However, this approach has met little success since 1960's. This is because the knowledge base for architecture is small compared to what needs to be known, the subject is complex, and--- except for organized efforts to study energy use and building safety--- there is no substantive, large-scale effort to fund research about the performance of buildings for human purposes. In studying environments, it is rarely possible to definitively say, "do this" or "don't do that". When a relationship between a given environment and behavior is identified, syllogistic advice is often given ("do this when situation A exists"), because traditional scientific inquiry isolates variables for analysis. Architecture is such a complex medium that the process of isolating variables usually creates unique situations; it becomes difficult to generalize an answer. Furthermore, because of this complexity, the ideal ways to structure fields of knowledge have not yet been identified.

On the other hand, several developments make inroads to the application of a scientific method of architecture. First, an emerging body of people trained in or with an affinity for architecture is engaging in research that asks good questions, and develops useful methods of description, simulation and analysis (e.g. Hillier and Hanson 1984; Groat 1988; Laing et al 1998, Mitchell 1990, van Hoogdalem, et al 1982, Stiny 1985; Wise1986). Their research allows the exploration and manipulation of sets of complex architectural variables. Second, new developments in computer technology can deal with complex relations between variables and can enablediscovery of the structure of data entered on the computer in
unstructured form. Third, there is a growing body of architects who are practicing architecture as a research discipline: that is, practitioners who base their designs on research, and then go back to completed projects and test their success and failure, working with the clients to redesign if necessary (see Duffy for further examples). Finally, there is the growing awareness that architectural research requires substantial funding on the national scale in every country, so that the knowledge base can be systematically developed.

**Applying an Architectural Reception Theory**

The assumption that architecture is a medium for culture has several logical consequences. First, the cultural ideas that architecture expresses ought to be understood by all members of a society, and their experiences of architecture must be taken into account. Seen in this light, architecture is more than simple manipulation of form; the degree to which the form accomplishes or fails to accomplish a cultural intention or purpose is of critical importance. Second, aesthetic appreciation is grounded in daily experience. The role of architecture is to transform habit into ritual and to create extraordinariness out of the taken-for-granted aspects of things. A third consequence is that architect becomes responsible for manifesting societal ideals and values in architectural form. The self-expression of the architect is not important in and of itself; rather it is important insofar as it encompasses societal ideals.

The professional in this context is not simply expressing his/her own ideas, but must understand and represent societal ones. The professional, then, should neither be alienated from the ordinary lives of other people nor should the professional be a conduit for the lowest cultural denominator. Instead the designer should be a cultural critic who expresses ideas from within the culture. This necessitates that architects know and understand how buildings are perceived and used within the culture, and that they respond to this knowledge in their designs.

These necessary conditions for an architectural reception theory do not correspond with most existing architectural theories, which are based on a conception of architecture as an individualistic artistic expression, and the public as passive consumers. The imperative to incorporate the lay perspective requires a new theory of architecture, one that engages the audience as an important part of the design equation.

In a limited way, architectural practice has had to take audience into account, and respond to client and user needs in buildings designs when these are identified by clients or governmental review bodies. But conventional architectural practices, at least in the United States, do not engage the user or the public using any systematic and reliable method. When the client does not provide specific information about client and user culture, cultural issues are likely to be overlooked, even when the audience is assumed to participate in design of buildings. The process of canonization of architecture definitely excludes the ordinary citizen. There are both architects who have conscientiously and successfully responded to client and user needs and whose works have been canonized (such as Aldo van Eyck, Herman Hertzberger, Ralph Erskine, Lucien Kroll, Charles Moore), and there are also cases of architects whose designs are canonized despite lack of good public reception for the work, and even despite building dysfunction (Richard Meier's Bronx Hospital, Louis Kahn's

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23 This approach shares with phenomenology the concern to base aesthetic appreciation on experience, but differs from phenomenology in its willingness to use objective measures to compare individual personal experience to shared experiences.

24 Lang (1987) has made an admirable step in this direction, but as pointed out by Francescato (1993) his ideas are not built upon the existing architectural orientation to form. In the proposed architectural reception theory, making form is central to the theory. The difference is that the motivation and means for making form are fundamentally altered.
Laboratory at the University of Pennsylvania, Frank Lloyd Wright's Guggenheim Museum in New York City, and Michael Graves Portland building.)

A theory of architecture that encompasses both designers and their audience must engage both the conception of architecture --- its design, which architectural theory presently addresses well --- but also its production and its function in terms of both symbol and use. A reception theory would redefine architecture in terms of the values of the shared culture, as well as those of the professional culture to which it is primarily oriented now. It would also expand the notion of aesthetics, from that which emphasizes visual response, to a broader experiential base developed from popular experiences with place (Langer 1953, Heshong 1979, Hildebrand 1999). Finally, by seeing architecture in terms of a design-use-and-evaluation cycle, the theory would unite existing knowledge about spatial cognition and perception with other forms of architectural knowledge permitting these very general theories to be applied and refined through actual design (as in the work of Carpman, 1986; Cohen and Weisman, 1991; Laing 1998; Moore 1990 & Zeisel 2003).

Any architectural reception theory needs to provide ways to determine how an architectural artifact is received by an audience, and means to judge the success of the reception. As with other aspects of the theory, this aspect is not yet fully developed, but several considerations have affected the study used in this book. In this study, we scrutinize the reception of environments within the value system of de-institutionalization, ascertaining which physical design features cue which receiver responses.

This takes place in the context of a series of challenges posed by reception theory research. Underlying any application of reception theory are several crucial factors. First, the separation between the consumer/audience/user and the designer must be mediated. Methods of construction and financing have become so complex that there is no direct relation between design and consumption/use. One of the purposes of a reception theory is to reduce this distance by knowledge of actual user desires at the beginning of design so that construction and financing would reflect rather than distort them. Architectural research that addresses the discipline and practice of architecture is another important component for reducing this distance. A related problem is the necessity of addressing the distance between the knowledge of specialist and that of the non-specialist. Currently, lay people cannot make informed architectural decisions because they are not aware of the available choices. A developed reception theory would include ways to create an informed audience through general education of the broader public as well as by developing client and user education for specific projects.

Additionally, there exists the problem of transforming unconscious knowledge into conscious decision-making. While ordinary people can often tell designers whether or not they like something, they cannot always tell why. Making good design choices requires that the “why” be understood. Further, places evoke feelings in people which they cannot necessarily describe, but which may be discovered in ways other than directly asking. Finally, people can only describe a very small part of whatever it is about the character of a place that generates a given response. Although people may know whether or not they like something, and may be able to describe how it makes them feel, they may not be conscious of the sources of these feelings, and so will be unable to discuss discuss them usefully. Architects and researchers must discover the underlying reasons that will engender appropriate decision-making. For this study, the key was to describe the responses that people have to a given set of environments in such a way that hypotheses could be made about the reasons for them. When possible, the hypotheses were tested.

The practice of architectural reception theory involves many substantive changes to architectural education, architectural research and architectural practice, and consequently to the way that environments are designed and built, and to the way their effects are studied. If properly developed and enacted, reception theory, as a new critical cultural practice, would
benefit society by generating architecture that continues to respond to evolving cultural ideals. The discipline and practice of architecture could then engage a conscious, active, and ongoing reconstruction of the places, and, by extension, the culture that we live in.

Reception theory generates an architecture of empowerment for all rather than an architecture of power only for those with the most resources. The goal of an architectural reception theory is based on the premise that the most effective action takes place when participants work together cooperatively toward a common good out of mutual respect rather than fear, to generate built environments that not only embody the societal role they need to play, but that support both top-down and bottom-up communication and action. The ordinary can be as compelling as the special by being extraordinary. An architecture of reception is designed to validate everyday life.
Chapter 3

Conscious Cultural Change & Normalization

Architectural reception theory as presented here is bound to the parallel concept of conscious cultural change. As indicated earlier, the post-modern condition places us in a position of potential consciousness about the differences between our espoused cultural values and our actual achievements. While architecture may only rarely play a leading role in cultural change, it often plays a major supporting role, since it offers a mirror for existing cultural ideas, and can be a practical and symbolic instrument for change. In this chapter we will discuss how built form has played a crucial role in the normalization or deinstitutionalization movement, and how architectural research validates, and might have supported the process. After presenting a brief history of normalization and its parallel deinstitutionalization, we present the conceptual framework that structures the subsequent chapters, the concepts of institution and home as parallel and contrasting cultural settings.

Conscious Cultural Change

Cultural change takes different forms, and can be characterized relative to the awareness of the intentions for and the outcome of the change. I posit several different levels of awareness. Unconscious, unintentional cultural change occurs without any conscious intention to change cultural patterns in a certain direction. Although such change can be attributed to various sources, the outcome is inadvertent. The automobile, for instance, intended to change transportation, had a profound impact on the design of housing. Certain formal changes perhaps made for economic or aesthetic reasons such as the enlargement of the kitchen space, make possible new life patterns, such as reducing use of the dining room and the formality of meals.

Semi-conscious intentional cultural change occurs when a change is intended to create a certain outcome, but without concern for the process of change or with the ability to monitor its success. Radical political movements such as the American, French and Russian revolutions were intended for a particular political end, without addressing the side effects and other kinds of consequences. Many innovations of the modern movement in architecture were intended to create better living, such as the highrise apartment building. They changed life patterns, but not always in the way intended by the designer.

Conscious cultural change is intentional change that incorporates a process for evaluating its success.1 Perhaps the first such social change was the civil rights movement. Different strategies have been tried, evaluated and amended (e.g. busing students, math curricula designed especially for girls), the results being assessed (perhaps incorrectly) by statistics and test scores. The ecological movement also is another example of conscious cultural change since we are trying to change people’s life patterns through various interventions, and can measure our results using criteria like the amount of pollution in the air or the quantity of recycled products. In the building fields using trial and test techniques with specific criteria we have developed materials with ever more effective insulating qualities, these attempts to reduce our energy

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1 In the design fields one organization that has such change as an implicit goal for sociocultural research is the Environmental Design Research Association.
consumption have cultural implications for manufacturing and construction as well as patterns of habitation.

Architectural reception theory as proposed here is premised upon conscious cultural change. In some cases a change or innovation may originate in unconscious or semi-conscious form, but to actually engage the reception of an idea it must be brought into conscious awareness. Reception theory based on conscious cultural change starts from the idea that every design is a set of hypotheses (although usually unstated, and often unconscious). Designs are not “right” or “wrong” but “better” or “worse” according to their success in addressing particular intentions. Conscious cultural change typically occurs in a series of designs rather than in a single radical innovation. The formal and conceptual ideas related to the change are likely to become clearer as alternative design approaches are attempted. Criteria are developed and refined over time as successive individual projects are evaluated. Incremental interventions can generate discussion and, according to their performance and reception, alternatives can be adapted or abandoned. Such an approach to change suggests gradual cultural modification, but in certain circumstances conscious strategic interventions may also leverage leaps in understanding and thereby radical conceptual change. Evaluation permits developing successively more strategic interventions. The consciousness of the change should be shared by everyone involved, including the general public and not be reserved for the designers or some other group; otherwise it is cultural manipulation.

Normalized as Conscious Cultural Change

Normalization can be seen as a cultural movement that engaged conscious cultural change in social practices. However, from an architectural perspective, the change was not conscious. Different architectural forms have been tried and accepted or rejected without criteria for evaluating the role played by physical environment. The process could have been and can be improved by attention to the development of valid and reliable architectural measures that can account for obvious and subtle differences between designed environments. The research reported here provides one example of how architectural research can support conscious cultural change by clarifying types of environmental intervention, their character, and the extent to which particular environments and elements of environments can support or sustain cultural attitudes and patterns.

According to David Braddock (1998), in the United States, people with developmental disabilities were seen as candidates for institutionalization beginning in the 19th century. Although the first institutions for people with developmental disabilities originated as state sponsored training schools, they devolved into state hospitals for custodial care. From 1880 to 1925, such people were seen as “deviant social menaces” (p.5). Early 20th century studies later refuted (p. 6)- that linked mental retardation to “criminality, immoral behavior and pauperism” even led to policies of sterilization in a few states (p.5-6). In the United States, institutions were isolated from ordinary life (often in rural areas remote from families), poorly supported economically, and hierarchically organized with residents at the bottom of the pecking order. The subculture that developed in many of these places valued and treated people with developmental disabilities as less than human, “no better than animals” (Wolfensburger

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2 Developmental disability is the term used to cover a great range of disabilities such as dyslexia, autism and Down’s syndrome. The abilities of people categorized as such vary greatly in character and may include or exclude physical, perceptual, cognitive, and functional competencies.
1972:18). Fortunately, during this time the total population of institutionalized people with mental retardation remained relatively low (no more than 50,000 for the entire nation) (Lakin et al: 1981:vii-viii).

After 1925, in response to urbanization, the numbers of people with developmental disabilities who were institutionalized continued to increase until, by 1967, the population in institutions reached almost 200,000 (Braddock 1998:6). Following World War II, gradually increasing resources improved the situation. In 1967 dollars per capita cost rose from about $600 in 1915 to approximately $2,000 in 1967 (Lakin et al 1981:ix). Braddock identifies three developments that took place during the 1950’s as key to changing attitudes about treating this population in the United States: (1) the advocacy of the parents’ organization, the National Association for Retarded Children, (2) the awareness of the normalization principle that was being used to guide services in Scandinavia, (3) and the concern of the federal government as expressed in the development of a variety of programs. In 1961 John F. Kennedy’s President’s Panel on Mental Retardation adopted the normalization principle of “providing the conditions of everyday life which are as close as possible to the norms and patterns of society’s mainstream” (Nirje, 1969: 181). Subsequent federal legislation led to a series of laws that consolidated the normalization movement in the United States by authorizing such developments as research infrastructure (to develop strategies and evaluate progress), planning funds, training and model community services programs.

This federal legislation was followed-up by state actions to close large state institutions and to establish smaller community residences either voluntarily, or more typically, in response to class action lawsuits, often brought or supported by the local Association for Retarded Citizens (Braddock 1998:9). Between 1970 and 1998 118 state institutions had closed, and 36 more are due to close by 2000, reducing the population in such institutions by 65% (to 53,000). However those housed in all institutions, state, private, and nursing homes in 1998 number 125,0003 and if we include residences with 7 residents or more as institutional settings the number grows to 179,000 as contrasted to 238,000 in residences serving 1-6 people (Braddock et al 2000). Although these figures indicate that the deinstitutionalization process is not complete, in 30 years a significant change has taken place.

Leona Bachrach describes deinstitutionalization as a process involving two elements, the avoidance of traditional institutions, and the provision of community facilities (1981). She points out that the word deinstitutionalization is neutral, simply describing a process that involves population movement. While this clearly implicates buildings as essential to the process, she also indicates that the purpose of deinstitutionalization is to create better living patterns, with less routinization and more variation of setting and behavior, irrespective of the building. In a discussion relating deinstitutionalization of the mentally ill to the developmentally disabled, she lists twenty-one functions of mental hospitals that were not always addressed in the deinstitutionalization process. Several of these functions may have been extremely influential on the politics of implementation: “providing a means by which society can segregate some of its deviants,” “relieving the patient’s family and community from disruptive social interaction,” “supplying an ostensibly relatively inexpensive form of patient care,” “providing an economic base and employment for a community or a portion of a community,” “providing a tax base for local communities,” “providing for mental health professionals a funnel for the removal of unattractive and often poor patients” (Table 2, 1981:61) These factors can be seen to affect such groups as police, families, state agencies, staff of institutions, residents of towns where institutions are located, and mental health professionals to name just a few. On the side of

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3 Braddock defines institution as a facility with 16 or more residents.
community resistance to normalization, the “investment value” of houses in ordinary neighborhoods plays a significant role (property as an investment subject to gain or loss of value, neighborhood as a representation of status that can be enhanced or reduced by the addition or subtraction of categories of neighbors, etc.). Changing the housing patterns of developmentally disabled people threatens the self-interest of many constituent groups maintained by the status quo.

State politics have played a critical role in deinstitutionalization, and for that reason, its progress has in each of the 50 states. Certainly in Minnesota, the impetus for change has come from parents and interested citizens, with actual changes occurring due judgments of the federal judiciary in response to litigation (Welsch versus Likins, 1972). Resistance apparently on all of the fronts mentioned in the previous paragraph impeded deinstitutionalization. From an architectural perspective, since the time this research began in 1981, ideas about acceptable facilities have continued to evolve. Minnesota began deinstitutionalization in earnest in the late 1970’s. Between 1977 and 1996 there was an 88% reduction in the number of residents of state institutions with 16 or more inhabitants (from 3,085 residents to 360). Private institutions with more than 16 residents dropped less dramatically (between 1986 and 1996 they experienced a drop from 2,016 to 1,074 inhabitants). Between 1986 and 1996 public and private facilities for 7-15 people dropped 68%, from 5,318 to 1,683 residents. In 1996 8,086 people lived in residences with 6 or fewer people, representing over 2/3 of the developmentally disabled people housed (Braddock et al, 1998).

During the period since the research began the ideal type of residence for people in Minnesota with developmental disabilities has changed from the group home to assisted living in housing for nondisabled people. The preferred types of residence to house people with developmental disabilities have evolved from special settings to increasingly normative placements, influenced greatly by Michigan’s success with community services and family support programs. With the implementation of programs for personal autonomy and self-determination, people with disabilities can participate in the choice of their dwelling. Today, placement in the least restrictive environment can mean living independently in an ordinary house or apartment, supported by community services, theoretically alleviating any concern for architecture. For more dependent people, however various kinds of architectural support will still be necessary. Even though large institutions are closing, many of the ideas represented in their architecture is capable of being replicated, albeit on a smaller scale in facilities for dependent people, thus inhibiting individual growth and opportunity and increasing the potential for stigmatizing environments. This research is directed toward being able to distinguishing between settings that support institutional life patterns and those that support other life patterns and the effects of the different settings on personal growth and status.

Public and Private Realms

This study began with a practical question: how can we understand the difference between the architecture of institutional housing and ordinary housing so that we can provide the best opportunities for people with developmental disabilities to make a place and an identity for themselves in their housing? This first question was explored by comparing the ideas of dwelling expressed in the architecture of residential institutions and in private residences.

In order to know about the architectural implications of dwelling, it seemed critical to understand the context of the problem, which is why we studied a variety of settings. Differences observed between settings suggested that residential settings could be described in
Chapter 3 Conscious Cultural Change & Normalization

terms of their degree of institutionality or homelikeness, or what some authors have called domesticity (Csikszentmihalyi and Rochberg-Halton 1981, Reed, 1996, Cieraad, 1999)4. In studying this question, we found that such a distinction resonated with other people’s understanding of residential environments. In initially setting up a polarity between institution and home we were aware of both the power of such an opposition, and the danger of it. In this chapter we address this structure, and some of the important ideas that distinguish and connect institution and home.

In a broad sense the concepts of institution and home are linked to the two realms in Western society, the public and the private. The distinction between these two realms has taken on different significance in different eras,5 but in the Western world, at least since the Greek times, the distinction between the two has been fundamental to the way that we construct society.

Unlike Hannah Arendt, who sees a merging of the two realms, I posit that while potential for a less differentiating structure exists, economic values of the workplace continue to dominate the public realm, and that social and personal values continue to dominate the private realm, perpetuating the distinction. While for Bensman and Lilienfeld, "the private and the public are inextricably intertwined and interlaced.... [and] cannot be treated as separate entities," (1979:182) we find that the concepts exist in our culture as ideals which refer to each other in a dialectical relation, but with differences that are clearly demarcated. Particular places may have attributes of both realms, but there also seem to be real places that embody each of the two realms. And there are certainly idealized places that symbolize these contrasting ideas, specifically the government building and the single family house. Even so, it is important to elucidate not just the associated ideas, but also some of the contradictions that inhere in the terms themselves and in their relationship. As a point of departure, I will first draw, or perhaps overdraw distinctions between the two terms, and then discuss the contradictions and inconsistencies.

The most basic distinction between the two realms can be made at the level of the values that drive them. The values found for inhabiting buildings in the public arena are typically those of managed group control (or control by those in power such as by a governmental group or commercial enterprise, supposedly on behalf of the group) and economy. In these buildings the values of a supervising organization intervenes between inhabitant and the building. Values in the private arena derive from control by the individual and while incorporating economy, it is servant to more fundamental values such as comfort, self-expression, dignity and autonomy. For housing these two value systems are embodied in the terms institution and home.6 Their juxtaposition highlights the contrast in our attitudes about public and private and the way that architecture is designed for these two types of setting.

4 In the text of this dissertation we will use as equivalent the Latinate term “domesticity” and the Anglo Saxon term “homelikness,” with the awareness that while “domesticity” may be more precise (describing not just the appearance of home, but the fundamental qualities and attributes of which it consists), for the lay person “homelikeness” is very likely more self-explanatory. Certainly the term “domestic” was never to images applied by lay participants, while “institution,” “institutional,” “home,” and “home-like” were.

5 For discussion of the historical views and evolution of the meaning of these two realms see Hannah Arendt, The Human Condition, Chapter II "The Public and the Private Realm," (1958:22-78).

6 The duality of the institution-home pair while not identical to the three pairs of opposites we take for granted listed by Foucault in his 1984 essay “Of Other Spaces: Utopias and Heteroptopias” (Foucault 1993), is echoed in all four: public and private space, family and social space, cultural and utilitarian space, the space of pleasure and the space of work.
Polarity

Levi-Strauss finds that duality is a primary conceptual device used by cultures to describe their world (1963). By advancing the idea of dialectics, that any particular object or event being evaluated in terms of a duality is seen in terms of both ends, Levi-Strauss allows us to see that the polarities are abstract ideals. As the work described in this book progressed, while the clarity of the use of polarity was clearly helpful as an analytic device and for structuring the findings, two questions arose. First, we asked whether the poles represented opposition or merely difference. Just as in tastes, salty is not opposite to sweet or sweet to sour, but each term represents distinct and important differences, much as Boston, New York and Los Angeles are different cities and not opposites. Institution and home could not be assumed to be opposites. Second, we questioned the relationship between the idealized polarities and the physical form of real environments, asking how the polarities were represented in physical form.

In the study of institution and home, polarity was used to create a sound basis from which to draw initial conclusions. However, from the very beginning, there was an understanding that the polarity was to be a tool, and although opposition was used as a device for analysis, the terms themselves were not necessarily opposite, nor were there necessarily only two possible poles in the field in which they existed. The overall approach taken was to use the idea of polarity at the beginning and to then develop ways to test it and explore its boundaries.

Furthermore, the words selected to stand for the opposing poles have evolved over the course of the study. Although the term *institutional* has continued to stand for the one pole, the term designating its opposite has changed from *normal* to *homelike*. In the research, and in this book, we focus on how architecture embodies the two places: institution and home, by examining the architectural characteristics that combine to make architecture identified as *institutional* or *homelike*. As a point of departure, we used two icons to characterize the two poles: the large, isolated, traditional self-contained institution and the owner-occupied single family dwelling as represented in the typical Minneapolis vernacular house.

Here it may be useful to set this approach into the context of the theoretical perspective of Henri Lefebvre who states that “the user’s space is lived—not represented (or conceived)” (1993[1974]: 362) and that he is interested in spatial/social codes’ dialectical character “as part of an interaction between ‘subjects’ and their space and surroundings (Ibid: 18). From our study we have come to see the spatial stereotype (Franck, 1987) as a kind of spatial/social code that mediates between people and their interaction with their space. But we argue that the existence of such a code implies that the user does not simply produce and reproduce space by living in it, as Lefebvre would argue, but that the user or lay person conceives it as well. The existence of the cultural stereotype or myth of the idealized notion of home, for example, and the fact that it is widely accepted as true and consistent, perpetuates and rigidifies particular conceptions of the lived-in environment at the expense of alternate possible conceptions. By means of its power to over-ride messages of actual experience the stereotype is a mechanism that silences the direct messages of space. In understanding spatial experience, the stereotyped cultural conception, then, must be accounted for as a counterpoint to lived space.

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7 Although we mentioned the prison as representing the most institutional form, it made more sense in the context of a study of deinstitutionalization for developmentally disabled adults to look to the large state institution which houses this population, and then hospitals and nursing homes which house mainstream society as the examples for the institutional polarity.
Home and Institution

The contrasting values of the vernacular house and traditional institution seem to be generative of their built forms. These values are interdependent; but for the purposes of analysis can be described as four sets of attitudes:

1. Resident control versus organizational control,
2. Autonomy versus dependence,
3. Individual orientation versus group orientation, and
4. Use of subjective versus objective criteria for environmental decisions.

Overall, these may be seen as describing two contrasting overriding categories, that of the organization which sees itself as responsible for the care and support of a dependent group of people, and that of the individual responsible for him/herself and his/her community.

Within the context of the principle of normalization, which embraces cultural norms stressing individualism, these two poles tend to be associated with negative (institutional) and positive (non-institutional) values, but in the larger context of society, they may be seen as neutral or reversed in value depending upon the circumstance. It may, for example, be seen as more appropriate for very ill people to be cared for by an institution than to require them to be self-sufficient. On the other hand, there may be intermediate options which fall between the two polarities, or which are out of the bounds of this conceptual structure. This interpretation is, therefore, not "the only" interpretation, but rather "an" interpretation which derives from the analysis of a specific issue, and from which generalizations are being drawn.

Rapoport has differentiated between monumental buildings, which are consciously designed to impress, and vernacular architecture, which is "the direct and unself-conscious translation into physical form of a culture, its needs and values..."(Rapoport 1969:2). The monumental building in our culture is almost invariably a public building\(^9\), and expresses the power of society over the individual. In contrast, the single-family detached dwelling, often identified as the ideal habitation especially in the United States (Handlin 1979; Cooper 1974, Robinson 1980, Archer 2002\(^10\)), expresses the importance of the self in relation to the group as well as expressing individual identity.

People who are seen as unhealthy or deviant in this culture have traditionally been hospitalized or placed in other segregated forms of housing such as prisons, old people's homes or schools for delinquents. Unlike the house which is accessible to work and shopping settings, and requires participation of the residents beyond the residential area, the tractional institution is a self-contained community where a resident's biological needs are provided 24 hours a day.

Goffman (1961) and others have described how these social and physical institutions tend to create patterns of behavior special to them and maladaptive in an ordinary community setting.

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\(^8\)From the outset is important to note that, as we shall demonstrate in greater detail, the terms home and institution are problematic in that each is not a "pure" term, having many overtones and shades of meanings as well as more broad and narrow definitions.

\(^9\)Highrise buildings and massive low-rise apartment buildings are large, but not usually monumental in design not being designed to impress. Nevertheless, they are perceived as quite institutional. In cases where houses are monumental, they tend to be perceived by lay people as less homelike than other houses and as having institutional qualities. For instance, one of the slides in this study that received a lower-than-expected homeliness score was described in the free sort as being "like a museum".

\(^10\)Archer provides an extensive critique of the American ideal of the suburban single family detached dwelling.
The underlying theme in this polarity of housing is that of control. At the institutional end of the continuum, the, control is retained by an organization of people other than residents. At the other end, represented most powerfully by the owner-occupied single family detached house, control is in the hands of the residents. In between lie such hybrids as multi-family dwellings, public housing, hotels and group homes. Some of the salient characteristics of the traditional, or what Goffman calls the total institution (1961:4-9)\(^\text{11}\) are:

1. An organization of people who are not residents owns and maintains the housing as a public service;
2. The residence is a work domain for representatives of the responsible organization;
3. The residents are assumed to be wards, requiring supervision, and thus are dependent and are served as members of a particular group with similar service requirements (what Goffman calls a large managed group 1961:7);
4. A large number of residents are served (over 16 and up to several thousand).

Goffman's book Asylums (1961) describes the social characteristics of institutions. In developing the term total institution he says the following: "When we review the different institutions in our Western society, we find some that are encompassing to a degree discontinuously greater than the ones next in line. Their encompassing or total character is symbolized by the barrier to social intercourse with the outside and to departure that is often built right into the physical plant, such as locked doors, high walls, barbed wire, cliffs, water, forests or moors. These establishments I am calling total institutions, and it is their general characteristics I want to explore" (p. 4), and "Before I attempt to extract a general profile from this list of establishments, I would like to mention one conceptual problem: none of the elements I will describe seems peculiar to total institutions, and none seems to be shared by every one of them; what is distinctive about total institutions is that each exhibits to an intense degree many items in this family of attributes" (p. 5). He subsequently lists the following attributes (p. 6):

1. "all aspects of life are conducted in the same place and under the same single authority",
2. "each phase of the members life 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",
3. "all phases of the days 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 explicit formal rulings and a body of officials",
4. "the various enforced activities are brought together into a single rational plan purportedly designed to fulfill the official aims of the institution."

He further adds, "In total institutions there is a basic split between a large managed group, conveniently called inmates, and a small supervisory staff...Staff tends to feel superior and righteous; inmates tend, in some ways to feel inferior, weak, blameworthy, and guilty" (p7), and "Significantly, the institutional plant and name come to be identified by both staff and inmates as somehow belonging to staff..." (p 9).
The single family detached vernacular house, the domestic setting, has parallel characteristics:
1. The house is owned and maintained by its inhabitants;
2. Habitation is the primary purpose for the housing structure;
3. The residents are a functionally independent group of individuals;
4. The residence houses a small number of people today (usually no more than 6).
These contrasting sets of constituent features of the two housing types are visible in the architectural forms they take, and represent attitudes about the people they house.

The vernacular form of the domestic setting derives from ideas about habitation and community that have evolved over a long period of time. The detached house, which we see as the ultimate expression of ideal housing in American culture, is generally found as one part of an integrated community, accessible to employment, recreational, commercial and other activities, and associated as well with forms of multi-family housing, most commonly, apartment buildings.
The single family residence may be the psychological locus of activity for its inhabitants, but is not the only physical place they encounter, since they must participate in the larger community to meet their daily needs. The house design responds to the desire for maximum control by the residents, individually and as a small community. It is a domain for expression of the individual and communal needs and desires. Its form and character are not static, but are able to be altered to match the changing configuration and character of the residents.

The traditional institution, on the other hand, came about as a result of the perceived need to isolate certain people from the established community. In the 18th century in England, ways of thinking that led to the industrial revolution (people as economic units, activities as processes, categorization by type), were also applied to such social questions, resulting in some charitable institutions like prisons and workhouses which were designed as ways to improve human beings, each being “a mill to grind rogues honest and idle men industrious,” as stated by Jeremy Bentham (designer of the Panopticon prison, cited by Andrew Scull, 1980:40) alongside madhouses for those who could not work. In the 19th century reforms to the establishment of more focused institutions for special groups such as hospitals for the mentally ill, homes for the aged, orphanages, etc. Many of these institutions were located in rural areas away from the city, for it was thought that by separating “deviant” people from mainstream society, and locating them in places with plenty of sunlight and fresh air away from the dangerous and negative influences of the city, they could be protected from criminal influences and their health needs could be better met.

The institutionalized group was thus isolated in a self-contained community, designed to be inhabited 24 hours a day by its residents. The community was typically planned and controlled by a charitable organizing group. Therefore the design of the traditional institution responds to the need for the managing organization to control groups of people rather than individual residents. Group needs are more important than individual needs, and the decisions about what is done lies in the hands of staff. Being a workplace as much as a residence, the building’s design tends to reflect the institutional staff needs more than those of residents. Because the building is intended to serve many people with a minimum of maintenance it is designed to be durable. As a result, the form of the institutional building, once built, tends to resist change.

In differentiating between home and institution we are not implying that these distinctions are pure, only that the cultural mythology or stereotype stresses their purity rather than their contradictions. For we know that in some circumstances the home can be a prison, and the institution can be a site of freedom. Some examples that come to mind are the suburban or
rural housewife who is isolated without transportation, the abused child forced to dwell with the abusing parent, or even the teenager who retreats to the bedroom to avoid the pervasive presence of parents in the community area of the house. Institutionalization may free a person of the routines of daily life so that they may address other considerations. Squatters occupying institutional buildings find their outsized rooms offer new ways of organizing living space, and discover new ways to use the corridor through radical restructuring. Later we will explore the degree to which these instances and other apparent contradictions associated with institution and home are related to the social context and/or to the structure of the setting. At this point we stress the central, defining characteristics.

**Home**

In Western society, at the architectural scale, an image of the single family house usually stands for the idea of home. Boulding situates the image as basic to human thought, pointing out that "a public image almost invariably produces a "transcript"; that is, a record in more or less permanent form which can be handed down from generation to generation" (1977:64). In American society the house seems to have become the transcript for ideal domesticity, the idea of home. The free standing dwelling in American society represents independence: the individualized facade represents the importance of the uniqueness of each individual; the yard on all four sides stands for the territorial control of the household; the conformity to the norm in house size and placement, not to mention maintenance of the yard and house show that the household is an upstanding member of the community (or is not). By assigning the idea of home to a particular building which has a given architectural form, and which is a bounded place within a larger context, these values are concretized and made visible.

The form of the house is not just a resident’s expression of how things should be done. Insofar as the cultural norm is repeatedly constructed, and then sanctioned by outside forces (advertising, federal mortgage programs, etc.) the physical form embodies the societal standard for the abstract ideal of home. Boulding notes that some images do not just stand for facts but also for values. The imaged value is concerned with the rating of the various parts of our image of the world, according to some scale of betterness or worseness" (1977:11). The image of the single family house as ideal appears to play this kind of role, in that members of American society continue to see the single family house as the standard against which other forms of housing are evaluated.

The emotional connotations of the English word "home" according to Czikszentmihalyi and Rocheberg-Halton, is a unique to the English language. Nevertheless, they point out, the association of the residence with the family has ancient sources and a widespread, if not universal significance. The word for house and family are the same not only in Latin (Czikszentmihalyi & Rocheberg-Halton 1981) but also in many other languages, for example...

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12 The idea of home has, as has already been mentioned environmental implications at many scales from the room to the house, to the street, to the neighborhood to the city, to the region, to the nation, to the earth itself. Here, however, we are focusing on the scale of the individual building.

13 In this book the term **values** stands for the long term, set of principles or ideals held by a group, and is not the same as standards. A group that holds a certain set of values usually develops ways to ascertain if the values are being met in daily life. **Standards** are the concrete forms that are considered to represent values. When these standards are matched, the criteria for the values are met. Standards are in a state of flux, and respond to fashion as much as to other longer term objectives for behavior.

According to Rybczynski, the concept of the family home, along with the modern idea of the family as tied to the parental couple seems to have originated in the medieval period and become established in the eighteenth century along with the development of the middle class (1986). De Mare provides a strong argument for the development of domesticity, linked to such terms as “intimacy” and “coziness,” as a product of the nineteenth century (1999). Even so, she describes the work of engineer Simon Stevin in 1590 as creating “sovereign” spaces for dwelling, “new spaces, spaces that are cut out of and rigorously cut off from the town” (p 15). He advocated durable buildings to be secured by locks. Within the buildings three dwelling units are located on separate floors, each with 5 generic, discrete, locked rooms, each with its own water closet and storage areas. Here, even when concepts of domesticity linked with comfort may have been lacking, the link between family and dwelling unit was explicit.

While real estate agents like to use the word "home" synonymously with the word house, these two concepts are clearly distinct. People who live in apartments, for example consider their dwelling units to be their home. Nor is the concept of home limited to a building, for clearly the nation we call our own is also home in the broadest sense, as is a city or landscape we identify with. However, in American culture, the sanctioned ideal built expression of home does seem to be the single family house. For much of this book, the single family house is used to represent the ideal expressed by the word home, but of course, it is not the only building form that home takes. For Margaret Mead, an office room served as home base. "For all my years of traveling, I have always had somewhere to return to, somewhere where everything is just where I put it away twenty, thirty or forty years ago”(1972:51). Americans make their homes in a great variety of circumstances, from mansions to single rooms in a hotel. But in relation to the cultural standard of the single family home, places which are not independent and under the control of the individual household may seem less than adequate to many.

The purposes fulfilled by home vary so much with each individual and each circumstance that they do not lend themselves to easy enumeration. Kim Dovey offers several properties of home: home as identity, home as order, home as connectedness (1985:33-64). Each of these has some aspects that are spatial and others that are temporal, and each set has come aspects that relates to the individual, to others that share the intimate life within the dwelling and to those outside the intimate boundaries.

These ideas represented by the home: order, identity and connectedness are not ideas rigidly expressed in permanent features of the private residence, but are inherent in the way it is conceived constructed and used. The feelings inherent in such ideas are the basis for the emotional tie we may have to our dwelling and to the notion of home. Home is where the people are that we know and love. Home is where we can continue to construct our order, identity, and connectedness, not as static forms but as living aspects of our person. This emotional tie to the home is one of the things that gives the home its significance in our society, for we find that not all places provide an emotional base for us, a place where we can not only do but simply be and feel. And within the social boundaries of the home we form emotional bonds of intimacy and community, of acceptance and love that are not always possible in other settings.

Identity: Home is a particular kind of idea in that, at least in Western culture, plays a significant role in establishing and maintaining the identity of the individual and the household in the context of society at large. In the broadest cultural context, Dennis Doxtater suggests that in many cultures the house is a ritual spatial element that unifies the individual and the cosmos (1980:30). Perhaps this fundamental unifying role of the house explains the powerful symbolic role of home in our society. At a smaller scale the house projects the public identity of the
individual and family to the community. For owners of houses, the importance of having an exterior appearance that represents their own identity has been well-documented (Boudon, 1972, Dolan, 1999).

As is addressed in more detail earlier, a child discovers the self from interaction with the spatial world. This occurs, typically, from the base of the dwelling, the dwelling coming to represent the central point, the self. The locus of the place of residence in a fixed place, and the tie of the idea of home to this particular place allows this discovery of self to be sustained, expressed and integrated with the other members of the household. The home further provides a base from which ties beyond the household may be made. The identity of self with home seems to extend into adulthood as well, as Clare Cooper Marcus explains in her article "The House as Symbol of the Self" (1974).

The childhood home seems to significantly affect the ways we perceive our later homes. It is as if we not only imprint on our parents, but also experience environmental imprinting that affects us throughout our lives. In cultures where residence and the form of the house are stable, this imprinting seems to serve a purpose much like the nesting of birds where one returns to the home ground to raise offspring. In our society, where mobility is a fact of life and few people live in the same place they grew up, the symbolic image of the home represented by the single family house may well serve to substitute for the physical place. Because of the lack of an actual geographic locus of families today, the need for the symbol in the current residence may be greater.

On the other hand, the single family house is also strongly associated with the family as a child-raising unit. This may prove problematic when housing single dependent adults. Although it is not unusual for single adults to share a house, in the United States more typically single adults live together in apartments. Several studies of people with chronic mental illness in the Netherlands indicate that in the Dutch context, the association of the single family house with family structure caused problems (reported in Keizer, 1991). Some residents took on a parental role vis a vis the other residents who were assigned to the status of “child”. In at least one instance the inequitable status was attributed to unequal room size with the residents of the larger room having the parental role. Sharing a room contributed to problems in other situations. If these were the source of the power inequities, the problems may be addressed by design. It is always possible to give residents their own rooms, and differences in room size or other attributes can be addressed with design modifications. Nevertheless when housing adults in family housing, or designing housing for adults to share, the powerful associations with family patterns must be taken into account, for example by creating settings that minimize the potential for triggering such responses.

Identity of the individual and of the household is both created and communicated by the furnishings and decorations of the house. People have cherished objects that embody such things as memories of themselves and their families (e.g. photographs, furniture), religious values (books paintings, sculpture), group associations (stereos, trophies), professional affiliations (books, wall plaques), and that represent ties to the outside world (radio, television) (Csikszentmihalyi and Rochberg-Halton 1981). These objects also represent actual and desired social status (Lauman and House 1970). These objects personalize and mark the setting as the domicile of the inhabitants. They make the place feel comfortable and special. This is communicated to others who enter the space. Thus the furnished and decorated house communicates that it is a place that is inhabited and cared about.

15This is discussed in the work of Clare Cooper Marcus (e.g. Cooper 1974 & 1995), and was also found to be the case by Robinson (1980).
The small scale of the dwelling also enhances identity. Where a small number of people live together, sharing a communal space, they know each other well. The identity of each member of the household is tied to their personality and actions. People, in this context have their identity reaffirmed by the knowledge others have about them.

Order. The idea of home and the modern conception of family apparently have developed in tandem as work and family life became increasingly distinct. The values expressed in today's house are derived from those of the family (although these ideals may not always be achieved in particular cases). As is clear from Rybczynski's work, the conceptions of comfort and ease of living are fundamental to the design of the residence. The order in the house is reflected in the degree to which the power is, in theory at least, distributed among its members. In today's house, the distribution of power is expressed in the ideal of each person having a room of his/her own.

The family residence represents the balance between the power of the individual and the power of the family community. The bedroom area is the domain of the individual, an area that each person controls. The living room, dining room and kitchen are the communal spaces which integrate the family unit, is accessible to all members and to a certain extent, under the shared control of all. While in the typical nuclear family there is a hierarchy, with parents maintaining control over the children, the children are still given access to all of the territories, and have full knowledge of what occurs in the shared spaces. When unrelated adults, with an equal economic stake, share a dwelling, there is rarely a clear hierarchy. The design of the house permits lines of power to change flexibly in response to given circumstances. In other words, although the power lines may be carefully drawn in a particular instance, the structure of the spaces does not rigidly enforce any particular power relation.

In family situations, while the titles of the participants may be as fixed as in other situations (depending on the make-up of the group there may be mother, child, grandfather) the roles of the participants may not be. The person who cooks or does the dishes is not necessarily the same person every day. This is reflected in the architectural form of the house in that the community-oriented activities usually occur in what Hillier and Hanson call distributed or integrated spaces (1984) (see Chapter 6 for a more complete discussion). The intimacy gradient of the house described by (Alexander et al. 1977) is also reflected in the syntactical structure in that there are integrated spaces near the entry where the community resides (again, see Chapter 6). The individual spaces are deeper in the structure, more removed, segregated, more controlled and thus more private.

The typical residence, whether house or apartment, has a relatively fixed structure for control by the individual. But the spatial structure for group associations of the inhabitants is relatively looser, forming what Hillier and Penn call a generative structure (1991:23-49), one which allows for change. The order represented by the dwelling form then is not a rigid order. This same structure, distributing power among all members, allows the expression of identity of both the individual family member and of the group. Where, for example, gender roles play a significant role in family organization, the spatial structure is loosely associated with it. Gender roles have certain stereotypical place associations within the dwelling, female to the connected integrated areas that are accessible but lack control, and male to segregated spaces. However, these associations are inscribed more in the social expectations than in the physical character of the dwelling (for example the locus of the kitchen at the center of the typical house may derive from the traditional role of the housewife, but would support rather than prohibit the husband playing the homemaker role, and also would allow more than one partner take on that role). Furthermore, when the residence is owned by its occupants, due to its material and size
(especially in the wooden houses typical of much of the United States), it is susceptible to change and alteration. Similarly the individual private spaces are structured physically and socially to be modified and rearranged to suit the inhabitant's desires or whims. The furniture is not fixed; the decorations can be replaced. Thus order and identity are expressed, not in a totally permanent, fixed way but in a way that allows for significant change.

**Connectedness.** The sense of connectedness arises in large part from belonging to an intimate group. This is expressed in the dwelling form in the distribution of power, which supports the ability to adapt and to work together. Another kind of connection links the dwelling to a larger community through its siting. The outdoor area is a place where one can actually be physically in the community and one's dwelling at the same time.

In a society that values independence and autonomy, the place of residence has also come to express the status of the individual and household in relation to the outside world. For many people, the place where one lives is an outward symbol of the person's accomplishments, for others it is simply a symbol of their way of life (Cooper 1974). But to have a "place of one's own" is an important symbol of one's citizenship. One of the many difficulties of being homeless is simply that of having no address. It is difficult to apply for benefits, or even to register to vote if you can't fill out the line on the application form that says number, street and city.

A residence also exists in relationship to the community. Its location within a larger block of dwellings such as in an apartment building, or as an independent entity such as a house produces quite different instrumental connections and separations. Symbolic relations are also significant, such as expressed and created by the culturally-bound role of the window, whether the picture window popular in the United States in the 1950's which has been described as conveying the household's economic status to the outside world, or in the Dutch context, the street window, conveying the virtue, or vice of the resident (Cieraad 1999b).

The home can also be a site of resistance to the outside, as described by bel hooks.

Historically, African-American people believed that the construction of a homeplace, however fragile and tenuous (the slave hut, the wooden shack), had a radical political dimension. Despite the brutal reality of racial apartheid, of domination, one’s homeplace was the one site where one could freely confront the issue of humanization, where one could resist. Black women resisted by making homes where all black people could strive to be subjects, not objects, where we could be affirmed in our minds and hearts despite poverty, hardship, and deprivation, where we could restore to ourselves the dignity denied us on the outside in the public world…. where black people could affirm one another and by so doing heal many of the wounds inflicted by racist domination. We could not learn to love or respect ourselves in the culture of white supremacy, on the outside; it was there on the inside…that we had the opportunity to grow and develop, to nurture our spirits. (1990: 42)

For people who are developmentally disabled, mentally ill, or disabled in some other way, the home may well serve a similar purpose, as a retreat from the outside world where one is stigmatized. Home is the place where we should be accepted for whomever we are and loved. From this locus of affirmation, one can reassert one’s own dignity in the face of a possibly antagonistic outside world.
If having a residence is a first consideration; considering the character of the residence comes next. The various types of residence offer different numbers of fellow inhabitants, different arrangements of territories and different expressions of life style. Each of these enables particular ways of inhabiting, and confers upon residents a certain implied status. If the ideal of the society is expressed in the image of the single family residence, the reality of housing is that most people compromise with the ideal. Sam Davis mentions four areas of compromise commonly made: reduction of private outdoor space, loss of identity for individual units, reduction of ease of access to the out-of-doors, reduction of view and exposure of fenestration & doors (1977). Such compromises are ways of life for most people in the world and are necessary for growing numbers of people in our society. The issue that is being addressed here is that of the defining of what it is essential to provide in housing which will be supportive of the act of inhabiting. Assuming compromises are necessary, it is critical to identify which compromises are merely inconveniences, and which are antithetical to the very notion of inhabiting.

**Institution**

In the broadest sense institution stands for any social organization which serves a particular purpose in society. While some social institutions evolve over time, others are consciously created. These consciously constructed social organizations are "institutionalized" in order to create social recognition and practical routinization (Archer 1988:264). Bureaucratic organizations typically use buildings to support both of these requirements, thus, the term institution, while referring also to social institutions, is used in everyday speech to denote the buildings which stand for organizations.

Foucault documents the history of modern bureaucratic institutions, linking them clearly to the emergence of the modern nation state, and finding their origins in the authoritarian disciplines of military and religious structures (1979). Surveillance and punishment is the theoretical foundation for the built forms that support the administration of the institutions. But perhaps the most essential thing for our discussion is the vision of society that underlies such a view of the necessity for discipline.

Historians of ideas usually attribute the dream of a perfect society to the philosophers and jurists of the eighteenth century; but there was also a military dream of society; its fundamental reference was not to the state of nature, but to the meticulously subordinated cogs of a machine, not to the primal social contract, but to permanent coercions, not to fundamental rights, but to indefinitely progressive forms of training, not to the general will but to automatic docility.

'Discipline must be made national,' said Guibert. 'The state that I depict will have a simple, reliable, easily controlled administration… (Guibert 1772) …. While jurists or philosophers were seeking … a primal model for the construction or reconstruction of the social body, the soldiers and with them the technician of discipline were elaborating procedures for the individual and collective coercion of bodies (Foucault 1979:169).

The military organization is organized in a top down command structure. Following this modus operandi, the institution is a disciplinary device by which decisions made by a few are carried out by the many. In his discussion of the panopticon, the apex of coercive buildings, in the light of the ideas which led to it, Foucault points out that discipline is a tactic of power "that fulfills three criteria…; firstly, to obtain the exercise of power at the lowest possible cost…;"
secondly, to bring the effects of this social power to their maximum intensity and to extend them as far as possible, without either failure or interval; thirdly, to link this ‘economic’ growth of power with the output of the apparatuses (educational, military, industrial, or medical) within which it is exercised; in short, to increase both the docility and the utility of all the elements of the system."(1979:218)

The military order requires a hierarchy with a few at the top and many at the bottom. When transformed into a economic service mode reflecting the notion of economy of scale, the model has a few at the top serving and controlling the many at the bottom, with the power retained by those at the top. The social roles and decision-making restrictions follow the top down hierarchy, with domains of control defined by those at the top.

The conception of an institutional residence is a contradiction of terms, since an institution is designed primarily as a structure for control over the inhabitants, whereas a residence ought to be designed to empower them. The primacy of the institution over the resident is what makes institutions problematic as places of habitation. The institution is fundamentally a workplace. In the institutional residence supervision of the occupants is the job to be done. The research of Bill Hillier and Julienne Hanson shows how institutional buildings embody power relations contrary to residential settings (1984). Their work, which will be discussed in greater detail later, documents geometrically and mathematically some of the spatial control mechanisms by which this occurs. The almost exclusive use of isolated spaces in residential institutions supports routines by creating clear lines of control by caregivers over residents, whereas the combination of isolated and integrated spaces in purely residential settings supports choice of access and distributes control among inhabitants.16

The very attributes that characterize bureaucracy and bureaucratic space, make it inappropriate for habitation. In his discussion of the theory of territoriality Sack lists 5 characteristics of modern organizational and bureaucratic structures:

Specialization - which refers to the division of labor;
Standardization - which refers to the extent of procedural regularity in the organization;
Formalization - which refers to the use of documentation for job definition and communication;
Centralization - which refers to the locus of authority in the organization
Configuration - which refers to the shape of authority and hierarchy and can often be summarized by span of control (Sack 1986:44).

While in a certain sense each of these characteristics is found in the way home environments operate, there is a qualitative difference in that the residential structure allows these to occur whereas in the institutional structure they are fixed in space. Furthermore, in the institutional setting these are the means of depersonalizing decision-making, and of solving the practical problems of retaining control over residents.

As Sommer points out,

Max Weber, the father of bureaucratic studies, maintained that a bureaucratic system increased in efficiency to the extent that it depersonalized the performance of official tasks. Weber believed "the ideal official conducts his office....in a spirit of formalistic impersonality....without hatred or passion, and hence without enthusiasm or affection" (Merton 1952:52). Note the intimate connection between official as a person and a

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16When using the term resident, I am not following Hillier and Hanson's choice of vocabulary, where the term visitor is used for residents, because they have no power, and workers are called inhabitants because they control the building.
bureaucratic category and office as status and location....But the impersonality that was the antidote to favoritism, nepotism, and arbitrariness, when transferred to the area of design, resulted in faceless buildings in which no one feels at home (Sommer 1974:106-7).

The premise of the inappropriateness of the institution for long term dwelling is based not only on societally held norms or ideals for adult behavior, which are an important factor in the provision of housing, but also on research findings. At least in the United States, the functional behavior of certain often-institutionalized groups seems to be at a higher level when they are housed in non-institutional settings (O’Neill et al, 1985; Rotegard et al, 1983; Thompson and Carey, 1980). Furthermore, as shown in Phase 3 of this research (Thompson et al, 1997b), the degree of institutionalization in a residence seems to affect resident behavior, so that the less institutional the evaluation of a facility the higher the level of resident functioning.  

The effects of a traditional institution are not limited to residents, but extend to staff as well. Therefore, when institutions require rigid schedules, numerous regulations, hierarchical social structures, differential access to members, etc., these undemocratic effects take their toll on people who work within them. In prisons, for instance, the denial of opportunities for choices, through rigid rules, schedules, even procedures for the appropriate way to fold clothing, not only dehumanizes prisoners-impairing their ability to take responsibility for their own actions- but also results in staff having to participate and enforce these rules, in turn dehumanizing them. Inmates are in prison due to crimes they have committed, staff people are there to make a living, and yet both must live in a brutalized and brutalizing environment. Even if staff are only there for 8 hours a day, that is 50% of their waking hours. Such a work environment is certainly highly undesirable; if this is the case can it be a humane environment to live in?  

Economic issues raise additional arguments against the traditional institution. Where attempts are being made to house dependent people in small, non-institutional settings, there proves to be an actual reduction in costs. The economics of large scale do not seem to hold for housing. Smaller residences are proving to be more economical. Not only is there a human benefit to reducing the scale of housing, which ought to be the deciding factor, but the economics suggest that institutionalization is very expensive. In New York in 1992, housing a person in a mental hospital for a day cost approximately $328 a day versus $96 a day in a group home (Winerup, 1992). In 1992, in Massachusetts the cost of placing adolescents in a psychiatric hospital for a day was between $441 and $558, as compared to a Mentor home, where a family cares for them and they are monitored by professionals, which costs $205 (Sit, 1992). In Minnesota, the 1993 cost of a day's hospitalization for a mentally ill adult in a regional treatment center was about $230 compared to $65 in a group home and $18 in a shared house with visiting mental health services (Hopfensperger, 1993).  

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17 The findings suggest that program philosophy and character of the residence may be intertwined, so that, in these cases at least, the program philosophy was manifest in the architectural form. The form of the design then, is probably affecting not only the resident behavior directly, but also indirectly because of its effect on staff as well.

18 New prison designs have helped to change the role of the prison guard from indirect supervision to direct supervision, where the increased personal interaction among prisoners and guards has not only improved conditions for prisoners, but also for guards, as measured by reduced sick leave and greater job satisfaction (Wener, Frazier and Farbstein, 1987)

19 The impact of these environments on staff was pointed out to me by Carol Davis, who worked in prisons for many years, and now is a scholar of institutional settings.
The social structures that occupy the institutional buildings are today undergoing significant change. The problem is that the buildings that house these institutions are not only designed to resist every such change, these buildings are designed to prevent change. One purpose of this book is to describe the mechanisms by which the traditional institutional building serves as a conservative, regressive social force. Although there may be other large social institutions which still require such buildings, when applied to housing, institutionalization seems to be especially destructive because of:

a. the history of our present social institutions which is associated with control and domination,
b. the coercive structure inherent in the buildings that support them, and
c. the attitudes toward residents represented in their material design.

It is now widely recognized that the social structure of traditional institutions in the United States has not appropriately supported the needs of dependent people. One contributing factor was the bureaucratic buildings that housed them. Now that deinstitutionalization is in its final phases at least in many parts of the United States, it is important to understand how such buildings functioned so that we will not inappropriately assign another group of people to dwell in the old buildings, or recreate new forms of institutional dwellings. It is also important to recognize that modification of the institutional buildings to support the new ideas has not proven to be viable. Their very structure seems to be antithetical to what we know represents human rights for housing. The change away from institutional housing has implications for buildings other than the traditional institution, those at the middle of the institution-home spectrum. Additionally, the process of deinstitutionalization implies a significant restructuring of the way we conceive of buildings.

De-conceiving the Institutional Building

My first contact with normalization in 1981 was an eye-opener. As the graduate of a professional program in architecture about to pass my registration exam, when confronted with the idea of housing for developmentally disabled people, I automatically saw in my mind’s eye a state institution. As a college student I had served as a volunteer working with people with severe mental illness in a large state institution on the East Coast of the United States. I had been appalled at the character of the environment and at the living conditions. At the same time that I recognized this as a place that no one would choose to live, I had to face my own prejudices. Within my cultural context I had come to see such environments as the places that certain kinds of people lived. It was no surprise that an institution of this kind was undesirable, but it was a surprise that there were ideas for alternative forms of housing. Nevertheless the old idea of an institution retained some power over my image of housing for certain groups of people. To learn that this was not appropriate and that new ideas advocated housing such people in housing as close to my own as possible, was a radical and very exciting idea. I was aware that if I, in 1981, as a fairly radical architectural thinker had absorbed the normative idea of the appropriateness of institutional housing for certain groups of people, it might be a challenge for other designers as well to see developmentally disabled people and others in a new way.

Wolfensburger proposes addressing the issue of negative associations, by creating environments that he calls "supranormative" (1977: 159). As much as possible such environments include value-enhancing features and exclude stigmatizing ones.

Valued people can afford exposure to processes and juxtapositions that do not devalue them, or that may even enhance them, while the same processes or juxtapositions may
denormalize a [person already perceived as deviant] or one who is at risk....Consequently the "conservatism corollary" of the normalization principle states that if a person or group is already devalued, or at risk, processes and juxtapositions should not merely be statistically normative ones, but should even go further by being supranormative in the sense of actually adding extra value projection to the person or group. For example,...the interior of a residence for devalued people should be even a bit more attractive and clean than average homes....(Wolfensberger, 1977: 159)

The environment in this way can assist society at large, and enable the stigmatized individual to reinterpret their status. By reducing or even eliminating stigma, and providing environments that support their abilities, dependent people can be encouraged to develop new skills that they may not have developed before, and thereby can significantly enhance their lives.

Such an approach addresses the way the general public may perceive an already designed building, but it does not address the thought process of the designer that creates such a building. Through this study I became aware of another bias in my normative architectural thinking that made me, as an architect trained in the United States, inclined to see more architectural aesthetic possibilities in an institutional setting than in a domestic environment. I realized that the aesthetic sensibility I was trained to have as an architect was decidedly “institutional.” Even when designing residential environments, I had been trained in an aesthetic of efficiency and austerity reflected in preferences for materials that had their origins in industrial buildings (e.g. metal, concrete, glass) and that could be seen as decidedly anti-domestic. Recently Christopher Reed has pointed out how the modern movement repressed domesticity. Perhaps because most architects’ careers begin with domestic commissions, modernist architects have insisted even more vehemently than modernist painters on their antipathy to the home….Witold Rybczynski….traces the phenomenon of domesticity from a faint presence in the Middle Ages…to a crisis at the dawn of the twentieth century when the “distinctly unhomy” International Style aesthetic of what critics called the ‘cold storage warehouse cube” came to dominate the most prestigious ranks of architecture and design.(1996:8).

Given the context of design, where codes and other regulations tended to dictate an institutional setting for people who might be called dependent, and where the architectural education tended to reinforce non-residential patterns of design, architects might find it difficult to make non-institutional designs. But how could one identify the difference between institutional housing and non-institutional housing?

**Key Research Questions**

I began the Phase 1 research with little or no understanding of the key issues of normalization, so the first question for me was very simple. What are the issues involved in housing people with developmental disabilities in an appropriate way? From the beginning I assumed that there must be good reasons why the housing had developed as it had, and other, probably better reasons why it was changing. That was why our initial investigation involved a wide range of housing, although it used a very small set of housing because of our budget. As I and the other architectural members of the research team became more literate about the issues of deinstitutionalization, and began to frame our study in terms of it, it became essential to know the architectural ideas that formed the cultural frame.

The Phase I study, therefore focused on defining the cultural stereotypes of institution and home in architectural terms. These were to be the operative terms of normalization for
design. Assuming a close link between the way buildings perform and the stereotypic ideas we have of them, these stereotyped architectural images and forms would permit differentiation between institution and home environments so that we could know to degree to which a residence was institutional. Although at the time we were not clear about the questions we were asking, they can now be described as:

What is the image that people hold in their minds when they describe either institution or home?
What are the architectural elements that comprise it?
What are the values that these two ideas represent?

Further development of our understanding of institution and home in Phase II had two somewhat contrary objectives. It sought to anticipate whether a particular housing example would be perceived as institutional or homelike, and it explored the nature of the two stereotypical ideas to discover some of their underlying structure. In retrospect these can be seen as being the following two questions.

1. Can we create a measure of architectural features to anticipate whether a residence will be understood as institutional or homelike?
2. What are the cultural constructions behind the two terms, and what are the cultural consistencies and contradictions inherent in them?

The research presented in the second section of the dissertation, after a summary, first presents the cultural stereotypes of institution and home as a kind of “truth,” and then explores how the concepts of institution and home structure the way that ordinary Americans in the United States see housing. This is followed by an analysis of the nature of the perceived opposition and dissection of the physical character of the environment to discover the limits of the stereotype’s consistency. Finally the ninth chapter looks beyond the institution-home opposition at implications for design of future environments to serve dependent people.
Exploring Institution and Home as Cultural Categories for Housing

Envisioning architecture as a cultural medium implies the importance of understanding the role that architecture plays in the communication of cultural ideas. The particular ideas focused on here are the architectural qualities implicit in the terms “institution” and “home”. This chapter presents the approach taken to study cultural ideas expressed in architecture that have had a powerful, overt effect on at least one segment of United States population: those with developmental disabilities. The following chapters present the findings in detail, exposing how architecture reflects, expresses and reproduces the cultural ideas of institution and home.

The cultural concepts that frame the analysis of housing will be familiar to architects because they are part of the general cultural knowledge, knowledge that architects employ that they might not describe as “architectural.” However, once these ideas become conscious, should architects choose to embrace them as “architectural knowledge,” architects will be empowered to make certain design decisions with more awareness of their cultural consequences. If they choose to use the ideas to make more effective housing, they will participate in the process of conscious cultural change. This is the empowerment that is made possible through the conception of architecture as a cultural medium.

This research presented here was completed over a 20-year period. It reflects an evolution in thinking based on a series of research efforts (including the writing of this dissertation), rather than on a single line of thought explored in one well-defined investigation. The thesis can be stated relatively simply: that architecture is a cultural medium, and that the cultural categories of “institution” and “home” affect the architectural design of buildings, specifically housing. The meaning and implications of the thesis are not as static as the simple statement might at first lead the reader to believe. The concept of “cultural medium” and the vision of how the categories “institution” and “home” affect design have emerged and evolved during the three phases of investigation. A complete methodological description of the research is available in the appendix. This chapter summarizes the major findings, some of which are more fully discussed in subsequent chapters.

The first phase, initiated in 1981 and completed in 1984, was applied research. As described earlier, its purpose was to create a set of design guidelines for housing that would support a “normal” living environment for adults with developmentally disabilities. Fundamental to the development of such guidelines, was the concern that they be supported by research findings about normalization and about architecture, findings either previously existing or created in this study. With minimal funding, the study of housing settings led to the framing of the design guidelines as a polarity between institution and home.1

Undertaken between 1984 and 1986, the second, more theoretical phase of research explored the validity of the terms “institutional” and “homelike” and their hypothesized

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1 In the time that has elapsed since this study began, in Minnesota all of the large state institutional buildings that housed adults with developmentally disabilities (the original people to be served by this work) have been closed. People formerly housed in such places now live either independently or with support in houses, apartments or group homes. However, large institutional settings still house many people on a permanent basis, such as people with mental illness and other populations with conditions that cause them to be dependent. Recently, an orphanage was proposed to be newly constructed as appropriate permanent housing for children.
polarity. Methodologically, it resulted in architectural measures for assessing the institutionality or homeliness of settings that were tested in the third phase. It raised theoretical questions about the implication of such cultural investigations for architectural design practices. The third phase work, a study of 20 group homes, was executed between 1992 and 1996. Phase 3 was not the substance of the dissertation, but lent credence to the findings of the first two.

**Phase 1: Design Guidelines for De-institutionalization / Cultural Stereotypes**

The initial analysis of the four contrasting housing settings for people with disabilities in Phase 1 demonstrated that there were great differences between the settings. We characterized these differences as degrees of institutionality or homeliness. As a way to discover whether the degrees of difference were particular to residences for people with developmentally disabilities or were more widespread, we documented and analyzed six additional settings for non-disabled people. Further analysis revealed that these additional settings represented a similar pattern of variation on a continuum between institution and home. Our observations of behavior in the settings for people with disabilities led us to conclude that the character of the setting affected the behavior of the residents. The conclusions were substantiated by findings from other research investigations.

[Exteriors of the 4 Residential Settings for Disabled Adults from Phase I](#)  
(I-H mean building ratings\(^2\): a=1.5, b=1.76, c=3.18, d=4.54) (photos by Myles Graff and Paul Emmons)

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\(^2\) This research project, entitled Architectural Planning of Residences for Mentally Retarded Adults, was funded by several departments of the University of Minnesota, the School of Architecture and Landscape Architecture, the Center for Urban and Regional Affairs, and the Department of Psychology. Findings are reported in Robinson, Thompson et al 1984.

\(^3\) The raw data from the Phase 1 research is no longer accessible, although the figures for the highest and lowest ratings are known. These mean building ratings were calculated by extrapolating the information from a larger
In determining how to describe the differences between settings that we had observed, we noted that the terms used by psychologists and others to describe the general research area that we had entered. “De-institutionalization” and “normalization” suggested a kind of polarity between institution and home that paralleled our observations about the architecture. We decided to use the descriptions as the basis for our design guidelines, which had to meet 3 challenges: (1.) addressing the great range of differences in the goals of the various housing providers, (2) educating designers about the substance of the findings (3) creating guidance without unduly restricting designed outcomes. Because definitive guidelines would be too specific to address the diverse goals of providers, and because they suggest singular solutions that restrict design exploration, we ruled them out in favor of design principles.

The design principles had not only to reflect the knowledge about normalization gleaned from our literature search, but also had to reflect the research data from our own investigation: (1.) the descriptive evidence of architectural differences, (2) the different program goals expressed by administrators, (3) the difficulties of staff in supporting residents (as described by staff and observed in their behavior) as well as (4) the support of everyday living for residents with developmentally disabilities in light of the behavioral challenges that we had observed.

Our analysis of the administrator and staff interviews used a matrix to compare their statements to different attitudes about therapeutic environments developed by Canter and Canter (1979): custodial, medical, prosthetic or enhancement and normalization. While all of the administrators espoused belief in the normalization goals that had become the official policy of the Minnesota Department of Human Services, their attitudes toward the use of the physical environment in implementing their programs reflected a much wider range of attitudes not uniformly linked to the degree of institutionality of the residence they were responsible for. The administrator of the large urban dormitory facility, a setting later rated from slides as highly institutional, had the most progressive attitude. However, in the residence evaluated as the most institutional of the residences, 30 people shared a single dining room. Though it was categorically a residence, and had the architectural potential to support normalization, its administrator stated that a dining room for 30 was normalized. While this was an improvement compared to the previous dining room, which had seated 200 residents, it couldn’t be called typical of the way that the ordinary citizen in a typical house ate his or her dinner. The detailed responses to a range of questions elucidated the role played by the physical environment in supporting or inhibiting the goals of normalization.

In contrast to the administrator responses, staff responses paralleled the institutionality ratings of their residence. Even though they espoused the normalization principle when asked general questions about the overall goals that they were implementing, version of the chart in illustration 4.05 and converting to the scale used in the Phase 2 study in which 5 = homelike.

4 Using ratings of 0 = custodial, 1 = medical, 2 = prosthetic, 3 = normalized, 4 = enhanced, and 5 = growth, the mean ratings for administrators was 1.4 for the state hospital, 4.0 for the large dormitory facility, 3.6 for the apartment group home, 3.5 for the modified family house. In contrast, the mean ratings of staff responses (2 staff per residence) paralleled the degree of institutionality of the residences, being 1.8 for the state hospital, 2.00 for the dormitory, 2.9 for the apartment residence and 3.0 for the modified house. This suggests that the administrators who were more progressive may have been impeded by the facility in educating their personnel. The administrator in the dormitory facility made significant renovations after our observations, and the facility was closed several years later. The state hospital was closed more recently, in 1999. To my knowledge, the most homelike facilities remain in operation.

5 Hendrickson et al. have documented the positive effect of dining arrangement on eating behavior in adults with retardation in a study of people living in a community residence who ate both in a small dining setting and in a congregate dining setting (1985). The adaptive dining behaviors in the small dining room were increased from 16% to 94%, and the maladaptive behaviors decreased from 29% to 9%.
when asked to discuss specific challenges they faced in everyday situations, their responses reflected the potential or limitations of their particular environment to support normative interactions. Thus, a staff person in a residence with gang toilets and showers tended to support group hygiene activities, while a staff member in a residence where two to three people shared a bathroom found it practical to support individual hygiene activities. While staff in the large institutional settings were unable to encourage residents’ independent cooking due to the dangers inherent in the design of institutional kitchens, staff in group homes with kitchens typical to ordinary houses could easily support such independent activity.

We had hoped to statistically analyze the many hours of behavioral observations of the residents made by our architectural research team, but the observations made by the student researchers to ascertain the fine points of “normal” versus “abnormal” behavior were not sufficiently reliable to draw definitive conclusions. Instead, we used the observations as general information about how the architectural form of the residences functioned to support or inhibit the larger program goals. The observations familiarized the research team with problems faced by staff in dealing with difficult behavior problems. The observation experiences also informed the team about the impact of architectural factors, such as how noisy rooms can aggravate aggressive behavior, how small spaces can accommodate or constrain certain activities, how furniture arrangement can limit socialization, and how great distances between activities can inhibit the use of informal movement and demand use patterns programmed in time and space.

Our first descriptions of architectural differences between settings, based exclusively on the four settings for adults with developmentally disabilities, took the form of matrices that delineated a three-part continuum between the most institutional and the least institutional settings. However, the addition of the six settings for non-disabled people, while sustaining relative consistency in the two most extreme fields of the continuum, created greater
variation and more ambiguity in the middle field. This led to discussions about the nature of the differences we were characterizing and how to name them. The most widely used measure for de-institutionalization, that of Wolfensburger and Glenn (1975), was written in terms of normalization, the attempt to achieve the most “normal” environmental setting. This suggested using, not degrees of institutionalization, as we had been doing, but degrees of normalization.

As we questioned how we were able to make distinctions between settings, we became aware that our characterizations were coming from our own internalized cultural categories for housing (institutional and not institutional). We observed that our conceptions, as researchers, were different from the way that we might conceive of such settings as designers (in terms of design principles such as creating a pleasing façade or minimizing the amount of circulation space). We further understood that our conceptions reflected the widespread cultural practice of categorizing things in terms of oppositions (Levi-Strauss, 1963). We then hypothesized that the oppositional categories represented how ordinary people understood and evaluated residential settings. Once we recognized the power of the oppositional categories, we began to see our own descriptions of the environments as describing culturally normative observations, or cultural stereotypes.

As we considered different options for oppositional terms to use, four considerations came into play. We wanted to use terms (1) that captured the opposition implied in the normalization principle, (2) that would resonate with the ordinary person, (3) that reflected the architectural attributes of the settings, and (4) that had a parallel construction. At first we chose the words “institutional” and “normal” because they seemed to represent the opposition inherent in the normalization principle, but we then realized that “normal” might be a bit ambiguous to the ordinary person. Furthermore, the terms did not seem to be completely parallel in construction, as the term “normal” seemed to be related more to behavioral criteria while the term “institutional” seemed linked to both behavioral and architectural criteria. I remembered comments made by a participant in an earlier study who had characterized brick houses as “institutional” in comparison to wooden houses, and I realized that the architectural parallel to the “normal” dwelling, the apartment or house, could be conceived of as relating to the concept “home.” We finally adopted the terms “institutional” (following Rivlin et al., 1981, and Wolfensberger & Glenn, 1975), and “homelike” (following Rotegard et al., 1981 and Bruininks et al., 1981). At this point we hypothesized that the polarity we were responding to was a cultural dialectic between institution and home.

Changing our conception of the design principles from a description of research findings, to a description of cultural stereotypes substantiated by research findings, permitted a more focused research effort. It also permitted us to use the design principles as an

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6 We are using the words "features" and "attributes" interchangeably to stand for the identifiable aspects of architectural settings that seem to independently cue ideas as well as cueing them as part of the ensemble. We are differentiating between features or attributes, which are general terms, and "elements", which form a duality with "supports". Our use of "elements" stands for parts of the setting that can be distinguished as having a relatively independent identity, like floor material, ceiling height or door type. These parts are used as variables in description of setting and are equivalent to Habraken's term "elements", as material volumes, or volumes that have weight, even though they may be attached to or part of the wall, floor or ceiling (1982). Features or attributes are more general, and may include either elements or forms that create support like barriers, walls, openings, etc.

7 This person, a Native American man, explained that his experiences in boarding schools, uniformly brick buildings, had affected his perception of single-family houses made of brick as institutional. This experience, which occurred in 1975, introduced me to the possibility of characterizing housing as “institutional.”

8 Criticism has been leveled at the use of the term homelike because people don't want to live in a place that resembles a home; they want to live in a home. While this is clearly a very important consideration, the suffix "like" permits addressing the issue of degrees of home or institution exhibited by a particular environment.
educational device. If we could inform designers about their own stereotypes, they could then use the stereotypes consciously, and we could thereby promote design innovation. We had to develop very thorough descriptions of the cultural categories, and we had to substantiate that others perceived home settings in a similar pattern. Following Travis Thompson’s suggestion, we then documented the 6 additional buildings that represented a range of institutionality or homeliness, but were inhabited by non-disabled people (a hospital, a dormitory, two apartment buildings and two single-family residences).

Illustration 4.03
Annotated Illustrations and Related Checklist Items

Our first task was to define the stereotypes. We began by carefully examining our photographs of the various settings and categorizing them into groups by place (exteriors, living rooms, halls, etc.). To enhance communication of the principles to architectural designers, we decided to create drawings of our stereotyped conceptions. The drawings were to be accompanied by brief written hypotheses linking the physical characteristics to their impact on attitudes toward and use of the residence, similar to the approach taken in developing pattern languages (Alexander et al., 1968). Additionally, following Zeisel and his
colleagues (1978), the images were accompanied by a checklist of items that would allow the
designer to assess a particular design (delineating, for example, the types of window that are
institutional versus those that are homelike). This method provided, in anthropological/
linguistic terminology both holistic description (the drawing captured the overall ambience of
the places) and atomistic description (the checklist of items delineated as many as possible of
the variables essential to the character of the setting). Pairing the drawings and the checklist
enabled the two conceptions to be directly compared and helped us draw out the salient
details. If we found a salient characteristic of one setting (fluorescent ceiling-mounted
lighting fixtures in living rooms), we sought a parallel conception in the opposite setting
(incandescent floor and table lamps in living rooms).

Illustration 4.04
Original Sketches of Staircases
(drawings by Julia Williams Robinson)

Making sketches to represent the stereotyped conceptions led to another discovery;
the process of drawing an image of each place type triggered new memories. For instance, as
I drew the definitive institutional staircase, I remembered the acoustic quality of the stairwell,
how my footsteps echoed. This reminded me of the hard surfaces of the concrete walls and
floors. Then I remembered how chilly the stairwell seemed, and that the railing was metal
and cold to my hand. The emergency exit sign appeared as I drew the exit door, as did the
door’s dark green metal surface. As I drew the parallel staircase of a house, I remembered
how, in a house, one is acoustically connected to the upstairs, that the light comes in from a
window on the landing, and that the railings are decorated. I was newly sensitized to physical
details that were in the photographic images that we had studied, but I had not noticed them
until I began drawing. My drawing hand had not only elicited additional remembered details
but had also made the environment’s experiential impact consciously recognizable to me as a
researcher. The experience of making the sketches (later redrawn as more finished images)
revealed that although such cultural categories are very powerful and are somehow recorded
in bodily experience, they are not necessarily directly accessible to conscious memory.
The next step was to assess the validity of the images as representations of institutionality and homelikeness. Additionally, we wanted to assess the institutionality and homelikeness of the ten settings that we had studied. Psychology student raters evaluated slides of 64 drawings and 110 photographed images. They rated images individually on a 5-point Likert, semantic differential scale with “institutional” as 1 and “homelike” as 5. When each drawing’s rating was compared to its pair, 27 (84%) of the pairs were found to be significantly opposite (p ≤ .001 using a Student T-test P). Those that were not rated as opposite were all plans, which were abstract drawings that lacked scale elements, like furniture. The final set of 48 drawing pairs included an additional 16 that were made subsequent to the test, and the five non-opposite pairs, redrawn to add more detail (see Chapter 5 for the complete set of paired drawings and hypothesized significance of the difference). Slides of each of the ten buildings were found to be highly correlated (r = .95 for mean ratings of exteriors to overall mean ratings of interiors at Spearman Rank correlation). The mean homelikeness ratings of slides for all ten buildings fell along a continuum from homelike (a single family house with a rating of 1.3) to very institutional (an urban hospital

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9 When people are asked to evaluate photographic images of setting and the actual settings, the differences in their response has been found to be small (Seaton & Collins 1972; Hershberger & Cass 1974; Danforth & Willems 1975, Feimer, 1984). Slides and photographs are therefore commonly used to study people's qualitative responses to different kinds of settings, including housing (Flachsbart and Peterson 1973; Hershberger 1972; Tobey 1982, Marsden, 1994).

10 Semantic differential tests are commonly used to study housing. See, for example, Hershberger (1972), Tobey (1982) and Nasar (1983).
with a rating of 4.75). The continuum for the residences for adults with developmental disabilities represented only a slightly smaller range, falling between (for a group home in an expanded suburban single family house) and (for a state institution that housed 1,000 people).

**Phase 2: Exploring Institutionality and Homelikeness in Architecture**

Finding that non-designers were able to evaluate buildings on a continuum between “institutional” and “homelike” raised a number of questions. Does housing actually fall on a continuum between institution and home? Was there actually an opposition between the ideas represented by the terms we had selected? Are these the best terms to represent the ideas that we are exploring? Are the architectural checklist variables valid? What architectural characteristics distinguish between the qualities of home and institution in residential settings? What values, attitudes and behaviors do these environments reproduce, reflect and communicate? Answering these questions required two types of study that needed to be related to each other. The first type investigated how people understand the settings (represented by parts A, B and D), and the second described architectural form so that that people’s understanding could be related to design choices (part C).

To investigate people’s understanding of housing design, as before, we studied people’s response to photographic images. Relating the understanding of architecture to physical design posed more of a challenge. We had decided to measure the settings using the Checklist of Architectural Features from Phase 1, which was an evaluative measure designed to define a qualitative difference between settings. But we wanted to validate and to improve upon the checklist by using a descriptive methodology as well. The checklist that we had developed in the previous study was limited by bi-polarity and by generality. Moreover, it had been based on observation, the fallibility of which we had already discovered in our learning through drawing.

Rather than make educated assumptions about what features are most relevant to the question at hand, as is generally done when measuring architecture, we sought a more objective form of measure that would permit more “complete” description by calling attention to details we might not have otherwise observed. By comparing atomistic

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11 Reported in Robinson 1986c, and more recently in journal articles and conference proceedings (Robinson 1988; Robinson et al. 1992; Robinson 1993), this work has been funded by many sources. In addition to a substantial grant from the National Endowment for the Arts, support was received from a great number of units within the University of Minnesota (The Graduate School, The College of Architecture and Landscape Architecture, the Institute of Technology, and the Institute for Disabilities Studies), and from the American Institute of Architects Health Facilities Committee and the Association of Collegiate Schools of Architecture through the AIA/ACSA Joint Committee on Research.

12 For a discussion of evaluative, descriptive and predictive assessments of environments, see Craik and Feimer (1987).

13 Laumann and House’s Living Room Check list (1970), for instance, consists of approximately 74 variables considered salient to social status and style; Groat selected key features of architectural style to differentiate between settings (1984). Moos and Lemke selected factors relevant to safe care for the elderly (1979), and Wool selected factors deemed important for building friendliness (1978). We have hypothesized which features are salient in The Robinson/Igenmay/Graft/Thompson Architectural Checklist Living Room Measure.

14 The creation of a “complete” and “unbiased” measure is only possible in theory, but an approximation of that has value for addressing broad architectural questions. Such an instrument would describe environments so that questions about history, questions about environmental systems, questions about behavior etc. could be related to each other. This kind of an instrument would permit the development of evaluative measures that cross present sub-disciplinary boundaries.

15 In this approach we follow Krampen (1970), who, in developing evaluative measures, has started with descriptive ones to discover patterns. Some others who have used purely descriptive techniques to discover patterns are Stiny (1980), Hillier & Hanson (1984), and Preziosi (1983).
description of the architectural features present in the photographed settings to evaluations of the photographed images, we hoped to derive from the catalogue of “all possible” elements, or those elements that were correlated to the qualities found in the images. In architecture there are two ways of considering environments: as artifacts to be experiences (the perceptual mode) and as artifacts to be made or produced (the conceptual mode). Observation-oriented research is based on perceiving; we pursued a method that would engage the process of conceiving architecture.

The traditional conceptual description of architectural form, the plan, does not represent the detailed architectural distinctions we had identified in our checklist of elements. We required a measure that would generate thorough description with greater differentiation and detail. The inventory is an anthropological method that has potential to describe such attributes as materials, lighting, types of ventilation systems, windows, doors, materials, furniture and decoration. This approach or similar approaches have been successfully used by architectural researchers, especially when studying typological aspects of form (e.g. Glassie, 1975; Preziosi, 1979b and Krampen, 1979). For example, Glassie made lists of characteristics and placed them in diagrammatic relation to each other. Preziosi took a similar approach with a visual inventory of formal elements (columns, walls, etc.), and Krampen employed inventories of building properties to study how building exteriors are perceived.

In considering various architectural descriptive devices, we recognized the traditional descriptive architectural specification (as opposed to the performance-based specification current in U.S. architectural practice today) as a type of inventory description that had potential to accommodate our desire for a complete description using a single tool. Using the descriptive specification as a way of proceeding, we developed an inventory of architectural elements to describe the housing settings. The specification-based inventory successfully describes interior spaces (with approximately 1000 variables per space); it has been somewhat less successful as a tool to describe the exterior environment.

16 In anthropological terminology atomistic description describes things in terms of their parts, and contrasts with holistic description, which tries to capture the entire entity at once.

17 The overall approach taken in this study combines photographic description, plan description and inventory description. It is not multi-dimensional in the manner advocated by Wandersman and Moos (1981), in that it does not incorporate a variety of social dimensions of setting; yet, it attempts to be multi-dimensional in terms of the environmental measures. Compared to the approach for assessing environments advocated by Wandersman and Moos, we are far less evaluative and far more directly descriptive. Although they have reason to believe that certain environmental features are important, they are interested in the architectural features as they relate to a number of social measures. We are focusing more directly on the environment itself. An evaluative measure that we would develop from a descriptive approach would, however, fit into the multi-dimensional schema they propose.

18 For a developed discussion of these two modes see Robinson (1986a). Lefebvre makes a similar distinction as a part of a triad of space as perceive-conceived-lived (1991 [1974]).

19 Description of architecture is not limited to the plan. Within the field of architecture, among descriptive techniques are those developed by Mitchell and Stiny (e.g. 1978, Stiny 1980, Mitchell 1986) that have developed formal and topological descriptive and analytic techniques (see Mitchell, 1990 for a review). Krampen (1980), Hillier and Hanson (1984), Preziosi (1979b, 1983) have addressed formal architectural syntax, and Groat (1988), Moos and Lemke (1979), and Woolf (1978) have created instruments using selected physical features. Outside of architecture, Wolfensberger and Thomas (1983) have developed an instrument that assesses architectural character in general, but without using particular architectural features.

20 Color is the one aspect of environment that was not included in the inventory. Despite its being a very important variable, the difficulty of reliably describing the color of each variable in a simple and efficient manner led us to rule it out as a factor that could be included.
We began by documenting 29 buildings in a midwestern city in the United States. The buildings exemplified ten categories of housing: hospitals, nursing homes, dormitories, rooming houses, group homes, mid-rise apartment buildings, walk-up apartment buildings, row houses single-family dwellings and public housing projects (a category that overlapped with others). Each building was documented using photography, video, building and site plans, the inventory of architectural elements and the checklist from the previous study. Complete documentation on all of the settings was not possible within the constraints of the study. Nevertheless, the substantial body of data that was comparatively analyzed revealed a complex picture of the relation between institution and home.

In Part A, an initial test of the institution-home polarity, we had university students rate slide images of the settings using the same semantic differential methods as in the previous study, with the change that the term “institutional” was substituted for “institution-like”. The findings were similar. The housing was rated as on a continuum between institution-like and home-like, with houses, walk-up apartments, rooming houses, group homes and mid-rise apartment buildings located generally in that order toward the home-like pole, nursing homes and hospitals located at the institution-like pole and dormitories, and row houses and public housing located at the middle. With the exception of group homes and mid-rise apartment buildings, mean ratings between building types were statistically significant (p ≤ .05).

Rotated factor analysis of the evaluations revealed finer distinctions within the concepts (see Illustration 4.07). When these were compared with the checklist of architectural features, most of these distinctions were found to vary with different features of either “institution” or “home”; however “privateness” and “intimacy/coziness” varied with the same features, suggesting that the checklist variables may not have captured some
perceptible architectural differences between places.

<table>
<thead>
<tr>
<th>Area of Image</th>
<th>Name Given Quality</th>
<th>Variance Accounted For</th>
<th>Total Variance Accounted For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facades</td>
<td>1.private dwelling</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.collective dwelling</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.context</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.modern-traditional</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.suburban</td>
<td>5%</td>
<td>56%</td>
</tr>
<tr>
<td>Corridors</td>
<td>1.linearity</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.austerity</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.public character</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.bright/dark contrast</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Living Room</td>
<td>1.intimacy/coziness</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.privateness</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.spacious</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.non-dwellingness</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.unnamed</td>
<td>5%</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>43%</td>
</tr>
</tbody>
</table>

**Illustration 4.07 Factors Associated with ratings of images of different areas of housing in the exploratory rotated factor matrix Study.**

In the rotated factor matrix analysis of slides the quality identified as “coziness”, and associated with high contrast of light and close seating arrangements, (see illustration 4.08) was largely found to be associated with “home-like”, but was also associated to some extent with “institution-like”. The concept of coziness is not, therefore, exclusive to home settings, a finding that suggests the possibility of making institutional settings cozy.

![Illustration 4.08](image1.png)  
**Illustration 4.08**  
Two of the slides identified as cozy in the rotated factor matrix analysis, that show role of high contrast lighting and seating in creating coziness

Cross-correlational comparison of checklist items to the images yielded unexpected correlations. Of these, the most interesting was the category non-dwellingness. It was generally applied to living rooms over 300 square feet in size, but it also associated with a few images of smaller spaces. In studying photographic images to identify the reasons for

21 With 77 evaluators, there were too few slides of each space type to do a statistically valid rotated factor matrix analysis. Because we simply multiplied the number of slides by ten, this analysis must be called exploratory.
associations of images of smaller spaces with non-dwellingness terms, we uncovered new elements not in the checklist, such as ceiling ventilators, wall-mounted televisions, wall-mounted signs, and stacking or folding chairs.

For Part B, using a different approach to study perception of images, another group of 34 students completed multiple sort tasks with 35 black and white photographs of the housing (Robinson et al., 1992). Because of the limited size of the participant group, these findings are more speculative than definitive. We first utilized the free sort method that had proved successful earlier (Robinson, 1980). This approach follows Tversky and Hemenway (1983), and uses linguistic and psychological approaches to study categorization of objects and concepts (Brown, 1958; Pavio et al., 1976; Rosch et al., 1976).22 In the earlier study, although the non-designers had categorized photographic images somewhat inconsistently, utilizing a variety of category types, a majority had used building type as a primary category (sometimes as the only category). We therefore assumed that would also be true in this study, and we were especially curious to discover which building types they would use. We designed the remaining questions to elicit information about the preferences for housing types. The first task (1) was a free sort designed to elicit spontaneous conceptual structure and categories. In this task, the students put the slides in groups “in any way that you think makes sense,” and assigned names to the groups. Subsequently, the students sorted the photographs more specifically (2) into opposite groups to which they assigned names, (3) according to whom they thought would inhabit the settings, and (4) according to whether the housing was desirable, acceptable or undesirable as a place to live.

In the analysis of the free sort we found that the 34 participants used five general approaches to categorization (see Illustration 4.09): 13 categorized the images by room type, using an extra category for building exteriors, eight categorized their images by using both room type and building type, seven grouped images by building type, combining interior and exterior photographs as we had anticipated, depending upon whether the image was interior or exterior, and two organized photographs by their residential quality. The remaining four categorized idiosyncratically using these and other additional categories. We realized that the earlier study had found building types to be basic architectural types because only building exteriors had been shown. This study showed that room types, not building types, are basic categories for interior spaces. Nevertheless, building type was used by a large number of people to combine interior and exterior images and constituted a category superordinate to room type. Furthermore, the residential/nonresidential categories subsumed both of the other basic types and therefore represented a level superordinate to building type. We had found a structure of spatial categories for housing that had a nesting character, in which room type was subsumed by building type and building type was subsumed by residential/nonresidential categories.

22 Sorting studies have been widely used in psychology to uncover conceptual schemata. For discussion of sort studies in general (in the context of a particular type of sort study not used here) see Canter et al. (1985), especially pp. 83-88. In retrospect, the categorization approach advocated by Canter et al., derived from Kelley’s repertory grid (1955) might have offered a more definitive understanding of preference. The free sort that was used, however seems more appropriate for generating user categories, by letting the respondent freely generate their own categories rather than having them participate in a sort whose structure implies certain relationships between categories, suggests numbers of categories, etc. To combine these two approaches would have been ideal.
Table showing the type of approach used in free sort by participants.

<table>
<thead>
<tr>
<th>Type of approach used in free sort</th>
<th>Example 1 By Room Type (plus building)</th>
<th>Example 2 By Rm &amp; Bldg Type</th>
<th>Example 3 By Bldg Type</th>
<th>Example 4 By Bldg/Rm Type &amp; Residential/Nonresidential</th>
<th>Example 5 By Other</th>
</tr>
</thead>
<tbody>
<tr>
<td># using approach</td>
<td>13 participants</td>
<td>8 participants</td>
<td>7 participants</td>
<td>2 participants</td>
<td>4 participants</td>
</tr>
<tr>
<td>Sample of type of sort</td>
<td>Kitchen Living Rm Eating Rm Hall Bedroom Bathroom Waiting Rm Buildings</td>
<td>Dining Rooms Apt Bldgs Bathrooms Hospital Small Business College Dorm Kitchen Sitting/Waiting Rms</td>
<td>Apartments Hospital Settings Hotel/Restaurant Residential Home</td>
<td>Nonresidential Bldgs Buildings People Live in Rms in Residences Rms in Nonresidences Bedrooms Hallways</td>
<td>Corridor Porcelain Relaxation Lay Your Head Creations Shelter Sick &amp; Disabled Dining Waiting</td>
</tr>
</tbody>
</table>

Illustration 4.09
Participants’ Categorization of Photographs of Housing in Free Sort

But we also discovered that lay people do not necessarily share architects’ use of building type as a primary mode of structuring place categories. Interior spaces, quality of space, as well as activities, users and spatial details all have powerful meaning for non-designers as cues for understanding place. Notably, participants most commonly categorized interiors of apartments as home, while they classified exteriors as institutional or grouped them inconsistently. This suggests that it is not the units themselves, but the relationship between the units, that generates the perception of apartment buildings as being somewhat institutional.

<table>
<thead>
<tr>
<th>Oppositional Category Used</th>
<th>Number in Category</th>
<th>Number using word &quot;house&quot; or &quot;home&quot;</th>
<th>Number I-H Related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home, House/Non-Home, business</td>
<td>6</td>
<td>(6)</td>
<td>6</td>
</tr>
<tr>
<td>Inside/Outside</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private/Public</td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Personal/Impersonal</td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>New, Modern/Old</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutions/Homes, private dwelling</td>
<td>3</td>
<td>(2)</td>
<td>3</td>
</tr>
<tr>
<td>Places to live/Places to work, Nonresidential</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Hospital/Nonhospital</td>
<td>2</td>
<td>(1)</td>
<td>2</td>
</tr>
<tr>
<td>Single Person or Family/Many</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>People or Families</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold/Warm</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desirable/Undesirable</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Ascriptions</td>
<td>34</td>
<td>(9)</td>
<td>24</td>
</tr>
</tbody>
</table>

Illustration 4.10
Part B Sort of Images of Housing into Oppositional Categories: Category Names Attributed by Participants

We were interested as well in the names that had been assigned to categories in the free sort. Had people spontaneously assigned either “institution” or “home” to the categories? What building type and room type names were used? The word “home” was spontaneously
used only nine times and the word “institution” three times. However, 28 of the 34 students had grouped single-family residences into a single category, and ten participants had used categories that clearly implied the institution/home distinction. Four building type names were used eight or more times: “house,” “hospital,” “apartment building” and “dormitory.” The most agreed upon names for rooms were “bedroom,” “bathroom,” “hallway,” “kitchen,” “dining room,” and “living room.”

The applicability of the concepts represented by institution and home and the category names were tested by the subsequent sort into opposite categories, the oppositional sort. The vast majority of the categories used, 24 of 34 (see illustration 4.10), reflected a vision of contrast between home settings and non-home settings. Twenty-three of the 34 participants (67%) consistently categorized 15 images, that were rated as “home-like” in the earlier study, as opposite to 13 other images, earlier rated as “institution-like”. The terms “home” or “home-like” were used by nine of the students for the first 15 images. Three people used term “institution” (two of whom had not used the term in the free sort). The remaining seven images were inconsistently grouped.

Examining the way people applied terms in both the free and oppositional sorts, we find that a total of nine people used “home” and five people used “institution”. Of these, three used both terms. This suggests that while the opposition between home and institutional settings was spontaneously generated in the opposite sort, and apparently shared by the majority of participants in the study, there was no agreed-upon terminology for the names to represent the poles. Additionally, more unanimity existed for both the concept and the name “home” than for “institution”. We attributed the unity and power of the category we call “home” to its link to a single building type, and the more ambiguous associations with our concept of “institution” to its association not with a single building type but with many kinds of buildings.

The sort by-type-of-inhabitant did reveal interesting findings, but analysis of the sort into desirable, acceptable and undesirable by building type indicated a high level of consistency between buildings of a particular type. Mean ratings of desirability show a range of preference parallel and inverse to the range of institutionality (5=desirable, 1=undesirable): single family dwellings, 4.43; walk-up apartments, 3.98; mid-high-rise apartments, 3.24; rooming houses, 3.36; group homes, 3.30; mid-rise apartments, 3.24; public housing (mixed category), 23 3.06; row houses, 2.92; dormitories, 2.75; hospitals, 1.6; and nursing homes, 1.39.

Part C developed a three-level ordinal measure entitled The Robinson /Ingenmey /Graff /Thompson Living Room Checklist (Thompson et al., 1990) by comparing 27 checklist items found to co-vary with rotated matrix factors in Part A to an assessment of eight living room environments from Phase I. Ordinal measures were created from continuous measures, such as dimensions, by examining room dimensions of spaces rated as being very institution-like, very home-like or in-between. Discontinuous measures were categorized similarly, based on the ratings of settings. These three-part measures were further developed in a five-level measure after the inventory of elements was analyzed.

The primary purpose of Part D, a further refinement of Part A, was testing (1) whether institution and home were opposite categories and (2) how they related to other categories found in the sort study. After completing Part A, we had realized that by using institution-like and home-like as poles in the semantic differential, we had imposed their polarity upon the evaluation. We therefore needed students to evaluate the two terms independently to know if they actually functioned as opposites. Consequently, in this study, a

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23 Public housing is described here as a mixed category because it can be seen as a category of its own responding to its method of funding, or as a category relating to its form, in this case row house or mid-rise apartment building.
new set of 30 students rated the slides from Part A using “institution-like/not-at-all-institution-like”, and “home-like/not-at-all-home-like”. Additionally, space types were rated in terms of qualities found associated with them in the rotated factor matrix analysis and in the sort study. For example, students rated living room slides along semantic differential scales using “institution-like/not-at-all-institution-like,” “home-like/not-at-all-home-like,” “desirable/not-at-all-desirable”, “expensive/inexpensive” and “cozy/not-at-all cozy”. We could then compare, for example, “desirable” with “institution-like” and with “home-like”, to see how it related to these terms.

In the Pearson Correlation study of the evaluations of slide images in terms of qualities of living rooms (see Illustration 4.11), “institution-like” and “home-like” were found to be negatively correlated, but only at the significance level of P=.090. The correlation study of housing qualities also showed that although “home-like” was strongly associated with “desirable”, “institution-like” was not strongly associated with “undesirable”. “Cozy” was very highly correlated with “desirable” (p = .000), but only correlated somewhat positively with “home-like” and somewhat negatively with “institution-like”. This supports the finding in the rotated factor matrix analysis that it may be possible to create cozy institutional settings.

### Pearson Correlation Coefficients

<table>
<thead>
<tr>
<th>Home-like</th>
<th>Institution-like</th>
<th>Desirable</th>
<th>Expensive</th>
<th>Modern</th>
<th>Private</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institution-like</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-.2216 (38)</td>
<td><strong>p= .090</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desirable</td>
<td>.4318 (38)</td>
<td>-.2972 (38)</td>
<td>-.1846 (38)</td>
<td>.5601 (38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p= .003</strong></td>
<td><strong>p= .035</strong></td>
<td><strong>p= .134</strong></td>
<td><strong>p= .000</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expensive</td>
<td>.1687 (38)</td>
<td>.1687 (38)</td>
<td>.5601 (38)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p= .156</strong></td>
<td></td>
<td></td>
<td><strong>p= .000</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modern</td>
<td>.2898 (38)</td>
<td>-.1747 (38)</td>
<td>.4520 (38)</td>
<td>.6036 (38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p= .039</strong></td>
<td><strong>p= .147</strong></td>
<td><strong>p= .002</strong></td>
<td><strong>p= .000</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>-.0133 (38)</td>
<td>.2093 (38)</td>
<td>.2765 (38)</td>
<td>.3984 (38)</td>
<td>.0621 (38)</td>
<td></td>
</tr>
<tr>
<td><strong>p= .468</strong></td>
<td><strong>p= .104</strong></td>
<td><strong>p= .046</strong></td>
<td><strong>p= .007</strong></td>
<td><strong>p= .356</strong></td>
<td><strong>p= .000</strong></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>.1036 (38)</td>
<td>-.2416 (38)</td>
<td>-.2498 (38)</td>
<td>-.3630 (38)</td>
<td>-.0701 (38)</td>
<td>-.8061 (38)</td>
</tr>
<tr>
<td><strong>p= .268</strong></td>
<td><strong>p= .072</strong></td>
<td><strong>p= .046</strong></td>
<td><strong>p= .013</strong></td>
<td><strong>p= .338</strong></td>
<td><strong>p= .000</strong></td>
<td><strong>p= .000</strong></td>
</tr>
<tr>
<td>Cozy</td>
<td>.1696 (38)</td>
<td>-.1817 (38)</td>
<td>.5567 (38)</td>
<td>.4676 (38)</td>
<td>.3874 (38)</td>
<td>.1235 (38)</td>
</tr>
<tr>
<td><strong>p= .154</strong></td>
<td><strong>p= .137</strong></td>
<td><strong>p= .000</strong></td>
<td><strong>p= .002</strong></td>
<td><strong>p= .008</strong></td>
<td><strong>p= .230</strong></td>
<td><strong>p= .260</strong></td>
</tr>
</tbody>
</table>

[coefficient/(cases)/significance]

Illustration 4.11  
**Correlation between Terms Selected for Living Rooms**  
**Part D Student Evaluation**  
(Analysis by Jan Greenburg)

The terms “institution-like” and “home-like” were found to be opposite for 88% of the slides. 64% of the slides were highly or moderately opposite, and 24% were somewhat opposite. Detailed hierarchical cluster analysis of the evaluations of slides indicated that
while a clear distinction was made between institution and home, the relationship is not one of opposition, but rather one of contrast. While comparison of the evaluation of slides using “public” and “private” independently of each other revealed they were opposed at a .005 level of significance. The level of significance of the opposition for “institution” and “home” was much weaker, only .10. Thus, the terms “institution” and “home” could not be said to be true opposites. The relationships to other terms are shown in Illustration 4.11.

Part E investigated the architectural characteristics of the housing by (1) studying the validity of the binary checklist of architectural features developed in Phase I, which had the two variables institutional and homelike, (2) analyzing and improving the inventory measure that had been used in Phase II to describe the housing in detail, and (3) following up on Part C by developing the 3-level measure entitled The Robinson /Ingenmey /Graff /Thompson Living Room Checklist into a more complex 5-level measure.

### Illustration 4.12
**Checklist Evaluation using Discriminant Analysis:**

*All Places (by building type from most to least institutional) by Checklist Item*

(Analysis & Illustration by John Klensin)

Validation of the binary checklist posed special difficulties. which John Klensin, of MIT, overcame by creating a method of discriminant analysis to study it (see illustration 4.12), and by using a cluster analysis of all 23 settings measured for each of the eight areas
(exterior, living room hall, stairs, dining room, kitchen, bedroom and bath). The discriminant analysis indicated that of the 236 checklist items describing the entire building, 193 (or 82%) were valid (Robinson 1986c: 16), either strongly (23 or 52%) or weakly (70 or 30%). Of the remaining 43 items, ten were clearly invalid, but because of our small data set there was insufficient data to definitively determine if the other 33 items were invalid.

**Illustration 4.13**

Cluster Analysis of Checklist Showing 3 Groups of Residences

Dendogram Using Average Linage (Across Group)

(S=Single-family dwelling, T=Townhouse, G=Group Home, D=Dormitory, N=Nursing Home, H=Hospital, M=Mid-highrise Apartment, R=Rooming House, P=Public Housing, W=Walk-up Apartment)

(Analysis by Joav Lavee)

The cluster analysis raised questions about the hypothesized continuum between institution and home. Instead of showing an even pattern of distribution among the different examples of housing, it revealed different patterns in three subgroups: the most home-like settings (S2 to G2), the most institutional settings (N2 to D3) and a group in between (M2 to D1) (see Illustration 4.13). The 11 most homelike residences and the five institutional residences seem to be comparatively closely related to each other, as are the seven intermediate residences, but the comparatively large distance between the three subgroups called into question the existence of a continuum for physical design. The strong relation between the homes supports the hypothesis of a distinct physical category, home, and further suggests that the checklist is able to measure qualities associated with home. The subdivided relation between institutions suggests that this category is not as physically unified. The great distance between the home group and the two other building groups indicates that the physical differences between institution, home and the intermediate group do not form a continuum. This may also be due to the measure itself, which does not clearly describe the middle condition, but is limited to description of the two poles.
The architectural inventory that we had used in Phase I provided a detailed description of space configuration, materials, hardware, furniture, equipment, and the like. It incorporated approximately 1,000 variables per space or room. The variables were transcribed into a form that, in theory, would have been possible to analyze with cluster analysis using the computer techniques of the time. However, this kind of “complete” measure created such large numbers of variables, and such a large contingent of 0 entries (variable not found), that the limited time and funds made analysis of the entire inventory impractical, and ruled out computer analysis of even a large subset. Instead, we focused on the living room data, analyzing variables identified as significant in the *The Robinson/Ingenney/Graff/Thompson Living Room Checklist*, as well as a few others for which we had new data. We applied a different form of discriminant analysis based upon graphs of variables organized by mean living room rating. We assigned weights to different variables to achieve a pattern of variation that reflected the institution-home evaluation (see Illustration 4.14). Using this approach we revised all 27 of the three-level scaled items in *The Robinson/Ingenney/Graff/Thompson Living Room Checklist* to create the *Institution-Home Assessment Measure for Living Rooms*, a five-point scaled measure of 32 architectural attributes (Chapter 6 discusses the design of the living room in relation to the assessment measure.). Additionally, we also developed a new descriptive research instrument by applying our experience using the *Inventory of Elements* and the data from it, *The Architectural Inventory Measure (A.I.M.)* is designed for a more systematic, computerized method of gathering and analyzing data. It replaces the unstructured matrix system we had used with a list that identifies each of 1,398 items one by one in a nested structure.

The new measure is divided into larger categories that respond to the process of making spaces: configuration, materials, systems and equipment, and furnishings. Individual parts of the measure are structured independently, depending on the nature of the variables being described (similar aspects of different parts of the environment, such as the material of a plumbing fixture or the material of a bed will not necessarily be found at the same structural levels). This measure combines quantitative and categorical data. The original *Inventory of Elements* had been minimally structured (three levels categorized place type, variable type and variable). It was also unweighted, because we intended to discover rather than impose the structure and weighting. However, the lack of structure made it difficult to apply to environments. We had hoped to develop weightings in the subsequent study, but the use of unweighted measures made analysis unwieldy for statistical purposes. Therefore, when

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**Illustration 4.14**

**Discriminant Analysis Diagrams of Inventory Features**

*Used to Develop Architectural Inventory Measure of Living Rooms*

(Analysis and Diagrams by Julio Bermudez)
the A.I.M. measures were applied in the Phase 3 investigation of 20 environments in Tennessee, the inventory was revised, so that environments would be assessed using weighted variables based on our observations of environments. While the weighted measure made possible the statistical analysis of the correlation between inventory items and observed behaviors, the imposition of a hypothesized value defeated one of the original purposes of the inventory: the discovery and characterization of relationships between physical variables.

(STRUCTURE OF THE INVENTORY)

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Horizontal</th>
<th>Ceiling</th>
<th>Vertical</th>
<th>Wall Opening</th>
<th>Door</th>
<th>Skylight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Wall</td>
<td>Floor</td>
<td>Ceiling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systems</td>
<td>Lighting</td>
<td></td>
<td></td>
<td>Plumbing/Accessories</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication Systems</td>
<td></td>
<td></td>
<td>Mechanical Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mechanical Systems</td>
<td></td>
<td></td>
<td>Elevator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furniture &amp; Equipment</td>
<td>Fixed Furniture</td>
<td></td>
<td></td>
<td>Non-Fixed Furniture</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decoration</td>
<td>Art</td>
<td>Plants</td>
<td>Etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior Context</td>
<td>Paving &amp; Surfacing</td>
<td></td>
<td></td>
<td>Landscaping</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power &amp; Communication</td>
<td></td>
<td></td>
<td>Etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjacent Buildings</td>
<td>Scale of Stories/Height</td>
<td></td>
<td></td>
<td>Building Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood</td>
<td>Scale of Stories/Height</td>
<td></td>
<td></td>
<td>Land Use</td>
<td>Etc.</td>
<td></td>
</tr>
</tbody>
</table>

Illustration 4.15
Nested Structure of the Architectural Inventory Measure (AIM)

At this point in the Phase 2 research, we had contradictory evidence about both the polarity and the continuum. However, we realized that our physical measures, both the checklist and the inventory, had combined two different kinds of built form. To modify Habraken’s terminology, it is possible to differentiate between the physical features that form the habitable substance of the building---materials, equipment furnishings and decorations---what Habraken called elements (1982), and the physical features that structure the spatial relationships of the buildings---what Habraken and his colleagues called supports (1976)---
that are represented in this study by the plans and space syntax diagrams. Thus we distinguish between the elements of the building, which are observable in photographs, and the structure of its spatial relationships, which are not.

Applying this distinction to our contradictory evidence, we hypothesize that those attributes of the inventory measure that describe elements observable in photographs fall into a gradual continuum, while those that address spatial relationships experienced by moving through space (supporting activities), do not fall into a simple continuum because they express the variety of spatial arrangements of institution. This hypothesis distinguishes the operation of elements from that of spatial structure and is a finding of this dissertation. The meaning of environments that derives from the functioning of elements in the housing studied is further developed in Chapter 6. Chapters 7 and 8 address structure of spatial relations. The validity of this separation, the extent to which, and the manner in which, these two aspects of architecture interact are questions that are not answered here, but seem worthy of further study.

**Part F** took the next logical step, exploring the syntactical structure of institution and home. Documenting all of the houses, we created plans, elevations and gamma analysis diagrams of each building. (We limited our other examples to the most representative member of the different building types, excluding rooming house, for which we had incomplete plan documentation). We analyzed these for visually observable differences, as well, using simple dimensional analysis and Hillier’s New Wave Program. Additionally, we developed a matrix analysis that compared the territorial gradient found in our single-family houses to the examples of other building types (See Chapters 7 and 8.).

Visual analysis of the scaled drawings of the different settings revealed very great differences in scale of both plans and sections. Linear measures showed a four-fold difference between the distance from street to bedroom for the mean of the single-family houses (57 feet) and the sample nursing home (250 feet) (see Illustration 4.16). The similarity between the street-to-bedroom distances in the plans of the most home-like residences, the single-family houses, is quite close. The street-to-bedroom distances of the most institutional buildings showed greater variation, corroborating the evidence from previous analysis that the institutional pole is syntactically more varied.

Study of the syntax diagrams (discussed in more detail in Chapters 7 and 8), revealed that the single family houses and row houses had very similar syntactical structures with many fewer spaces than the institutional residences, and were arranged in ring, linear, and fan-shaped patterns. The institutional buildings, nursing home, hospital and dormitory had many more spaces than houses, but only exhibited two of the three spatial patterns, linear and fan-shaped. The apartment and public housing examples had more spaces in the building overall than the houses, but fewer spaces in the units than the single family house, and generally exhibited all three of the spatial patterns.

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24 We use these terms somewhat differently from Habraken et al. To contrast with supports, instead of the term "components" which in their 1976 work is simply related to the building materials, we use the more broadly defined term "elements" as in their later work to also include furniture and decorations. Neither is this use of "supports" and "elements" equivalent to Rapoport's "fixed-feature elements" and "semi-fixed-feature elements" (1982:87-101), since we include among elements the materials that are in the wall as well as the furniture. It may well be that as we develop these ideas further it will be important to separate those items that communicate symbolically into Rapoport's fixed-feature and semi-fixed feature elements. The resulting differentiation would then be a triad of supports, elements and furniture or supports, components and elements, the first two of each series representing fixed-feature elements of setting and the second, semi-fixed feature elements.
### Illustration 4.16
Distance between Entrance and Bedroom in Different Kinds of Housing

Comparison of the buildings to the matrix representing the territorial gradient of the single family houses showed that buildings evaluated as more institutional tend to have more of the public realm on the interior of the building, and to lack increasing layers of the gradient. Two layers commonly missing in institutional buildings are the private and the semi-intimate.

### Phase 3: Study of 20 Group Homes

The research completed for this dissertation assumes the significance of institutionality and home-likeness for inhabitants of housing, and it also assumes that it is possible and relevant to measure architectural attributes that affect how people live. Although not a part of the research for this dissertation, the Phase 3 research is mentioned here because it demonstrates both the significance of architecture affecting behavior in housing, and the relevance of the Architectural Inventory Measure developed in this dissertation research. Furthermore, the findings support the consistency of perceptions of institutional and homelike qualities in housing across social groups within a local culture and between two different North American regions. Finally, the findings supported the distinction found in the dissertation between aspects of housing that can be evaluated by assessing images as compared to aspects of housing that are not discernible from images alone. Travis Thompson was principal investigator on the project and I served as architectural consultant (for details see Thompson et al., 1996 a, Thompson et al., 1996 b).

The project, which took place between 1992 and 1996, examined 20 group homes for adults with developmental disabilities to see whether the degree of institutionality or homeliness of the housing affected the behavior of residents and staff. Demographic information on the residences was determined from administrators’ responses to questionnaires. The residences were documented using photographs, videotapes and the Architectural Inventory Measure (A.I.M.). The detailed behavior of residents and staff was observed over time and documented extensively. As a part of the study, students, architects, group home administrators, developmentally disabled people and family members of residents of group homes rated photographic images of the 20 residences relative to different

<table>
<thead>
<tr>
<th>Building</th>
<th>Mean Homeliness</th>
<th>Total Distance Street-BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-1</td>
<td>1.4</td>
<td>250</td>
</tr>
<tr>
<td>H-1</td>
<td>1.6</td>
<td>277</td>
</tr>
<tr>
<td>D-1</td>
<td>2.0</td>
<td>324</td>
</tr>
<tr>
<td>G-4</td>
<td>2.3</td>
<td>112</td>
</tr>
<tr>
<td>P-3</td>
<td>3.0</td>
<td>52</td>
</tr>
<tr>
<td>M-3</td>
<td>3.1</td>
<td>139</td>
</tr>
<tr>
<td>W-2</td>
<td>3.9</td>
<td>57</td>
</tr>
<tr>
<td>S-2</td>
<td>4.0</td>
<td>51</td>
</tr>
<tr>
<td>S-5</td>
<td>4.5</td>
<td>55</td>
</tr>
<tr>
<td>S-6</td>
<td>4.5</td>
<td>61</td>
</tr>
<tr>
<td>S-3</td>
<td>4.6</td>
<td>67</td>
</tr>
<tr>
<td>S-4</td>
<td>4.6</td>
<td>53</td>
</tr>
</tbody>
</table>
descriptive terminology.

**Association between architecture and behavior.** Perhaps the most important finding is that, when the analysis controlled the non-environmental variables (client characteristics, program philosophy and physical comfort), the perceived architectural character of a group home was found to be strongly associated with the behavior of its residents. The less institutional a residence appeared to be, the more positive interactions were found from staff to individual resident \( r = 0.64, p < 0.01 \). Physical aggression was found to be inversely related to homeliness \( r = -0.69, p < 0.05 \). In the ten most homelike residences, as compared to the 10 most institutional facilities, residents were significantly more likely to participate in a variety of household chores. In the ten most institutional settings, residents were significantly more likely to be uninvolved in activities and to be participating in repetitive stereotyped movements (e.g. rocking back and forth).

**Architecture Inventory Measure (A.I.M.).** Although the A. I. M. was only partially analyzed, it usefully distinguished between the 20 settings in a cluster analysis. Cluster analysis of the physical attributes of settings independently verified the associations between residents’ behavior and their physical settings originally determined from evaluations of photographic images. Of the 365 interior variables analyzed, 65 differed significantly across the settings and reliably distinguished perceived homeliness. Subjective impressions of raters for homeliness, comfort, privacy and institutionality were also able to be independently verified based on physical attributes of setting.

Cluster analysis on interior variables first created two broad categories that distinguished renovated, older private dwellings from residences intentionally built as group homes. Subsequent analysis generated five groups of residences. Of particular interest is one group that turned out to consist entirely of houses designed using H.U.D. funds.

**Consistency in evaluating images of housing.** The evaluations of photographic images by the five different groups in the state of Tennessee, including students, found statistically significant levels of agreement between the groups. This finding indicates that the adjectives “institutional” and “homey” are not just understood in Minnesota, and are not just understood by students, but are widely understood by a cross-section of American culture.

**Limitations of images to account for architectural qualities.** Findings from a structured sort task of photographs of the settings completed by students indicated that the terms “institutional” and “homey” were highly negatively correlated with each other. “Institutional” also correlated positively with “impersonal”, and “sparse”, and negatively correlated with “friendly”, “cozy” and “appealing”. “Homey” had the opposite correlations. Another interesting finding was that “privacy” was found to be associated with neither “institutional” nor “homey”, in the data on evaluation of photographic images, providing additional evidence that “privacy” may not be discernible from photographic images.

**Conclusions about Findings**

Phase 1 of this study developed guidelines for the design of housing that would support a “normal” way of life for disabled residents. It also generated a set of architectural features that were hypothesized to be associated with the qualities institutional and homelike that are described in Chapter 5. Finally, this phase of research resulted in the hypothesis that institution and home are oppositional polarities and that housing falls along the continuum they form.

The Phase 2 research addressed 6 issues raised in the first study regarding institution and home.

1. **The validity of the continuum of housing between institution and home** was found to be limited to a perceived continuum, but it was not found in the checklist data on the physical character of the 29 settings. Although there is a possibility that the binary origin of the
measure itself affected the continuity of the physical reality, this does not deny the
importance of the perceived continuum that appears to have been imposed on reality as a way
to understand larger issues of housing.

(2) The validity of the opposition between institution and home. Analysis of the
semantic differential evaluations, using the terms independently, showed that “institution-
like” and “home-like” were not oppositional, but rather represented positions of difference
framed in a dialectic.

(3) The validity of the two words “institution” and “home” to stand for the ideas we
were studying. The terms “institution/institutional” and “home/homelike” were
independently applied as words framing an opposition by 2 people, while many others
selected a wide range of terms to frame the concepts as opposites. This suggests that while
the concept of contrast is widely shared, there is no agreement about the terms to describe the
difference. However, there was independent application of the terms. Three others used
“institution/institutional”, and twelve others used “home/homelike”. The ability of
participants to consistently use them in semantic differential studies, suggests that they are
valid terms, even if they are not consistently applied.

(4) The validity of the items in the architectural checklist. We were able to validate
82% of the items in the checklist. By comparing checklist items to slides from the rotated
factor matrix analysis, we discovered slides with which no checklist items were associated
and we were able to identify possible new physical variables. Because of the small data set,
we were unable to conclusively eliminate any items as invalid.

(5) The identification of those architectural variables associated with the qualities of
institution and home. By comparing space syntax analysis diagrams of different types of
buildings, we identified aspects of spatial arrangement that are associated with institutional
and home-like qualities (See chapters 7 and 8.). Additionally, by focusing on the living room,
and comparing architectural elements found in preliminary inventory data to institution-home
ratings of the same settings, we were able to create a 32-item, five-scaled instrument of
architectural variables. This material is more fully developed in Chapter 5.

(6) The identification of the values and attitudes reproduced, reflected and
communicated by the two types of environments. The comparison of physical design features
and spatial arrangement features of different building types with earlier behavior observation
studies and interview data revealed that the concepts, institution and home, are linked to
ideas about how people should and could behave, about attitudes and expectations toward
building inhabitants, as well as to patterns of administration and to building design. These are
explained throughout the next three chapters and summarized in a description of degrees of
institutionality in Chapter 8.

The methods used to explore the differences between types of housing reflect the
concern to discover how architecture contributes to the communication and reproduction of
cultural ideas. Unlike social science research, in which the focus of the research is the human
being, here the focus of the investigation has been the character of the architectural
environment. For this study, methods have been used and, in some cases, developed that
enable description of environments so that their effects on human behavior may be accounted
for. This process has involved a variety of descriptive forms, that have included: slides and
photographs, as documentation of actual environments in time; holistic sketches that
characterize cultural images; textual annotations that describe hypothetical relations;
quotations of comments by users of environments; and atomistic descriptions such as the Architectural Checklist, the Architectural Inventory Measure, and the discriminant analysis graphs that enabled development of assessment instruments.

The four subsequent chapters delineate the differences between institution and home using the descriptive measures developed in this investigation. Chapter 9 draws broad conclusions about how this work exemplifies one approach to exploring how architecture serves a medium for cultural attitudes and patterns of life.
Chapter 5

Stereotyped Conceptions of Institution and Home¹
(Illustrations drawn by Richard L. Laffin)

The power of unquestioned cultural ideas such as cultural stereotypes to direct our thinking derives both from their ubiquity and from our unawareness of them. By describing stereotypes, we become conscious of them and thereby empower ourselves. We can see them for what they are and consciously choose to perpetuate them or to alter them. The description of stereotypes presented in this chapter was originally created in 1984 to describe design principles or patterns that are used unconsciously in the creation of housing. This approach was influenced by the systematic description of behavioral patterns using pattern language (Alexander, Ishikawa & Silverstein, 1968), and by the description of behavioral criteria for design using a design checklist that could be scientifically validated (Zeisel, Epp & Demos, 1978). Since the time that our research team formulated these particular descriptions, awareness of the general patterns of institution and home described here has become more widespread, but a systematic description of the details of these stereotyped patterns is, to my knowledge, unique to this study.²

Architecture communicates simultaneously through shape, texture and form as manifest in wall surface and material, furniture, equipment, and detail and subtle visual nuance (semantics), and by means of the relations of spaces and objects to each other (structure). As described earlier, we predominantly experience the syntactic or structural aspect of space across time, by moving through spaces, and, for that reason, we mainly perceive it unconsciously. The semantic mode links visual sensation of the complex environment is with emotional content and the visual sense seems to dominate. Because semantic architectural communication relies on the visual, it seems to be more accessible to our conscious awareness, even though it still forms a part of our habitual unconscious experience. In our apprehension and interpretation of architecture, syntax and semantics are inseparable. Although the boundary between them cannot be clearly drawn, for certain analytic purposes they may be looked at independently, as we will do in Chapters 6, 7 and 8.

This chapter describes stereotypical conceptions and interprets the cultural messages of institution and home, as we discovered in 1984, without distinguishing between syntax and semantics. The discussion addresses the ideas we assume to be culturally-based of what constituted the American house and traditional residential institution at that time. The specific architecture being studied comes from a particular region of the United States, and evaluations of that architecture are by observers from a particular age, class and geographic background (university students in the midwestern U.S). However, the stereotypes they represent may have been and may continue to be understood nationally as suggested 1992-96 Phase 3 work, and they may be applicable even more widely in our globalized culture. However, such speculations remain to be explored in further study.³ These ideas are

¹ The annotated illustrations of the stereotypical notions of institution and home were first published as design principles in the monograph Toward an Architectural Definition of Normalization (Robinson et al, 1984)
² Earlier we mentioned the work of Wolfensburger and others who have made systematic descriptions.
³ There are certainly differences between the ideas described here and those held in the Netherlands, for instance. Dutch social mores reflect far greater willingness of the society to distribute wealth to support disabled people. Their traditional
stereotypical in that they are a conventional conception that may or may not have its basis in real experience, but are nevertheless powerful motivators of attitude and action. As mentioned earlier, architectural stereotypes are not only communicated through direct experience, but also indirectly and unconsciously, through mass media such as radio, television, theater, books, magazines, etc. and by word of mouth.

However, a stereotype comes from somewhere, and in the case of housing, it comes from our familiarity with and knowledge of certain cultural forms that represent shared norms. So, for example, we learn about the stereotypical single-family house and the stereotypical hospital when we read the comic strips, see an advertisement or observe a soap opera. Since a cultural context is filled with contradictions and complexities, norms do not necessarily match ideals, but the given group they serve considers them to be acceptable standards. In many instances other options are neither known nor available. In the design of housing, then, we come to accept certain forms as measures of our ideals even though the match between the ideals and the stereotypes is not necessarily consistent.

Furthermore, the stereotypes rarely match exactly the actual artifacts they are stereotypic of. The basis for our exploration is founded on this inconsistency between the ideals, the stereotype and a particular architectural representative. We study the stereotypes to discover the ideals and values they express, and to see how the correspond to the real environments we have studied. Implicit in this approach is the question of how the environment can be changed to represent current cultural ideals.

**Design Principles versus Stereotypes**

The description of the stereotypes originated as design principles, conceptions that engender the architectural form of the institution and home. As described in the last chapter, the principles are framed as drawn illustrations and written explanations, and are supported by the detailed list of design features that forms the Robinson/Emmons /Graff Architectural Checklist (see Appendix 2: all first published in Robinson, Thompson et al., 1984).

Institutions, while suffering from the same tendency to create dependency, by and large have done so in environments of a much higher quality. The large residential campuses that I visited in the Netherlands in 1996 were universally well-maintained and modern, in comparison to those in the United States, in terms of high-quality landscaping that includes large quantities of flowers (high maintenance vegetation), and even domestic animals. The interiors of the Dutch institutions, while stereotypically institutional in terms of scale of room and regimentation in types of furniture, showed a far higher level of personalization within the residents’ room.

Some important differences exist also between the houses in the U.S. and the Netherlands. Semantically, both Dutch and American households seem to equate number of objects with homeyness. The objects, however, are different: even when they are the same type (e.g. coffee table) they are likely to have important stylistic differences that are very complex (type of wood, height and size of table, proportions between table width and leg width, etc.). I am not able to generalize about these differences. In both contexts, the living room window can be significant, but the significance is very different (see Cieraad, 1999b).

The syntactic differences in houses are easier to describe. For example, in the ordinary Dutch house, the entry is more likely to be segregated from the living room and other spaces. The living room and dining room are equally likely to be linked, but the kitchen may be segregated. The ring-like pattern among the private spaces in the American house that is discussed in Chapters 7 and 8 is found less often in Dutch houses. As another example, a toilet in its own room is always located near the front door in the Dutch house. In a modest-sized house in the U.S., if a single toilet is provided, it will be located near the bedrooms in the bathroom. A toilet is considered too private to be located in a prominent place, and Americans would feel uncomfortable walking from their bedroom through the whole house to get to the toilet. The “half bath” as it is called by real estate agents, is an “extra” provided in more upscale housing. Another interesting difference is that the door to the American toilet and bath opens in, whereas the door to the Dutch toilet opens out. Therefore the American “bathroom” is generally larger than the Dutch, while the adjacent hall will be smaller since there is no need to accommodate the door swing.
The illustrations are paired to contrast institutional characteristics with homelike ones. The assumption of the original principles followed the basic precept of normalization, that a residence should be, as much as possible, like the dwelling of the ordinary citizen. Rather than present the ideas as a prescriptive list, the team thought a better approach would be to describe the difference, and, by example, inform the designer of his/her own stereotypic ideas. The designers could then apply the homelike principals as much as possible while avoiding the institutional ones, informed not only by our descriptions -which would be more memorable because they fit into an already existing intuitive pattern - but also extended by the designers’ own observations. If we posit the characterizations as stereotypes rather than as design principles, they are not prescriptive. Rather, they describe a way of seeing the world reflected in the widespread acceptance of the normalization theory.

<table>
<thead>
<tr>
<th>Context/Site Feature</th>
<th>Institutional</th>
<th>Homelike</th>
<th>Validation</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are paved pedestrian paths</td>
<td>No</td>
<td>Yes</td>
<td>X</td>
</tr>
<tr>
<td>Yard has</td>
<td>Permanent courts for organized games</td>
<td>No fixed courts for games</td>
<td>✓</td>
</tr>
<tr>
<td>Ratio of building to open yard space is</td>
<td>different from neighboring structures</td>
<td>similar to neighboring structures</td>
<td>+</td>
</tr>
<tr>
<td>Ground area in front of residence is similar in size &amp; shape to adjacent residences</td>
<td>no</td>
<td>yes</td>
<td>+</td>
</tr>
<tr>
<td>Ground area in back of residence is similar in size &amp; shape to adjacent residences</td>
<td>no</td>
<td>yes</td>
<td>+</td>
</tr>
</tbody>
</table>

Illustration 5.01, Robinson/Emmons/Graff Checklist Items Associated with Illustration A-5, Building Volume

Although the features of housing are presented as if they could be isolated, each part must be seen in its relation to the whole in order to be fully understood. For example, the number of rooms and their size inevitably affect the scale of the building, the material of the building exterior affects the type of window that frames the interior views, and so on. Nevertheless, the dissection of the building enables a detailed understanding that would otherwise be impossible. The description is organized by formal attributes from large to small scale. This is not meant to indicate relative importance, but reflects the way a building tends to be designed, from the site to the room. The letters reflect their grouping (A, Context, Site and Building Exterior; B, Building Organization; C, Rooms and Space), and the numbers in parentheses associated with the drawings reflect the items they illustrate from the Robinson/Emmons/Graff Architectural Checklist located in the Appendix. For example, Illustration A-5, Building Volume relates to Context, Site and Building Exterior and to checklist items 20-22 (see illustration 5.01). Checklist validation is based on the Phase II inventory analysis, in which + = strongly validated, ✓ = moderately validated, and X = not validated).
Context & Site

The stereotypic notion of the appropriate context and site for housing in the United States reflects the assumption of zoning typical to a city in the United States. Housing is located in a distinct area, segregated from industrial and commercial activities, and housing located in other areas is often stigmatized4.

The descriptions reflect alternative conceptions of the institution that are implicit in these descriptions. Among these conceptions are the institution as isolated from the city on a campus in a rural area, and the institution as an urban workplace with the character of a commercial or industrial building. Since institutions may take one of several forms, we have not deemed necessary that the descriptions be internally consistent.

Lastly, these descriptions reflect a conception of the institution as an environment that houses a large number of people in comparison to a house, and that therefore it is a building of much larger scale. The issue of size brings with it a set of physical differences from domestic settings in aspects such as building materials and construction, massing, siting and parking. Many of these physical differences derive from building code and regulation requirements for the health and safety of people housed in groups.

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4 A recent lawsuit against the United States Department of Housing and Urban Design stipulated that residents of a housing projects built on industrial sites had to be relocated in housing built in residential areas (Rhodes and Bonsignore, 1994)
An urban area that 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 that include housing.

Institutions are usually isolated and 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 waking 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 built and open area. Matching the local standards is desirable. Existing building mass, lot size, construction type, materials and relation to the street are some things to consider in siting a building.
PARKING AND VEHICULAR ACCESS

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. These types of parking areas create an institutional image. This type of building usually requires delivery of large quantities of items, so a loading dock is common.

YARD DESIGN

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 unless obtrusive places appear less institutional but use of on-street parking is more common, except in multi-family dwellings. A simple driveway with 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.
**CONTEXT / SITE**

**INSTITUTIONAL**

**BUILDING VOLUME**

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.

**STREET-ENTRANCE RELATIONSHIP**

The street entrance to an institutional building is usually the shortest distance between to points. A business may even open directly onto the sidewalk. If there is pace between entry and sidewalk, it is undifferentiated reflecting is totally public nature. Lack of transition space and lack of variety in landscaping are often cues to a non-residential building. The backs of these buildings are usually un-landscaped.

**HOMELIKE**

**BUILDING VOLUME**

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**

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 these 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 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.

Not only are materials important, but how they are used affects perception. Large expanses of material, lack of 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 characteristic of homes. Wood and stucco are the most frequently used residential materials. Decorative elements are usually incorporated in private dwellings.
Institutional

WINDOW FAÇADE PATTERN

Facades that have a repeated window pattern (such as strip windows or windows of all one size) appear institutional. The repetitive window 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.

Buildings Entry - Doorway Design

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.

Homelike

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.

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.
**Building Organization**

The organization of the interior spaces of an institutional or homelike building show distinct patterns of entry and circulation space, as well as distinct spatial arrangements, both internally and relative to the exterior spaces. As previously noted, the spatial arrangement corresponds to different power structures typically found in the settings. The institutional building usually concentrates control in the hands of the staff and restricts the resident, inhibiting or formalizing social contact between residents. The house, on the other hand, tends to distribute control to household members, supporting informal social contact between them.

After building size, the use of the institution as a workplace is perhaps the next most important factor generating the difference between the arrangement of spaces in institution and home environments. Cost-savings and efficiency are of higher priority in work environments than in domestic settings.
ENTRY- TERRITORY DEFINITION

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, 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

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 my only be 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.
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 doorbell or knocker must be used to notify residents who control access. Inside, the area is decorated with pictures on the wall or decorative light fixtures.

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.
UNIT ENTRY – CONTROL

When large numbers 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 occupant does not control the door. 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 diminished the privacy and autonomy of the resident.

BUILDING ORGANIZATION

Institutional  Homelike

BUILDING ENTRY – MAIL

In most institutions the mail is delivered to administrators or staff who distribute it to the recipients. There are not 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 mail by the institution limits the privacy and autonomy of the resident.

In private housing there is a mailbox 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.
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 non-residents.

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 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 corridors are disproportionately long and narrow. 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, terrazzo, or industrial weight carpeting), fluorescent lighting, exit signs, fire extinguishers, vinyl moldings.

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 moldings, pictures on the walls, and furniture in the space.

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-door and to the interior spaces difficult.

In dwellings other than high rise apartment buildings, vertical access is handled primarily by stairs that 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.
Institutions, in responding to fire codes, have enclosed stair towers with heavy fire doors that 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 that does not exist in smaller dwelling units. Stairs may be located in building extremities in response to exiting requirements.

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 produced 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.

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 that invites passage. It is centrally located.

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.
YARD ACCESS

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 directed 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

It is unusual to find outdoors areas in institutions that are near access point 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.
Rooms & Spaces

The design of rooms and other interior spaces is also affected by the conception of the institution as primarily a workplace. The rooms in an institution follow the notion of economy of scale and are much more likely to have standardized sizes and uniform material, shape, size and furnishing. In contrast, in a house, the premium placed on distinctions between places and between people encourages variety of environments as a result of the expression of individuality and uniqueness. Furthermore, in the house, comfort takes precedence over durability, while the institution places priority on hygiene and the reduction of maintenance costs. In response to the perceived economy of scale, the larger number of residents in an institution, the more rooms in bigger spaces. Additionally, in an institution rooms must be named to distinguish one institutional space from the next. This reflects the segmentation of activities according to time into discrete, designated spaces. In the private dwelling, although room names may suggest activities, the interconnected design of the spaces promotes unstructured activity and spontaneous use of areas according to their design character rather than their name. Thus, in one day, the domestic living room may at different times serve to entertain a large number of friends, to eat a family meal in front of the television and for one person to quietly read a book or magazine.
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 remains 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 that 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.

The specialized staff of an institution has 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. Deskwork 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.
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.

FIRE PROTECTION EQUIPMENT

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 that take place there.

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

In private dwellings, because access to the out-of-doors is so easy, the requirements for fire safety that 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.
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 are likely to be uniform. Behavior cues may, therefore, by 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.

The institutional equivalent of living rooms re lounges. They are usually large spaces (over 300 square feet). Lounges are either totally enclosed rooms are 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.

In a residence it is the high contrast in the character of the space that gives the cues to 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 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 tale 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.
A lounge is a room in a public building where strangers must wait together without a reason for interaction. Thus the seating is laced 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 ten-foot diameter. The sofa is the focus of the room, and the other chairs are arranged around it. Where there is a large number of people, furniture is brought from other rooms or cushions are used and people sit on the floor.

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. Coffee 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 of 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 provide places to keep music, books and other activity-related items. Walls will have a variety of decorations, original art, photos, wall hanging, 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 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 create 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.

The sole purpose of a kitchen in an institution is to prepare and clean up meals. Its main features are efficiency and sanitation. All surfaces must be kept sterile, they have durable finished, 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 fluorescent light.

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 that 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.

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 snack 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.
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 is 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.

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 that integrates preparation, ingestion and clean up. The small number of participants creates an easy clean-up job necessitating small sinks or dishwashers.
An institution is built of durable materials that can stand up to cleaning with strong chemicals and heavy duty machinery. Special staff usually does housework; residents have limited access to cleaning equipment and little responsibility to clean. Janitors' closets or other special areas are provided which store only cleaning-related articles.

SECURE STORAGE

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.

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, 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.

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 kitchens 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.
LAUNDRY ACTIVITY

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.

LAUNDRY SPACE

When laundry for residents of an institution is cared for by the institution, the laundering of clothing is done for the residents by staff. In institutions, the large amount of laundry to be done requires that a special room be set aside that contains many machines, and is designated to serve only the purpose of laundry. The room is often stark with a concrete floor and bare walls. The lighting is fluorescent.

In private homes, only one or two people may do laundry 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.

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 that 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.
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 five feet wide. Sometimes privacy is provided by curtains hung on ceiling tracks. The large size creates an impersonal character.

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 handle or push plates. There may be a smoke detector or sprinklers in the bedroom.

In residences, bedrooms tend to be square with width and length 15 feet or less and a total size less than 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 hung more than 4 feet across. They are operable, usually double-hung, casement or sliding.

Closets for hanging clothes (with at least three feet of hanging space) are almost universally provided in residential bedrooms, but other furniture is usually freestanding. 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 doorknob.
Traditional institutions are designed to sleep a large number of people efficiently. All bedrooms meet the same standard. 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.

**BEDROOM – ACTIVITY & DISPLAY DOMAIN**

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 non-sleep items is omitted. Where there is art or other decorative material on the walls it is often selected by the institution, and thus is not reflective of the individual.

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.

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 freestanding dresser for each person and shelves where non-clothing belongings may be kept. A desk or table may serve for writing or 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.
**BEDROOM FURNITURE**

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.

**BEDROOM / BATHROOM RELATIONSHIP**

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 and other personal items. A trip to the bathroom then becomes an event that must be planned.

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 non-clothing items. Individuality will be emphasized more than order.

Bedrooms and bathrooms are immediately adjacent in homes (within ten 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.
BATHROOM MATERIALS AND CHARACTER

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 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 standard, therefore requiring segregation by sex.

BATHROOM CONFIGURATION

An institutional bathroom exists for purely functional reasons. It is designed to efficiency and ease of cleaning. The walls are usually completely surfaced in durable material like ceramic tile or concrete block. Partitions are of 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 wastebaskets. The room may be a completely interior space lit only by fluorescent lighting.

In a private residence, a few people, usually no more than four, share a bathroom. 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.

Bathrooms in private dwelling 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 of 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.
Implications of the Comparison

The comparative method has elucidated significant differences between the stereotyped conceptions of institution and home. In the next three chapters we will compare the conceptions to data on actual environments. We will see to what extent these stereotypes are reflected in actual environments, and will learn more about the conceptions themselves. Do the architectural attributes of institution and home settings support these concepts as parallel and opposite? Can architectural measures actually account for the patterns that we have observed? Finally, what are the implications for designing new environments, and what are the implications of this research for the discipline and profession of architecture?
Chapter 6

Architectural Character: Semantics of the Living Room

By comparing the stereotyped ideas of institution and home, we have identified distinct differences between the two kinds of setting. It is clear that the perceptual ascriptions "institutional" and "homelike" - used both in daily parlance and by study participants- have a basis in built environments. At the same time, several analyses of the housing settings in our investigation, suggest that the relationship between institution and home is not a simple continuum between two poles.

Nevertheless, people do seem to generalize degrees of institutionality, and our work documents that the perceived character of setting co-varies with features of architecture. An investigation that focused on living rooms across several of our studies compared detailed architectural descriptions of physical settings to their perceived character (See Chapter 4 descriptions of Phase 2, Parts A, C & D), identifying many architectural attributes that are validly associated with degrees of institutionality and homeliness. From these data we developed a preliminary evaluative measure for institutional and homelike qualities of setting that forms the basis for this chapter.

First the chapter depicts how architecture communicates ideas semantically and explicates the values that are communicated in different residential settings. It explains how the research team refined the bi-polar Architectural Checklist using the Phase 2 research findings for the living room, thereby creating the Institution-Home Assessment Measure for Living Rooms, an evaluative instrument with a five-point scale that assesses living room character. Then, the measures are used to illustrate how selected details of the physical setting communicate its character. The concluding section of the chapter discusses what was learned from the analysis of living rooms about architecture, about the institution-home construction, and about the usefulness of inventory measures in architectural research.

A preliminary Institution-Home Architectural Checklist, a five-point evaluative instrument based upon the Robinson/Emmons/Graff Architectural Checklist, was created from the descriptive data collected in 1984, and slide evaluation data collected in 1985-6. At the time we executed the study, in the Midwest there was little understanding of deinstitutionalization, so that our findings describe environments that reflect a relatively direct communication of institution and home values. Today, increased awareness about deinstitutionalization and the architectural elements associated with institutions has resulted in many institutional elements being eliminated from non-domestic residential settings or being replaced by elements associated with home. Contemporary non-domestic residential environments thus carry more complex and even subverted meanings. Since broad cultural ideas concerning architecture are relatively stable, the ideas of institution and home that such re-designs respond to may be better represented by the relatively unadulterated environments of 1984, than by those found today. For that reason the data may be particularly useful to represent these normative ideas.

As mentioned previously, we assume that this preliminary instrument may be generally applicable more widely in the United States. Although regional and climatic differences are important, the means and ideas of construction are more similar between regions than they are different. The validity of these assumptions remains to be ascertained, but the work done in Phase 3 of this study in 1992 (Thompson et al 1997a & 1997b) substantiates that while particular details may be dissimilar (in Minnesota, unlike Tennessee,

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1 This measure is preliminary in that it is both partial and untested. The items that we have identified however seem to be valid measures.
Architecture of Institution & Home: Architecture as Cultural Medium

for instance, brick is rarely used for single household housing construction), the very large preponderance of features seem to be applicable at a later date in at least one contrasting regional setting. Nevertheless, since the study is based on small set of environments, conclusions must be considered to be speculative.

The Role of Architectural Attributes in Communication

The complexity of architecture was evident from the very beginning of the research. In attempting to describe it, we discovered overlapping complex relationships within and between spatial configuration, material, systems/equipment, furniture and decoration. Furthermore, now, after having examined data gathered on settings, it is clear that there are many types of variation in architectural features, each requiring a different descriptive mode.

**LIGHTING**

<table>
<thead>
<tr>
<th>Number of Light Fixtures</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 25</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>16-25</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>10-15</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>6-10</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5 or fewer</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

*Illustration 6.01 Variation by Degree: Number of Light Fixtures in Living Rooms from the Institution-Home Assessment Measure for Living Rooms*

In measuring the points along the continuum between home and institutional living room settings, for instance, certain elements vary by quantity. Within quantity variation, we can distinguish variation by degree, a relatively rare type of variation such as that found in the number of light fixtures (see Illustration 6.1), from a more complex type of variation, by differential distribution. We find that living room size in institution does not vary simply by degree, but that size in institutions tend to be either bigger or smaller than in homes (see Illustration 6.2).

**CONFIGURATION**

<table>
<thead>
<tr>
<th>Room Size</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 ft² or more</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>less than 125 ft²</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>125 to 299 ft²</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>2300-349 ft²</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>250 to 299 ft²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125-249 ft²</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Illustration 6.02 Variation by Differential Distribution Living Room Size from the Institution-Home Assessment Measure for Living Rooms*

Other elements vary by kind. A simple example is that of lighting. In 1984, fluorescent lighting was typically found in institutional settings, thus a sign of institutionality, and incandescent lighting was typical of homes. Places that used both were more ambiguous. In another example, floor materials varied from concrete or terrazzo in extremely institutional settings, to resilient flooring (linoleum/vinyl) or industrial grade carpet to tile or brick or plain wood to residential carpet to area rugs placed on wood or carpet.

2 For an additional investigation in a different region where selected checklist items were studied in detail, see Liu 1991 (Buffalo, New York). Within the original geographic region studied, of the 236 checklist items describing the entire building, 193 (or 82%) were found to be valid (Robinson 1986c). These items continue to be studied relative both to validity and reliability.
Illustration 6.03 Variation by Kind
Type of Light in Living Rooms
Floor Material in Living Rooms
from the Institution-Home Assessment Measure for Living Rooms

In yet another pattern elements do not vary alone, but with other elements. Variation by quantity in differential distribution combines with variation by kind to generate an even more complex pattern that I call **composite variation**. The proportion of table and floor lamps as compared to fixtures mounted on the wall and ceiling combine to create a graduated effect. This example combines 3 different attributes of lighting: (1) number of fixtures (2) mounting (fixed versus freestanding) and (3) placement of light fixtures. Neither of the last two variables was a strong indicator of variation in and of itself, but combination with each other and with number created an observable pattern.

Illustration 6.04 Composite Variation
Type of Light Fixture
from the Institution-Home Assessment Measure for Living Rooms

In a final form of variation, **by singular trigger**, particular elements serve as signs (in semiotic terms) or unitary attributes of a particular setting. Since they tend to be only found in one type of setting, signs denote the type of setting: a wall-mounted television (institutions), a fire exit sign (institutions), or a fireplace (homes). They operate like a trigger if they are very potent. In the strictest sense, they are not variables, since they do necessarily have comparable equivalents in all settings. For that reason, despite their importance, we have not included them in the 5-point measure. Signs seem to be especially subject to
subversion in our culture. For instance, the efficacy of fireplaces to communicate home is such that they are frequently used in such non-home settings as restaurants to cue homeyness, thereby reducing their power as a symbol of home.

The attitudes communicated semantically by an environment are manifested by means of the architectural elements that make it up. Since each element has been selected and built into the environment directly by individuals and indirectly by normative patterns of construction (construction methods, building codes, customary practices, normative conceptions of building type, etc.), these forms represent not just the attitudes of the designer, builder, owner and/or inhabitant, but the attitudes of society about what is acceptable practice. Here again, by comparison of different places, attitudes and values are that are expressed through the building are revealed.

As suggested by Norberg-Schulz (1965:151), and Rapoport (1982:51), because architectural redundancy is an important part of environmental communication, a message may be communicated through a combination of elements and at all scales. But it often takes only one item out of place, such as an exit sign in an apparently typical family living room, to create environmental dissonance.

The Values Manifest by Architectural Features

The research evidence discussed briefly in the last chapter indicates that, different from written and spoken language, architectural syntactical arrangement has a physical form that may be experienced somewhat independently of visually cued meaning. While subsequent chapters address syntactical arrangement, this chapter focuses on the meaning or cultural schemata manifest in or produced by visual images of spatial configuration (sizes and shapes of spaces, sizes, shapes and kinds of openings), materials, equipment, furnishings and decoration. The semantic affect or feeling of the settings experienced in viewing images, seems to derive from experiences within spaces -motor, visual, auditory, olfactory and tactile (some not visible in the images, e.g. odors and temperature, yet apparently cued by them) and their associations. In contrast, what might be called the semantics of architectural syntax, experienced primarily through kinesthetic sensation of movement between and across spaces, seems to be produced by the arrangement of space.

If architectural syntax is somewhat analogous to the grammatical structure of language, the meaning of architectural spaces is more analogous to the vocabulary of language, the expressive elements that are located within the structure. But unlike language which engages primarily vision and hearing, the experience of architecture involves movement and tactile sensation. Even though overall environmental meaning arises from an integration of all of the sensory modes, the expressive aspects of environment that are experienced dominantly by vision and non-motor sensory modes seem to be interpreted somewhat separately from and more consciously than experiences dominated by movement. The elaboration of architectural space in such attributes as material, color, shape, lighting and furnishing seems to convey attitudes and values more overtly than does syntactical structure.

The way that environments are produced profoundly affects the meanings. Who it is that controls the design of a setting determines to a large extent which values and attitudes will be manifest and reproduced in that place. When semantic elaboration is in the control of the inhabitant, symbolic elements manifest the values held by the resident (Marcus, 1978, Cziksentmihalyi and Rochberg-Halton, 1981. When the elaboration is in the hands of the institution, it expresses institutional control and not uncommonly, institutionalized disregard for resident autonomy.

In the following discussion of the values we found represented in the environment, a list of abstract social attitudes described in Chapter 3 as generative of the traditional institution and the vernacular house have been reconfigured to reflect their manifestation as
concrete qualities legible in the design of the physical environments.

**Dignity & Economics**

One's selfhood, one's personal identity is created at the nexus between self and others. A critical part of developing a sense of one's place in the world is the understanding that others value you and your contribution. The esteem in which we are held is manifest to us in many ways, an important one of which is architecture. We know that, responding to traditional office hierarchy, the big boss gets the corner office. But it is not primarily the syntactical structure of the spatial relationship that communicates status. It is the quality of

![Illustration 6.05](image)

**Illustration 6.05**

*Living Rooms Illustrating the Continuum between Institution and Home*

(Ratings:A=1.1, B=2.0, C=2.7, D=3.5, E=4.8)

the place, only some of which results directly from its position. The boss's office will be the biggest, will have the most expensive wall finish and furniture, will have the most windows, the best view, and will rate the "Bigelow on the floor". Similarly, status in housing, whether
class status or the status of the individual, is primarily expressed in semantics.\(^3\)

In our society there is a great disparity in the way that housing, here represented in its broadest sense, expresses the degree of respect toward members of our society. We can see the continuum in the six living rooms presented below, reflecting not simply the extent to which we, as a society expend resources on one person or upon another, but also the frame of reference brought to different groups of people. Witold Rybczynski’s suggestion that the family residence evolved as an expression of the desirability of comfort and ease of living (1986) is manifest in living rooms D and E. The chairs are arranged so that sitters can see each other’s faces and hear each other’s words, and so that the room size and character further supports such activity. In contradistinction, living rooms A and B are arranged with all the chairs at the perimeter. These settings, a state hospital for adults with developmental disabilities, and a hospital lounge do not encourage social interaction. Instead their arrangement enables the janitors to clean more easily. Here the measure of the space is the economics of maintenance and safety codes rather than inhabitation. The most institutional rooms are not necessarily those which cost the least to furnish, but are the ones that reflect the values inherent in the attitude of economy of scale, whereby the individual is not a person, but one of a class and treated identically to others of the same class.

The difference between the two approaches to housing is so fundamental, so taken-for-granted that at first it seems absurd to mention it or even to question it. A monetary economic argument is altogether different from an argument based in what could be called human economics. An monetary economic argument justifies treating people differently than you would treat yourself. In institutional housing, monetary economics take precedence over human economics. Employing such an argument in the design of housing has human costs to those who inhabit it.

Living room C, a group home architect-designed for physically disabled people, shows how the economic model, relying on institutional codes for safety and access has generated a building with inappropriate scale and materials. The inhabitants are free to move their furniture to reflect their activities, but the space is too institutional to effectively support inhabiting behavior. Whether in extreme cases of institutional housing, or even less extreme cases such as housing for disadvantaged populations or developers building housing for rental markets, the economic argument alters the fit. Buildings designed for ownership are desired not only because the occupant controls the dwelling, but also because a different set of criteria is brought to bear upon its construction.

**Control & Community**

The dominant environmental factors that enable control are syntactical. The placement of the living room in a single family dwelling at the point of the greatest likelihood of social interaction, near the entrance, and typically located on a path connecting entry, dining room and kitchen, assures its accessibility to all household members. But semantic elements also contribute to the potential and expression of control. The configuration of the space can be crucial. If the room is too big it won’t be cozy enough to sustain the sense of connection between the members of the small community of inhabitants, but if it is too small, it will not be able to contain the furniture to seat everyone. In a house or apartment, the furniture arrangement engages conversation and continuously invites group gathering, thereby being an instrument for the development of community among the household members. Furthermore, the room is likely to contain some expression of each

\(^3\) Economic class is not the primary concern in this paper, but is an essential aspect of housing. Discussion of the communication of status in lower and middle class housing includes work by Becker (1978), Laumann and House (1970), Rapoport (1969) and Cooper (1974). Those who have addressed the issue of status relative to handicapped people, including Canter & Canter 1979 and Wofensberger 1977.
person's membership in the community by their presence in a visible photograph, their having selected furniture, their artwork on the wall, their having a special place where they sit, a toy of theirs on the floor, magazines they ordered, records, tapes, books or CDs they bought, etc. Even though it may be rare that everyone is physically present in the space at once, symbolically everyone is represented. Mutual "ownership" of the space expressed through various forms of marking, is supported by the central placement of the space and the character of its furnishings, selected for comfort and arranged for social exchange and display.

The living room equivalent in an institution, the floor lounge, although intended to serve a social purpose, often fails because of its syntactical placement. Typically it is either too segregated (in a room off a corridor outside of the main path of circulation), or too accessible (within a public corridor that is uncontrolled and accessible to a parade of people not a part of the community of inhabitants). Such institutional living room placement may be determined by fire codes and economic arrangement of spaces, as well as supervisory needs. In addition to the living room configuration tending to be too large or too small (discussed above), its furniture and decoration are selected by people who are outside the residential community and therefore reflect administrative control (values of durability, economy of scale, routinization) rather than community solidarity and identity.

**Maintenance & Hygiene**

We have several times discussed how institutional living room furniture is commonly arranged more to allow the janitor to clean, than for the social concerns of the resident. But the issues of maintenance and hygiene also affect the choices of materials for wall ceiling floor surfaces and furniture, as well as the type of decorative elements. In the traditional institution, seat materials are selected for durability not comfort; wall materials are easy to clean or to hide the dirt rather than pleasing to the eye. Even decorations must be low maintenance and therefore are minimal. A shelf with knick-knacks requires complicated dusting. While some institutions will invest in real plants (those that can afford a maintenance service), more often plants are a simulated substitute. The day-to-day caring for things that household residents take for granted, is an economic issue to institutions, with maintenance representing an undesirable ongoing cost.

In private residences things are expected to wear out, and need replacement. While inhabitants may avoid overly fragile and costly materials (e.g. ordinary people rarely use silk for sofas and chairs since it is expensive to purchase and maintain), they will choose materials which are comfortable and attractive within the range of reasonable affordability and durability. For hotels, an institution for which appearance and comfort are an important marketing matter, the expectation that major renovation will occur about every six years is built into the strategic planning. Traditional residential institutions, on the other hand, seem to consider maintenance a non-regular, deferrable cost that can be put off indefinitely. Minimizing upkeep costs affects all decisions. Institutions will spend a lot of money at the time of construction rather than having to reinvest in maintenance and replacement. While this attitude may make sense in relation to decisions about heating and cooling systems, it is likely to have a devastating effect on the ability of building materials and furnishings to support comfort and inhabitability of the environment.

**Identity & Order**

We have already discussed the importance of making one's mark in the environment, and the sense of identity that creates. Among others, Kron (1977) and Csikszentmihalyi and
Rochberg-Halton (1981) have shown that household objects play an important role in creating identity, expressing status and expressing social integration. The act of inhabiting often results in clutter and in the disorder of projects incomplete (magazines, sewing, unwashed dishes, etc.). Personalization generates wall and furniture surfaces with objects retained as memorabilia. Despite the images in home magazines which suggest that the ideal living room is Spartan, environments containing more objects tend to be read as more homelike - although disorder is not associated with homeyness (Thompson et al, 1997a). The density of personal possessions seems to communicate inhabitation.

In the institutional setting clutter and disorder are inappropriate. Making a personal mark denies the power of the institution and disturbs the orderly uniformity of the setting. The regimentation enforced by bulk purchase of identical pieces of furniture is reinforced by rules that restrict modifications to the environment. Justified by values of hygiene and fire regulations, in traditional institutions, residents’ ability to furnish and decorate their living room territory was severely limited if tolerated at all. Nursing homes like Hertzberger's De Vrie Hoven in the Netherlands which was designed to encourage residents to place their own living room furniture and decorations in the corridor, are only beginning to be widely accepted in the United States because such personalization is usually seen as being disorderly.  

*Meaning of the Living Room - Architectural Features*

In sum, the living room in a house is generally a room near the front door which serves as the place to entertain guests and the main place for sitting in comfort and engaging in quiet activities like conversation, television watching, listening to music or reading the paper. The activities housed by the living room may be individual, but it is a place designated for all household members. Except under unusual circumstances, generally associated with visitors to one household and not to others, everyone is entitled to use the space, and may enter it and use it freely. The space is designed to be inviting, friendly and comfortable.

Another purpose of the typical living room is display. This room may have the most valuable furniture, and is likely to contain art objects, mementos, photographs, collections or other articles manifesting the interest, character, status and identity of household members and of the household community.

Although, as pointed out earlier, rooms in private residences are not designated for single activities, they are associated with certain purposes that define their spatial character. Living rooms sit in the context of other interior spaces typically found in American private residences, dining rooms (or dining areas), kitchens, bedrooms and bathrooms (here we assume that entries, corridors and stairs are not rooms). The kitchen is designated for food preparation and household duties; the dining area or room is associated with eating; the bedroom is the private territory of the individuals assigned to it, and is associated with sleeping, dressing and individual leisure; the bathroom is associated with personal hygiene. The living room is associated with entertainment of guests and shared household leisure activities (television, music, games).

Of the other rooms optionally found in houses (e.g. dens, family rooms, recreation rooms, workrooms, sewing rooms, dressing rooms, laundry rooms), the family room and recreation room are most similar to the living room. They are often (although not always)
similarly associated with entertaining guests and shared family activities, and so are included for analysis here. We have also included the den in our analysis, although these spaces are usually designed for solitary use. The evolution of the den and the family room has come about for very different, but related reasons. Because of the communal nature of the living room, and its use for entertaining guests, some household activities may be too boisterous for it, and others may be too private. This engendered us of the family or recreation room for boisterous activities (originally for children to entertain their guests while adults were entertaining theirs in the living room), and the den to house individual work activities (although sometimes the den is used for similar purposes to the family room). Therefore, the recreation room may be somewhat larger than a typical living room, and the den is likely to be smaller.

Illustration 6.06
A Lobby and a Lounge-Waiting Room in Two Different Hospitals
(I-H Ratings: A = 1.6, B = 2.1)

In the institutional places we studied, those owned and maintained by people who are not residents such as dormitories, hospitals, and nursing homes, we determined that the places equivalent to the living room in a house are lobbies, and lounges (typically floor lounges or waiting rooms) (See Illustration 6.06). While both serve to entertain visitors and as communal spaces, they are not directly equivalent, because the lobby generally serves the very large community of the entire building, and the floor lounge serves only some of the building occupants. Furthermore, since neither the lobby or the lounge are controlled or furnished by the residents, neither serves the purpose of personal display central to the house or apartment living room, although they do display the institutional values (status or lack thereof, etc). For certain kinds of living room analysis we included additional institutional spaces such as activity rooms and libraries, 5 parallel to the inclusion of the den and recreation room in houses.

In places like large apartment buildings, there are often two types of living rooms, those that serve the individual units, and others that are shared living areas like entertainment rooms or lobbies(See Illustration 6.07). For certain analyses, we have included these where they were in the buildings investigated. We identified such spaces as institutional, since none of the buildings studied were condominium or cooperative apartments and the people who

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5Due to limited resources, we have not included staff lounges in this study, although a lot would be learned by studying these spaces in comparison to those provided to residents of institutional buildings.
controlled these spaces were not building residents. Additionally the rooms were located in semi-public or semi-private areas of the shared building. Finally, participants rated them as institutional.

Some types of places like group homes and rooming houses are more ambiguous in their organization of spaces. Although we have classified examples into groups using their use categories, their designs are derived from a variety of different building types, such as house, dormitory or apartment, and the type of living room tends to follow the model of derivation (See Illustration 6.08).

Living room arrangements may take three different forms depending upon their location in a house, an institution or a multi-family residence. (1) In the house, the living room is in the private realm and generally serves a multitude of purposes, often supplemented by other living spaces like family rooms or dens, which have a more specialized use. All of these will be classified as home spaces. (2) In an institution there are generally several kinds of living rooms each serving a specialized use, sometimes related to its location, at other times related to the activities it houses. For instance the lobby by the front door is for waiting; a floor lounge is for socializing with the group of people who share a housing subdivision; and other spaces, televisions rooms, activity rooms, libraries, game rooms, etc. are furnished to
serve particular activities. All of these spaces will be institutional. (3) In multi-household buildings such as apartment buildings, where each unit will have its own living room serving many purposes, the building itself may have some shared area that all building occupants may use, such as a lobby or entertainment room. Depending upon their location and purpose, living rooms in these buildings will be either home spaces (within the unit) or more institutional spaces (outside).

**Architectural Elements and the Meaning of Institution & Home**

The architecture of institution and home is constituted by the relation between the underlying intentions of the people involved with the building (those that designed and built them, those who maintain them, and those who use them) and the form itself (here meant in the broadest sense to include the building and the artifacts within it). The building could be said to be a kind of repository of decisions, with its architectural elements documenting, albeit in an imperfect way, the ideas that went into its making, maintenance and use. Through them the building communicates attitudes (how people should inhabit it, relative status relative of various inhabitants and visitors, etc.) and it tends to support certain activities and to impede others.

Although this chapter presents the interpreted “meaning” of a building as a set of attitudes that formed the collective decisions and that are communicated by means of the form, we must acknowledge that certain limitations of the data themselves make such interpretation from elements speculative. Attitudes are read indirectly, and can be expressed in many ways. Even within a particular cultural context, at different times and places, due to the many forces that affect a given choice (changing technologies, availability of materials, the expense of construction, etc.), the elements selected may vary greatly from one environment to another even though they represent the same attitude. Conversely, due to the same forces that limit selection, an attitude may be not be able to be effectively represented. Finally, in certain buildings, especially “high” architecture, the relation between attitude and elements can be subverted by experimental or intentional use of architectural elements originally intended for different purposes.

The methodology we applied to create the Institution-Home Measure for Living Rooms was intended to describe cultural norms at a given time and place. Therefore we investigated ordinary buildings, selected at random within the constraints of building type, which tended to generate almost exclusively middle and low income residences. Taking the

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6 Slide image is from Phase I research and rating is not available
elements found in the living rooms of the residential settings, we sought to develop measures that would describe the continuum found in the slide evaluations. To generate the measures we analyzed living rooms from the 21 settings that sufficient data from both the slide evaluation and the inventory description in Phase 2 (supplemented by additional observations taken from the slide documentation). We studied both the entire set of 38 living rooms (including settings like recreation rooms and studies in houses and libraries and recreation rooms in institutions), and the 21 living rooms (or for institutions lobbies or floor lounges) that best represented the settings, arranged from most to least institutional as per their institution-home ratings.

Using discriminant analysis to compare bar graphs, we chose weights for inventory measures either singly or in combination with others, that best approximated a graduated continuum (see Illustration 6.09). Because computer analysis at that time required a measure with all variables weighted and related to each other and could not use our single variable, unweighted measures that included lots of zero values, we had to analyze our data using discriminant analysis. This procedure required detailed personal attention to hypothesize relations between variables and to test patterns of variation. Although this process was not the objective one that would ideally be used to discover the relation between inventory measures and slide evaluations, we assume that given sufficient expertise, today a process could be designed that that employed computer analysis to replicate the labor-intensive comparisons we made.
The following discussion uses the measures to detail the differences found in the small set of living rooms studied.

**Placement and Configuration**

Placement and configuration are largely aspects of syntax, but are discussed here because they affect the character of the living room. Some aspects have been described using the inventory, and in this form lend themselves to analysis as elements of architecture.

*Location.* The typical living room in the private dwelling is, as we have discussed, adjacent to the front door, within a clearly defined communal realm. The location of the room differentiates the living room from a den or study and from a family room. Usually the other spaces are removed from the front door, dens in the private realm, and the family room in the communal realm, but in the basement or at the far end of the kitchen, as it is usually a noisy alternative to the living room. Although the living room is normally the closest room to the front door, within 12 feet, because a dwelling is small it is never far from any other space. Its location at the front, along with its permeability permits it to serve as a filter between public, private, and intimate realms.

Another aspect of the living room's location is its placement relative to the outdoors. In houses and apartments the living room is always on an outside wall with windows looking out. In general the more homey living rooms have at least three windows placed on more than one wall. Thus domestic living rooms are generally well lit by natural light, and provide opportunities to see out. In houses especially, this permits awareness of who is coming up the front walk.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance to Entry</td>
<td>Over 50 ft</td>
<td>31-50 ft</td>
<td>22-30 ft</td>
<td>12-21 ft</td>
<td>under 12 ft</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Illustration 6.10

LOCATION MEASURE-Distance: Living Room to Entry
from the Institution-Home Assessment Measure for Living Rooms

The lobby sometimes serves as a filter between the public and the semi-public areas of an institution, when, like the living room, it is the first space you enter. But the distance between the lobby and other areas of an institution (in our study we have found distances of up to 434 feet between the lobby and a typical hospital bedroom) militates against its serving as a place for casual gathering for inhabitants. Rather it serves gathering related to entering and exiting the building. Since the lounges are located in subdivisions of the institution, they may be closer to the centers of activity, but unfortunately, as mentioned earlier, they are rarely on the normal path people traverse, so that they usually do not serve effectively as natural gathering points either.\(^7\)

While lobbies usually have plenty of windows to the out-of-doors, lounges may have few or none. In institutional settings it is rare that a living area will have windows on more than one wall. Since one is usually entering from a corridor, this often creates the effect of backlighting the space so that as one enters the room the light is blinding. Unlike houses and apartments that rarely have interior windows since no room is far from the exterior, because

---

\(^7\)Anecdotal evidence from a friend who was hospitalized for many months suggests that the lobby areas, despite, or perhaps because of their public placement are better places to entertain guests than the floor lounges. The lounges, being closed off by a door, seem to belong to the institution rather than to the patients.
in institutional buildings are deep they often employ windows between interior spaces to allow light and views to penetrate from one interior space to the next.

Integration. The location of the living room in the private abode in the United States\(^8\), so essential to its role of entertaining visitors, is enhanced by its generally being visually and spatially linked to the main path of circulation, or even being part of it. If the entry and the living room are not contiguous, they usually connect with an opening wider than a single door, and rarely have a single door, or one that shuts. The living room is also usually open in a similar fashion to the dining area or dining room, and is often linked as well to the kitchen. In the typical residence, the communal area of the dwelling does not consist of distinct separated spaces, but of areas tied visually and through ease of movement one to the next. In other words, the living room is generally a room that does not have doors per se but rather wide openings that connect with the other rooms in the communal area of the residence.

Having the living room as an integral part of the communal area of the private unit permits it be entered and exited casually. The living room is accessible to all and activities within it can be viewed prior to entering. Because the house is small, the living room is close to the other spaces. Therefore all household members know, or can easily find out what is happening in the living room, and can choose to participate or not.

A. S-5 Entry to Living Room  B. S-6 Living Room to Dining Room

Illustration 6.11

Typical Connections between Living Rooms and Other Domestic Spaces:
(I-H Slide Ratings: A = 4.8 and B = 4.1)

While the lobby in an institution has some of the same open features as the living room, it is generally too large, open and undefined for comfortable conversation. In addition to being distinguished by its size (see below), it is directly accessible to too large a number of people to serve as an informal filter, and in most cases is too undifferentiated from public territory to be a good place for formal entertaining of visitors.

The lounge, on the other hand, is usually small enough to serve for conversation, but is located in a segregated space entered by a single closed (due to fire regulations) door off a corridor, making it seem inaccessible. Such separation from the path of normal interchange impedes informal communal gathering, a primary function of the living room in a house, thus impairing the development of a community by residents. When a glass wall encloses such spaces there is an increase in the visual connection, but casual movement is still impeded.

\(^8\) Here it is important to note that the typical Dutch house is organized quite differently from the American. The entrance typically is a separate space, segregated from the rest of the household. Even when the living room is connected to the dining room or kitchen, it is quite likely to be separated from the entry- and its related and requisite toilet and coat closet- by a single door. This same space will typically connect to the stair in a Dutch residence with more than one level.
CONFIGURATION

<table>
<thead>
<tr>
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<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Room Entrance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 or more entrances</td>
<td>1 entrance by a single dr</td>
<td>1 entrance by a double dr</td>
</tr>
<tr>
<td>1 entrance by a double dr</td>
<td>3-4 entrances</td>
<td>1-2 entrances, including one opening with no door</td>
</tr>
<tr>
<td><strong>Room Size</strong></td>
<td>400 ft² or more</td>
<td>less than 125 ft², 350 to 399 ft²</td>
</tr>
</tbody>
</table>

Illustration 6.12
CONFIGURATION MEASURE- Room Entrance & Room Size
from the Institution-Home Assessment Measure for Living Rooms

Size. The size of a space affects its character. In private residential settings the size of a given area responds to the normal furniture patterns and the activities which will occur. In living rooms the typical 125 to 250 square foot size can easily contain a sofa and several chairs with extra space. The seating can thus be placed away from the wall, allowing enough space in front for a coffee table, and room behind for other furniture such as shelves, desks or tables, which will be against the walls. There needs also to be space to walk. Dens may be smaller, since they require less furniture, normally a desk and shelves, and theoretically serve one person at a time. Recreation rooms are often larger to accommodate space for active games. Ceiling heights in living rooms do not seem to vary much, except that heights over 9 feet were not found in the homelike settings, and that the two places with ceiling heights clearly usually high (20, and 25 feet) were among the more institutional places.

Size of LR organized along the I-H continuum
All LR per Setting

Reference: size of room has been entered directly from inventory in sft.

Illustration 6.13
Graph Showing Relative Sizes of Living Rooms in the 29 Settings
Arranged by I-H Rating
(Graphs by Julio Bermudez)

Living rooms in institutions vary in size from very large lobbies that house many people simultaneously, to small waiting rooms that may only serve one or people at a time. In between are those lounges that serve as gathering places for people in a subdivision of the building. As can be seen from line graphs in Illustration 6.13, the more institutional living rooms tend to have a greater range of size than the others do. If we look at living rooms and
floor lounges only (omitting dens and recreation rooms in private residences, and in other settings lobbies, activity rooms, libraries and other areas) we find that there is still a tendency for these spaces to be either larger or smaller than the living room in the dwelling, although the difference is not as pronounced (See second graph illustrating 1 LR per setting).

**Materials**

The importance of administrative control in environments is expressed in choice of materials that are durable, and hygienic. The object is first to have a material that will not show wear and tear, and that will be easy to clean. Due to concepts of economy few traditional institutional settings will make the choice to have a less durable, but perhaps more appropriate material that will need to be replaced regularly. Furthermore, in the context of the large numbers of inhabitants using such settings, is especially difficult for many more beautiful or comfortable materials to endure. In some institutional settings, hospitals, for example, the concern for hygiene in the past has dictated materials that can be washed with disinfectant such as ceramic tiles or resilient flooring. Such materials have come to be associated with cleanliness, although today we find dangers in widespread use of disinfectants in public spaces (as compared to specialized rooms like surgical suites).

Another aspect of materials that we have addressed already is the tendency for institutional settings, in contrast to private dwellings, to have similar materials throughout a single facility, so that materials selected for flooring are likely to be similar in all spaces. This not only responds to the economy of means for purchasing but also reduces the numbers of different kinds of cleaning equipment required. The concern for easy cleaning is common to the selection of materials in a house as well. People often comment that having wood floors with carpets is not as easy to maintain as wall to wall carpet. Nonetheless the aesthetic considerations of comfort and appearance will play an equal role to practicality in a residence, resulting in the choice of materials that are softer, more textured and not necessarily particularly easy to clean or “hygienic”.

**Wall.** The most common wall material found in the settings is plaster/gypsum board. It was found in every kind of setting. The differences we discovered were in the use of other materials, and in the kind of material used to finish the wall. As would be anticipated glossy paint was common in the most institutional settings and semi-gloss finish in the more institutional intermediate areas. Matte paint was found in a wide range of settings largely at the homelike end, but including several middle settings as well. One of the most institutional appearing rooms, however had matte painted walls. Wallpaper was not commonly found but the single instance was in a homelike living room. Similarly, wood paneling was found two homelike settings once as a pure wall material and secondly in combination with matte painted plaster/gypsum. The instance of real wood in an institutional setting occurred when in combination with glossy finished plaster/gypsum.

Even though none of the measured settings had exposed concrete or concrete block walls, in Phases 1 and 3 these were observed in residential institutional settings, and therefore have been included. Matte painted concrete block walls were in a relatively homelike setting, and while not common in Minnesota, they may be more so in other regions.

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9Plaster/gypsum board is here used as a generic term to describe all types of plaster or wallboard. The main difference between the use of plaster versus other plaster-like materials was the age of the building, not its use.
Ceiling. Ceilings, too were mostly plaster/gypsum board, and glossy paint was an important indicator of institutionality. Although acoustical tile was not found in the most homelike settings, it was found both in institutional and middle settings. In those two instances where the ceilings also included wooden beams, both places were the most highly rated as homelike, suggesting that wood beams may be important home indicators. Wood ceiling moldings also were found with the more homelike settings.

Floor. The most common floor material was wall-to-wall carpet, possibly because of the cold climate in the Upper Midwest region of the United States. The more durable shorter or non-pile carpet was found in more institutional settings, whereas homelike settings had longer, softer and more richly textured carpet. Settings having carpet covered with area rugs were among the most homelike.
### MATERIALS

<table>
<thead>
<tr>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Floor Material</td>
<td>Concrete Terrazzo</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Illustration 6.16**

**MATERIALS MEASURE-Floor Materials**  
*from the Institution-Home Assessment Measure for Living Rooms*

Resilient flooring of plain vinyl or linoleum\(^\text{10}\) was commonly found in the more institutional settings. When it was covered with area rugs, the setting was generally rated in the middle range. Similarly, the one setting with ceramic tile was rated in the middle range. In the Upper Midwest, unlike many warmer climates, ceramic tile as well as brick or stone are not commonly used in living rooms, they have been included in the measure based upon findings in Phases 1 and 3. Plain wood floors were found in places rated in the both middle and homelike range. When covered with carpet, wood flooring was associated with homeliness.

**Window & Door.** Since window material and operation vary in differential distribution in a linked manner, they are illustrated together (see discussion of ventilation equipment below, and Illustration 6.18). The most institutional spaces had non-operable fixed metal windows, or sliding metal windows ( or a combination thereof), had no windows, or had fixed metal windows opening to interior spaces. The middle rated buildings had sliding metal windows or a combination of fixed and sliding. In homelike settings most windows were wood, either double hung or casement, although a few settings had metal windows\(^\text{11}\).

Because the majority of the homelike spaces did not have doors into the living room but rather simple openings, the material for these entryways is not an issue. But those that did have doors, either as a front door or as entrance into a den or recreation room, tended to have doors that had glass panels in them. The hardware was usually a knob.\(^\text{12}\) The middle range buildings tended to have solid doors with knobs. In the institutional spaces where the doors were of solid wood, the hardware was a latch and push plate. Other institutional spaces had glass hinged doors with metal frames and knobs. Institutional living room spaces did not, as a rule have closets. In homes, closets were sometimes found in living rooms, and the doors were generally of solid or louvered wood.

**Systems & Equipment**

Equipment is something that we normally don't attend to in environments, yet it is

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\(^{10}\) The term resilient is used to describe vinyl, linoleum or other resilient man-made materials used to create a shiny, durable surface.

\(^{11}\) This is very likely to be subject to regional differences, since wood is not a good material for windows in damper climates than Minnesota.

\(^{12}\) With an increasing interest in handicapped accessibility in the United States, today handles are replacing round doorknobs.
legible to us and gives subliminal and strong messages about settings that we perceive unawares. There may be a great variety of systems and equipment in a given living room setting, such as HVAC (heating, ventilation and cooling), lighting, plumbing and sprinkling, fire prevention and security. These manifest ideas about control and risk that differentiate the private residential setting from that of the institution.

Certain kinds of equipment become markers for institutional settings as they are often required in public settings by code: sprinklers, fire extinguishers, exit signs, fire doors. Private houses are small and egress is simple, and since much of the risk is borne by the individual rather than by the public, until recently there has been no legal requirement for fire or security equipment. Interestingly, as individuals have come to be educated about fire prevention, and laws in many areas of the United States require the use of smoke detectors in apartments, their use and that of fire extinguishers in home settings reduces their power as a purely institutional sign. Nevertheless, in domestic settings these artifacts remain banned from the living room.

Fire Prevention Equipment. The fire equipment that remains a sign of institutional settings is the fire extinguisher, the exit sign, the sprinkler, the emergency door and the fire alarm. The smoke detector is also a sign, but seems to be somewhat less powerful, especially when mounted in the ceiling. However, the emergency devices with flashing lights remain large and noticeable signs of institutionality. In Figure 6.17, notice the exit sign, the release bars on the door, and also the small fire alarm placed to the right of the door.

Illustration 6.17
Fire Equipment as an Institutional Sign

HVAC. Different kinds of heating systems are associated with different kinds of buildings. The old fashioned hot water or steam radiator is associated with the single family house, or small apartment building (although many older institutional buildings use them as well). The cast iron radiator is thus a sign of home. Baseboard hot water radiators have been usually associated with larger buildings, and thus they have come to be a sign of institutionality in the United States. Electric baseboard heating is more ambiguous. Found in all settings during
our research it was associated mostly with apartment buildings. Similarly built in air conditioners are associated with apartment buildings, whereas unit air conditioners are associated with home.

Large air heating and cooling systems are also usually associated with large nonresidential buildings, and thus wall and ceiling grill vents and ventilators tend to be associated with institutional buildings. The heating and cooling measures below may be limited by the time the research was made.

While some equipment communicates messages by its presence, another may be notable by its absence or by the fact that it does not function as it appears to. So for example, thermostats may be visible, suggesting that temperature control is possible, but the thermostat itself may either not be able to be altered. In the case of many apartment buildings, the thermostat appears to be able to be manipulated, but in reality altering the temperature gauge has no effect on the heating system. But whether the sign is nonexistent or gives a false message, the net result is that control of temperature is out of hands of the resident.

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In a similar way, the presence or absence of operable windows functions to deny or make opportunities for adjusting temperature and air, and to communicate where the control of a space lies. Therefore operable windows are more like to be in places where the resident controls and pays for the heat. In Illustration 6.19, although the electric baseboard heating in

<table>
<thead>
<tr>
<th>HEATING, COOLING &amp; VENTILATING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institution</strong></td>
</tr>
<tr>
<td>Windows</td>
</tr>
<tr>
<td>Heating</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cooling</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Illustration 6.18
EQUIPMENT MEASURES - Heating, Cooling & Ventilating (HVAC)
from the Institution-Home Assessment Measure for Living Rooms

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13 In the United States the electric baseboard heater, a smaller cousin of the hot water baseboard heater is increasingly found in houses, and may come to have the same status as the ubiquitous hot water radiators hung under the windows in new housing in the Netherlands.
the first photograph (A) is ambiguous, the built-in air conditioner on the wall to the left indicates that the building is a multi-household dwelling (and the metal sliding windows are another indication). In the second photograph (B) the ceiling ventilator over the window is the sign of a large, central HVAC system (other evidence includes (1) the window that opens visually to an adjacent interior area, (2) what may be recessed sprinklers, and 3) the fluorescent tube lights in the next room).

Illustration 6.19

Heating, Ventilating and Air Conditioning Equipment
Indicate the Character of the Setting
(I-H Ratings: A = 4.5  and B = 2.1)

A final piece of heating equipment has special status for the living room, the fireplace. Since, as has already been pointed out, the fireplace is an obvious fire hazard, it is by code disallowed in institutional settings. Its psychological impact is so powerful that even if it doesn't actually function, or isn't actually used, the masonry fireplace, or its substitutes, a metal fireplace, a wood-burning stove, a gas fireplace, or even a mantelpiece without any functioning flue communicates the home message.

Lighting. A related but somewhat less direct logic, affects the use of lighting. Free standing lighting that may be moved to a particular place or object and that focuses light in one area rather than even lighting an entire room is the kind most often found in private living rooms. Although one house setting in our study was lit exclusively with overhead and wall lights, the others had either exclusively or predominantly freestanding light fixtures.

<table>
<thead>
<tr>
<th>LIGHTING</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Light Fixtures</strong></td>
<td>Over 25</td>
<td>16-25</td>
</tr>
<tr>
<td><strong>Type of Light</strong></td>
<td>all fluorescent</td>
<td>mixed fluorescent and non-fluorescent</td>
</tr>
<tr>
<td><strong>Flexibility</strong></td>
<td>less than 20%</td>
<td>20-39%</td>
</tr>
<tr>
<td><strong>Type of Light Fixture</strong></td>
<td>All ceiling</td>
<td>All wall mounted 2 or more ceiling plus wall</td>
</tr>
</tbody>
</table>

Illustration 6.20

EQUIPMENT MEASURES - Lighting
from the Institution-Home Assessment Measure for Living Rooms

The most homelike living rooms also were likely to have fewer lights, a mean of 2.6.
whereas the institutional lounges and the middle range living rooms had a mean of 6, and the institutional lobbies had a mean of 32. The most institutional places were illuminated by exclusively fixed lighting, generally recessed in or located against the ceiling with fixed lighting accounting for over 80% of the lighting in every setting. The middle settings were likely to have a mixture of fixed and freestanding fixtures, including wall fixtures and lamps hung from the ceiling. In our rotated factor analysis of slide evaluations, the factor called intimacy/coziness was made up in large part of images of seating in either natural or artificial light located within a darker space, suggesting the importance of area lighting to the evaluation of homeliness.

General lighting is used in many public places since there is a perception that they ought to be well lit, and that the public cannot or should not turn lights on and off. In order to create a bright area, rows of fixtures are often used. In combination with what are generally larger spaces to begin with, the essentially shadowless character of general sighting is a strong communication of institutionality and loss of inhabitant control.

**Furniture**

*Upholstered Seating.* Furniture powerfully communicates attitudes about comfort, durability, identity and cost. While the amount of enclosed space can be a symbolic statement about the ability of a group or individual to control and economically support territory, the character of its inhabitation and its inhabitants is marked by what it contains. Among these makers furniture is arguably the most potent.

The sofa is the landmark or sign of a living room. Dens and recreation rooms also may have sofas which is why they are classified here as living rooms, but while living rooms virtually always have sofas, dens and recreation rooms may not. While lounges and lobbies also commonly have sofas, these rooms also frequently have exclusively single seating. A conventional living room in a home has a sofa that seats three and two upholstered chairs, for a total of 5 comfortable places to sit. A loveseat seating two may substitute for the sofa. Occasionally there will be an additional hard chair or two, usually associated with a desk, or perhaps as a side chair along the wall. The upholstery in such a living room is normally a soft fabric (with the exception of a few recliners, we did not find leather or vinyl in the settings rated most homelike), and the chairs are made of wood. While the fabric may be matching, or similar in color, usually there are 3 or more styles of furniture in the living room. This reflects the fact that, due to cost, people may not purchase a complete matched set. More often they buy a single piece of furniture, or if they buy a matching sofa and chair, they will usually supplement them with another one they already own, perhaps reupholstering the old one in a

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14 The word sofa is used here to mean what I grew up calling a couch and others have told me they called a davenport.
compatible fabric. Thus while the new and old furniture will not exactly match, it will nonetheless be of a compatible color and pattern. This creates a sense of unity without repetition of identical elements.

Institutional lounges are typically furnished either with no sofas or with three or more. The lounges and lobbies we observed generally seated more than ten people, with the largest having seats for up to 50 people. These chairs are likely to have a metal frame that is covered with vinyl or with a rough durable fabric. All of the upholstery is usually covered with one or two fabrics, and while we found up to five styles of chair in some of the larger lobbies, with 50 chairs all covered with the same fabric, the appearance is of a uniform pattern (see Illustration 6.22)

**Table 6.21**

<table>
<thead>
<tr>
<th>UPHOLSTERED SEATING</th>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Total Upholstered Seats</td>
<td>2 or fewer</td>
<td>8-10</td>
<td>3-4</td>
<td>6-7</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Sofas</td>
<td>0 sofas</td>
<td>2 sofas</td>
<td>1 sofa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chairs-Upholstered</td>
<td>7 or more</td>
<td>5-6</td>
<td>3-4</td>
<td>1-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chairs-Upholstered-Material</td>
<td>Over 50% are vinyl w metal or plastic frame</td>
<td>Over 50% are vinyl w wood frame</td>
<td>Over 50% are cloth w metal frame or mixed cloth and vinyl</td>
<td>50-99% cloth w wood and/or plastic frame</td>
<td>100% cloth w wood frame</td>
<td></td>
</tr>
<tr>
<td>NON-UPHOLSTERED SEATING</td>
<td># Plain Chairs</td>
<td>7 or more</td>
<td>5-6</td>
<td>2-4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Chair Action/Material</td>
<td>Metal folding</td>
<td>Plastic &amp;/ or Metal Stacking</td>
<td>Metal- fixed All Plastic-fixed</td>
<td>Wood Folding</td>
<td>Solid wood Wood w fiber (rush, wicker, etc.)</td>
<td></td>
</tr>
<tr>
<td>TOTAL SEATING</td>
<td>Institution</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td># Seats</td>
<td>15 or more</td>
<td>10-14</td>
<td>1-2</td>
<td>3-4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td># Styles</td>
<td>more than 6 seats of any one style</td>
<td>More than 5 seats of any style</td>
<td>1 style with no more than 5 seats of any style</td>
<td>At least 2 styles of seating with no more than 3 seats of any 1 style</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Illustration 6.21

FURNITURE MEASURE- Seating

*from the Institution-Home Assessment Measure for Living Rooms*
Non-upholstered Seating. In the private residence, unless there is a dining area in the living room, as is the case in some of the apartments in the study, the seating usually consists entirely of upholstered chairs, or of one or two hard straight chairs that may be associated with a desk or which may be used as a side chair. In institutional settings, there are often large numbers of hard straight chairs used to supplement the upholstered chairs. These are sometimes used arranged in rows, but more often they are placed around tables.

Other Furniture. Living rooms in homes have a variety of furniture additional to seating. Despite the smaller size of the living room in a house, it generally has more types of furniture than does an institutional lobby or lounge, including in addition to end tables or coffee tables - commonly found in institutional settings - furniture like desks, secretaries, side tables, pianos, buffets, chests, trunks, bookcases and shelves.

General Arrangement & Style. The general arrangement and style of furniture reflects the degree of desired interaction in a setting, in addition to the technique of purchasing, described above, and the relative importance of maintenance. In waiting rooms, for instance, it is assumed that social interaction should be discouraged. Furthermore, the furniture is arranged to allow the professional cleaning person to clean without having to move it. Furniture therefore tends to be placed either all at the center so that the edges can be easily cleaned, or all at the edges to allow cleaning of the center.

Living room furniture in the private residence is placed both along the wall and away from the wall. Seating is generally arranged away from the wall in a configuration that supports conversation - often around a coffee table - and additional furniture used for storage or display is placed along the walls, where it will not interfere with movement. When the room is very small, as in apartments or tiny houses, so that there is not enough room to place
OTHER FURNITURE

<table>
<thead>
<tr>
<th></th>
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<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee Tables</td>
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<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>End Tables</td>
<td>5 or more</td>
<td>2</td>
<td>0</td>
<td>1-2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Tables Reg Height</td>
<td>3 or more</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Other One-of-a-Kind Furniture</td>
<td>No one-of-a-kind furniture in addition to chairs &amp; tables</td>
<td>1</td>
<td>2</td>
<td>3 or more one-of-a-kind pieces</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FURNITURE PLACEMENT & DENSITY

<table>
<thead>
<tr>
<th></th>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furniture Position</td>
<td>Furniture at room edges (gap of 8’ +)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Furniture evenly distributed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Furniture all in the middle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furniture Density</td>
<td>Over 10 items of furniture per 100ft2 or fewer than 2 items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Over 2 items per 100 ft2 and less than 4 total or between 9 &amp; 10 total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-6 times per 100 ft2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Over 6 items per 100 ft2 and less than 9 total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Illustration 6.23

FURNITURE MEASURES-Other Furniture, Placement & Density

from the Institution-Home Assessment Measure for Living Rooms

Living room furniture in the private residence is placed both along the wall and away from the wall. Seating is generally arranged away from the wall in a configuration that supports conversation—often around a coffee table—and additional furniture used for storage or display is placed along the walls, where it will not interfere with movement. When the room is very small, as in apartments or tiny houses, so that there is not enough room to place the furniture in the middle of the space, the sofa will be set against the wall. The other seating may then be located along the walls of the room but it will not be straight against it, but turned at an angle so that the seats can face each other.

Furniture in institutional living rooms is placed in one of three ways: (1) either all along the wall, generally in lines of seats and end tables, or (2) all grouped into several smaller arrangements in the middle of the room, consisting entirely of seating, end tables, and possibly coffee tables, or (3) sometimes, evenly distributed throughout the room, usually with straight seating arranged around tables. Occasionally all the seating will face one way to view a main activity or desk.

The style of furniture has more variation in the home living room. It has already been pointed out that furniture in a private residence will not necessarily match, whereas in an institutional setting the chances are good that most of the furniture will be of a small number of styles creating a uniform and anonymous character. Since the number of pieces of furniture in a domestic living room is small, the amount of furniture of any one style is limited—even if all are of the same style. The sense of duplication in substantially increased when more than 3 items of furniture are the same. Certainly if institutional settings would have 50 unique items of furniture the sense of unity would clearly be a problem. The duplication permits coherence in the context of large quantities of furniture. This demonstrates one of the underlying causes of the inherent anonymity of large-scale settings.

Density. Another factor in the arrangement of living room furniture is its density. The range
of density for all furniture goes from over 7-8 pieces for every 100 ft² for the most homelike rooms, to 2-5 for moderately homelike rooms and over 10 for certain crowded institutional rooms, although the rooms rated as more institutional showed great differences in furniture density. In the most homelike rooms the proportion of furniture that is seating is lower and the proportion of other furniture is higher. In other words, in institutional settings seating dominates, whereas in home settings other furniture is more in evidence. The living room furniture thus indicates the tendency for institutional rooms to be designated for a single purpose.

**Decoration**

While items of furniture are the most fundamental marker for a room --- being linked directly to room purpose and relatively difficult to move and expensive to obtain --- decoration is an equally important marker of habitation. Linked to personalization and display, the living room decoration both reflects and communicates household status and taste.15

Decoration takes many forms. Some decorations are embedded in the materials of the fixed architectural elements (walls, ceilings, floors), others are embedded in the systems (embellishments of light fixtures, radiators, etc.), and still others are embedded in the furniture (e.g. fabric coverings, elaboration of the wood or metal structure). Another type of decoration is brought to the space in the form of objects placed within it, such as practical objects, artwork, plants, and window coverings.

Drawing the line between decoration and other architectural elements is somewhat arbitrary. So for example, large planters set on the floor are here considered furniture while small hanging plants or plants set on top of furniture are considered decoration. While

![Illustration 6.24](image)

**Relative Density of Living Room Decoration Communicates Institution & Home**

(I-H Rating : A = 2.26 ans B = 4.5 )

15Other studies have documented how decoration is linked to class. Here we have not addressed class, and are not certain to what extent the concept of homeliness is class-bound. There is evidence that our culture shares certain ideas about house and home that are communicated through the media etc., but these do seem to be overlaid by cultural patterns that could be attributed to class and/ or other sub-cultural associations. Anecdotal evidence suggests that if there is an effect of class, it is overlaid with other sub-cultural patterns. For example, different groups of what could be called upper class people in the United States have different ideas. Those with intellectual pretensions may have “high art” living rooms that look very institutional in terms of little or no window decoration, while others of the same social class may have very traditional tastes with rich embellishments of windows, including 4 or more layers such as wooden shutters, sheer curtains, cloth curtains and valences.)
Window coverings are to a large measure part of the HVAC system in that they help to control light and heat, since they are less fixed environmental attributes they are discussed as decorative elements. Similarly, elements like stereos, and speakers can be either decorative elements or furniture. Where they are built into furniture they are called furniture, where they are not they are considered decoration. Telephones, typewriters and computers are considered decorative elements, since they add to the general appearance of an environment that is being actively inhabited (in 1984, computers were only found occasionally).

Wall and Surface Decoration. Wall decorations and decorations on surfaces are the most obvious differentiating decorative markers. Home living rooms have a number of items on the wall that tend to be varied in character, including paintings, wall hangings, hanging plants, photographs. While institutional settings are far more likely than home settings to have empty walls, their decorations tend to be larger and fewer in number. There is usually only one, likely to be a painting or reproduction of a painting. Additionally there is very rarely anything on the surface of furniture other than magazines, an occasional plant, and, increasingly rarely, an ashtray (ashtrays may also be in the form of furniture). While the most homelike settings had more than 5 items on furniture surfaces, the most institutional settings had only 1 or 2.

Wall and Surface Decoration. Wall decorations and decorations on surfaces are the most obvious differentiating decorative markers. Home living rooms have a number of items on the wall that tend to be varied in character, including paintings, wall hangings, hanging plants, photographs. While institutional settings are far more likely than home settings to have empty walls, their decorations tend to be larger and fewer in number. There is usually only one, likely to be a painting or reproduction of a painting. Additionally there is very rarely anything on the surface of furniture other than magazines, an occasional plant, and, increasingly rarely, an ashtray (ashtrays may also be in the form of furniture). While the most homelike settings had more than 5 items on furniture surfaces, the most institutional settings had only 1 or 2.

Window Coverings. Window coverings also are a strong sign of habitation, especially when the coverings can be manipulated. Most settings that had windows to the exterior had some form of curtain. In the most homelike places the curtain was more likely to be mounted on a simple curtain rod. The curtains themselves were more likely to be sheer, and the coverings were also more likely to have several layers, such as a curtain and a pull shade, a curtain and a venetian blind or a curtain and a valence. Institutional settings usually had solid cloth curtains or vinyl curtains mounted on pulleys.
LIVING ROOM DECORATION

<table>
<thead>
<tr>
<th></th>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td># Decorations on Walls</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3-4</td>
<td>5+</td>
<td></td>
</tr>
<tr>
<td># Decorations on Horizontal Surfaces</td>
<td>0-1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5+</td>
<td></td>
</tr>
<tr>
<td>Window Coverings</td>
<td>No window</td>
<td>Shade only</td>
<td>Cloth curtain only</td>
<td>Cloth curtain + shade/blinds</td>
<td>Cloth curtain + valence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No window covering</td>
<td>Vinyl curtain only</td>
<td>Only venetian blinds</td>
<td>Sheer only</td>
<td>(shutters only)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cloth curtain + sheer</td>
<td>• 3+ layers of: cloth curtain, shade, sheer, blinds, valence (shutters)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cloth curtain + sheer</td>
<td>• (Shutters + 1 additional layer)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Illustration 6.25
DECORATION MEASURES
from the Institution-Home Assessment Measure for Living Rooms

Inventory Measures & The Institution-Home Continuum

Three questions arise as a result of studying the inventory data: “What did we learn about architecture?” “What does this tell us about institution and home?” and “What can we conclude about the usefulness of inventory measures in architectural research?”

Architecture: Our study of architectural elements shows four things about architecture. (1) It is possible to describe architecture in rich detail using the concept of variables that might affect its perception. (2) It is also possible to compare the rich architectural variables to qualities that people ascribe to that architecture, and from that to develop measures that detail differences in architecture. (3) It is possible to understand the kinds of variation that contribute to architectural effects. (4) Although we have only partially assessed the validity of the measures that we have developed in Phase 3, that work shows that is also possible to definitively relate architectural variables to the qualities that people perceive. The value of such analysis is related to its applicability in design, perhaps most powerfully described as it predictive ability. In order for such a process to produce predictability, studies such as the one documented here would have to be expanded to investigate a much larger set of environments, within a carefully defined cultural and temporal context, in terms of a defined set of qualities.

Institution and Home: We have learned about specific design features that communicated domesticity and institutionality in living rooms in the mid 1980s in a Midwestern city in the United States. The range of environments studied are limited geographically, do not encompass what might be called the full range of institutionality, nor the full range of class

160
and ethnic variation even within the particular context chosen. For example, a more complete range would include such settings as prisons, jails, single room occupancy hotels and centers for homeless people, thereby extending the institution end of the scale. Additionally, examples of housing would include a greater range of ethnic difference (Americans and immigrants of African, Asian, European and Hispanic descent as well as Native Americans) and also housing that represented a greater range of poverty and wealth, perhaps broadening the concept of home (e.g. converted lofts, live-work environments). Even if in the 1980s housing that represented “home” was narrowly defined (and our study was too small to definitively determine that), today that may no longer be true.

Two aspects of the pattern of variation between institution and home are worth noting. We have already discussed how the different measures of the Institution-Home Measure for Living Rooms vary by quantity (degree and differential distribution), by kind, by composite variation, and how another form of differentiation can be called singular trigger. Another aspect of institutionality and homeliness that may be obvious, but is worth remarking upon is that the variation patterns represent the tendency to be institutional and the tendency to be homey. Because the individual tendencies did not represent a complete variation, the measures typically represent a combined pattern based on mixtures found in intermediate settings. The measure Type of Light, for instance (see Illustration 6.21) combines the tendency for institutions to have fluorescent and homes to have incandescent lights. The intermediate settings, then, do not seem to have architectural elements of their own, but to borrow in distinct ways from each end of the continuum.

**Inventory Measure:** Although the inventory measure that we used in this study was crude, it did permit us to identify a greater range of variables in living rooms than was identified in the Architectural Checklist in our first study (see Appendix), and therefore to develop a better evaluative instrument for these spaces. As a result of this study we developed the descriptive instrument Architectural Inventory Measure (AIM) for the entire building (see Appendix for selected pages from the instrument) based upon the method of descriptive architectural specification, which was applied in Phase 3. Illustration 6.27 shows the relation between the Architectural Checklist, the Institution-Home Assessment Measure for Living Rooms, described in this chapter and the Architectural Inventory Measure. In the Phase 3 research the AIM instrument revealed patterns of variation that were not directly observable not only between architectural elements and qualities of space, but between architectural elements and observed behavior (Thompson et al, 1996b). If applied in focused studies with much larger number of environments, that employ new techniques for analyzing large data sets this instrument can be used to develop predictive measures identifying architectural variables that correlate with perceived architectural qualities and with behavior in environments.
A. Architectural Checklist (evaluative measure)

Institutional

109. Living room floor is resilient flooring (vinyl or wood or carpet linoleum) concrete or terrazzo

B. Preliminary Inventory (descriptive measure)

**ROOM MATERIALS - FLOOR**

<table>
<thead>
<tr>
<th>wood</th>
<th>vinyl</th>
<th>tile</th>
<th>carpet</th>
<th>rug</th>
<th>vinyl</th>
<th>tile</th>
<th>roll</th>
<th>hard</th>
<th>concrete</th>
<th>terrazzo</th>
<th>quarry</th>
<th>tile</th>
<th>ceram</th>
</tr>
</thead>
<tbody>
<tr>
<td>base</td>
<td>base</td>
<td>base</td>
<td>w-w</td>
<td>area</td>
<td>tile</td>
<td>base</td>
<td>roll</td>
<td>wood</td>
<td>concrete</td>
<td>terrazzo</td>
<td>quarry</td>
<td>tile</td>
<td>tile</td>
</tr>
</tbody>
</table>

C. Institution-Home Assessment Measure for Living Rooms (evaluative measure)

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor Material</td>
<td>Concrete Terrazzo</td>
<td>Residential carpet + area rugs</td>
</tr>
<tr>
<td></td>
<td>• Plain resilient</td>
<td>• Ceramic tile + area rugs</td>
</tr>
<tr>
<td></td>
<td>• Resilient + area rug</td>
<td>• Brick/stone + area rugs</td>
</tr>
<tr>
<td></td>
<td>• Industrial carpet</td>
<td></td>
</tr>
</tbody>
</table>

D. Architectural Inventory Measure (AIM) ©, (descriptive measure - unweighted)

**5.3. FLOOR**

5.3.1. Number of Types of Floor Material
5.3.2. Percentage of visible surface covered by
5.3.2.1. Carpet Piece
5.3.2.2. Carpet, wall-to-wall, non-pile
5.3.2.3. Carpet, wall-to-wall, short, hard pile
5.3.2.4. Carpet, wall to wall, short, soft pile
5.3.2.5. Carpet, wall to wall, long pile
5.3.2.6. Carpet, wall-to-wall, shag
5.3.2.7. Ceramic Tile/Brick Tile
5.3.2.8. Concrete
5.3.2.9. Entry / Door Mat
5.3.2.10. Linoleum/Vinyl Sheet
5.3.2.11. Linoleum/Vinyl Tile
5.3.2.12. Mat
5.3.2.13. Metal grate
5.3.2.14. Metal plate
5.3.2.15. Metal Tile
5.3.2.16. Rug
5.3.2.17. Stone
5.3.2.18. Terrazzo
5.3.2.19. Synthetic Seamless
5.3.2.20. Wood, end grain block
5.3.2.21. Wood, parquet
5.3.2.22. Wood, Plywood
5.3.2.23. Wood, Strip or Plank
5.3.2.24. Other, describe

Illustration 6.26

Measures for Floor Material: Relation between the Architectural Checklist (A), the Preliminary Inventory (B), the Institution-Home Assessment Measure for Living Rooms (C), and the Architectural Inventory Measure (D)
Chapter 7

Spatial Structure of Control & Empowerment: The Territorial Gradient

This chapter and the following chapter deal with the organization of the interior spaces in different kinds of housing. In order to analyze the differences between types of housing, I developed analytical tools that compare extreme cases of institution and home. By means of this device, I discovered architectural and social patterns that articulate essential differences between institution and home. Emerging from this process are initial definitions of institutionality and domesticity in residential architecture. Institutionality is the degree to which an institution enforces its rules and systems upon its inhabitants and expresses its importance and separateness from the outside world by means of built form. Domesticity is the degree to which a household supports and expresses the identity of the individual and a small household group and maintains an interactive relation with the outside community. These reductive definitions may not describe the rich variation and subtle distinctions between the myriad forms of housing, but they allow the pinpointing of certain architectural and social organizing principles that, when combined, explain a great deal about how various forms of housing support different cultural patterns.

Housing plays a formative role in the self-definition of the resident, in the creation of a resident’s social group, and in the relation of the resident to the outside community. In Chapter 7 I will discuss how the structure of the spaces of the residence can either empower the resident or put the resident at the mercy of others. Certain spatial organizations permit residents to exert control over their activities, and to promote positive connections with others in a self-regulating community. Other spatial organizations empower the administration of a residential program. Different administrative forms of residential programs empower or dis-empower residents in different ways and to different degrees. This chapter presents spatial concepts fundamental to control and empowerment and sets the stage for the analysis of building types in the chapter that follows.

In the United States, and perhaps in other countries as well, the ideology of individualism is practiced without a concomitant ideology that supports group engagement. This one-sided ideology is manifest in an architecture and urban design that tends produce anonymity in public spaces and in certain interior settings. Such anonymity diminishes rather than supports community.\(^1\) A number of writers have identified the development of community as a critical issue in an increasingly individualistic American life (e.g. Bellah et al 1985, Kemmis, 1990). By demonstrating that the development of individual and community can be mutually reinforcing rather than mutually exclusive, these writers argue for a transformation of cultural patterns. Some of these transformations have spatial and architectural implications. In our study of different residential building types, certain kinds of institutional buildings seemed to actively impede the development of interaction between building inhabitants, whereas other buildings seemed to encourage it. An essential part of our exploration became to discover how architectural design contributes to the empowerment of the individual and the development of community. Using the spatial pattern of the traditional midwestern American house\(^2\), I have developed a territorial gradient, a structure of physical

\(^1\) Anonymity is not necessarily negative. It may be useful to distinguish between anonymity in a public street and anonymity an interior setting, especially an institutionalized one.

\(^2\) The mid-western American house can be assumed to successfully generate neighborhood relations because it is structured relative to its interior spaces and those directly adjacent to the resident.
domains that is hypothesized to underlie control of residential environments by inhabitants, and the development of a self-regulating community structure. As I have discussed, physical design will not generate social change in and of itself, and certainly, the lack of a well developed commitment to community outside the dwelling realm in the United States is partly due to the cultural diversity of the society. But if designers can identify and then construct spatial structures that encourage and support the development of community, we can help to support positive change. There is, at present, little clarity about how spatial organization can and does support community. The separation between private and public life is an essential pattern of American society. Bellah and others argue that two forms of individualism exist in these two realms, utilitarian individualism in the public realm and expressive individualism in the private (1985: 45-46). The U.S. view of the world derives from a sense of the individual as the central point, and designates the world beyond the private realm public. "Public" has come to mean that which lies beyond the "private" realm of self and the extended self in the form of the household; so while “public” and “community” at first appear synonymous, upon closer examination, the idea of public can be seen as an abstraction derived from individualism, and as unrelated to a sense of community based on social connection. The term “the public”, is defined as the "people constituting a community, state or nation,” with the relation between individual and group defined by an abstract concept. In comparison, “the community” is defined as the "social group of any size whose members reside in a specific locality, share government, and have a cultural and historical heritage". In these definitions shared values are essential to the definition of community. For community, the focus is upon the group as integrated with a particular situation or locus, a shared social construct-culture and a shared history. In contrast, the concept "public" is an abstraction that simply designates what is not private. It thereby lacks sufficient power to engender social cohesion. A spatial structure that would support the development of community therefore must encourage social cohesion. From the point of view of the spatial designer, it becomes important to know how the concepts of community, private and public relate to spatial design. If we seek to empower people to develop community, we need to understand how spatial design relates to social intentions. In this chapter and the next I explore the organization of space, asking what particular forms and structures engender its potential for supporting the individual, group and society.

Spatial Aspects of Control

Robert David Sack notes that the difference between Western culture and other cultures, (perhaps the most dramatic contrasts are with aboriginal groups such as Native Americans), is that Westerners have used the physical environment to control, or exercise authority over people and things (1986). Western architecture is thus infused with implications for power relations. What makes this control problematical is that, unlike many other cultures, the conception of power that we hold does not seem to effectively incorporate the idea of reciprocity. Instead, our buildings typically reflect the notion of maximum control at minimum cost. The building becomes a technological device to maintain an imbalance, climatic and/or social.

The spatial characteristics of a space which allow it to be a vehicle for the creation and maintenance of power relationships in Western culture seem to derive from our concern for territoriality, what Sack calls "a strategy to establish different degrees of access to people, things, and relationships" (1986:20). Space is only one of the means for asserting territorial control. Sack describes assertion of territory as involving three interdependent relationships: classification by area, communication that a territory exists, and enforcing control over
access to it. We can identify four architectural means by which the creation of territory seems to occur:

1. creation of physical locus by implied boundaries--- the existence of defined edges which may or may not be visible---, or foci--- an object or set of objects around which a place is organized.
2. division into physically separated spaces (generally by walls, ceilings, and/or floors, any of which may be open like a fence or deck, or enclosed like a room)
3. elaboration or marking of space (with a particular kind of window, door, or other opening, or with the use of materials to create distinct visual and acoustic effects)
4. structuring relations between spaces (the ways that divided spaces relate to each other, by proximity/difference or linkage /separation).

The ability to control a particular space is affected by available spatial mechanisms, as well as by several other factors, including the numbers of people who have access to a space, the roles of the people who use it, the conventions or rules for social interaction in the space, and the way that activities are contained or dispersed within the space. For the purpose of defining the territorial gradient, the following discussion focuses on the effect of group size, leaving discussion of the remaining factors to the subsequent chapter.

**Effect of Group Size on Community Relations**

In the development of the individual in relation to the community group, group size is a critical consideration. There is evidence from archaeology and anthropology that community group size is related to its type of governmental structure. For example, authority figures are not required to maintain social order in groups of several hundred people or less, but once population exceeds 500 they seem to be obligatory. At a population of about 1000-1500, police functions begin to become necessary (Naroll 1956: 687-715, Trigger ND: 97). Hunting and gathering groups seem to maintain a size from 20 up to 40, at which point they subdivide. The number 25 is sometimes called the "magic number" for such groups (Hassan, 1981:53, Lenski and Lenski, 1974:104). Based on studies in New Guinea and elsewhere, Van Baal hypothesizes the composition of the early human band to consist of about 36 adults and 24 children (1981: 80). Alexander and others cite numerous studies that indicate the effect of group size on, for example, the self-regulating ability of work groups (1977:401-402), local governments (1977:72), and on neighborhoods (1977: 81-2). Oscar Newman's work indicates that the number of household sharing a hallway should ideally be from two to five, and the population living in a building should not exceed 1000. These numbers have an important impact on the crime levels in the structure (Newman, 1972: 69, 72). Baum and Valins' work demonstrates that living quality is affected by the size of groups in dormitories. Students living on hallways where 34 bedrooms opened directly off them had considerably higher stress than students whose bedrooms were organized into six-room suites (1977). Although the scale of the group and of the space it occupies are not the only determinants of governance, there does seem to be an important relation between group size and the ability of a group to function with informal governance.

---

3 This is contrary to the argument made by Mary Douglas in her book *How Institutions Think* (1986:24-28). She argues that there is no qualitative difference between larger and smaller communities relative to their ability to take collective action and to develop a distinctive thought style, and she discounts the notions that "community", is easier to maintain among a smaller group. In this chapter, by looking at the relation between physical setting and social structure, we find that while group size may not make a difference in many aspects of community life, it does relative to buildings. For architectural settings, group size seems to make a difference for the development of the type of social bond that is dependent upon face to face contact, and that results in places where people identify with their environment and collectively claim it.
Scholarship about larger groups indicates that there are useful analogues to what in our society are called neighborhoods. Murdock documents organized bands that have settlements of about 250 people (1949: 80-81), with evidence on group size that is more explicit for populations over 500 than about the smaller groups. Naroll's definition of the population of a settlement is based not on the group size in which people function on a daily basis, but on the largest settlement in which they gather on an annual basis. But he also acknowledges that there are many groups 'like the Todas, who have no settlements larger than the extended household, people who live in what Murdock calls neighborhoods''(1956: 693). It is precisely these neighborhood groups that seem to be the most useful to look at as analogues in considering the organization of housing. Such groups documented in the anthropological data are usually kinship groups.

Unlike the way of life of the anthropological groups described above, the American lifestyle in the U.S., insofar as we can generalize (and the situation may be changing with new immigrant groups), does not consist of large kinship groups that live in a geographically restricted area. In a housing situation in the United States, household units are typically small, and not necessarily kinship-based, and neighborhood groups consist of people in a spatially contiguous relationship. 4 I suggest that it is possible to build upon the human tendency to be a social creature, and the tendency to be concerned with one's own territory. By creating groups of the appropriate size for given territories, I hypothesize that social associations proper to the size of group will emerge. Starting with small, self-identified, self-expressive and self-policing associations of people within a very limited area, and linking these to each other in successively larger groups, we would create a structure that would result in what could be called a self-regulating community. 5 Limited size and geographical restriction are hypothesized to have certain potential effects that encourage group cohesion.

One of the areas in United States society that functions well is the single family house on the residential street in neighborhoods typical of those in midwest United States built during the early part of the 20th century. This is considered the ideal dwelling pattern in United States, and generally supports both community and privacy6. I will, therefore, use an examination of this single family dwelling and its typical community pattern along with the data discussed above as a basis for the territorial gradient that I am proposing. This formulation will lay the groundwork for our later discussion of potential community formation within different housing forms.

4 Mean household size in 1991 was 2.63 (U. S. Buraeau of Standards 1992:51).
6 Here we use privacy in the sense defined by Irwin Altman as "a central regulatory process by whish a person (or group) makes himself more or less accessible and open to others" (Altman 1975:3).
7 The analytical frame given to this discussion by defining territorial realms based on population size oversimplifies a complex situation for the purpose of elucidating how the interior space of housing functions in the context of the United States midwestern City. I avoid drawing conclusions beyond housing into the urban realm because there are questions of significant cultural specificity that generate the urban pattern discussed here. Some important factors are that housing in such cities is mostly low-density, traffic is dispersed through a predominantly rectangular grid of streets, the automobile generates the city building pattern, and commercial and industrial areas are commonly segregated from residential areas.
The United States Dwelling Pattern as a Prototype

The ideal of the single family residence, or house, is such a strong part of American culture that it pervades American thinking about housing as influenced by the electronic media, and international thinking. Tremendous differences in living patterns exist based on such things as geographic location, household membership, ethnicity, economic status, class, occupation and age; yet, when the word "home" is mentioned, for most people the free-standing house comes to mind. The house represents "home" and stands for the idealized form of dwelling. One reason is that in a house, the boundaries between the household unit, and the world outside are visible. Additionally, in an area populated by single household dwellings, there is usually a clear and visible demarcation of boundary between one street and the next, and one neighborhood and the next, creating territories with strong images. Also, long-term inhabitants have traditionally owned their houses, so visible boundaries represent the desired attributes of control and independence combined with permanence and roots. The coincidence between the form of the house and its relation to neighborhood, and the underlying ideal of the self and its relation to community is mutually reinforced, and present significant reason for the power of the house as icon.

Outside the house, the openness of the typical residential street combined with the accessibility of the discrete residence enhances the coexistence of observation and privacy. A stranger is easily identified. Often, neighbors distinguish visiting friends from strangers by recognizing familiar cars parked in front of their neighbor’s house. The development of a sense of community requires not only that people are familiar with each other, but that they are aware of what is going on in their community. In effect, the relation between the open shared territory and the discrete private territories creates an awareness that allows for and is respectful of privacy. Even in one’s own house, though one may know who is at home, one is unlikely to know exactly what they are doing. When the sounds of household members are audible, the words are not necessarily discernable. Parallel to these ears in the house are Jane Jacobs "eyes on the street" (Jacobs 1961: 35). Both of these arise from the clear delineation between inside and outside that overlaps with the visibility of the outside by neighbors.

First, there must be a clear demarcation between what is public space and what is private space.... Second, there must be eyes upon the street, eyes belonging to those we might call the natural proprietors of the street. (Jacobs 1961: 35).

When the number of houses is limited, and the view of the street from the houses is clear, the territory across the street, between the houses, becomes a semi-public neighborhood space. Children may ride their bicycles on the sidewalk, or in some places, run freely from yard to yard. When, under these same viewing circumstances, there are separated front yards, people may talk over the fence. The yards then create a kind of extended semi-private area visible to the semi-public neighborhood territory.

American single family housing districts function effectively as self-regulating communities. Houses typically hold from one to six people, and the typical block-long street with houses on both sides holds anywhere from 10 to 30 houses, generating a block of about

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8 Extrapolation about the American midwestern 20th century house from the discussion by Hillier and Hanson of the English house of the same period (1984:155-163), shows some remarkable differences between them. The most notable contrast with our midwestern examples in that the English house frequently has a corridor with doors connecting to the kitchen to what they call living room and to what they call parlor spaces. In the American examples we find that even when a corridor exists in that location, the rooms tend to open onto each other with wide apertures in the wall (arches, double doors, etc.) creating one large area with identifiable sub-areas.
30-100 people. In these places, the community areas are exterior, and are thus visible from the house interior. There is typically the range of territories I have described between house and street, territories that are marked by plants, sidewalk design, lighting, sculpture, etc. Sometimes there is an area that is not associated with any particular house, perhaps a circle of land in the middle of the street, or a leftover triangle that isn't in anyone's lot. When the local neighborhood is functioning well, such a lot becomes joint territory. One neighbor may plant a tree, another may plant flowers, and a third may mow the lawn or pick up the wind-blown trash. Many people contribute informally to the place, and, in so doing, they mark it both as their own and as belonging to the group, in much the same way that people sharing a living room each bring some furniture to contribute.

The free-standing house, and its cousin, the row house, provide a simple but clear demarcation between the public world and the private world (see Illustration 7.1, a section showing territorial gradient). Within, a group of intimately bonded members of the household (today rarely numbering more than six (U.S. Bureau of the Census, 1992)\(^9\)), dwell in individual and shared territories whose ownership and boundaries evolve over time. As along the street, in the house, there is general awareness of what is going on that is respectful of privacy. The openness of the public street is parallel to the integration of the private spaces, allowing visual and acoustic access. In the intimate areas (those ordinarily occupied by one or two people), visual privacy is maintained, and the presence of others is heard in a general way that allows private conversations and activities.

![Illustration 7.01](Diagram by Hank Liu)

Although divided into private areas (shared by the household community) and intimate areas, the house interior accommodates evolution as it is easily altered, and the openness of its shared territories allow change of activities over a short span of time as well. The typical house design generally has a flexibility that is distinctly different from institutional buildings (see Illustration 7.2). Though features of houses vary somewhat geographically, and don’t perfectly accommodate every subcultural group, on the whole, the relation between the designation of a space and the activities it actually houses are loose and accommodating. If people suddenly drop in, the kitchen changes from a workplace to an area for a coffee klatch. Alternatively, people can easily carry their coffee cups to the living room or to the outdoor patio. The intimate areas, although designed for individual control, accommodate social action as well. Children may take their friends to visit in the room they sleep in. The household may gather in a bedroom to watch television, or someone may decide to watch TV in the bathroom while taking a bath. Dinner may be eaten in the kitchen, in a dining room, or in the living room or bedroom while watching TV. While there are segregated places that can be made private, their use is not limited by their name. As for the

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\(^9\) Census data indicates that 98% of all households have 6 people or fewer, 96% have 5 or fewer 89% have 4 or fewer, and 74% have 3 persons or fewer (U.S. Bureau of the Census 1992).
spaces that are integrated, they foster evolution of activities over time rather than requiring distinct changes in space or action.

Control of territory within the house occurs differently in the private areas than in the intimate areas. The shared private areas are controlled by the group as a whole in a general way, and in a temporary way, by individuals. In contrast, the intimate areas are controlled by individuals, some spaces temporarily (bathrooms), others exclusively (bedrooms). Household community control is exerted at some periods of the day when household members do something together in a given area, like eating a meal or watching television, or when they do

**Illustration 7.02.**
A Typical Traditional American Single Dwelling Plan and Space Syntax Diagram
(plan by Jill Fursteneau)
different things at the same time in the same place, like one person reading a book while another one sews. These activities usually, but not always, occur in the shared private territory. Such community activities are generally not scheduled, or forced upon household members, although they may be regularly occurring behaviors. Instead, as discussed above, they tend to evolve gradually. One person may choose an activity like reading the newspaper, while another chooses a compatible one, like sewing, so that they can be together. The television may be turned on and people gather to watch, or a card game begins and others join in or observe. People do not necessarily arrive at the beginning of the activity or leave at the end, but they come and go freely, unless social rules indicate otherwise (as when entertaining guests).

Control of community spaces by individuals occurs across time. The variety of spaces within a house combined with the small number of household members permits the same non-discrete space to be easily controlled by different household members for short periods without severe conflict. For example, a person seeking a solitary moment may arise early in the morning to have the kitchen to himself. The second person arising may also seek solitude and take her tea to the living room. Later, the living room may be dominated by several people who want to watch cartoons on television, while the first person goes to get dressed, and the second person retreats to the kitchen. All of these activities require only very small spatial movements to accomplish control.

**Three Types of Spatial Structure**

The structure of the house contributes to the demarcation of the household as a private community, the development of community and individual territory within the house, and the pattern of informal relations between people, spaces and time. The spatial arrangement of the spaces is a primary factor that enables this development. Hillier and Hanson have developed a method of studying the structure of arrangement of spaces, or syntax of space, called gamma analysis which uses the following symbols:

- A space designated for a particular purpose,
- Connection between spaces by a door or other opening,

The symbolic diagrams that represent relations between spaces do not represent scale of area, but simply how spaces, in this case primarily interior spaces, link to each other. I apply these diagrams to represent convergence of functional distinctions with spatial ones, so that a corridor that turns a corner will be described as a single space as long as there is no separating doorway or wall segment.

Applying such diagrams to the single family house, we have discovered three characteristic spatial arrangements: linear, connected and fan-shaped (See Illustration 7.3 [3 spatial arrangements]) that typically these relate to three different social purposes

1. The spaces connected in a linear pattern relate to patterns of movement, such as the separation of the public outdoor areas from the indoor dwelling.
2. The connected arrangements link the more public living areas.
3. Fan-shaped arrangements link the least public spaces.
This is visible in a dissection of a typical American single family residence (See Illustration 7.3 [plan and syntax of a typical traditional American house]). The entry sequence is linear, the arrangement of living room, dining room and kitchen is connected, and the bedrooms and bathrooms are arranged in a fan shape. In this context, these distinctive arrangements seem to reflect three distinct spatial categories and three territorial types. The link to the public realm, the community activities within the residence, and the activities linked to the individual represent the territorial types, public, private and intimate.

The door to the unit demarcates the private domain in the midwestern American house. Unlike many other types of housing, in the single family dwelling, the distinction between private and public is made at the point of entry to the building. A stranger is not allowed to pass through the door without the permission of an inhabitant. Usually, within the private domain, a linear entry sequence acts like a series of privacy locks. In cold climates, these locks double as devices for thermal separation. As shown in the diagram and plan, the second, more communal, or private functions (e.g. entry, living room, kitchen, dining room, stairs) are usually directly spatially open to each other instead of being discrete, totally separated areas linked by a hall. This pattern differs from European houses, which are more typically structured like intimate spaces, with kitchen and living spaces connected in a fan pattern by a corridor. In two-story American houses, as illustrated, the intimate functions (bedroom, bathroom, and possibly study or sewing room) are separated from the communal functions first by a stair and then by a semi-intimate corridor. The intimate realm consists of discrete segregated spaces that open off of a very short corridor in the fan pattern.

In the house, the territorial gradient is not only characterized by a hierarchy from public to intimate but also by different degrees of segregation. The entry areas are segregated in a linear fashion, with private areas integrated and the intimate areas segregated by the connecting space of the corridor. The three different patterns reflect the intimacy gradient and their relation to activities. The entry represents the transition between outdoors and the semi-public areas inside the private territory. Its depth, which can be measured by the number of rooms linked sequentially from the entry, and control reflect the desire to separate the two domains and restrict entry. The direct connection between the community spaces and their shallowness (evident in a lack of intervening rooms) with respect to each other and to the entry sequence, reflects the need for the community members to be aware of each other and to interact in a loose, informal way. The segregation and shallowness of the intimate areas with respect to each other reflects the competing desires for individual control and awareness of others. The depth of the intimate spaces, with respect to the entry, reflects the territorial gradient between public and intimate spaces in a house.
The Territorial Gradient: Self-Regulating Communities

The remainder of the chapter develops a territorial gradient that will be used to analyze housing design. The gradient has been designed by combining the observations about population scale, governance, and dimensional scale with implicit cultural rules for territoriality that support self-regulating community in the traditional American city. The territorial gradient is assumed to support the self-regulating, voluntary system of territorial control that operates by creating community and concomitant community responsibility. In the next chapter, this system will be compared to the institutional system of control, which requires hierarchical structuring of authority, and tends to impede the development of community. The three broad territorial levels that are the foundations for the gradient—intimate, private and public—are not architectural categories, although they are associated with certain types of architectural spaces. They are cultural categories that derive from the number of people who participate in different kinds of activities. As described here, they contain certain intrinsic contradictions because they operate with a great number of different factors and function somewhat differently in different contexts. It must be acknowledged, therefore, that the territorial gradient is a rough tool and that the analytical categories have inherent problems of “purity”. Nevertheless, the next chapter will demonstrate its usefulness in clarifying differences between types of housing.

The illustration of the territorial gradient lists eight items or variables that serve to distinguish the following: levels, territorial access, range or distance, scale of use, term of occupancy, responsible entity, social control, and environmental control. Of these, only range or distance has direct architectural applicability, in this case, as dimension. The others, however, have clear architectural implications. The character of the architectural space (dimensions and geometry especially, but also attributes, such as material and lighting) determine the potential for different kinds of use. Architectural attributes thereby communicate to the social rules implied by a space since social rules are context driven and not arbitrary. For purposes of comprehensibility, each factor will be individually introduced, but in reality, all of the factors are interrelated within a given context. Social forces and architectural features work in concert.

Scale of use, or population scale, is the driving principle of the domains. I have discussed how different sizes of community groups relate to governance at a community level. Though the architectural scale is sensitive to the immense range of human differences, for analytic purposes I will take certain physiological human conditions for granted like the stature of the human being, the range of normal vision, the limitations of human memory, etc. following Hall (1966) and others (Tuan, 1974, Alexander et al., 1977, Porteous, 1977, Altman & Chemers, 1980, Silverstein, 1999, Hildebrand, 1999). As mentioned earlier, the numbers of people in certain activities generate the three broad levels of territoriality. Intimate activities are done alone or with one other person, private activities are activities restricted to a specific group, and public activities are unrestricted and open to all. Working back and forth between the activities, numbers of people and architectural spaces found in the exemplar of the single family dwelling in the residential neighborhood generated the parallel ideas that related dimension, governance, and cultural rules.

A primary structuring principle relates to basic human contact. The fewer people that one meets on a regular basis, and the more frequently one meets them, the greater the likelihood that one will recognize the people met. On the other hand, if one meets very large numbers of people on a regular basis, one may not recognize anyone. In non-kinship organizations, the meetings between people in a limited geographic area forms the primary basis for the creation of successive neighboring structures in the public, private and intimate realms. The most intimate relationships characteristically are between very small numbers of people with whom one spends a lot of time, like those within a household of one to six
people. The next level of relationship depends upon knowing people well without necessarily knowing their more intimate secrets, seems to occur in groups of between six and 25 individuals. In like manner, the more anonymous and formal social relations that are characteristic of the public realm seem to be generated by numbers starting somewhere between 25 and 100. The realms overlap, so that one may meet a household member while in the public realm, and members of the public may come to the house from time to time. However, the people known intimately will be proportionally very small, and the vast majority of the people in the most public realm will be anonymous. Thus in a group of over 25, it is likely that most of the group members will be known superficially, while in an intimate or private group, it is likely that all people will be known relatively well.

A second principle combines numbers of people with dimension to develop modes of occupation and social control. Very large open spaces are rarely controlled by a single person, while very small spaces commonly are. Oscar Newman developed the concept of defensibility to describe the ability of a person or group to control a space (1972). He notes that informal surveillance is a prerequisite for social control. When a space is cannot be surveled by informal means whether because of its size shape or placement, formal structures need to be developed for control. These can be physical (e.g. walls, gates, doorways), or social (e.g. rules, surveillance equipment, watchmen or police).

Control and inhabitation are closely related, since an inhabited space is more easily controlled. Factors that seem to affect the way that given domains support both control and inhabitation are expectations for the visitor (territorial access), the distance from the inhabited territory (ability to control), the numbers of people who may be expected to use a space (scale of use), as well as the frequency and length of the time they will spend there (term of occupancy). For control, it is also important to know who is responsible for the maintenance and supervision of the domain (responsible entity), and how that control is maintained socially, and environmentally. For inhabitation, the locations (area of inhabitation), the type of inhabitation, possible related activities (potential activity) and the character of the inhabited area are all significant factors. The descriptions show how each realm has different mechanisms that relate to the scale and character of its use.

Different domains offer different relations between inhabitant and visitor. Stranger and inhabitant are equals in the public domain, where everyone can rightfully be, whereas in the semi-public and community domains, a stranger must clearly have a reason to be there to avoid arousing suspicion. A person entering the semi-private domain comes as a supplicant in need of sanction. One doesn't approach another person's unit door without anticipating a possible confrontation with the occupant. When inside, the invited guest usually has free access to any of the shared private rooms, living room, kitchen, dining room, but entrance into the intimate spaces is restricted. The visitor gains access to the toilet or bedroom with an additional special request.

The relation shown here between domains of control and scale of use is very approximate, determined based upon group size, as discussed above. But scale is an essential element of the discussion since it is linked to all of the other factors. Public spaces in buildings are accessible to large numbers of people, but in our culture, they are not usually occupied for long periods of time relative to other domains (we spend most of our time at work or at home, by ourselves or in small to mid-sized groups). Due to this combination of short occupancy and large numbers of people in public areas, the potential for recognition of others is reduced. Consequently, informal surveillance, which relies on voluntary use of conventions rather than enforcement of rules, is ineffective as a mode of control. In addition, the use of conventions assumes that the all members of the resident group share social conventions. This is less likely where there are larger numbers of people. But even with small numbers, if social conventions are not shared, more formal means of control may be necessary.
The clear definition of responsibility for territory and for territorial boundaries enhances the social mechanisms of control. Most public and semi-public territories are clearly designated by being out-of-doors, and in the control of the city police, so that when these domains are inside a building their public or semi-public designation no longer holds. By defining the public realm in terms other than place ownership (a privately owned building is not de facto a private place), or location (an interior space is private space), and partially in terms of population size, we can see that it is not uncommon for buildings to house numbers of people beyond those who can be informally regulated. Therefore, when concerned to empower the occupants, it seems important that formal governance be considered an integral part of any large building. Approximately 30 occupants seems to be the maximum for informal governance, although a good building design might well be able to support development of a much larger informal structure. For housing, the governing body can develop rules of conduct and/or designate people to supervise the building, either from among themselves or as a hired workers (doorman, security guard, receptionist, etc.).

The clear demarcation of boundaries for the domains of responsibility also enhances control. In the urban context, surveillance of public, semi-public, community and semi-private settings occurs through visibility and control points. Control points mark the territorial edge either visually (e.g. the entrance implied by the corner of a city block or suburban road), or physically (doors, gates, etc.). The visibility required for surveillance from within adjacent structures occurs naturally on a street because the distance across the street creates a wide cone of vision in the forward and side directions from building windows and entrances. When this same public domain is on the interior, visibility is impaired in normal hall design. It may, however, be achieved through such devices as the use of windows between unit and corridor (although with a narrow corridor this is not usually enough), and by using atria or widened corridors (but without visibility from within the unit the corridor width will be ineffective).

If a group of people that share a building is large enough that anonymous relationships will occur (I suggest this occurs in groups of more than 25), either the shared space should be visible to all, or another form of control needs to be instigated. In the second case, either a formal governance structure should be developed, or staff should be hired, since group solidarity will be impaired due to reduced natural recognition, surveillance and responsibility. If a group of people is to be able to control its own territory, first the members must feel responsible to the community. Responsibility is something that cannot be generated by the design alone, and it is assumed that, in any given group of people, there are at least some who will feel responsibility if the circumstances do not make it risky to do so. The role of design is to minimize the risks of community interaction and to maximize the benefits. By creating environments in which the territorial definitions are clear, and the control mechanisms can operate effectively, architecture can promote the development of a community. When the scale is larger than about 25, design must be supplemented with other measures, and continual reinforcement may be required.
When the public, private and intimate realms are related to architectural domains (as in the single family house in the traditional urban neighborhood described above), I identify seven domains, associated with typical population groupings, to form the spatial gradient from intimate to public. I hypothesize these domains form a territorial gradient (see Illustration 7.04).

1. The public civic domain, like a main street, is open to public access and allows access to anyone.

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10 The concepts and terms selected here draw directly upon the work of Alexander et al. (1977), Altman (1981), Altman and Chemers (1980), Chermayeff and Alexander. (1963), Davis and Altman (1976), Newman (1972), El Sharkawy (1983), and Sprague (1991). The new names given here include my own terms of “intimate” and “semi-intimate” and reconceptualize Sommer's and El Sharkawy’s “personal space”, subdividing it into two different kinds of space. They are derived from existing uses of space, and from a reinterpretation of public domains to include three, rather than just two, so that the distinctions can be make between space shared with the adjacent neighbors (a semi-private relation) the near neighbors (the semi-public group that share a street, for example), the larger neighborhood or region within the geographic unit, and the geographic unit itself (city, suburb, county, etc.). This greater differentiation reflects the complexity that was noticed in our comparison of large scale buildings to the typical residential pattern in the U.S.
2. The public neighborhood domain is comprised of the set of side streets and main streets that make up a defined subsection of the larger urban, suburban or rural unit. Anyone can go here who appears to have reason for doing so.

3. The semi-public or collective domain, is the street, block, or, in an apartment, the corridor, where anyone can go who appears to have a reason, but where neighbors may feel they can confront someone who appears to be unsanctioned or acting inappropriately.

4. The semi-private domain includes the lawn, porch or entry. These are areas adjacent to the private areas, which are controlled by the occupant, and where anyone who goes needs a potential sanction from an occupant.

5. The private domain of the living room, kitchen or dining room is the communal part of the private area, where an occupant has already sanctioned a visitor’s presence.

6. The semi-intimate domain, the hall related to the bedrooms and bathrooms, is made up of areas shared by the household group where a visitor must have permission to go.

7. The intimate domain, the bedroom or bathroom, is the exclusive domain of the individual, where a visitor must be invited to enter.

**Territorial Gradient and Institutionality**

The territorial gradient presented here is theoretical and generalized. Although based on other theoretical work, it is a hypothesis and is limited by being largely drawn from one example. On the other hand, its power derives from the interrelation of between spatial and social mechanisms in the particular case studied. The next chapter compares building types with varying kinds institutional control, using a variety of analytic concepts that include the territorial gradient. Because the gradient permits different kinds of buildings to be compared against a single system, it begins to disentangle many of the mechanisms by which institutionality operates, and more clearly shows how the functioning of public space, private space, and intimate space vary across building types.

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11 Roderick Lawrence uses the term “collective” for the shared spaces outside the dwelling unit (1990, 1987). In developing a more detailed hierarchy of domains, his collective spaces, which are used in conduction with multi-family dwellings, seem to combine both what we call semi-public as shared spaces and what we call semi-private, the exterior extensions of the private dwelling.
Building appearances can be deceiving. Our long-term appreciation of a building, like our appreciation of a person, depends upon performance rather than appearance. But when we are faced with an unfamiliar building in our own culture, typically we are able to make judgments and have expectations about it based on its appearance, which cues our preconceptions about the building type it resembles. We can usually understand the cultural schemata that it embodies. We categorize buildings by their type, and think we all share the categories. Our research confirms that the sharing is general. Virtually everyone in our culture can identify and describe different residential building types. From hospitals to single family residences, residential building types are known directly from actual inhabitation or indirectly from broadcast, digital, and print media. As noted earlier, our research showed that the building categories or basic types that study participants recognized and agreed upon were house, apartment building, dormitory and hospital. Yet, the same photographed residential settings that were categorized into the four

Illustration 8.01
Images of Hospitals and Nursing Home Exteriors

groups had been framed in ten professional research categories that reflected much greater differentiation, such as between single-family house, row house, and group home, or between hospital and nursing home. The lay categorizations demonstrated that distinctions that represent critical differences in the ways the buildings structure human activity through program and form are not necessarily recognizable by ordinary people in images of building exteriors or interiors.
Images do not seem to capture organizational principles. A category like dormitory, for instance, encompasses a great variety of spatial arrangement. A traditional dormitory arranged along a corridor is quite different from a suite-style building. Buildings that function as a dormitory may not have been originally designed for that purpose. When we recognize a building as typical and identify it within a cultural category, even though we may intimately know how examples of the type greatly vary, the process of attributing a cultural category tends to mask the differences, often keeping important distinctions between particular buildings hidden from conscious understanding. In this chapter we will dissect a number of typical building forms that have significantly different purposes and organizational structure, with the purpose of revealing how they actually function to support the control of the resident and/or the control of an administration. We will describe the mechanisms by which the different standard residential building types structure our experience, explaining how they differ from each other and what the significance of the difference is. With this knowledge in hand, in the final chapters we can then consider what it might mean to develop alternative arrangements.

Our original hypothesis was that institution and home represented two clear poles and that housing fell on a continuum between the poles. While the evaluations of photographs tended to confirm the hypothesis, the data describing physical elements of the 29 places showed that while the two ideas clearly contrasted, their structures differed. Cluster analysis of physical data measured in the checklist indicated that even though very homelike settings are very much like each other, very institutional settings, while forming clusters, are different from each other. In fact, the more institutional a place was found to be, the greater its tendency to differ from other institutional settings. Thus the concepts “homelike” and “institutional” are different from each other, but do not have parallel constructions.

We concluded that the quality “institutionality” derives from many sources, only some of which are visible in photographs. To differentiate between kinds of institutional settings it was necessary to supplement assessment of photographic images with other methods of investigation. The inventory of elements allowed us to see that some aspects of economy of means are recognizable in photographs of a single space, while others are not. For example, the comfort versus durability of furniture is measurable in physical elements such as material and style of furniture, while the standardization of room size, measured by room dimensions, is not visible in a single image. Similarly, the sequence of spatial arrangement, so critical to understanding environmental control, is not visible in images. Identifying such distinctions requires methods of studying the arrangement of spaces.

As we use architectural settings in our daily activities, we become familiar enough with the normative patterns of building types to be able to navigate other similar buildings. We form unconscious cultural schemata or patterns that we reproduce in subsequent actions by associating spatial attributes with our normal activities. Therefore effective navigation does not require conscious awareness of the spatial structure. We only become conscious of the structure when it fails to support our intended actions. Even then, the link between spatial structure and culture is generally underrated, though recognizable when pointed out. Nevertheless, with appropriate tools, it becomes possible to make legible the spatialization of cultural patterns in buildings.

A building's designated purpose, encoded in its name, brings with it a set of assumptions about what is an appropriate form for that name, what kind of people are normally housed there, what kinds of activities occur there, etc. The panopticon prison is a building that physically forces a relationship of surveyor/surveyed upon guards and prisoners. Foucault uses it to demonstrate the power of architecture as a force to communicate political and cultural patterns through the control of the body's gestures, postures, positions, and placement in time (Foucault 1979). In our daily lives, this ubiquitous process creates what appears to be the "normal" condition of our lives. Thus, in constructing
our buildings, we tend to replicate the "normal" pattern without seeing that there may be other ways to do things. In a discussion of the way that cultures tend to legitimate the established order, Bourdieu writes:

The most successful ideological effects are those which have no need of words, and ask no more than complicitous silence. It follows, incidentally, that any analysis of ideologies in the narrow sense of "legitimating discourses" which fails to include an analysis of the corresponding institutional mechanisms is liable to be no more than a contribution to the efficacy of those ideologies: this is true of all internal (semiological) analyses of political, educational, religious or aesthetic ideologies, which forget that the political function of these ideologies may in some cases be reduced to the effect of displacement and diversion, camouflage and legitimation, which they produce by reproducing - through their oversights and omissions, and in their deliberately or involuntarily complicitous silences - the effects of the objective mechanisms (Bourdieu 1977:188-9, Levi-Strauss 1968:34).¹

As a medium that has no necessity for words, architecture is not just a silent mechanism that supports existing cultural patterns, but it is also a mirror for our unconscious ideologies. Through our buildings, we may unconsciously perpetuate ideas that we would find questionable if we were aware of them. Since building types frame the way that we conceive of activities, they are an important cultural vehicle. By investigating types of residential building, we can study the ideas and assumptions that we bring to the design of buildings and the way that their architectural forms produce particular cultural patterns.

**Polarized and Distributed Power in Buildings**

Arguably, the most fundamental attribute of institutions, as manifest in buildings, is structured power both toward the building occupants and toward the outside world (e.g. Foucault 1979[1975], Markus, 1993, Peatross, 1994). We can define institutionality as the degree to which an institution enforces its rules and systems upon its inhabitants, and expresses its separateness from and importance to the outside world by means of built form. While the degree to which the building can be said to “determine” behavior is an ongoing discussion that we will not engage here, suffice it to say that buildings seem to play an important role in supporting, impeding and directing behavior (Hillier 1996:183-5). They thereby empower some people and disempower others. In our spatial analysis of institution and home, we are primarily concerned with the manner in which the building empowers the resident both as an individual and as a member both of the social group inside the residence and the social world outside. In this view, domesticity, in contrast to institutionality, can be expressed as the degree to which a building empowers its occupants individually and collectively and expresses its relatedness to the outside world.

The concept of a the hegemony of powerful societal force that dominates human action from the top down implied by much of the scholarship on space. Foucault shows how governments and institutions use cultural mechanisms, including architecture, to produce disciplined behavior. De Certeau describes how the everyday practices of people subvert and ignore the mechanisms of power, working around them as much as working within them. He focuses on the “dispersed, tactical, and makeshift creativity of groups of individuals already caught in the nets of ‘discipline’.” (1984: xiv-v), all of which occurs within the top-down construct. Building upon the observations of these French scholars, but using a slightly

¹Bourdieu 1977 citing Lévi-Strauss 1968 as a source.
different set of assumptions, we postulate that power is a field that can be polarized, but that bi-polarization is not the only possible configuration. Unlike magnetic fields, which offer only two poles, positive and negative, the field of political power has many possible poles. It is true that traditionally circumstances have tended to concentrate power at a particular pole, or center, in a dialectical relation to the powerless; but, at least in theory, circumstances can also disperse power evenly among many centers.

Therefore, the polarization of power reflected in the spatial organization of patterns that we normally use to create buildings is not inevitable. If we can conceive of ways to use environments to distribute power rather than concentrate it, we may be able to design places that support different, more democratic forms of institutional organization. The normative pattern of the midwestern US domestic environment seems to provide one model for distributed power. Graham suggests that the internal divisions of some middle class housing may differently empower women, children, servants and strangers (1997:143). In our study, domestic environments are not found to incorporate servants or workers, or to spatially advantage one group of inhabitants over others. In contrast, the organization of space in institutional residences empowers workers over residents. Furthermore, the spatial and power relations between resident and worker vary by the kind of institution.

Foucault describes the bureaucratic and institutional social structures that have been reproduced in our buildings since the late eighteenth century (e.g. Forty, 1980, Tomlinson, 1980, Duffy 1980, Bender, 1987, Markus, 1993) as having evolved from the military form of organization (1979[1975]). Our society has taken for granted the social structure that is designed to carry out orders through a clear hierarchical organization that controls every member, but we argue that other social structures are possible. The institutional residence, military-like, maintains its power by reducing the control of individuals over territory and by eliminating the spatial potential for forming groups outside the pre-ordained hierarchy. In such settings, hired personnel maintain order, supervising and regulating the activities of the residents and visitors. Group activities tend to be planned and scheduled by the staff. In contrast, the ordinary domestic building is controlled informally by individuals and the community of residents, typically a family or voluntary group. The spatial structure supports spontaneous shared activities that lead to community cohesion. It also supports individual and collective resident control of visitors.

**Institutionality**

In their analysis of how power relations in buildings are affected by spatial organization, Hillier and Hanson demonstrate that institutional space is distinct from residential space (1984). Distinguishing between the role of building inhabitant and visitor, they describe the difference as being one of role reversal. Peatross (1994) has further shown that the syntactical structure of the space has pronounced effects on the use of space and its control by residents and staff. My analysis of a variety of different institutional forms also shows that the structure of types of institutional residences exhibited different forms of reverse relations between groups that could best be compared using three groups of building users, resident, worker and visitor. As a result of using three groups instead of two, the particular relations that I call “institutional” can not always be clearly described using the term “reversed.” For that reason, I generally use the word “institutional” where Hillier and Hanson would use the term “reversed.”

Although, by and large, various residential institutions originally had a benign purpose, they manifest the concentration of power in the institutional administration. The institutional forms that we have inherited reflect the knowledge, views and understanding of our predecessors. In light of current ideas, these forms no longer seem fully appropriate. Moreover, if we continue to assume that it’s suitable for power to come from a single source,
we are likely to recreate architecture that supports precisely that phenomenon. If, instead, we seek to empower the resident, we must learn how architecture concentrates or distributes power. The comparison of institutional settings to each other and to home settings has revealed some of the mechanisms by which power is concentrated or dispersed. We do not propose to use these mechanisms to subvert and bypass the rules of concentrated power, as by the strategies and tactics de Certeau advocates. Rather, we propose to develop institutions that spatialize mechanisms of distributed power in order to empower the resident and thereby alter the nature of the institution. It should be possible to develop a new kind of institution with mechanisms and rules that reflect a more democratic and community-based approach to living.

Architecturally speaking, then, the problem of institutionality can be said to derive at least in part from our limited conceptions of how to design spaces. At the present time, we seem to have only two clear spatial models. The first is the largely self-regulating vernacular urban residential structure, which is vernacular in the sense that it has evolved gradually over time in response to a trial and error method. The second is the bureaucratic institution, based upon military organization, which controls mainly from the top down. Some new spatial structures, such as the open office design, seem to suggest alternatives to the traditional institutional patterns. Yet such patterns are rarely effectively utilized because we have not yet understood the mechanisms that strategically link social functioning (decision-making, attitudes, activity, etc.) to spatial arrangement.

In theory, the spatial structure of an institution corresponds to its social functioning. However, the complete connection of one to the other is probably impossible; for spatial structures rarely function as intended. They create unanticipated consequences, both good and bad. Additionally institutions constantly change, making it impossible to design a perfect fit. In spite of these difficulties, we argue that the spatial pattern of a given building found in use by a particular institution at a particular time represents in great measure the way it is actually functioning. If the gap between design and function had been too wide, the design would have been modified to better suit its function. Certainly an institutional structure that has been repeatedly built represents a normative conception or typological pattern of that institutional category.

The following discussion of different residential building types deals primarily with the building type patterns that have been repeatedly used. By analyzing these types we hope to gain some insight about the problems of existing residential structures, and to develop strategies for making better residential designs. The way that a given place will actually function is not dependent exclusively upon either space or social context; both must be taken into account in any analysis. Both are defined broadly here since I am extrapolating from a small number of examples. Conclusions must be taken as speculative.

**Non-spatial Aspects of Power & Control**

Control of space indicates the ability to determine what happens in it. In a certain sense, simple occupancy of a space denotes a kind of control over that space; but if the occupant of a space is unable to come and go freely, to restrict who enters the space, to regulate the climate of the space, or to furnish and alter the space, the occupant cannot be said to control it fully. Clearly there are degrees of control. In an owner-occupied house, the occupant may have full control. In an apartment building, such control is limited to the unit, and, even within the unit, there is restriction on alteration and furnishing of the unit space. In a dormitory, the room occupant can control access to the space, but is generally not able to control much else. In a hospital room, the occupant controls almost nothing.

The social forces that interact with spatial design to affect power and control in a residence are no doubt myriad. Five factors are important in this analysis:
1. the number of people, which was discussed in the last chapter,
2. the character of the organization
3. the segmentation of time
4. the rules and customs for the cultural settings, and
5. the social roles of the building users.

These forces interact with the building form to affect the residents’ ability to inhabit the building through marking their territory and forming social groups.

**Character of the Organization**

The character of the residential organization, as reflected in its attitude toward the resident, derives from a combination of factors including its intended purpose. Examples of such purposes include medical (curing), hospitality (hosting), parental or educational (nurturing), correctional (reform), custodial (protection), penal (punishment). The economic structure (such as government-sponsored, nonprofit, or commercial) of the institution is an additional factor that implies a particular economic position for the resident. Such economic positions often establish complex roles for the resident, such as citizen/welfare recipient, charity case/research subject, consumer/client. This attitude determines the social roles of the building user, prescribing not only what the social roles are, but also the ways that social roles are carried out. For instance, a hospital patient may be housed in a space structurally similar to that of a hotel resident but, having accepted the role of “patient,” the patient is not given analogous spatial control. Furthermore, allocation of environmental features responds to and reinforces role assignment. The provision of a lock to the guest of the hotel helps to create the social meaning of “guest” in that context. A lock on the door would preclude the definition of “patient” that requires acknowledging that one is sick, needs to be looked after by, and is totally dependent upon and subject to the hospital staff. The body of the patient has to be accessible to staff at all times of the day and night, irrespective of the reason for hospitalization. Perhaps most fundamental to the following discussion is whether the resident is given the power to accept or reject the services of the staff.

The character of residential organizations seems to be fundamentally defined by its approach to security. Although the territorial gradient suggests that security be intimately tied to community creation, from the traditional organizational perspective, security is created through visual oversight. Engaging this approach, most everyday housing seems to provide security through informal observation. Other residential forms provide security either by supervision or by surveillance. Supervision combines informal observation with formal observation by employed supervising personnel, whereas surveillance relies exclusively on employed personnel. Different building forms affect the ability of the residents to engage in informal supervision, as well as affecting the ease with which employees can control a residence. For instance, a walk-up apartment building generally operates exclusively on informal observation. But, in certain situations, it may employ a security guard at the door, and even may place security cameras in key places throughout the building. The guard is in the employ of the residents. Without special permission, the guard is not permitted to enter the dwelling unit. Such a guarded apartment building is supervised rather than surveyed. Dormitories at higher educational institutions in the United States usually have a similar arrangement, where personnel are not normally permitted to enter the rooms or apartments of students. At boarding high schools, however, a dormitory building identical to a facility at a university may be under surveillance in such a way that personnel have the right to enter the student’s room. In this case, because the residents are minors, a higher level of security may be seen as appropriate, even if it is rarely used. The type of security provided in a given situation is driven by the attitude taken toward the resident, and will thus be affected both by the purpose of the residential organization and by the degree of trust it has in the residents.
These attitudes are bound up with the ability of the building design, in many cases a prescribed building type, to support security in the geographical and social context.

Segmentation of Time

Two aspects of time are critical to a discussion of residential institutions: segmentation of time and term of stay. The Western concept of segmentation of time is inextricably linked to spatial segmentation. The analog clock, for instance, is a spatial instrument that assigns time to a segment of a circle. The building can be a place that assigns people to space in time. Term of stay, somewhat less directly linked to space, corresponds to cultural rules about the rights and assignment of different kinds of building occupants to territory within the structure. We will discuss term of stay in the discussion of social role.

The segmentation of time is effected by the allocation of identified activities to particular spaces. Time can be structured or unstructured in concert with space; for discrete, segregated space (that enclosed by walls and closable doors, and opening on to circulation areas) and implied and integrated space (that defined by furniture, partial walls, or linked by opened doors to other activity space) engender different temporal relations. The discrete, separate space enables the structuring of time in a way that is discontinuous with other spaces, whereas spaces that are open to each other generate a looser structure of time.

Discrete spaces in the intimate realm allow the control of space for privacy. In the private realm, where social activities take place, however, segmentation makes it difficult for the individual to ascertain the social context within which he or she operates. It thus becomes difficult for the individual to regulate his or her relation to the social context. Such regulation requires support of the primitive protective urge to simultaneously see but not be seen, the prospect-refuge instinct (Appleton 1975; Greenbie 1981). The most effective way to do this is to be hidden, while retaining a wide arc of vision. This protective stance allows one the opportunity to see what is going on before deciding to participate (Zeisel, 1981: 44-5). A discrete space with a single door does not allow this, because, by the time you pass into a space by the door, you are committed to entering. At the same time, spaces that are completely open do not allow this previewing, as there is no place to hide. It is spaces that are connected and not fully enclosed that enable a person to be free to participate or withdraw.

In partially open spaces then, activities can be informally regulated and time can be described as less formalized, as in the interior of the house described in the last chapter. Activities within such partially open, integrated spaces can easily and informally be coordinated and synchronized with one another. In contrast, discrete spaces create a lack of awareness of activities outside them, so coordination between activities in such spaces tends to require a more formalized intervention. As the number of inhabitants in a building increases, there is a tendency to move toward formal coordination of activities through the exclusive use of segregated spaces and through scheduling of activities to them. It is also possible to break large populations into smaller, more integrated groupings.

In traditional institutions the link between place and activity tends to be unitary and spaces are discrete and segregated. If you know either the activity or the place, the other can be ascertained. In a private residence, the place of activity is chosen by the individual and, although it is sometimes determined in specific ways (you usually cook in the kitchen), is not nearly as predictable as in a residential institution. For example, the radio may be listened to in many places: one's bedroom, the kitchen, the living room or the dining room. The choice depends on who one wants to be with, what else one is doing, where one was when deciding to listen, etc. The time of listening to the radio is also flexible (although children may certainly be restricted and subjected to the judgment of their parents). Time may be scheduled in the house for certain activities, especially meals that must be served when hot, but most other activities are less time-structured. In institutions, however, the synchrony of
time and place goes hand in hand with surveillance, as the place is controlled by the time and time by place.

Institutions, especially those charged with keeping track of every building occupant, tend to classify activities and to segment them into specific named territories, enabling the accounting for every occupant by looking at their scheduled activity. Notably, tracking occupants occurs for a variety of reasons, from custodial reasons, as in a hospital, to economic reasons, as in a hotel. Use of places designated for one activity for other purposes is typically discouraged. In a mental hospital or nursing home, if the bedroom is defined as a sleeping area, it may not be considered an acceptable place to be during the day. Instead one is expected to occupy the day room or the lounge. Surveillance or supervision is not, therefore, limited by the visual field. Scheduling is a form of virtual surveillance that facilitates knowing a person’s location at a given time without the necessitating actual observation.

Furthermore, in institutional settings, designation to discrete space and time may separate people from each other, classify them in groups, and assign people to activities. Since discrete spaces are usually designed and equipped for singular purposes, such as a dining room or shower area, and because occupation of a particular space implies engagement in that purpose, a particular group may be assigned to occupy a place at a particular time, and may be designated by gender, age or by place of last name in the alphabet. Individual identity is thereby replaced with classification by objective description at the same time that movement is constrained by assignment to activity.

The alliance of segmentation of time to segmentation of space is an effect of the tool of the plan. Planning is laying out events in time and in space. The plan drawing represents spatial structure in a way that is more synchronic (representing a moment in time) than diachronic (representing the passage of time). The schedule, on the other hand sets up diachronic structures. Combining the plan and the schedule allows for a reading of both time and space. The simultaneous understanding of all of the spaces at once permitted by the plan is entirely different from the experience of real space in real time, in which only one space can be occupied at a single moment and in which the vertical dimension, the details of physical character and the relation between spaces are experienced over time. Some aspects of the sequence of the spaces, their physical character and their volumetric dimensions of may be interpreted by careful reading of the plan, but this is difficult for most nonprofessionals. By means of the plan, however, we can visualize in two dimensions both the inside and outside shapes and sizes of spaces and their relationship to each other. This ability to visualize the organization of all the spaces makes the plan especially useful in understanding the structure of the spatial organization. The main emphasis of a floor plan is on the arrangement of walls relative to open areas and openings like windows and walls. Thus the spatial structure of the architecture remains essentially fixed (Hall's fixed feature space (1966)). Within the spaces, insofar as the form allows, uses may change; and, in response to changing use, furniture, equipment, and objects within the space are moved. Analysis of floor plans reveals those aspects of the design that are relatively fixed by the architecture.

Rules & Customs of Cultural Settings

Earlier, in distinguishing the term “cultural setting” from the term “behavioral setting”, we defined the cultural setting as excluding the actual behavior that takes place in a setting, but including both the physical character of a setting and the implied behavioral expectations. The implied behavioral expectations take the form of implicit and explicit rules for behavior and customary actions that are determined the social organizations the building embodies. They are supported, but not determined, by the physical arrangement of spaces. A residential floor a hospital and a luxury hotel may have a similar floor plan layout, both with
single bedrooms that have full bathrooms (toilet, sink and bathtub) and desks at the elevator, that in the one case houses a nurse, and, in the other, a concierge. But the two different building types engender very different behaviors because the organizations have dissimilar social structures, rules and customs.

Social Role

The social structures associated with different types of buildings used for housing define different roles, such as patient and nurse, or client and concierge, that affect how the building functions as a residence. Of the three positions that relate to building occupancy, two positions have inhabitant status associated with the building. These are the resident who lives in the building, and the worker who is responsible for supervising the resident and/or maintaining the building. One position, that of the visitor, does not not relate to building occupancy.

The term of stay or occupancy and the social role related to it qualify the positions of building users in the different residential settings. In general, the term of occupancy of residents can be described as being either transient (this is not the primary place of residence), limited-term (this is the primary place of residence for limited time), or long term (this is the permanent place of residence). Occupancy of worker, linked to terms of employment, can be described as live-in (primary place of residence), shift (occupancy as a worker for a designated block of time on a regular basis), temporary (occupancy as a worker on an occasional basis) or absentee (those who administer from afar). Finally, the visitor only has a provisional relationship to the building at the time of stay.

Each position implies a different form of control, depending on the circumstance. Workers’ control of territory varies depending upon the presence of the owners and the relation of workers to the owners, which affects their relation to the residents, and their occupancy. When inhabitants who own their building employ domestic workers or hired maintenance personnel, the resident and employer are the same. They thus maintain authority over both the residence and the work, and consequently the worker has limited control over the space. An exception takes place when such domestic workers live on site and are allocated territory of their own that they control, especially if the owner is frequently absent. When housing is a place of employment for shift employees who only maintain the areas of the building shared by all, such as entrances, corridors and community rooms in an apartment building, the employees control certain parts of the building and the residents control the others. Worker control is increased when they have an allocated space that they occupy regularly. When housing is a place of employment for shift employees who supervise the residents and maintain the whole building the workers typically have permanently allocated territory. This is true both in income-producing businesses like hotels or rooming houses, and in residences, such as dormitories. When employees are constantly on site, they tend to control the building. These workers wholly control the community areas and regularly, under terms set by the administration, exert some control over the resident territory (typically a room). The staff controls the building in domiciles that employ live-in workers or regular workers to survey the residents and assign permanent space to them. The staff controls the building when they have right of access to all spaces. In this kind of a place, there may be various worker roles that imply different kinds of control: nurses, guardians and custodians, who control both people and space, maintenance workers who control the space, and administrators or managers who may not be allocated a territory in the building but exert authority, either directly or indirectly, over both people and space.

The dynamics of resident control parallel those of workers. Residents partially control their space by occupying it, but, as mentioned before, total control requires authority over such diverse processes as access, personalization, and climate control. Various levels of control are ascribed to various resident types. Owner-inhabitants control the whole building.
Unsupervised people, such as renters, or typically, family members of an owner-inhabitant, control the dwelling unit which may be a building. Supervised people partially control their dwelling unit or room. Surveyed people are residents with little or no control. The position of the visitor, or person who occupies the building occasionally or regularly without territory, depends upon who is in control of the space being visited. Ultimately, the visitor is subject to the person or group that control the building, although at a given moment in time they are subject to the person who controls the space they occupy.

The complexity of the types of occupancy, control and residency relative to social role makes generalizations about the relation between social role and building types difficult, for many aspects of the quality of a dwelling are dependent on the particular combination of these factors.

**Forms of Institutionality and Syntactical Structure**

The thrust of the argument about institutional buildings is that their syntactical structure can facilitate or inhibit both the enforcement of an institution’s “rules and systems upon its inhabitants” and its “separateness from the outside world.” The following discussion demonstrates how the structure of the interior spaces of buildings empowers building residents and/or administration. The degree to which people who occupy a given building can oversee it and restrict and invite access to it is directly affected by the scale of building and number of occupants; yet, the ways that spaces are structured in relation to each other either supports or negates control by the resident. Obviously for certain types of housing, administrative control is desirable and necessary. By exploring different types of building design, we can reveal the balance between administrative control and resident autonomy evident in different types of housing design. First we will explore administrative control through analysis of plan using space syntax diagrams and then we will compare different residential arrangements to the territorial gradient of the midwestern house developed in Chapter 7.

Housing that is controlled by its residents, what Hillier and Hanson call an elementary building (1984:176-197), has several important features exemplified in the last chapter’s discussion of the midwestern free-standing urban house (These features also apply to row houses and double houses):

1. The house in its urban context is characterized by a territorial gradient that has a hierarchy from public to intimate
2. There are three different domains represented in the gradient: public, private and intimate. Each is subdivided to create more subtle gradations.
3. Spaces in the public domain are exterior and are linked to the interior by a series of semi-public and semi-private linking spaces (walkway, steps, porch, vestibule, entry, etc.).
4. The door to the house is the point that distinguishes the public realm from the private.
5. Spaces in the private domain are located closest to the formal access point. They are connected to each other and tend to be ringy (living room, dining room, kitchen)
6. Spaces in the intimate domain are segregated from the private domain and from each other by stairs and/or a semi-intimate hallway that control access to the intimate areas (bedroom and bathroom)

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2For discussions of domains of control on the exterior of the building, see Marcus and Sarkissian (1986), Gehl (1987).
7. There is no identifiable territory for workers. Workers occupy the house temporarily and are granted special status as visitors or inhabitants depending upon their role and task.

The interior spaces of the freestanding house can be expressed in three different diagrams as in illustration 7.3: linear, ringy and fan-shaped.

Buildings that are controlled by staff rather than residents are described by Hillier and Hanson as having "a public institutional character" (1984:184). The residents occupy isolated spaces, while the staff spaces are connected and related to the entrance. The territory between the public exterior and the resident's room is inhabited and controlled by the staff. Thus the staff forms a strong community, while the occupants or residents are isolated from the staff and from one another. Staff-controlled buildings of small scale, like the group homes discussed in a later chapter, are kind of a hybrid. Even when they do not have the full range of the intimacy gradient, because of the smaller number of residents, they are less public in character.

Inside staff-controlled buildings, there may be intimate territory, but generally there is no semi-intimate, private or semi-private territory. The intimate territory typically opens directly into a semi-public area, and there is rarely a shared area controlled by residents that is adequately ringy to engage informal socialization. Furthermore, visitor access is not controlled by residents, but by staff. Visitors must either directly approach the intimate territory of the individual’s room or be entertained in semi-public areas subject to staff surveillance. Moreover, the staff has authority over the public and semi-public territory. By controlling the area intervening between the outside and the intimate area, staff retain primary control of the building, and thus practically and psychologically dominate the building. Thus, it is the staff that "control the knowledge embodied in the building and its purposes" (Hillier and Hanson 1984:184).

The resident or occupant is not only under the control of the staff, but occupies an isolated cell rather than a space connected to others in a manner that supports social interaction. While the elementary building evidences a hierarchy from public to private in the elementary building, the institutional building manifests a device that potentially limits resident access to the exterior, and supplants resident control with staff control.

Furthermore, as described by Hillier and Hanson, the territory at the access point in an institutional building does not serve as a point of social exchange between the either the staff or the resident and the visitor. Instead, it becomes a point of control, where categories rather than individual differences are used to distinguish sanctioned from unsanctioned entrants. This both expresses and reinforces the tendency for staff to see the people they serve as cases rather than as people.

Perhaps in continuity with its origin in military organizational structure, the institutional building’s design impedes creation of a social structure among the residents. Socialization occurs best with informal interactions between a small number of people that occur by chance and by choice. In a resident-controlled habitation, designated social spaces are designed for between one and six people. They are located by the entrance, are several in number, diverse in character, and are spatially open to each other. Their location makes them highly visible from the main point of access, a place with many opportunities for meetings, but because they are not usually directly in the access path, the site offers choice about whether or not to interact at a given time. The spaces’ small size supports intimate interaction between a few people. The diversity and number of areas encourages a variety of modes of socialization (associated with chatting, watching television, food preparation, eating, etc.). The connections between them permit easy shifts between activities or people. By contrast, the designated social spaces in institutional building are generally large, singular and segregated. Segregated spaces do not support informal interaction, but require that a formal decision to socialize be made. When the spaces, such as lobbies, are not segregated, their
large size tends to suppress intimate interactions and make informal meetings into public events. If several different social spaces are provided, it is highly unusual that they are connected to each other in such a way that people can move from one place to another informally. Although halls in institutions are places where people have opportunities to meet one another, they are generally difficult places to socialize because of the lack of choice about contact, and the lack of space and furnishing that supports engaged interaction. Furthermore they are under constant supervision of others.

In sum, residential buildings that have been designed for control by a nonresident administration tend to better embody their role as work places than their role as habitations. They manifest economic notions about efficiency of work and economy of construction. As a result, the buildings inhibit, distort and interfere with the normal pattern of living by failing both to maintain the intimacy gradient and to support socialization. The analysis of different kinds of institutional buildings designed for habitation will further clarify which design characteristics distort and disrupt this normal living pattern and how they do so.

Several kinds of drawings and diagrams illustrate the structural differences between housing types. Building plans and gamma analysis diagrams drawn from the perspective of the building entrance describe the overall organizations of buildings. Syntactical diagrams of sectors of buildings (Robinson 2001) demonstrate detailed differences between degrees and kinds of institutional buildings. These are supplemented by diagrammatic sectional analyses. All of the diagrams are derived from specific examples, but are generalized to reflect a synthesis of the similarities and differences between the various buildings studied. It is important to acknowledge that the particular examples that were a part of the study. The inclusion of some examples, and the exclusion of others, has undoubtedly biased the conclusions that are drawn.

**Apartment Buildings**

Apartment buildings are designed to accommodate a normal pattern of living, while supplying more dwelling units to an area than single-family dwelling design permits. Generally speaking, the dwelling units are structurally similar to the interior of a house, without the separation by level between private and intimate spaces that some freestanding houses provide. The difference between a house and an apartment building occurs in the relationships between the units and the relationship of the units to the street. Semi-private and semi-public areas are interior to the building skin rather than exterior. As Newman points out (1972), in the apartment building, the issues of control and accessibility become critical at the semi-private domain, the area between the outdoor public arena and the apartment unit entrance. The difference between an apartment and a house (and probably the reason that on
a scale of institution and home, apartments are seen as more institutional than houses) is the increase in size of the semi-private area, and its shift to the building interior.
single rooms, additional space is needed. This space may house activities which cannot take place in a single space, and, more importantly, it may provide for socialization with neighbors so that a cohesive group will result. Without a cohesive group, the shared territories like halls will remain totally public spaces rather than having aspects of semi-public or semi-private territory. Even when fewer than about six people share these areas, they will never be truly private, since access cannot be fully controlled. However, they can be made more secure by reducing the number of people who share them and by providing community spaces where gathering can occur naturally. Such secure spaces engender a group’s ability to identify its members take a measure of responsibility for them.

Illustration 8.04
Plan of a Hall Dormitory with Communal Bath/Toilet
(Drawing by Jill Fursteneau)

Perhaps the most problematic S.R.O. type is the hall dormitory or rooming house in which the residents share a communal bath and toilet facility (see Plan and Syntax diagrams). Here the resident must enter the public hall to have access to the toilet. The public hall intervenes between the two most intimate spaces, the bathroom and the toilet. Additionally, the living room area or lounge is a segregated space that is typically not adjacent to the level entry so that it does not function effectively as an informal socialization space. In such buildings, there is no intimacy gradient, and no exclusively semi-private space. The corridor serves simultaneously as semi-intimate (linking bedroom and bathroom), private (providing access to living/lounge/study area), semi-private (as entrance to the unit), semi-public (being shared by more than 25 people) and public space when are accessible to large numbers of people and/or strangers. This confusion of territories and distortion of the intimacy gradient creates a very stressful living environment.
Yet a different category of dormitory that was not represented by an example in our study is the suite form. Baum and Valins compared a hall-style dormitory, with 34 bedrooms that came directly off of the corridor, to a dormitory with suites designed to house six students arranged along a corridor. The organization of three double-bed rooms and a bathroom around a shared lounge created a hierarchy from semi-public corridor to semi-private lounge to intimate bedroom and bathroom. They discovered that on dormitory floors with essentially the same numbers of residents, social activities of suite dormitories occurred most often in the suite lounge while in the corridor scheme they more frequently occurred in the hallway. Baum and Valins found that in both hall and suite dormitories the floor lounge was virtually unused. Additionally, there were differences between the levels of stress of the two resident groups.

Residents of dormitories with long corridors "were unable to effectively regulate their interactions in the dormitories, leading to crowding stress and rather persistent withdrawal responses." In contrast, residents of suites were "able to regulate social interaction and as a result did not experience crowding" (Baum and Valins 1977:102). The stress of students in the hall-style dormitory also seemed to be related to the ability of the residents to form social groups: "By inhibiting group development in the dormitories, the design of the corridor in environments prevented the conversion of public space to semiprivate interaction spaces and functionally discouraged adequate social supports" (1977:104). The successful redesign of the dormitory (Baum and Davis 1980) shows that the structure of the spatial arrangement is very important. The suite design does not totally eliminate the problem of a flawed intimacy gradient; there remains both confusion between private and semi-intimate space, and a long unobservable corridor. Nevertheless, the functional difficulty is significantly diminished in the suite.
In a private residence the communal spaces are open to each other and there is usually no distinct circulation space between them. By contrast, in dormitories, the communal living and study spaces are not integrated areas, but are generally separate and segregated. In terms of eating activities, this is especially true when communal food service is located in a distant location that requires scheduled meals. Since the floor lounge social spaces are designed to be neither visible nor easily accessible, they generally remain unused. The corridor, rather than the space designated as communal, serves the purpose of informal communal contact. Baum and Valins (1977) found that nonsocial behavior, such as reading, occurred exclusively in the bedroom in corridor design, but in a dormitory with a suite arrangement these nonsocial activities occurred most often in the suite lounge, and thus set up opportunities for being with others in a more ad hoc fashion, more typical of what occurs in private residences. Howell's research also supports this. In housing for the elderly, she found that unless social areas were well utilized by residents only if they were on main circulation paths (1980).

The hotel room or dormitory that has its own bathroom does not violate the relation between the bathroom/bedroom intimate space, but still suffers from a wide gap in the intimacy gradient, since the corridor is constantly accessible to total strangers. The long corridors are difficult to observe and are therefore not secure. They preserve anonymity. Strangers living temporarily side-by-side along a corridor may share a desire to avoid talking to each other, and to avoid hearing each other's intimate sounds in the middle of the night. However, when an unsupervised public territory lies just a door away from one's intimate space, some awareness of neighbors may be important to preserve security. Even if some degree of anonymity is acceptable or even desirable in temporary housing like hotels and motels, it is not acceptable in a more permanent housing situation because it hinders the creation of community basic to a self-regulating social group.

Illustration 8.07
Structure of Hotels and other Single-Room Occupancy Buildings with Private Bath/Toilet
(Diagram by Carlos Naranjo)

Rooming houses are essentially a form of dormitory typically run by private individuals instead of an organization. The main difference between rooming houses and other S.R.O.’s is the term of stay. Many people inhabit rooming houses as their permanent dwelling. Typically, the resident’s control is limited to the intimate space represented by the room, which may serve as many purposes as a house, such as cooking, eating and entertaining. Because rooming house residents tend to be more heterogeneous than in a dormitory, it is more of a territorial compromise when the public hall serves as semi-intimate space for access to hygiene areas. When other shared facilities are provided, such as communal living rooms and cooking, there is increased potential for the creation of a
community among the residents of a building. However, the anonymity of the corridor design inhibits community development for groups larger than about six.

In single-room occupancy buildings, although the resident is not in control of the building, as in all institutional buildings, the resident does retain control over the intimate space represented by the room. The hall becomes simultaneously semi-public and semi-intimate, thus compromising the intimacy gradient and confusing normative definitions of territory. The administrative territory controls access to the building and thus provides both security and supervision to the public or semi-public corridors.

**Hospitals and Large Health/Custodial Facilities**

The traditional hospital is a truly institutional building where the occupant is dominated by the building rather than in control of it. As in the hotel, the bathroom is normally adjacent to the bedroom, thus allowing privacy to be maintained relative to the semi-public corridor. Today, the bedroom is most likely to have two occupants. Having between one and four occupants is common. However, the room itself is not the border of occupant control. While the occupant is free to leave the room (assuming physical ability),

![Illustration 8.08](image)

**Illustration 8.08**

Plan of the first floor of a large metropolitan hospital

...
At the section of the hospital sometimes called a wing or department, where the hospitalized person resides, the bedrooms and associated bathrooms are organized along a corridor or circulation path similar to that of a hotel. However, the hospital hallway is far more active than the hotel hallway, because it is openly accessible to outsiders. It is also subject to a higher level of observation than the hospital by virtue of a substantial staff zone on the residential floor. The lounge associated with each department is generally a discrete room that can accommodate about 20 people. It is hard to locate and is too large for comfortable, intimate conversations. The resident, assumed to be bedridden, eats in the bedroom. Socialization between resident and visitor is nominally supported architecturally by the hospital arrangement, but none of the spaces where socialization is supposed to take place are designed to accommodate informal interaction.

The control of the resident’s body is almost total in health and custodial facilities where the entire spectrum of living is provided for the occupant. In traditional nursing homes and mental hospitals the resident may be manipulated through the use of drugs. When large numbers of people are housed, and central eating recreational and other facilities serve the
entire group, grouping of individuals and scheduling are mandated. Surveillance of the resident is a key aspect of the floor design (see Illustration 8.10). When this lack of control over mind and body is aggravated by sharing of the room with more than one other person, use of bathing facilities which are not directly tied to the room, or scheduled access to food or activities, the individual has not only lost control, but is dominated socially and environmentally. It becomes evident why such an environment is adverse to regaining lost health, especially mental health, or in encouraging appropriate behavior in people with developmental disabilities. The normal boundaries of the person are negated by a regulatory system reinforced by environmental territories. The deinstitutionalization movement originated as a response to these extreme cases.

Hospitals, which are intended to be temporary residences, or the more extreme custodial environments intended for long term dwelling, can be called institutional environments because of their total control of the resident’s body. The resident is not in control, but is dominated by the staff and by the building. The territorial gradient is violated by the lack of intervening territory between the intimate bedroom and the public corridor. When the unit consists of a bedroom and related toilet/bath area, a certain degree of individual control relative to visitors is still possible. But, when more than two people share a bedroom, even this minimal control is lost. The location of the public corridor between the bedroom and the lounge compromises the use of the lounge as an effective private territory, and, without any integrated space for socialization, the creation of a self-regulating community is impeded. Any pattern of life related to an ordinary dwelling is impossible, because the resident is removed from the process of making meals, doing laundry, and participating in informal individual negotiation of activities supported by the integrated spaces in a private dwelling. The inhibition of community development maintains the power of the administration, but is destructive of the long-term needs of the resident. Dependency upon the institution is created by forcing the resident to rely upon the institution for provision of meals. Any social interaction is at the expense of the identity of the individual.
Barracks, Summer Camps & Emergency Shelters

When temporary housing is provided, it is not uncommon for large numbers of individuals to share a communal sleeping area that is segregated by gender. By avoiding the taboo of forced intimacy between genders, the forced intimacy required by such enforced group living is theoretically mitigated. When the term of stay is short, when group members are not suffering stress, and when the number of co-occupants is relatively small, a certain intimacy is possible, and group cohesion may actually be enhanced by the short, special circumstances. An example of such a circumstance is a typical summer camp, where six or fewer young people share a cabin or tent.

On a long term basis, the loss of control is more often debilitating. In these types of dwellings, there is very often no space under the control of the individual except the bed and a trunk or locker, or just the luggage brought by the occupant. This is especially true in situations such as shelters for the homeless, when people may be subject to physical threats or potential theft of their items. Even the minimal control of a consistent bed is impossible in shelters where the resident’s the bed will change from night to night and there is no secure place for belongings. Typically, the bathing and toileting facilities are communal which aggravates the loss of control.

Housing large numbers of occupants in a single space does not foster the development of a cohesive social structure. Subdivision into smaller groups can help if the groups retain their identity over time, but, if visibility over the collective space is diminished, or if membership frequently changes, subdivision can impair security. When so many people occupy large spaces, it is impossible to even gain a temporary control by having the space to
oneself when no one else is there. Generally, meals and other activities are scheduled to prevent individuals from going off by themselves. This form of institution is different from the hospital and custodial environment in that the body itself is not the site of supervision (except for security), but the total lack of territorial gradient and of any intimate space creates a form of institutionalization that is perhaps even more inappropriate for long-term habitation. Emergency housing, such as a tent city, where small family units are granted a territory they control, is far preferable to housing undifferentiated groups of people in large enclosed spaces.

**Prisons / Penal Institutions**

It is in the secure institution that the control of the occupant by means of the building reaches its apex. Nagel lists 6 different organizing schemes: radial, panopticon, telephone pole, high-rise, courtyard and campus (1973:36-46). While there are great variations in the design of penal institutions in the United States, these differences relate predominantly to the organization of the entire institution, that is the relationship between the housing facilities and the other facilities of the prison, such as facilities for reception, eating, work and recreation. The housing itself is traditionally structured in either a ward organization, in which all of the people sleep in one large space (sometimes divided into cubicles), or more commonly, that of a linking corridor or court off of which cells with walls that open to the corridor. Where the ward design is used, the number of people sharing a sleeping space may range from four to eight in what are called squad rooms, or there may be many more people. One design for a Florida penitentiary indicates 72 beds, laid out in plan (which may even represent bunks) all of which share a single bathing and toilet facility and day room (Nagel 1973:72). The cell type of building, whether organized along a corridor or around a court, may house as many as 400 to 2,000 people in a single multi-tiered cellblock (Johnston 1973:43). Many of these cellblocks do not provide a lounge area nearby.

The structure of such buildings rarely addresses the needs of the person imprisoned, and usually has everything to do with minimizing the effort required of the people providing the security. The ward designs achieve security by having a single entrance / control point from which all of the spaces diverge, and from which all rooms are visible. In this structure, what would be intimate, segregated spaces in a house, are public, and are totally integrated both with each other and with, what would be in a house, the private community space. For the sake of security, walls are rarely provided in the toilet and bathing areas. Evacuation takes place in full view of the other inmates and guards. In a ward arrangement, there is no place under the control of the individual.

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3 There are new types of prison arrangements that are currently being designed and built, but most prisons presently in use are of the traditional design as a shortage of prison space inhibits closing of old prisons.
Security is similarly achieved in a cellblock design, by maintaining access through a single point and by having all spaces observable from that central point, often by means of an open atrium space that enables supervision of several floors of cells at once. A significant difference from the ward is the provision of cells to residents. Structurally the design resembles that of hotels and dormitories, but the details are altogether different. The cells are not bedrooms but combined bedroom–toilets that, in the case of the open-cell design that we are discussing here, has one wall open and visually accessible to the security guards. One or two individuals typically occupy the cell. The individual has a defined territory but no privacy. As in the ward design, bodily functions take place within the hearing and visual field of guards and other inmates. In traditional cellblock designs, there is no adjacent space provided for the creation of community, since that is seen as creating an opportunity for inmates to overpower guards.

In both kinds of prison, the entire space is subject to physical surveillance by means of windows or walls open to the adjacent area, and, in many cases, by electronic surveillance as well. In both the ward and the cell design there is no individual control or privacy. There is also no way of being alone, for even though in open cellblocks spatial isolation is maintained, there is no auditory or visual separation.

Penal structures rely heavily on the use of open space for surveillance, whether in the form of wards, corridors or courtyards. Security is enhanced by heavy indestructible materials, such as concrete, and the use of metal bars for optimal visibility and controlled movement. Physically and electronically every activity is easily surveyed. Here the domination of the incarcerated person accomplished by means of the building reduces the physical role played by the guards to one of visual surveillance. Foucault points out that the architectural structure is a silent force, for the prison as a panoptic schema exercises its power "spontaneously and without noise". The panoptic schema makes any apparatus of power more intense; it assures its economy (in material, in personnel, in time); it assures its efficacy by its preventative character, its continuous functioning and its automatic mechanisms (Foucault 1979:206).

Penal facilities consist only of layers of public space, creating barriers to the outside community. The ultimate institutional building, they do not contain intimate space, and require that intimate activities occur in public view. Every part of the building is by definition public. This creates a situation that negates the possibility of human inhabitation.

**Territorial Gradient & Institutionality**

As illustrated above and in the diagrams below, the domains of control operate differently in resident-controlled buildings than in staff-controlled institutional buildings. Inhabitant-controlled buildings, exemplified by individual dwellings, usually exhibit a
discrete separation between the outdoors and indoors, a very small area of semi-private space, relatively open private space, and a shallow interior with discrete intimate spaces linked to one common private corridor. The interior of the resident-controlled dwelling also encompasses a narrower range of domains because the front door relegates many territories to the building exterior. Institutional buildings, on the other hand, encompass the complete range of domains inside, investing much space in public or semi-public territory. They often fail to provide semi-private and private space altogether, and, where discrete intimate space is provided, it is located adjacent to public or semi-public rather than semi-private territory. In the institutional building, the structure of the interior spaces is deep because of the extensive semi-public territory. By contrast, the space within the domestic building is overall rather shallow with private spaces close to the exterior and intimate spaces deeper inside. Within the freestanding dwelling, things are relatively visually accessible to the visitor; within the institutional building, most things are hidden from view. Because of this depth of space, and the large amount of discrete space, the spaces in a public institution is actually more hidden from public scrutiny than is the private dwelling.

Chapter 7 used the territorial gradient as the basis for the concept of self-regulating communities. By utilizing the informal observation of residents themselves, self-regulation empowers the residents and limits the need for police or other formal security force intervention to emergency situations. In American architectural literature, the territorial gradient has become an accepted design pattern, presently popular, for example, with those practicing New Urbanism (Duany, Plater-Zyber in Krieger and Lennertz 1991, Kelbaugh, 1989, etc.). Those who have studied the space syntax analysis of urban environments have sometimes questioned its validity as a pattern from which to develop urban form, suggesting that its defensive posture doesn’t reflect the importance of the free movement of strangers to creating a healthy, secure public environment (e.g. Hillier, 1996). However, from the perspective of the individual resident, the layers of territorial gradient permits monitoring of the access of the stranger to the private abode, and its link to limited numbers of people enhances the ability of the individual to identify with the different layers of neighborhood group.

Illustration 8.13
Sections of House, Apartment & Hospital illustrating intimate, private & public domains
As applied here, the territorial gradient offers a way to compare different forms of housing to the midwestern American house. By determining the number of people who have access to the different interior spaces of a typical building of a given type, we can discover the level of territory to which that space belongs. For example, the communal bathroom in a typical hall-type dormitory is accessible to 25 people or more, thereby qualifying it as semi-public space with accessibility similar to that of a typical residential street. This indicates why it may be undesirable for a long-term residential situation. By placing the interior spaces of a variety of institutional buildings on a chart with the territorial gradient at the top, we can discover a variety of violations of the gradient created by institutional efficiencies, made in the name of economy (see Illustration 8.12).

**Intimate space** is probably most commonly violated. The bedroom and the bathroom, defined in the house as intimate territories, are the most likely to be located in other realms of an institution. Having one’s intimate territory within a ward or barracks within sight, hearing, smell and close proximity to others clearly negates intimacy. Also, shared bathing and toilet facilities, where there is more than one toilet, bath or sink, infringe upon normal intimate boundaries. The lack of auditory privacy in these communal hygiene territories is very disturbing (usually such places are all hard surfaces, so the least sound is advertised far and wide), and when, as in prisons, there is not even a modesty barrier, it is punitive.

**Semi-intimate space** is another common site of infringement. As can be seen in the matrix, the corridor linking bedroom to other spaces is often a place of public activity, so that intimate activities are separated from semi-public or public territory by only a door. And in some cases, such as the corridor-type dormitory, the corridor that intervenes between bedroom and bath. The bedroom / bathroom connection that would normally be semi-intimate space is a place where one may be forced to confront strangers.

**Private territory**, where the small group gathers to create a sustainable intimate community, is rarely provided in institutional buildings. Economies of scale increase the people sharing the community space to such a large number that the limits of intimacy are intolerably surpassed. Even when private spaces are provided, they are segregated by placement in discrete rooms, distant from the shared circulation path with doors for auditory and visual separation. This spatial segregation generally prohibits informal, naturally-occurring interaction, and small community functions depend upon scheduled activity.

**Semi-private territory**, defining the edge between the unit and semi-public territory, is nonexistent in most institutional settings. The definition of institutional residents as members of a group rather than as individuals or as small communities of individuals militates against the kind of personalization or identity of group with unit that normally takes place in the semi-private territory. Mail, for instance, may not be delivered to an individual box, which would otherwise link the subgroup or individual to a particular place within the larger context. The doorbell, which notifies the inhabitant of a visitor, is rarely part of an institutional structure.
REALM | PUBLIC | Semi-public | PRIVATE | INTIMATE
---|---|---|---|---
**DOMAIN** | Proposed Group | Public | Neighbourhd | Space | Priv | Household | Household | Intimate | Personal | Intimate
---|---|---|---|---|---|---|---|---|---|---|---
**Size** | 500-1000 | 100-500 | 25-100 | 6-25 | 3-6 | 2-3 | 1-2

- **Prison cell** (1,000) | st, en, str | hl, lr-d | hl, br, ba, |
- **Barracks** (40) | st | walkway, lr-d | en | br, ba |
- **Motel** (500) | st | walkway |
- **Hospital** (600) | st, walkway, lobby | lobby |
- **Nursing Home** (300) | st, walkway, lobby, elevator-stair | lobby, living-dining-kitchen, bedroom, bath |
- **Dormitory-hall** (100) | st, walkway, lobby, elevator-stair, living-dining-kitchen | living-dining-kitchen, bedroom, bath |
- **Dormitory-suite** (100) | st, walkway, lobby, elevator-stair, living-dining-kitchen | living-dining-kitchen, bedroom, bath |
- **Group Home** (16) | st, walkway, entrance, living-dining-kitchen, bedroom, bath |
- **Mid-highrise** (680) | lobby, elevator-stair | lobby, living-dining-kitchen, bedroom, bath |
- **Rooming house** (30) | st, walkway, entrance, elevator-stair | lobby, living-dining-kitchen, bedroom, bath |
- **Walk-Up Apt** (24) | st, walkway, lobby, entrance, living-dining-kitchen, bedroom, bath |
- **Row Hse** (3-6) | st, walkway, porch, entrance, living-dining-kitchen, bedroom, bath |
- **Freestanding House** (3-6) | st, walkway, entrance, living-dining-kitchen, bedroom, bath |

Illustration 8.14

Domains of Control for Different Types of Housing

Key: st=street, walkway, lobby, elevator-stair, hl=hall, en=entry, po=porch, lr=living room/lounge, 1-k-d= living-dining-kitchen, br=bedroom, ba=bath

The distinction between *semi-public territory* and *public territory* that is manifest in the private dwelling is sometimes apparent and sometimes negated in institutional buildings. When there is a control point beyond which not everyone may pass, and when the numbers of people who pass such a control point are smaller than approximately 30, a semi-public territory may be said to exist. The existence of semi-public territory requires that a neighbor can be differentiated from a stranger. Many institutional buildings have such a large number of people using them that semi-public territory cannot be said to exist. In these instances, the building becomes fully public, except for the private and intimate spaces, whose characters are compromised by direct proximity to the public territory.

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4 This chart is dependent upon rather gross assumptions about population with the figures on group size representing assumed population use. The size of the building selected to represent a building type affects how it would be placed on this chart. Some additional assumptions: bedrooms shared by non-related adults are assumed to be semi-intimate, bathrooms (in the American context including toilets) that do not have multiple fixtures are assumed to be intimate since the space is controlled by one person at a time.
The investigation of the structure of the different kinds of housing shows two attributes of inhabiting that are linked to organization of spaces:

1. The ability of the household and its neighbors to create social ties, and, related to this,
2. The ability of the individual and household to control access to the building spaces.

The development of social ties is supported by providing loosely structured, highly visible spaces with clear territorial boundaries that are linked to the private scale on the territorial gradient. The control of access to buildings requires that the type of territory and the activities within it be appropriate to the scale of use and be linked in an incrementally changing gradient of territory.

Illustration 8.15
Images of Stairs Showing Degrees of Institutionality
Degrees of Institutionality

From the discussion above, institutionality in housing can be seen as having many architectural forms. Our observations lead us to define degrees of institutionality in relation to domesticity that reflect distinctions between forms of organization relative to control of the building by the residents. The disruption of the privacy gradient in different housing types that is evident in the diagram above, combined with the character of the individual and group territory that are provided in different allocations of space, combine to promote or limit the resident’s individual autonomy and residents’ community formation.

We can identify five levels of domesticity or institutionality in residential settings: domestic housing, domestic housing with institutional characteristics, partial institutions, complete institutions and oppressive institutions. Such broad generalizations imply that individual buildings may combine aspects of one or more categories. The categories are designed to show how different aspects of housing, such as the territorial gradient, the term of stay and the level of surveillance, combine to make larger structural relations.

1. **Domestic housing**, such as free-standing single-family houses, row houses, or double houses, have a back yard and a front yard that open onto a residential street. They are long-term dwellings that employ informal observation through a complete territorial gradient with the front door separating the interior private and intimate realms from the various public realms.

2. **Domestic housing with institutional characteristics** is exemplified by various forms of apartment buildings that have an interior corridor or shared vestibule. These buildings are domestic settings since they are long-term habitations with a complete intimacy gradient within the dwelling unit. However, outside the unit itself, the length of and poor visibility in the semi-private corridor territory makes it difficult for the resident to control that part of the gradient. Many forms of apartment building, especially those with six units or fewer, are amendable to informal control by the residents. Other, larger building forms can best achieve security with formal supervision by hired personnel.

3. **Partial institutions**, such as dormitories and hotels, are designed to house large numbers of people economically for a limited term. They serve as short-term housing do not have a complete territorial gradient, and function with formal supervision by hired staff. Usually only some activities are scheduled. In general, they provide some autonomy for the individual, but do not support community structure. Because of the number and nature of residents and the arrangement of the housing units, the building has an administration whose responsibility is supervision of the building. These administrators are distinct from the residential group. The administration of such buildings generally occupies a small part of the building on the ground floor near the entrance and the residents’ territory is located on upper floors under the primary informal control of the residents themselves. In such buildings, by contract, the residents control discrete territory with lock and key, although maintenance and administrative personnel typically have the right to enter for designated purposes. All realms of the territorial gradient are provided within the building walls. Partial institutions vary in their provision of intimate territory. Some provide intimate territory for both bedrooms and bathrooms, others provide communal bathing and toilet facilities that violate
the territorial gradient. Partially institutional buildings also vary in their support of socialization. Some create hierarchies of social structure in suites, or other groupings, that encourage the development of community. Some provide social areas that support informal interaction. Others make no provision for socialization. But, in all cases, the interiorized semi-public or public halls located on the residential floor inhibit the viability of the territorial gradient.

4. **Complete institutions**, represented by building types such as hospitals, nursing homes, and other custodial residences, have full responsibility for the welfare of the residents on a short-term basis. Administration has complete authority in such buildings, providing comprehensive facilities, scheduled daily living activities and constant surveillance. Although residents may be assigned to discrete rooms, they are not able to lock their spaces and staff have access to resident spaces at all times. Typically, intimate spaces are directly adjacent to public and semi-public spaces, thus violating the territorial gradient. These buildings lack private territory. Although they may have space intended to be private, because it is usually discrete, and does not open onto semi-private territory, it does not effectively support informal socialization. Although these organizations impede the autonomy of the individual and the development of a self-regulating community, insofar as they house people on a temporary basis for some beneficial outcome, they are acceptable. Such residences are not acceptable, however, as permanent places of inhabitation. Moreover, these environments should be supplanted once new building designs make it possible to provide supervision of residents without denying individual autonomy and the informal social interaction that supports self-regulating groups.

5. **Oppressive institutions** control long term residents by total surveillance within a totally public set of spaces, hindering the autonomy of the individual and denying the formation of social groups. They are not acceptable places of inhabitation. These settings provide neither intimate nor private space. In these settings, intimate activities take place in a public realm. These settings include such buildings as ward and open-cell prisons as well as emergency housing where more than six people sleep and bathe in large, open rooms. Such places impede the development of benign self-regulating communities and encourage oppressive behavior in residents and staff (citation). Maintenance of security requires constant supervision by staff. That these environments continue to be used demonstrates that the culture continues to harbor a punitive, rather than a rehabilitative, attitude toward the poor and criminal.
<table>
<thead>
<tr>
<th>Degree of Institutionality</th>
<th>Presence of Territorial Gradient</th>
<th>Transience</th>
<th>Level of Surveillance</th>
<th>Control by Social Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Housing</td>
<td>Complete gradient</td>
<td>Long-term</td>
<td>Informal observation</td>
<td>Resident controls bldg, Resident controls access by visitor and worker</td>
</tr>
<tr>
<td></td>
<td>Public territory exterior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic with Institutional Characteristics</td>
<td>Complete gradient</td>
<td>Long-term</td>
<td>Informal observation, sometimes supervision of public territory</td>
<td>Resident controls unit, Resident or worker control bldg</td>
</tr>
<tr>
<td></td>
<td>Public territory in interior corridor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial Institutions</td>
<td>Incomplete gradient</td>
<td>Limited term</td>
<td>Formal supervision</td>
<td>Resident controls intimate territory, Worker controls building, territory primarily at bldg entrance, Visitor controlled by resident</td>
</tr>
<tr>
<td></td>
<td>Intimate realm present, juxtaposed to public realm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No Private territory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public interior corridor may intervene with intimate territory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Institutions</td>
<td>Incomplete gradient, Limited term or temporary</td>
<td>Surveillance</td>
<td></td>
<td>Resident has territory but no control, Worker controls bldg and unit, territory is located throughout bldg, Visitor controlled by worker and has access to whole bldg</td>
</tr>
<tr>
<td></td>
<td>Intimate realm juxtaposed to public realm, No Private territory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public interior corridor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oppressive Institutions</td>
<td>No gradient, Only public territory, No Intimate territory No Private territory</td>
<td>Long term</td>
<td>Surveillance</td>
<td>Resident has minimal territory and no control, Worker controls bldg, Visitors kept at exterior by workers</td>
</tr>
</tbody>
</table>

**Illustration 8.16**

**Degrees of Institutionality and Selected Characteristics**

By comparing different forms of institutional buildings to the midwestern house and to each other, several factors distinguishing institutional buildings are revealed. Degrees of institutionality relate to the manner in which administration is housed within a building, the presence of a complete territorial gradient, the provision of intimate space under the control of the individual resident, and the presence of private space structured to enable the collective residents to develop a self-regulating community.
Chapter 9

Research Conclusions

The original intention of this study was to generate research that would lead to cultural change. We sought to identify institutional settings with the idea that traditional institutional settings were inimical to inhabitation for the long term. Following Dybwad and Wolfensburger, we sought to identify what it was about the settings that most closely approximates those lived in by society’s mainstream that differed from traditional institutional settings. We assumed that by understanding that difference, and describing it in detail, we could offer information to designers who could make better housing for disenfranchised groups. Such housing would retain the rights and privileges provided by the normative housing setting, namely the single family detached house.

The research in this dissertation explores how ordinary people understand housing in order to inform designers about what is the most appropriate design of housing for dependent people. With a better understanding of the values that frame people’s appreciation of housing, designers can respond with designs that address society’s needs. As a scientific investigation, this research explores how it might be possible to anticipate the way that a given architectural form will be understood in its social context. As a humanistic study, it explores past environments with the intention of understanding how they came to be the way they are and what their impact is now so that future environments may better serve human needs.

Several broad conclusions can be drawn from this work. The first set of conclusions relates to the research approach of the study, the relation of the research to conscious cultural change and the implications for an appropriate research methodology. The second relates to the content of the study: the validity, usefulness and applicability of the comparison of institution and home. The third addresses the implications for design.

Institution & Home

Central to this study, is the question of the validity, utility, applicability and relationship between the terms institution and home. The most important broad substantive finding is that institutionality and homeyness are qualities of housing that, in 1984-86, were perceptible and understood in the midwestern United States. The qualities are comprehensible to the general public, and not just to design professionals. We also determined that it is possible to identify and describe many of the architectural features that generated these qualities. While concepts like institutionality and home are always in a state of flux although cultural ideas tend to change slowly, today, almost 20 years after our study began, people still use the institution-home dialectic in ordinary daily interactions.
The flux of cultural patterns, and their susceptibility to change and reinterpretation, can be demonstrated by one transformation that has taken place since this study began. In the 1980’s wheelchair ramps in house entrances were just being introduced. At that time, ramps appeared unusual and were associated with institutional settings. Today, twenty years later, they are accepted as a normal “home” accommodation to a house with steps. The addition of the ramp not only changes the understanding of how you enter a house; it also changes the idea of how a house “should” look. Furthermore, it changes the ideas of status. Whereas before it was stigmatizing to have a “ramp for the handicapped”, today it is seen as a normal “accommodation” for someone who uses a wheelchair.

We also know from our own experiences that institutional and home environments exhibit a certain ambiguity. A close relative of mine had the good fortune to die in her own home; her bedroom contained a hospital bed, a hospital table, a wheelchair, a commode, piles of medicines and various other institutional accoutrements as well as a few remnants of normal home furniture (wooden table, chair and chest of drawers). A slide image would capture both the normal scale and details of a house bedroom as well as the largely institutional furnishings. In like manner, institutions in the United States are becoming more aware of the need to provide for human amenities. Institutional places, maternity wards and upscale nursing homes in particular, may have residential details and furniture. These more ambiguous environments are no doubt increasing, as society has become aware of the problems associated with institutionality. Nevertheless, when faced with places exhibiting mixed messages, we ascertain their ambiguity with the cultural dialectic of institution-home in our minds.

**Oppositional Structure**

Despite the consistency with which study participants evaluated images of housing along a continuum between institution and home, a significant finding of the study is the lack of a pure oppositional relation between institution and home. The comparison of evaluations of the slide images with descriptions of the physical attributes of the settings revealed that the home-like and institution-like poles are not parallel in structure. Although homelike places are very similar to each other, institutional places are more physically different, and, at least in living rooms, they are increasingly different as they are more institutional.

In the slide evaluation and sort studies, we found a great deal of unanimity about what constitutes home, which was most clearly represented by the single-family house. On the other hand, we found that institution was a more diffuse term. When we compared the data
from the checklist and inventory studies, certain anomalies raised questions about the opposition that the syntactical analyses subsequently clarified. There is no single type of institution that seems to represent a central category “institution,” rather there are many different types, each with quite different institutional characteristics. For example, we find that in hospitals toilets are associated with individual bedrooms, and more than four people rarely share them, as in a house. In what were otherwise the most institutional environments studied, the intimacy gradient between bed and toilet is thus maintained. But in many dormitories, which were evaluated as less institutional than hospitals, there are communal toilets, organized in stalls, shared by 15 or more students. Furthermore their typical placement separates them from the bedroom by a public hall that is accessible to the whole dormitory. This fundamentally violates the intimacy gradient.

I interpret this to mean that the institution-home opposition is a cultural pattern that has been imposed on observed differences as a way of identifying broad patterns. Where differences relate to degrees of difference, such as increased size of building or more lighting fixtures in a room, the difference tends to fall on a continuum, but where the difference relates the structural patterns, the differences no longer line up along the continuum. Although the imposed pattern may obscure certain important distinctions between the two settings, its apparently larger efficacy in identifying many patterns of difference, and expressing general differences in ways of thinking has made it widely used in categorizing and differentiating between kinds of housing.

*Housing Categories & Qualities*

Another important finding relates to the way that different kinds buildings are understood relative to housing as a whole. In the sort study, we found that ordinary people tend to cluster the different buildings into a few broad building types (apartment building, house, dormitory and hospital) compared to the fairly complex system of building types used by professionals (The researchers selected 10 types in this investigation.).

Furthermore, when assessing interior spaces within building, participants did not usually identify spaces by building type, as the researchers had done when structuring the research, but identified them by room type (e.g. living room bedroom, kitchen). The researchers assumed that the building type categories would supercede the categories for interior spaces, and that a hospital lobby would therefore be differentiated from a dormitory lobby. But we found that for participants looking at interior spaces, distinguishing between lobbies and kitchens was a more important distinction than between hospitals and dormitories. However when asked to categorize photographs into opposites, people placed interior and exterior images together in each of the two piles. Therefore people were capable of seeing a larger picture, but when freely sorting, they distinguished between rooms (e.g. living rooms, kitchens) and building exteriors (apartment building, dormitory) as two independent basic categories.

The difference between professional and lay categories indicates possible arenas of confusion in communication between professional and lay people that can be alleviated with education on both sides. The need to understand such differences reinforces the importance of research on cultural patterns.

In the study of housing qualities that employed slide images, perhaps the most surprising finding was that homelike was not strongly associated with private even though institution-like was strongly associated with public. Similar associations with private and public were also found in the Phase 3 study. We hypothesize that this finding results from the method used to identify these qualities. While images of public environments evidence visual signs of public use through durability of materials and scale, the physical characteristics of environments that communicate privacy are not visible in images because privacy is
primarily experienced as a relation between environments rather than as attributes of the 
spaces.

The study of housing qualities also showed that, although home-like was strongly 
positively associated with desirable, institution-like was not as strongly negatively associated 
with desirable. Similarly, in the rotated factor matrix analysis of slides, the quality “coziness” 
(associated with high contrast of light and close seating arrangements) was found to be 
highly associated with some images that are not extremely homelike (see illustration 09.2). 
This shows that institutional environments are not necessarily interpreted as negative places, 
suggesting that it is possible to create better institutional settings than we have at present.

Symbolism and Syntactical Arrangement

The inconsistencies that we found seemed to entail a distinction between how 
environments may communicate ideas within spaces (intra-spatially) versus through 
communication experienced by movement between spaces (inter-spatially). The research 
showed that those items linked to homelikeness and institutionality that are observable in 
photographs (such items are within areas of the environment and are thus intraspatial) tend to 
fall into a gradual continuum, while those aspects of architecture that are linked to 
homelikeness and institutionality that are experienced by moving through space do not 
(interspatial). This suggests that while these two forms of communication may interact to 
some degree, they also seem to operate independently of one another.

I hypothesize that those items of the inventory measure that are observable in 
photographs and tend to fall into a gradual continuum, are primarily intra-spatial, and often 
reflect associational schemata. On the other hand, inventory items that derive from inter-
spatial relationships, experienced by moving through space, tend to reflect cognitively-based 
schemata. That is why they do not function identically.

This hypothesis, which finds intra-spatial and intra-spatial communications to operate 
at the same level of abstraction and yet distinguishes their operation, is a finding of the 
dissertation that is not directly supported by other work that studies architectural 
communication, such as the works of Barthes, 1964; Jencks, 1969; Eco, 1980[1973]; 
Preziosi, 1979 a & b; Krampen, 1985, Rapoport 1977,1982]. Arguably, this finding is 
supported by Preziosi’s semiological analysis distinguishes structure, form and material. 
Given my premise, Preziosi’s structure would communicate inter-spatially, form and material 
would communicate intraspatially. Preziosi’s work, which explores archaeological sites, 
dresses the material character of architecture without reference to how it is actually 
understood by users. This raises several questions. First, are my observations correct? 
Second, does the way places are designed correspond to the ways that spaces communicate to 
users? The validity of this distinction, and the extent to which and the manner in which these 
two aspects of architecture interact, are questions that are not answered here, and seem 
worthy of further study.

The inter-spatial syntactical structure of the house framed the subsequent analysis of 
other buildings in this study. The analysis of the domestic environment indicated that the 
three fundamental physical patterns we identified seem to be associated with three activity 
patterns. The linear arrangement of spaces was associated with movement (entry, stairs, 
hall); the fan arrangement with control of intimate activities (halls linked to bedrooms and 
bathrooms); and the connected arrangement was linked to informal social interaction (living 
rooms, dining rooms and kitchens arranged to encourage easy observation and movement 
between spaces). The comparison we made between houses and other residential forms using 
these patterns revealed distinctions between buildings that we described as degrees of 
institutionality. Again, additional study is needed to determine whether the hypothesized 
degrees of difference may simply be distinctions in formal arrangement that appear to be
degrees of difference (see further discussion below in the section on forms of institutionality).

The syntactical structure of the symbolic aspect of intra-spatial communication was not specifically addressed in this study. However, the visual analysis of the inventory of elements for living rooms revealed several patterns of variation for architectural elements. For the most part, elements did not communicate individually, but in the context of other elements, each adding to the overall effect. Some elements, such as floor materials generally varied by kind (e.g. wood, tile, concrete as increasingly institutional). Other kinds of elements varied quantitatively by degree (greater numbers of light fixtures indicated higher institutionality) or by differential distribution (room size smaller or larger than a certain size communicated different levels of institutionality). Yet other elements varied in composite variation (mounting of light fixtures combined with number and placement of each kind to communicate degrees of institutionality- the most homelike was associated with a combination of floor and table mounted). And a last group of elements operated as a kind of “trigger” effect in which the element’s presence was so strongly identified with a quality that it communicated directly, and had the potential to over-ride other, less potent elements (triggers included the presence of an exit sign, fire extinguisher, wall-mounted television or fireplace)1.

Logics of Institution and Home

In studying housing to uncover what we have called “manifest cultural schemata,” we discovered certain logics associated with the two types of settings. Examination of the data on the images and the syntactical structure of the plans revealed that institution and home represented contrasting patterns of thought. Institutionality oriented to control of the resident by the institution, and is produced by traditional institutional design and homeliness delegated control to the residents themselves, supports their control in the design of the domestic residence. These cultural patterns of control tend to persist despite evidence, such as that presented in Chapter 3, indicating that institutions have severe social and economic liabilities. The logics of the traditional institution are those of the economic model of the workplace that derive from the military bureaucracy and the industrial revolution. One such logic is monetary economics, most obvious in the application of economies of scale. Traditional institutional environments have repetitive patterns of space size and shape, materials, furniture, lighting, and the like, because it is assumed that it will be less expensive to make uniform choices. The uniformity expresses the assumption that each resident is an economic unit rather than a person with human dignity. In the domestic setting, the materials, furniture and decorations represent the taste of the inhabitants, with different rooms designed to accommodate the activities anticipated in the space as well as the distinct interests and character of the individual residents. Rather than being bought all at once, furniture is usually purchased over time so that it reflects the inhabitants’ history. The domestic setting thus has a richness and specificity unique to each room and to each home.

A closely related logic is that of order. In a traditional institution, clutter is not acceptable. The order of the institution takes precedence over the order of the inhabitants generally supporting the needs of the workers first. The domestic setting supports individual and group choice, and because of the small numbers of people involved, it allows flexibility in scheduling. By contrast, the institution mandates routines that are difficult to change and adjust to individual or group needs. A domestic environment typically involves a rich array of objects manipulated to personalize spaces and to generate and express identity (“coziness” was associated with a higher density of artifacts). In an institution, such “messiness” violates

1 This is similar to the functioning of Lynch’s “landmarks” described earlier, in which, for example, the sofa identifies the living room and the bed the bedroom.
the order. Thus the institutional value of order fundamentally contradicts the need of a resident to inhabit.

The concern for economics and order are paralleled by the logic of maintenance and hygiene that results in austere environments with minimal decoration. What decoration exists is made of durable materials that do not encourage change. Because they are easy to clean, such settings reflect the value of cleanliness and the desire to minimize maintenance costs. The home environment offers a contrasting model of comfort, pleasure and aesthetics that requires ongoing care of the environment. In the home setting, it is assumed that from time to time furniture and carpeting will need to be replaced. A concern for maintenance in the residence may result in a more durable fabric, but is not likely to result in a fabric on a sofa that would be unpleasant to touch or a bedroom rug that would be uncomfortable to walk on barefoot.

Perhaps the subtlest institutional logic is the inhibition of collective community formation among residents. This suppressed community of residents allows the institution to maintain hierarchical control from the top. The isolated location of social spaces, such as lobbies and dining areas, within the inter-spatial structure of the traditional institution inhibits the natural casual gathering of people that is fundamental to creating group cohesion. It may also necessitate the scheduling of activities within the segregated, named spaces. In contrast, the living room, dining room and kitchen of the home setting open onto each other, permitting direct access and easy flow between the spaces.

**Different Forms of Institutionality & the Territorial Gradient**

The final important finding was a description of different forms of institution. Goffman classifies institutions in terms of the types of people they serve and their role relative to society. (1961, 4-5). Although still in the form of a hypothesis, this study identifies different kinds of institution based on the arrangement of spaces (the syntactical structure of their architectural design, similar in approach to Markus, 1993, but using somewhat different criteria) and on their social structure.

A study of plans of different types of housing showed distinct patterns of arrangements between homes and other housing settings. The syntactical arrangements, as described in the gamma analysis, did not alone account as much for the significant differences between settings as did the syntax when combined with other factors. Other influential factors include the numbers of building users, their social roles, activities and use of the spaces, and the relative location and sizes of different types of spaces. Based on the order of the single-family dwelling, we created an intimacy gradient for the numbers of people using a space that describes seven territorial levels ranging from public-urban to intimate. When we located the exterior and interior spaces of the different building types in the gradient according to their use, we discovered different patterns. All of the territories of the freestanding house were distributed within the lowest five levels of the gradient with the two most public being on the exterior of the building. The apartment building territories were distributed within six consecutive levels, but some public parts of the gradient were located on the interior of the building. Other building types, such as hotels, violated the gradient by skipping many levels of territoriality, juxtaposing intimate areas directly to public areas. Still other types of buildings, prisons for instance, did not provide any intimate territory for residents. These differences formed the basis for developing the hypothesized gradient of institutionality. It remains to be determined whether this represents an actual gradient or simply different kinds of spatial structure.

The description of these different kinds of institutionality, in terms of particular social and architectural features, was found to represent distinct ways that residents are empowered or disempowered by the environment. Analysis of particular types of housing settings relative to their social goals and administrative structure led to the identification of different kinds of
institutionality. As a result of this investigation, these are described as *domestic* (relating to single family houses and row houses), *domestic with institutional characteristics* (various kinds of apartment buildings), *partial institutions* (dormitories and rooming houses), *complete institutions* (hotels, hospitals, nursing homes), and *repressive institutions* (prisons, barracks, and open multi-bed shelters for homeless people). These different kinds of institutionality not only have physical differences, but also exhibit related differences in their social structure (term of stay, type of surveillance, social roles of residents and other social structures). Insofar as the architectural form of institution is bound to its purpose and administration, it is difficult to change the nature of an institution without simultaneously changing the buildings that support it.

The discussion of territoriality in residential buildings has emphasized the advantages of controlling the environment without addressing the positive aspects of anonymity and free access that characterize the public realm. Taking into account new ideas about the importance of public space in supporting social contact between diverse populations (de Certeau, Harvey, Boyer, Dovey), the application of a territorial gradient that includes the public realm and addresses issues of control may seem contradictory. However, if we see access and even anonymity as having positive attributes in the public realm it does not necessarily negate the desirability of control in the private and intimate realm. Further, we can study the impact of interiorizing certain public environments that formerly were out of doors. Such interiorization creates clearly defined and controllable access points, as in malls and skyways that have become privatized spaces that hold a number of people formerly associated with public-urban territorial levels.

**Research Approach**

Architectural research is in its infancy. For example, in the field of environment-behavior research methodologies such as space syntax, and an increasing interest in building evaluation have only been developed within the last 15 years. With their development architectural form has emerged as essential to investigate. As explicitly architectural, the methods of cultural analysis employed in this dissertation may be of special interest. In addition to description in plan, photograph, and syntax diagram, methods adapted both from psychology (semantic differential study), and from anthropology (inventory, dialectical analysis, questioning etic research categories) have been employed to describe and analyze architectural form. The employment of the dialectic of images, questioning researcher categories, architectural inventory, and space syntax gamma diagram analysis have been of particular value, because they are profitably used here in somewhat unusual ways for architectural research.

These successes lie in the context of a number of challenges that my team and I faced in the process of completing the research; these have already been discussed in Chapter 4. Phase 1 especially had severe budget constraints that limited us to a small investigation. Additionally, we discovered that architecture students with minimal training had difficulty making the discriminations in resident behavior that would allow us to draw refined quantitative distinctions. We therefore used our observation studies to inform us in a qualitative way about activities and resident-staff interactions in the different environments. Finally, we unable to analyze our inventory data using standard statistical methods because of the large numbers of variables compared to the numbers of cases we were studying, and also because of the binary nature of the variables. In Phase 2, we were not able to use statistical methods to discover how variables are structured relative to each other.

In Phase 2, our subcontractor, hired to randomly select housing within the given categories, had difficulty recruiting participants (a problem we have encountered in subsequent research on housing), therefore we have different numbers of different kinds of
housing, and we had several environments that we could only study partially due to recruitment problems. In the documentation phase, we employed a variety of descriptive methods, some of which could not be analyzed in detail due to constraints of time and funding. Both the videotapes, which we used to supplement the inventory investigation, and the interviews served primarily as reference. We made plans only of one example of each type of building, except group homes, which we documented completely. Also it would have been advantageous to observe behavior in the settings. Although we made some mistakes in the early student evaluations of images (lack of random variation, mixing institution and home on a single form), follow-up research showed that the effect was insignificant in the first case and useful as a point of comparison in the second.

Another issue not addressed in Chapter 4 is the challenge of doing a study that ends up taking over a decade to complete. The perspective of the researcher and the context within which the research operates has changed radically. Two things are especially worth noting. De-institutionalization changed from being a radical idea to becoming a societal norm, and computerized analysis of study findings has made some of the methods we used obsolete. Had we done this study today, our analytic methods would be quite different.

**Dialectic of Images**

Perhaps the most interesting methodological discovery is the value of the dialectic of images, in conjunction with words and atomistic description, to discover and describe a stereotypical normative perspective. The usefulness of the images was first as a device to discover remembered experiences through the process of drawing. Additionally, *comparative analysis* revealed some of the structure and the complex set of elements that produced the effects. In the first phase study, the paired mental images were drawn and then validated as representing the ideas “institutional” and “homelike”. These same images were used to identify salient physical attributes of setting hypothesized to generate the perceived qualities. By providing analogies between physical elements in two equivalent settings, the comparative approach elucidated corresponding characteristics that might not have otherwise been evident. For example, the presence of communal mailboxes in certain institutional settings marked mail delivery as an important aspect of difference between the two settings. Because mail does not usually have an obvious presence in domestic settings, mail delivery might have otherwise been overlooked.

A focus on describing and analyzing environments and was essential to this investigation. The various forms of description revealed different and sometimes apparently contradictory findings. Interpretation of the findings required appropriate analytical techniques, some of which were new to us and others of which were invented to address the particular data. We found that the reconciliation of the findings simply required a new way of seeing the evidence.

An important broad finding is that the combination of methods utilized in the investigation successfully applied the notion of conscious cultural change to architectural design. The approach taken in studying institution and home identified the physical features associated with qualities of architecture as understood at a particular time and place. Identification of the physical features associated with a social context enables studying the relation between behaviors and individual design features. Subsequent designs can then correspond to educated hypotheses about what design features support or disable desired social effects. In this research, the methods could not be followed to their logical conclusion. But the approach provides a method by which it may be possible to:

1. Describe normative thinking about the architectural qualities of a limited set of environments.
2. Identify the physical dimensions that may generate human responses to those environments.
3. Design environments that embody the appropriate dimensions.

**Questioning Research Categories**

The significance of being open to questioning research categories, is central to any anthropological study. When followed here, it revealed the next level of complexity. For instance, using a free sort to elicit user categories led us to conclude that our institution-home opposition could not be taken for granted, and to see that public and private are different in nature from categories such as friendly. Our original methodology that compared physical elements to perceived qualities of setting showed home and institution to be non-parallel categories. Both of these findings led us to employ space syntax analysis on the plans. The diagrams revealed particular and important distinctions between types of institutions, and demonstrated how symbolism and syntactical arrangement of space work somewhat independently of each other.

**Architectural Inventory**

The architectural inventory was central to the validation of particular features hypothesized in Phase 1 as relevant to perception of institution and home. As discussed above, it also allowed comparison of physical form to perceived features so that key researcher assumptions could be called into question. One of the problems we had with the inventory from the beginning was the large number of unweighted variables. Statisticians found the structure of the elements very difficult to work with, especially because of the limited number of environments. Therefore our conclusions must be seen as speculative. However, in the Phase 3 study, a weighted version of the inventory proved useful in identifying which of many possible architectural features were correlated to particular behaviors and perceptions. An inventory is complementary to other ways of describing architecture. It captures certain aspects of physical form through non-narrative use of words (naming) to identify architectural elements, like a traditional descriptive (rather than performance) specification. In theory, an architectural inventory could be used to discover which architectural features are important to a given architectural quality, issue or activity by cross-correlation studies, so that architectural research would be less dependent upon a hypothesis-test model to ascertain every single architectural element.

**Space Syntax Gamma Diagrams**

The space syntax gamma diagrams played an essential role in exposing the organizational structure of different types of housing, so that they could be related to other social and architectural aspects of environments. The distinctions between types of spatial arrangements that support different kinds of human activities made possible by syntactical analysis could not be effectively studied by means of images. Neither was it possible to distinguish the means of spatial control revealed in syntax diagrams from other forms of architectural description such as photographs, sketches, inventory, or even visual examination of plans. Once understood through diagrams, the patterns in the plans become more legible.

**Implications for Future Research**

The Phase 1 and 2 research that informs the body of this dissertation remains largely exploratory because it is limited by geographical and temporal limitations (data collection in 1984-5, within the limits of a midwestern United States City) by small sample (30 sites), by distribution (unequal representation of each building type, overlapping categories) and by...
irregularity of the data (e.g. not all data was collected for all sites, building categories overlapped, slides selected for buildings were not equivalent, weather and lighting conditions varied in different images). During the research, we were able to make some corrections (changing the semantic differential descriptors to singular qualities for later studies) and to discover that other errors were inconsequential (lack of random arrangement of slides). I regret that the interview data for Phase 2 were not sufficiently consistently gathered for analysis, for they might have revealed important issues. The broad patterns that were discovered, many of which were found repeatedly in the different forms of the data, seem valid for the time and place and strongly suggest broader application. Many of the particular findings remain speculative.

What was powerful about the study was the comparison of a wide range of housing types. Looking across a diverse set of housing, revealed patterns that raise questions about the difference between the values our society espouses and the actual way that we house our citizens. It would be valuable to do a more ambitious study that would permit investigation of housing stock across the United States, and even internationally, to see regional and cultural differences as well as changes over time. Instead of studying the issue of institution and home per se, a more ambitious study might focus on documentation and pursue a study of housing conditions in terms of a wider range of qualities and evaluative criteria. Such a study would include an explorative study of evaluations by lay people to explore cultural patterns and norms, as well as an evaluating the sites using criteria developed by professionals as a point of comparison. It would also be useful to document patterns of daily use in each setting.

**Housing for Empowerment - Implications for Design**

Western society, particularly in the United States, is committed to individual freedom, and its ideals envision maximum opportunities for every societal member. The underlying premise of this work maintains that the traditional institutional buildings are inappropriate settings for long term inhabitation, but the question of how to provide housing for those who are dependent remains. What makes large institutional environments dehumanizing? How can society provide support without undermining identity and community? Is it really necessary to house people in large structures? Under what circumstances should economic realities dictate human rights? Are economic constraints really what are creating large institutional buildings?

Certain inherent structural characteristics of large traditional institutions have been identified here. These characteristics make them dehumanizing, despite the best efforts of staff, and despite changes to the interior character of the individual spaces that accommodate human interaction. Although Rossi and other theoreticians point out the value of transforming buildings to new uses, such transformation is extremely unlikely to be successful for traditional institutional buildings unless the new purpose is radically different and does not include housing. The structural characteristics of institutions seem to produce patterns incompatible with housing. These patterns are reinforced by the associations of hierarchical social relations within such buildings. Examples of the structural characteristics are extremely large numbers of isolated rooms of a uniform size and character, long disorienting corridors, great distances between rooms used in daily activities, a lack of a territorial gradient due to the spatial arrangement of rooms, and lack of interconnected semi-private spaces. In the past, buildings and social structures for dependent people have emphasized control and supervision. The hospital is designed to allow supervision and control of those defined as sick. The prison has enabled surveillance and control of criminals. The qualities of control and supervision are not exclusive to housing for dependent people. The spatial patterns that serve normative people, in settings like schools and offices, support supervision and control of students or office workers. Walls limit access to or egress from
certain areas. The particular layout of rooms and furniture allows some to see, and others to be seen. In these circumstances, the reciprocity upon which equality is based is specifically denied. In these socially-sanctioned buildings, there is a hierarchy of access and control; there is a group controlling and a group being controlled. But what may be acceptable today in work settings is not acceptable in long-term residences.

The present cultural emphasis on independence and self-reliance in American society is one factor that places people who are not fully capable of independence in the category of non-participating members. The environment, together with a greater societal acceptance of difference, can play a role in supporting people who are not physically or economically fully independent, or who due to mental conditions, or due to proven untrustworthiness, are incapable of good judgement.

**Size.** One fundamental problem of traditional institutions is size. Because of their size, traditional institutional residences tend to create an administrative structure that represses the needs of the residents in favor of those of management. It is no small administrative matter to deliver 3 meals a day, clean beds, correct medications, and provide social programs and 24-hour supervision to one or two thousand people. For those who need 24-hour support, in the United States, the ideal is to have a small-scale residence where the identity of each individual and of the residents as a group is not overwhelmed by the needs of management. People need to be given maximum autonomy and dignity. Small-scale residences need not necessarily be single family housing, since many dependent people do not live in a typical family. When people are capable of some independence they may seek their own housing unit such as an apartment, rather than having just their own room.

**Presence of workers.** A related issue is the design of housing for dependent people whose needs require the presence of workers. The challenge is to incorporate the presence of the staff without diminishing the quality of the inhabited environment. Too often management by staff is given priority in design and, as a result, staff controls the environment. It is important to provide resident adults with as much control over their dwelling as they can sustain, for the dwelling serves the resident not the worker. Also worth noting is the effect of a low-quality environment on both workers and residents. If dependent residents are not provided a dignified and decent place to live, workers are also stigmatized and suffer by having to spend so much time in an undesirable setting.

**Separating buildings from services.** Key to developing an alternative form of support for dependent people is the proposition that we conceptually divorce building design from the provision of social services. In the large traditional institutions, the administrative and social support or social program for dependent people was tied to the institutional form. Today we know that the social program can be handled independently of the housing in various ways depending on the degree of dependence of the resident. Some people are sufficiently independent that they can be served intermittently by visiting staff, as little as once a month or as often as several times a day. Others may need support only during the daytime night. Each of these offers opportunities to have the dependent person in mainstream housing.

If we can architecturally distinguish between the provision of services and the provision of housing, a greater range of opportunities is possible. For instance, we can offer nursing services without necessarily providing nursing homes. We can create a social group by providing social programs independent of a residence without necessarily having a group home. Although the costs of hospitalization have allowed us to consider the delivery of services outside the hospital, we do not yet have a clear mandate for such delivery as a central rather than a subsidiary service. Whether helping people who have been injured in their existing residences, or developing appropriate services for people with mental illness or developmental disabilities, the provision of service without walls is key to the development of a new form of care that can replace the traditional institution. Today in the United States,
under certain circumstances, governmental financial support can be provided directly to individuals who can select the service the best provider available. The establishment of such “waivered” services for certain groups is a step in the direction of empowering the recipient and more flexibly directing services to needs.

**Individual and Group autonomy.** Another factor in the design of housing is the need to provide group and individual autonomy for residents. Even though control or supervision by nonresidents may be a necessary component of many buildings, in a democratic society, buildings should provide for the development of individual and community identity. When people have physical, cognitive or ethical limitations, their need for community and individual identity is no less strong, though their abilities to provide these for themselves may be reduced compared to other people. Thus, the provision opportunities to individuals with limitations may be even more important than for the more mainstream population. The new institution needs to extend the concept of order to accommodate the “disorder” of inhabitation. One approach to achieving this, as a way of providing reciprocity between staff and residents, is to develop at least some territories of inhabitation that can be controlled by the residents individually and collectively, rather than by the institution and the staff. These territories should be designed and managed so that residents easily appropriate them. Territories and social areas could be allocated to groups with clear delineation between them and between them and institutional territories. Additionally, residents could play a role in redesigning or furnishing the environment.

**Relation to community.** The traditional institution has been a “complete” and independent community, intentionally separated from the outside world. There was little need for residents to interact with the context outside. Isolation from the community was one of the primary reasons that de-institutionalization was initiated- to locate residences in a community setting. Even when residences are in a community setting, however, it can be a great challenge for dependent people to participate in the community outside the residence. Certainly living in a “normal” residence where the exigencies of daily life require that you shop for food, purchase personal items, and go to the movies tends to support such interaction. But, while siting and building design can contribute to a building being open to the community, social programs may need to further encourage development of community among the building inhabitants as well as supporting participation in community outside.

**Minimizing “institutional” aspects of buildings.** For certain temporary or rehabilitative purposes, it may be appropriate to house large numbers of people together (dormitories, barracks, hotels, hospitals), in which case it is desirable to minimize certain negative institutional effects associated with large-scale construction. Furthermore, in nonresidential settings (offices, classrooms, childcare facilities), there may be a value in minimizing these characteristics as well. To support the individual and group autonomy discussed above, physical design should link small territorial groupings of individual areas to an associated gathering space visually open to circulation paths used by all, thus permitting, but not requiring, people to have regular contact with other building inhabitants. Another prime consideration is the social program. Such places do not have to be run like traditional institutions, which emphasize control and supervision by staff and deny development of individual and community identity. The social program can support individual autonomy, choice and control, as well as formation of social groups for purposeful activity.

**Stigma.** The problem of stigma is yet another challenge for dependent people. By applying the principle of supranormalism discussed in Chapter 3, a better than average quality of environment can enable society at large as well as potentially stigmatized people to reinterpret their status. Environments should stress the domestic values of comfort and attractiveness and individual choice rather than accepting minimum standards for construction, economics of scale that lead to uniform and monotonous environments and emphasis on durability and easy maintenance,. Whatever environmental supports and
prosthetic adjustments are needed would be designed to fit into a residential context rather than to contrast with it. A commode that has the color of a chair rather than the color of a toilet can still function effectively. Hospital beds can more closely resemble domestic ones. Reducing or even eliminating stigma, and providing environments that support the abilities of dependent people will encourage them to develop new skills that they may not have developed before, and thereby can significantly enhance their lives.

BEYOND INSTITUTION AND HOME

Until this chapter, we have used the institution-home dichotomy in a restricted way, defining home as positive and institution as negative. This oversimplification served a specific purpose, that of clarifying why certain settings may not function well as places of permanent habitation. However, the limitations of that dichotomy must be acknowledged. Living in a house will not necessarily lead to good living conditions, nor will living in an institution necessarily lead to bad ones.

When institutions are needed to serve social purposes, they do not have to utilize the top-down political structures as traditional institutions have. They do not have to operate in large buildings with many inhabitants. They can support rather than impede the creation of informal social groups within their body. They can create a situation in which individuals are valued, not just for their institutional role, but for their personal contributions. They can be structured so that the individual controls a territory and can express his/her own identity as individuals and as members of a social group permitting choice to participate or retreat. They can support communication between community members as well as from community leaders.

But the challenge will be to create physical forms that support these new forms of institutional life. We have presented one approach to identifying alternative forms, looking at the ordinary residence for alternative spatial structures. There are undoubtedly other, equally potent, sources. Here we have asked what values lie at the base of the concepts of institution and home and how these are manifest in architectural form. This is not an argument to make nonresidential environments "homelike", because there is a value in being able to discriminate between domestic and other places. Rather we have tried to use the home setting as an analogue. We have tried to understand those principles that make the house habitable, and then to apply those principles to other places.

To eliminate the stigma associated with institutions, new residential settings may need new names. Previously, we have tended to link social structure of the institution and the services provided with the physical design. If we start from a different premise, such as that of providing a “normal house” for dependent people to live in, we are forced to develop a different service structure. Instead of centralized services, we may offer distributed services. Institutions are not necessarily linked to buildings. By considering service and architectural setting as discrete we can derive new ways of living that may create less stigma and provide greater choice and autonomy to residents.
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Appendix 1

Scientific Description of Research
Appendix 1A
Research Methodology Phase 1

RESEARCH METHODOLOGY: PHASE I

The purpose of the Phase 1 study, initiated in 1981 and completed in 1984, was to develop guidelines for the design of housing for developmentally disabled adults as close as possible to mainstream housing. We decided to study a variety of residences to understand the overall parameters of the present housing, and to see what seemed to work best for residents and staff. There were two parts to the project. The first part studied the physical arrangement, appearance and use of 4 residences for developmentally disabled adults and then studied the physical arrangement and appearance of 6 residences for non-disabled people. It resulted in design guidelines in the form of oppositional principles, and a checklist assessment measure for institutionality and homeliness. The second part investigated the degree of homeliness and institutionality of the settings for disabled adults, investigated the whether the images of all 10 settings fell on a continuum between homeliness and institutionality, and also tested the opposition between the drawings used in the design guidelines.

The team working on the architectural part of the project consisted of myself as Principal Investigator, Travis Thompson as Co-Investigator, Evelyn Franklin as consultant and research assistants Paul Emmons, Myles Graff, and Rita Engenmey. Richard L. Laffin drew the illustrations for the design principles.

Phase 1: Part 1

Subjects. Part 1 began with a study of 4 contrasting residences, all housing severely and profoundly disabled men and women: a 16-bed remodeled ward at a large state institution in a rural setting (80-bed building), a 80-bed dormitory in an urban context, a 5-unit suburban apartment-style group home and a suburban group home in a modified single family dwelling serving 8 residents. In order to discover whether the degrees of difference were anomalies of residences for developmentally disabled people or were more widespread, we then studied six additional settings for non-disabled people: a 483-bed urban hospital, a 100 person urban dormitory, 2 apartments in 6-unit walk-up apartment buildings (one urban one suburban), and 2 detached single family dwellings housing 4 and 2 people respectively (one urban one suburban). All settings were in a metropolitan area with a population of 2.5 million.

Methodology

Photography. The physical character of all of the residences was documented using photography (35 mm Ektachrome 100 ASA film) and floor plans. For the housing for developmentally disabled people we conducted interviews with 1 administrator and 2 staff of each residence and observed resident behavior.

Interviews. For each residence one administrator and 2 staff were asked the same 17 questions. The interview covered (1) program goals, (2) definition of normalization (3) how normalization was achieved in their program (4-5) how the physical design and layout of the facility contributed to or impeded to normalization and (6-17) details about the functioning of the program in the facility (the ideal design, policies about visitors, policies about resident independence, handing of clients with behavior problems, etc.). The interview ended with a tour.
of the facility by each person, providing the opportunity to identify particular design features that illustrated his/her perspective.

Observation. Observers followed a mapping protocol for resident behavior that accounted for place, activity and type of interaction with others. 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 completed, for a total of 8-12 hours of observation at each setting.

Findings

Our initial analysis of the settings physical character revealed that there were very great differences in the physical design between the 4 residences for developmentally disabled adults that we characterized as degrees of institutionality or homeliness. We found similar differences in the physical characteristics of the settings for non-disabled people. Both the settings for disabled people and the settings for no-disabled people seemed to fall on a continuum between institutionality and homeliness. We were able to characterize detailed differences in bedrooms and living rooms using a three-point scale of institutionality and homeliness.

Our 8-12 hours of observation of the behavior of the disabled people and staff at each setting, while remaining at the informal level, indicated that the less institutional the character of the setting the more normal the behavior of the residents.

For the design guidelines we initially created a rough 3-part matrix description that identified degrees of differences in institutionality and home-likeness for different aspects of exterior and interior design. With such a small sample, and realizing that a less complicated approach that would be more accessible to designers, we then developed a set of design principles presenting the distinction as an opposition between institution and home. These principles were presented as (1) a paired set of images to present a holistic description of the settings, (2) paired annotations to describe the hypothesized relation between setting and behavior and (3) individual items in the form of a checklist to provide an atomistic objective description that could be developed in further research.

Phase 1, Part 2

Part 2 was designed (1) to assess the homeliness and institutionality of the 6 residences for developmentally disabled people, (2) to test whether slide images of the 10 settings fell into a continuum between institution and home, and (3) to test whether the drawings in the design principles used to describe the institutional and homelike polarities were perceived as opposites.

Methodology

Visual Cues. Participants evaluated a total of 174 slides: 110 slides of settings and 64 slides of line drawings. The 110 slides of settings represented 11 images for each of the 10 settings being studied: Exterior, Living Room, Kitchen, Dining Room, Family Room, 2 Bedrooms, Bathroom, Corridor, Entryway, Stair. No people were present in the images. Both the slides of settings and the 64 slides of the line drawings were on 35 mm Ektachrome, 100 ASA film and they were presented interspersed with each other in random order.

Participants. The 29 undergraduate students who evaluated the slides were students in an introductory psychology course who were awarded bonus points toward their final course grade for participating in such research. They had been informed that there was no relation between...
their ratings of the images and the assignment of points toward their final course grade. Excluded from this study were those with coursework in mental retardation, those with a family member with retardation, those who had worked in a facility for people with retardation, and those with training in architecture.

**Viewing conditions.** Groups of approximately 6 students (range 4-10 students) viewed slide images projected on a 1-meter square screen in a dimly lit room. Two text images were shown first, and then the 214 images were projected for 10 seconds and advanced automatically to the next slide. No conversation was permitted during the rating period.

**Rating.** The participants were asked to rate the homeliness or institutional quality of each slide image. They recorded evaluations on rating sheets by circling a number from 1 to 5 with 1 being under the word *homelike* and 5 being over the word *institutional*.

### Findings

The evaluation of the photographs indicated that the mean ratings for residences fell on a continuum between home and institution. The most homelike residence was a single family dwelling with a mean rating of 1.3 and the most institutional residence was an urban hospital with mean rating of 4.75. The four residences for developmentally disabled lay relatively evenly distributed along the continuum. The continuum for the residences for adults with developmental disabilities represented only a slightly smaller range falling between 1.8 for a group home in an expanded suburban single family house and 4.5 for an 80-person building on a campus at a state institution. There was a high level of consistency within each setting, with slides within settings being correlated at Spearman Rank correlation, \( r = .95 \).

The student assessments showed a high level of correlation between the drawing pairs and the pole they illustrated (overall \( p \leq 0.05 \)). Of the drawing pairs 84%, or 27 pairs, were found to significantly represent opposites (\( p \leq .001 \) using a Student T-test P). Two pairs were found to be opposite with \( p \leq .007 \), and an additional 3 pairs (all plans) were not rated as opposites. These last plan drawings were redrawn to include scaled objects such as furniture (See Appendix 2B for the specific ratings). Plans are difficult for ordinary people to read and thus difficult to evaluate, but should be understandable to designers.

Based on the observed differences between the settings we created the design principles for normalization presented in Chapter 5, along with the Checklist of Architectural Variables shown in Appendix 2A.
Appendix 1B
Research Methodology Phase 2

The second phase of this work was structured to challenge the first. With an emphasis on description of architecture it explores the perception of housing (here broadly defined to include both the physical reception of information, and cognition, the mental processing of it) relative to the physical forms of the architecture. We utilized several alternative ways to study perceptions as well as several ways to document architectural form.

For the study of perception we were interested to see: (1) whether the continuum we had identified would be validated, (2) whether the two terms would be considered opposite to each other, (3) whether others would spontaneously use the terminology we had selected or whether they would ascribe different, perhaps more appropriate terminology, and (4) whether other types of categories would emerge.

For the study of the physical characteristics of setting we sought (1) to validate the checklist items that we hypothesized accounted for institutionality and homeliness in Phase I study of the physical environment, and (2) to be able to identify in a more complete way the architectural variables that might account for these characteristics in residences.

Because the checklist of architectural attributes was based upon our observations, inevitably limited by our biases and expectations, we were interested in developing a technique of “complete description.” Theoretically, such description would document architectural setting so thoroughly and so completely that we could discover key variables by comparing attributes to behaviors, either perceptions of settings or behavior within settings. That would allow us to make direct correlation between behaviors and architectural variables, rather than having to rely on our skills of observation to make hypotheses. In contrast to descriptions based on the perception of built form we sought to describe architecture from the perspective of its design, using the conceptual approach to architecture1. This interest led to the inventory measure, based on the concept of descriptive architectural specification (different from the modern approach of performance specification, which does not describe physical attributes of items, but instead describes the criteria they must meet). In theory, at least, specifications completely describe the materials, equipment and hardware that comprise a building. We sought to develop a measure that could describe all the physical attributes that might possibly be in any building.

Phase II, lasting from 1984 to 1986 (with analysis of data continuing through 2000), involved a complex organization of people. My overall role was Principal Investigator. During Part A, which was funded by the National Endowment for the Arts and various departments within the University of Minnesota, I organized a team of faculty advisers with whom I met occasionally at different phases of the project. The advising team consisted of: Travis Thompson, Psychology; Kinley Larnitz, Statistics, Harvey Sarles, Anthropology, Dwayne Thorbeek, Architecture, Evelyn Franklin, Design, Housing and Apparel, Donald McTavish.

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1 Conception as I apply it here is parallel to Lefebvre’s representations of space. My use of the terms conception, perception and reception of architecture (1989/1986) derived from an understanding space as a cultural artifact that is made (conceived), understood (perceived) and used (received). My perspective has some parallels to that developed by Lefebvre (1991/1974), especially pages 33-53) in which space is understood as a production. He describes space as being produced in three ways: through spatial practice (parallel to reception), by means of representations of space (parallel to conception) and through representational space (parallel to perception).
(Sociology) and Paul Emmons, then, Architectural Intern. Research Assistants played key roles. Myles Graff served as research coordinator. Kurt Dubbe, Ben Black, Jim Schulmann, Dave Kjellson and Darcy Ferrill and Jill Fursteneau formed the two 3-person research teams that documented the 29 settings. Jan Greenberg did the statistical analyses. Maria Estella Huber, Deborah Steifel, and Jill Fursteneau drew plans and elevations. Jim Schulman and Anthony Albrecht were responsible for the literature review.

Part B, took place between 1985 and 1988 and was funded by the University of Minnesota Graduate School and the Department of Architecture, Travis Thompson was Co-Investigator. Research Assistants Julio Bermudez, who took primary responsibility for literature review and analyzing the data on architectural setting, and Michelle Johannes whose primary responsibility was the research involving human subjects, were important contributors to theoretical issues. Jan Greenburg and Joav Lavee provided statistical assistance.

Data collection for Part C took place in 1986 using images from Phase I. Travis Thompson was Principal Investigator, I was Co-Investigator, and Myles Graff and Rita Ingenmey served as Research Assistants. This investigation used data from Phase I to test measures developed based on Phase II data.

For Part D, I was again Principal Investigator and Travis Thompson was Co-Investigator. Research fellows Julio Bermudez, and Rita Ingenmey being responsible for data gathering, data analysis and refinement of measures. The four of us also developed conceptual ideas. Consultants Joav Lavee, Nadav Kassuto, (and during the second part, Brad Dougdale and Caroline Cochran) provided statistical analyses. Taking place during 1987-89 and again in 1990-92, this work was largely funded by the Minnesota Center for Research on Developmental Disabilities and by the University of Minnesota Graduate School. This same group of researchers was involved in Part E, along with colleague, John Klensin of the Massachusetts Institute of Technology who participated in analysis of the physical architectural variables. Part E occurred during 1988-90 and was funded by the American Institute of Architects Committee on Environments for Health, as well as a University of Minnesota Bush Sabbatical Fellowship.

The College of Architecture and Landscape Architecture at the University of Minnesota funded Part F during 1990-94. Research Assistants Carlos Naranjo, Hank Liu, Keith Nicholls, and Tom Westbrook assisted with drawing of plans, space syntax analysis, and creation of diagrams and illustrations to explain key concepts.

**Part A**

The purpose of this part of the investigation was to document a range of housing settings so that they could be analyzed in a variety of ways.

**Subjects.** Twenty-nine buildings used for housing were documented in ten categories: 3 hospitals, 3 nursing homes, 4 dormitories, 1 rooming house, 4 group homes, 3 mid-rise apartment buildings, 3 public housing projects (consisting of a mid-rise apartment building, a walk-up apartment building and a row house), 2 walk-up apartment buildings, 1 row house and 5 single-family dwellings. The research team identified the nine kinds of housing as in three broad types, buildings that house mainstream people, buildings that house disabled people, publicly owned buildings that house low-income people. The subcontractor hired to randomly select the buildings identified the sample using lists of housing from various state, city and private sources. Although we had requested and received thirty-two buildings, three of the selected settings were unable to be more than minimally documented (one hospital, one row house and one rooming house).
Methodology. The housing was documented using a standard protocol that included photography, videotape, measured drawings, the architectural checklist of attributes from the previous study, an inventory of architectural elements and global measures (subjective evaluations by each researcher). Documented aspects of the settings included exterior and context as well as generally 10 interior spaces representing entry, corridor, stairway, living room, dining room, kitchen, 2 bedrooms, bath and elevator. Since all the settings did not have all of these types of interior spaces, there was some variation in the rooms documented (if buildings were multiple unit dwellings, one or typical apartment was documented; if buildings housed occupants in rooms rather than apartments, two rooms were documented; if rooms were both double and single, one of each was documented). Additionally interviews were conducted with one resident of each of 16 buildings.

We formed two 3- student research teams and both teams conducted a test documentation of a University dormitory not in the sample. The documentation of the two teams was compared and protocol refined in order to standardize description procedures.

Prior to the team documentation, one researcher located all of the buildings and photographed the exterior. This photograph was used to create a site card that listed the building address, located the building on the city map, and provided the name and telephone number of the contact person. On that card there was space to list the date of the visit and the team members’ initials. Teams were provided a package of materials for each site visit that included a Fieldwork Set-up Protocol and a Fieldwork Breakdown Protocol, as well as protocols for each type of documentation, and the necessary materials.

Site Measurement. Using 100-foot tape measures researchers recorded site dimensions. They documented site features and interior spaces on grid paper. On the site plan they noted building footprint, dimensions, site attributes and the building relation to adjacent structures. In addition to placement of walls and doors, researchers documented the dimensions of interior spaces, furniture, equipment and lighting on the floor plans. This permitted later development of hard-line floor plans and also checking and comparing data on plans with inventories and photographs of setting.

Photography. Researchers photographed buildings with a 35mm camera using 28-mm lens, tripod, and 400 ASA Ektachrome film. Control for the amount of light in each exposure was made through the use of a light meter. No filters were used to compensate for fluorescent lighting. After the first shot of the site card, the building exterior was documented in its street context and from all sides. The photography protocol called for each interior space to be documented beginning with the entrance. Each interior space was recorded with 1-4 slides depending upon the size and complexity of the spaces (for instance living areas and bedrooms were documented with four slides, while bathrooms and entries were generally documented with 2). Location of photography positions was placed on a rough plan of interior spaces.

Videotape. With a hand-held video camera on 3/4” color videotape, the photographer recorded the sequential arrangement of spaces that a visitor would typically experience. After recording the site card, the exterior of the building was photographed starting from a typical arrival position 150 feet from the entry door. Various pans were taken, including one of the building context from the entrance door. The interior of the building was documented in successive sequence from public to private spaces.

Architectural Checklist. Researchers assessed building exteriors and interiors using the Robinson/Emmons/Graff Architectural Checklist developed in Phase 1 (See Appendix 2A). The analysis was to be a comparison pared across buildings and to other measures so that the checklist measure could be validated and refined.
Inventory of Elements. As mentioned above, we developed this using an approach similar to a descriptive architectural specification in which all attributes of every element to be inserted in the design is catalogued and described. The Preliminary Architectural Inventory Measure (see Appendix 3B) identified 375-approximately 700 variables that could be accounted for in each generalized interior space, and approximately 700 variables for the exterior, for a total of a minimum of 4450 variables per building. Within the interior spaces, boundary conditions were described (wall, ceiling, floor, moldings, doors, etc.), surface materials were documented, furnishings and objects were identified and described as is lighting and other equipment. The package of materials for each fieldwork session contained the inventory. Research Assistants filled out the inventory using pencil.

The inventory was divided into two sections. The first section, entitled “Context Features and Building Features,” assessed the buildings’ exterior. We documented the following named spaces for exteriors, context and relation to the neighboring buildings, front yard, side yard, and back yard.

The second part of the measure described each room by type: entry, corridor, stair, living room (including lounge, recreation room, game room, etc.), dining room, kitchen, bedroom, bathroom, laundry and miscellaneous interior spaces. Where more than one such space was found, up to three additional spaces of that type were documented. The same interior inventory measure was used for all spaces, but was printed on different colors for each type of room to minimize confusion. The packet of materials contained two copies for each interior space, with an additional copy for bedrooms, bathrooms and living rooms. The interior inventory had sections entitled Global Measures, Adjacencies, Room Materials and Finishes, Door, Windows, Lighting, Utilities (Heating, Ventilating, Air Conditioning, Plumbing, Electrical), Fixed Furnishing, Non-Fixed Furnishing: Seating, Non-Fixed Furnishing: Bed, Non-Fixed Furnishing: Other, Equipment, Decorations, Plantings, Trash Container, Clock, Personal Objects. Each section of the interior inventory was structured as a matrix with possible variables listed along the top and spaces beneath for examples to be described. It was anticipated, for example, that each door or piece of furniture would be described in a different row. Additionally, there were spaces to list for variables that hadn’t been predicted. The exterior inventory was simply a list of attributes with an associated list of different possible variables. The intention was to structure the data to permit analysis using cluster techniques. Additionally, we expected to compare these data both to the architectural checklist data and to the studies of the perceived character of the slides of the settings. We anticipated that the inventory data would provide physical evidence to assess the institution-home polarity, and thereby refine the checklist instrument. It was also anticipated that cluster analysis of the inventory data would uncover relationships other than the polarity being studied. Finally we expected to use the inventory data to refine the Robinson/Ingenmey/Graff/Thompson Living Room Measure. Each researcher recorded responses to the yard, façade and interior spaces of residences using a 5-point Likert scale for the following characteristics: home-like to institutional, pleasantness of temperature, odor, noise, overall pleasantness, degree of order in appearance. These data were not analyzed.

Interviews. Open-ended questions asked residents to characterize their residences, and thereby to develop subjective views of the housing. Additionally we asked a few closed, demographic questions. These subjective descriptions were intended to provide a more qualitative understanding of the settings.
Part B

We conducted two studies using images of the documented housing. The first study largely replicated the study from Phase 1: psychology students evaluated slides of settings to see if they would be able to rate this housing using a 5-point Likert scale, and to see whether the housing evaluations would fall along a continuum. The semantic differential scale was altered somewhat to use the terms institution-like rather than institutional in order to create a more parallel opposition to home-like. The second study was a multiple sort test to discover how students categorized the housing and what terms they used to characterize it. We were especially interested to find what names participants would give to their categories.

Methodology
Selection of Students. The 77 students who evaluated the slides and the separate group of 34 students who completed the free sort were members of an introductory psychology course who received bonus points for their participation. They were required to have English as their first language and to have no vision impairment.

Slides. Twenty-eight buildings were represented by 180 color slides. Exteriors, living rooms, bedrooms and bathrooms were selected for each building represented. In addition other slides were selected with regard to ambiguity and clarity of cues for institution and home. No people were present in any of the photographs.

Student Evaluation of Slides. As the study in Phase 1, slides were randomly arranged and projected on a 1-meter square screen using a Kodak Carousel projector in a dimly illuminated room to a small group of students (approximately 10, range 6 to 15). They were given a recording sheet on which they were instructed to print their names and record their ratings. They were asked to fill out a personal data form that addressed demographic information including their experiences with institutional settings. Then they were asked to rate the home-likeness or institutional quality of each slide by circling a number from 1 to 5 with the word home-like above the 1 and institution-like above the 5. No further instructions were given. Using an automatic timing device each slide was projected for 8 seconds before advancing to the next. No conversation was permitted during the period of rating. The session lasted one hour and fifteen minutes.

Photographs. Thirty-five black and white images were made from slides used in the evaluation, above. Eight represented the exteriors, one of each type of housing (dormitory, group home, hospital, mid-rise apartment building, rooming house, single family home, public housing project-row house-, and walk-up apartment). The 27 remaining images are of various rooms selected to represent key differences between the housing types (bathroom, bedroom, dining room, hallway, kitchen, and living room/lounge). The photographs were numbered from one to thirty-five on the backs and placed in the same initial random order for each subject. Ratings were analyzed descriptively for each slide, each room, each room type within each building type, each building, and each building type. Ratings were also evaluated using factor analysis to uncover basic dimensions for categorization.

Multiple Sort Study. Participants were each given the set of 35 photographs and a 7-page experiment booklet and given verbal instructions to answer questions in the order presented before looking ahead to the next question. Written in large type, the booklet consisted of 3/4 page of instructions followed by 6 pages formatted to cue responses for 4 sorts. The instructions informed the participants that “There are no right or wrong answers, but that an answer is right if it is true for you.” The first question asked them to “please put the photographs in any way that you think makes sense.” Subsequent questions requested the participants to sort the
photographs: into opposite groups, by types of people who would inhabit these settings, and into
groups according to where they would like to live-desirable, acceptable or undesirable. The
form provided space to write several descriptive adjectives for each group of photographs and
for additional open-ended follow-up questions (e.g. “why are these photographs opposite?”
“What about the images made you imagine the kind of people you did?”). The first question was
intended to generate the subjects’ own spontaneous conceptual structure and vocabulary. All the
questions were designed to uncover the types of categories and nomenclature associated with
housing. User categories were compared using tallies and multiple matrix analysis.

Findings

Evaluation of Slides. Mean ratings of individual slide images fell along a continuum between the
two poles institution-like and home-like (see Appendix 4 for slide images and assessments).
Single-family houses, walk-up apartments, rooming houses, group homes and mid-rise
apartments tend to be clustered at the home-like end of the continuum. Nursing homes and
hospitals were ranked at the opposite end. Settings such as dormitories, row houses and public
housing occupy an intermediate position with the difference between them and the more
institutional settings being statistically significant at a level of \( p < .001 \). The difference in mean
ratings of between strongly home-like and moderately home-like is not as extreme but is rather a
continuous gradation. The groupings confirm expectations that subjects are able to differentiate
between home-like and institution-like cues within the settings and that the home-like and
institution-like represent two ends of a dimension of housing that subjects can evaluate with
some degree of quantitative precision.

Additionally, differences in mean ratings between all building types except group homes
and mid-rise apartment buildings, were statistically significant at the \( p < .05 \) level. This suggests
that while some buildings within a building type are rated higher or lower than others,
classification by building type includes a dimension of institution-likeness/home-likeness that
differentiates one type from another.

Study of the ratings by room type showed a correlation between the ratings of living
rooms and the composite ratings of the individual buildings. The ordinal ranking of living rooms
according to mean values for each building type closely corresponds with a similar arrangement
of the means for each of the building types. This correspondence is less pronounced for other
room types, implying that the living room ratings may be a reliable predictor for the aggregate
rating of the whole building, but other spaces may vary somewhat differently.

Room types also varied in terms of the degree of their home-likeness or institution-
likeness. Hallways, stairs, exteriors and bathrooms are typically rated more institution-like than
were kitchens, bedrooms, living rooms or dining rooms. For example, means for kitchens range
from 1.73 (more institution-like) to 4.64 (more home-like) with a grand mean of 3.78. Hallway
means range from 1.09 to 4.112, with grand mean of 2.16. One explanation may be that
hallways, stairs, exteriors and bathrooms tend to lack furniture and generally to be less
personalized than the other spaces.

A rotated factor analysis performed to uncover the basic dimensions underlying the
variables employed in the study produced factors for building exteriors, for living rooms and for
corridors. The five factors that accounted for 56% of the variance in rating building exteriors
were: private dwelling (24%), collective dwelling (13%), building-street relationship (7%),
modern (versus traditional) appearance (6%) and suburban or typical-mid-western-house
appearance (5%). The four factors associated with corridors that accounted for 52% of the
variance were defined path (19%), austerity (15%), public character (10%), and dim light (8%).
Accounting for 43% of the variance associated with living room spaces were intimacy or
coziness (18%), private-ness ((9%), emptiness or spaciousness (6%), non-dwelling-ness (6%), and another factor we couldn’t name (6%).

A comparison of the factors with the checklist, produced associations with checklist items for certain of the variables. Other factors that were not found to be associated with either institutional or homelike attributes were assumed to vary according to different criteria. Those factors that had associations with building exteriors: private dwelling (14 home-like items) and collective dwelling (12 institutional items). Corridor factors associated with checklist items were: defined path (3 home-like items and 1 institutional item), austerity (9 institutional items) and public character (7 institutional items). Factors of living rooms that were associated with checklist items were: intimacy/coziness (14 home-like items), private-ness (the same 14 home-like items), and non-dwelling-ness (11 institutional items and 2 homelike items). We were intrigued that the two factors intimacy/coziness and private-ness had identical checklist items associated with them, but were distinct factors. We concluded that perhaps there were differences between them not related to distinctions between institution and home (or at least distinctions that we had been able to identify). The main differences that we observed between the images most highly associated with the two living room factors intimacy and private-ness were that the slides linked to private-ness were more formal than those linked to intimacy/coziness.

Comparative study of the rotated matrix assessments of images to the evaluations of the actual setting using checklist items offered opportunities to refine the checklist through previously unidentified details. For instance we noticed that although most of the slides associated with the term non-dwelling-ness were of spaces over 300 square feet in size, a few images were of much smaller spaces. These images had powerful institutional cues some of which were on the checklist (exit signs and push-bar exit doors) but others of which were not, such as ceiling ventilator, wall-mounted television, wall-mounted signs, and stacking or folding chairs. These we could add to later versions of measures. This also raised questions about the different kinds of kinds of variability that affected perceived qualities and the relative importance of different variables.

Multiple Sort Study. We first analyzed the free sort data using analysis of matrices created of participant categories, category names and descriptors. These revealed six basic kinds of category: room type, building type, type of activity, furniture or environmental detail, quality of place and kind of occupant. However, the structuring of the categories indicated that for most participants (31 of 34) the most powerful categorization fell along three lines, room type, building type and to a lesser extent, residence/non-residence. Activities, furniture and environmental detail were closely allied with space types. Kind of occupant was closely allied with building type.

While rarely using completely “pure” categories, participants employed five general approaches to categorization: (1) 13 categorized image by interior space (with exteriors of buildings grouped together in a special category), (2) 7 grouped photos by building type (interiors and exteriors together in groups), (3) 8 categorized images by a combination of room type (for interiors) and building type (for exteriors), (4) 2 organized photographs by their residential quality (residence versus non-residence or residential versus public place), and (5) 4 participants categorized the images using various idiosyncratic and in some cases mixed approaches (e.g. whether spaces had windows, whether spaces were active or passive, by types of resident, qualities of spaces, furniture types). In architecture building type is a primary organizing structure, with interior space types as a secondary category.

It was useful to learn that architects’ bias toward the use of building type as a conceptual structure for built environments is not necessarily shared by lay people. In the context of a large
number of interior slides, interior space type can be a more powerful or equally powerful organizing structure. The categorizations also revealed that for many people activities, qualities and furniture provide important cues for understanding places.

In the free sort we were also interested in how people might spontaneously use the terms institution and home. Twenty-eight of the 34 participants grouped images of single-family residences together, with 7 calling the category home, the most common name for that category. The term institution was applied in only 3 instances. However, 10 participants used categories that implied the institution/home distinction, employing terms such as public or non-residential for the institutional polarity and house, private or residential for the other.

Images of interiors, (26 of the 35 images) were rarely described by building type, but instead were designated by room type, indicating that the basic type for building interiors is room, whereas building exteriors are classified by building type name. All of these were seen by a few participants as being in what seems to be a superordinate category of home/non-home. Building type was an important category nonetheless. Seven of 34 students distinguished the images primarily by building type and another 8 used building type with interior room type to group the images.

Although the building type categories were not consistently applied we did find that there were four building type names designated 8 or more times. These are: house, hospital, apartment building and dormitory. The hypothesis that individual buildings are identifiable as similar is further supported by the way that buildings of a given type were evaluated along the institution home continuum. There was a high level of consistency in the evaluations of buildings of a given type. On a five-point Likert scale with 1.00 being institution-like and 5.0 being home-like, ratings and standard deviations for each building type (designated with researcher names) are as follows: Dormitories (4 buildings) 2.75 [SD .39]; Group Homes (4 buildings) 3.3 [SD .43]; Hospitals (3 buildings) 1.6 [SD .30]; Mid-High-Rise Apartments (3 buildings) 3.24 [SD .40]; Nursing Homes (2 buildings) 1.39 [SD .34]; Public Housing (mixed category 3 buildings) 3.06 [SD .56]; Rooming Houses (2 buildings) 3.36 [SD .65]; Single Family Dwellings (5 buildings) 4.43 [SD .39]; Townhouses (1 building) 2.92 [SD .69]; Walk-up Apartments (2 buildings) 3.98 [SD .53].

The room names assigned to groups of interior images were not completely consistent. The most agreed upon names for rooms were bedroom, bathroom hallway, kitchen, dining room, and living room. The category Living room was sometimes differentiated from waiting rooms or lobbies, and sometimes included them. When the names lounge or sitting room were used they generally encompassed both living and waiting rooms. But what is especially interesting is that participants most commonly categorized interiors of apartments as home, while they classified exteriors as institutional or grouped them inconsistently. This suggesting that it is not the units themselves, but the relation between the units that generates the perception of apartment buildings as being somewhat institutional.

It is significant that 31 of the 34 students classified the photographs by room or building type, and only 4 used another approach. These findings suggest that although they are not the

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2This seems to follow Tversky and Hemenway's findings that inside and outside were major categories. Their findings also suggested that superordinate categories for environmental scenes are room type, building type as well as landscape type, see their discussion and Table 3 (1983:136-140).

3Other names for this category were residence, home, and single family dwelling.

4Also identified as building types were nursing home, group home, condo, restaurant, club, fraternity and sorority, hotel, high-rise. Names used more than once as categories were hotel/restaurant (2), business (3), institution (3), and high-rise (2). Only one participant used group home, although the category was implied by one other who located the photograph of the group home exterior in a category "special housing for a certain group".
only categories for classifying images of buildings, building types and room types are powerful and consistent cultural categories. The categories attributed most frequently to the groups of photographs are room and building names. Apparently because of the inclusion of both building interiors and building exteriors in the photographs to be sorted, most students attempted to place images into one, or the other, or both of the two types of spaces. Thus the categories room and building can be understood to be superordinate to the basic types (being the named rooms and buildings).

The two superordinate categories building and room may be applied as parallel, or building may be applied as superordinate to rooms when rooms are understood to be contained by buildings. When categorizing the images in terms of room, the parallel nature of the categories is implied by the need to lump the remainder, exterior images, into a group with a name such as "Buildings". In contrast, the 7 students who used building type as the predominate category mode were able to subsume all of the room images into the building categories. Thus, while individual building and room types can be seen as basic categories, building type and room type can be understood as superordinate categories, with building sometimes being superordinate to room.

There was also frequent subdivision of rooms and buildings into groups representing public/nonresidential and private/residential (10 cases), or what we are here calling institutional and home-like. Additionally, participants mentioned of the term "institutional" (4 cases) to contrast with home which suggests that institution and home are also superordinate categories, significant, and overlapping with, although less powerful than building and room type.

In the sort into oppositions we were more explicitly testing the hypothesized polarity. For this question 23 of the 34 participants (67%) consistently categorized 15 images (rated as home-like in the earlier study) as opposite to 13 others (rated as institution-like). The remaining 7 images were inconsistently grouped. The names ascribed to the first group varied, but the terms home or home-like were used by 9 of the students for these images. The term institution was used by 3 people (a different 3 than had used the term in the free sort). This suggests that while the opposition between home and institutional settings was spontaneously generated, and apparently shared by the majority of participants in the study, and while a sizable group saw home as characterizing one of the poles, there was no agreed-upon terminology for the names to represent the poles. The names given in the 23 cases were variants that could be grouped as Home/ Non-home (9 cases), Private/Public (4), Impersonal/Personal (4), Institutions/Homes (3), Hospital/Non-hospital (2) and Single-Person-Residence/Many-Person-Residences (1).

Relative to building type, it is also important that home-like is predominantly associated with one building type, the house (although clearly the abstract notion of home has application to others as well and also to larger scale settings, like cities and countries), while institution is associated with many kinds of building types. This may well contribute to the unity and power of the category home and concomitantly with the lesser power of the term institution. Also, building type seems to be differentiated by plan organization, or room arrangement. Room arrangements are made by structures of support and are experienced by moving through space and are not fully comprehensible from photographs of interiors. Room type, on the contrary, is more highly differentiated by furnishings, highly visible in room interiors. This may affect the ability to perceive building type in images of room, thus impairing the ability to identify building type even if it were a category superordinate to room.
Part C

Part C was designed to develop a measure with a 5-point scale for one type of interior space. We selected the living room to evaluate since it had been found to be the most representative interior space in Part B. Additionally, it is the most accessible space in a residence and affects both the first impression of a residence and the daily living patterns. This study used data from the Phase I investigation of ten residences.

Methodology
The Robinson/Ingenmey/Graff/Thompson Living Room Measure. Using the 27 checklist items found in Part B to be correlated with intimacy/coziness, privacy-ness and non-dwelling-ness; we developed an ordinal measure of architectural attributes (See Appendix 3A). Continuous measures (e.g. room dimensions) were converted into ordinal scores. Discontinuous measures (e.g. fixed, versus moveable lighting) were categorized as ranking from one to three (lighting position was described using several alternatives, incorporating possible mixes of floor lighting, wall-mounted lighting and ceiling mounted lighting).

Scoring of Living Room Slides. Eight slides of living rooms and lounges that had been evaluated by the students in Phase 1 were placed in random order. Four of the slides were images of the residences for people with developmental disabilities, and four were from the settings that primarily served people without handicaps (the hospital, the dormitory, the six-unit apartment building and the single-family dwelling). Experienced architects scored slides for each attribute using the 5-point Likert scale with 1, most home-like and 5 most institutional. We compared the mean home-likeness scores of settings made by the architects with ratings of same slides by the undergraduate students.

Findings
Means for each living room were calculated using the architect’s score for all 27 architectural attributes. These mean home-likeness scores for the architectural attributes of living rooms were highly correlated with mean overall subjective ratings by the students for all living room slides at r = .89. Additionally, the average living room scores were also correlated with the overall number of residents in the building they were part of at r = .66, but were poorly correlated with the number of residents in a given living unit r = .22. Ten living room attributes correlated .62 to .90 with subjective ratings of home-likeness, whereas the relation of the next 10 most highly correlated attributes varied from r = .19 to .60. Of the 27 architectural attributes that we identified, 74% were correlated to the student ratings.

Part D

Part D tested two questions: (1) whether institution and home were opposite categories, and how they related to other categories found in the sort study; (2) whether there was a bias in the ordering of slides.

Methodology
Student Evaluation of Slides to Test Categories. Slides rated in this study were the same 180 images used in Student Evaluation of Slides for Part B, and were again randomly arranged. Student raters were selected in the same way. Slides were presented in the same format except that rating procedure was different. This time, 30 participants rated the images using independent five-point semantic differentials with descriptors institution-like/not-at-all-institution-like, and home-like/not-at-all-home-like rather than using, as previously institution-like/home-like. Also, all slides were rated using the descriptors desirable and not-at-all-
desirable. Additionally, students rated slides using different descriptors depending upon the space type. For example, they rated living room slides using as descriptors, expensive/inexpensive and cozy/not-at-all cozy; corridors were rated as endless/not at all endless and bare, not at all bare; and exteriors were rated as modern/not at all modern and public/not at all public. Visual analysis of graphs of mean scores and statistical analysis were used to study the significance of the relations between all of the different qualities including the hypothesized opposition. Ratings of images were also compared to checklist items.

Test of slide order. Since slides in all of the studies up to this time had been presented for evaluation in a single random order for each study, we decided to make sure that the order of the slides had not affected their scores. We made a small study to test this in which we presented 10 slides (selected randomly from the group of 180 slides used in previous Phase II studies) ordered in two different random patterns to two different groups of psychology students. The two evaluations were compared.

Findings
For the independent semantic differential ratings of institutional and home-like, 88% of the images the institution and home ratings were found to be significantly opposite. Opposition existed to a high or moderate level of significance (P ≤ .01) for 64%, to low significance (p ≤ .05) for 24% of the slides, and no statistical significance for 12%. Overall, the opposition is not quite as strong with a significance is at the 0.090 level (See Figure 0.19). The statistical significance of the opposition between institution and home is not nearly as strong as that of, public and private (p = .000). Although institution and home, are terms that in a pragmatic sense can serve as opposites, since study participants were able to evaluate housing using the two terms without any instruction, they were not found to be completely opposed.

The data from the study of slides presented to two different groups of raters in two different random orders indicated no significant difference in the ratings of the slides.

Part E

Part E focused on analyzing the architecture of the settings. This had three aspects: (1) testing the validity of the checklist, a binary evaluative measure (2) improving the inventory measure, a descriptive tool that had been used during the Phase I, Part A descriptive study, and (3) further developing the “Robinson/Ingenmey/Graff/Thompson Living Room Measure,” a detailed 5-point evaluative measure.

Methodology
Architectural Checklist. Because the architectural checklist consisted of binary, paired items, statistical comparison with the ratings of slides for the spaces described was a challenge. Two methods were developed by John Klensin to study the checklist.

The first technique was a form of discriminant analysis. For each designation of homelike (2), the word home was written, and for each designation of institutional (1) the work institution was written. Tallies of all checklist items were prepared with the ratings listed in the order of the mean scores either for the setting, or for the mean scores of the space types represented in the slides. Tallies were also prepared only listing the 5 most homelike settings and the 5 most institutional settings. Degrees of correlation were developed based upon the consistency of the descriptions of these twelve extreme settings in the context of the other evaluations.

The pattern of the intermediate variables was checked to see whether they were very irregular, but if they tended to vary with the 10 extreme cases, items were assessed as follows.
For example if all or most of the institutional settings were described as institutional and all or the most of the homelike settings were described as homelike, the measure was determined to be strongly validated (in Appendix 2 see Checklist items 116, 117, 122). If one extreme was consistent and the overall pattern suggested a continuum (118, 112) the item was evaluated as weakly validated (118-121). If no consistent pattern was exhibited, the item was considered not validated (123). If a pattern was opposite to the institution-home-like the measure was considered invalid (see Appendix 2A for evaluations, ++=highly or moderately validated, √=weakly validated, x=not validated or invalid).

The second technique used to analyze the checklist was cluster analysis. Cluster analysis was carried out using the nearest neighbor approach to discover what kinds of relationships existed between the checklist measures for individual buildings. This was done using all 236 of the checklist variables for the 23 buildings assessed using the checklist, and with checklist items for each of eight areas (exterior, living room hall, stairs, dining room, kitchen, bedroom and bath) within the 23 buildings.

The Inventory of Elements. As described above this descriptive instrument documented the architectural attributes of a particular place with verbal and numerical description of setting. It was an inventory in that it named attributes and it was a specification in its detailed description of materials, configuration, hardware, etc.5

We transcribed the inventory data into a data set that permitted analysis of the rich set of variables. The open-ended character of the Inventory of Elements proved useful in that we were able to identify by name a large number of variables that had not been named in the original inventory. We also identified a numbers of problems with consistency due to the matrix structure we had used, and structures of variation that would permit clearer description. The critique that we developed relative to the inventory of elements led to further research into specification measures and to a new, highly structured descriptive tool, the Architectural Inventory Measure.

Although we were able to transcribe the data into a form that could have been analyzed using the computer technology available at the time, and although we had anticipated that we would study the data using cluster analysis, the very large size of the data set, its complexity, the large numbers of 0 entries (variables not found), and the limited time and funds remaining made such analysis impractical. Instead we limited our investigation to the living room data and analyzed those inventory items hypothesized to be important in the earlier Robinson/Ingenmey/Graff/Thompson Living Room Measure. We generated graphs of variables ordered according to mean ratings of the rooms in which the variables were found. Visual examination of graphs of the rough variables permitted developing hypotheses for combining variables and for assigning quantitative values to attributes such as quantities, materials or types of items. These were then tested to see how closely they approximated the order as the ratings of the living rooms, and revised as necessary. From this analysis we created the Institution-Home Assessment Measure for Living Rooms, a 5-point scaled measure of 32 architectural attributes.

Findings
Based on discriminant analysis of checklist items ordered by mean rating of area, we found that of the 236 checklist items describing the entire building, 193 (or 82%) were found to be valid (Robinson 1986c: 16). Because of the small size of the data set were not able to determine definitively which items were invalid. Additionally, as might be expected, examination of

5Color is the one aspect of environment that was not included in the inventory. Despite its being a very important variable, the impossibility of reliably describing the color of each variable in a simple and efficient manner led us to rule it out as a factor that could be included.
checklist evaluations by setting showed that in general the settings perceived as most institutional have more institutional ratings and fewer homelike ones, whereas those most homelike have the reverse, and the settings perceived in between have increasingly more or less depending upon their overall rating, suggesting a continuum.

But a cluster analysis of the checklist items for all of the 23 measured spaces using mean ratings for each setting derived from 8 areas (exterior, living room, hall, stairs, dining room, kitchen, bedroom, and bath) reveals not a straight continuum, but a tripartite pattern between subgroups: the most home-like settings (S2-G2), the most institutional settings (N2-D3) and a group in between (M2-D1). In this case, the 11 most homelike residences and the 5 institutional residences seem to be relatively closely tied to each other, as do the 7 intermediate residences, but the relatively large distance between the 3 subgroups raises questions about a continuum. The strong relation between the homes supports the hypothesis of a distinct physical category home, and further suggests that the checklist is able to measure qualities associated with home. The subdivided relation between institutions suggests that physically this category is not as unified. The great distance between the home group and the two other building groupings indicates that there are physical differences between institution, home as well as the intermediate group, which may or may not be in a continuum. This may also be due to the measure itself which does not clearly describe the middle condition but is limited to description of the two poles.

If, borrowing loosely from Habraken, but changing the terminology, we differentiate between the spatial relationships of the buildings (supports: Habraken et al 1976), and the building materials, furnishings and decorations (elements: Habraken 1982), as in semiotic analysis (Barthes 1964; Eco 1980; Krampen 1979, and Preziosi 1979a&b) we can distinguish between the elements of spaces and the support or relations between spaces, an explanation for the operation of the hypothesized continuum seems to emerge. In both of the formal descriptions that we used, the checklist and the inventory, measures of support and elements are mixed. When these are separated as in the analysis of the inventory which is developed in Chapter 5, and the analysis of support or syntax which determines the relations between spaces, developed in Chapters 7 and 8, we find that those attributes which measure the elements demonstrate strong evidence of a continuum, but the attributes of support or syntax, show differences which do not seem to fall in a clear continuum.

The Inventory of Elements identified a large number of variables that were transcribed into a data set for further analysis. Constraints discussed above resulted in limiting analysis to a discriminant analysis of living room data. Using these data we revised the Robinson/Graff/Ingnemey/Thompson Living Room Measure to create an evaluative instrument called the Institution-Home Assessment Measure for Living Rooms. The original 27 items were transformed into 32 measures. We did not use the data to uncover previously unobserved items, but instead concentrated on the variables we had found important in Part C. Of the 27 items we determined that we did not have enough consistent data to substantiate one, and did not analyze.

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6We use these terms differently from Habraken et al. To contrast with supports, instead of the term "components" which in their 1976 work is simply related to the building materials, we use the more broadly defined term "elements" as in their later work to also include furniture and decorations. Neither is this use of "supports" and "elements" equivalent to Rapoport's "fixed-feature elements" and "semi-fixed-feature elements" (1982:87-101), since we include among elements the materials that are in the wall as well as the furniture. It may well be that as we develop these ideas further it will be important to separate those items that communicate semantically into Rapoport's fixed-feature and semi-fixed feature elements. The resulting differentiation would then be a triad of supports, elements and furniture, the first two representing fixed-feature elements of setting and the second, semi-fixed feature elements.
the data for five (door type, door lock, doorknob, ceiling height, wall trim and building code specific attributes—fire safety devices). Seven of the original items were restructured to create 11 entirely different measures. The remaining 21 items were developed in greater detail.

Using the data from the Inventory of Elements, we also developed a new descriptive research instrument. The Architectural Inventory Measure was designed for a more systematic, computerized method of gathering and analyzing data. Instead of using a matrix for describing variables, we decided to use a list that would identify each of 1,398 items one by one, thus eliminating the ambiguity of the matrix. The new measure was divided into larger categories that respond to the process of making: Configuration, Materials, Systems and Equipment and Furnishings Individual parts of the measure were structured independently depending on the nature of the variables being described (similar aspects of different parts of the environment such as the material of a plumbing fixture or the material of a bed will not necessarily be found at identical structural levels). This measure combines quantitative and categorical data. The original Inventory of Elements was essentially unstructured (three levels: categories place type, variable type and variable), with the idea that the structure should be discovered rather than imposed. This made it unwieldy. Even though the Architectural Inventory Measure was highly structured, the possibility remained as well to analyze the variables without reference to the existing structure.

**Part F**

At this point we had accumulated a great deal of material about the image of residences and about the details related to the material and elements of the buildings, and we sought to learn more about the between the spaces within them. We turned to the plan.

**Subjects**

Although the smallest buildings had been fully measured in the process of data collection, the medium and large buildings were only partially documented. Furthermore, it turned out to be very difficult to acquire plans. We therefore limited our detailed study a single, most representative, example of each type (see Appendix 5 for plans, elevations, syntax diagrams and numerical analysis of exemplars of building types).

**Methodology**

Floor plans, elevations. We generated floor plans and elevations of a minimum of one of each type of building. Plans and elevations of buildings were drawn at the same scale for comparative purposes. We measured distances between the street and bedrooms for different places, noting locations of different kinds of spaces and barriers between exterior and interior.

Spatial Analysis. From the floor plans we applied a form of gamma analysis of building interiors that identified places by our own rules of space differentiation. If an area was connected with smooth walls, and only differentiated by turning a corner, it was designated as a single space. If an area was continuous, but had a change of ceiling plane, or a wall segment that differentiated two areas, it was defined as two distinct spaces. We defined staircases and elevators as a single vertical space that connected all of the hallways. Visual analysis of syntax diagrams was the primary analytic method. However we also analyzed the diagrams of buildings and residential floors of institutional settings using New Wave version 1.2 provided to us by Bill Hillier, developing numbers to represent connectivity, control value, segregation and depth.

Diagrams and Charts. Using the concept of the privacy or intimacy gradient (Chermayeff and Alexander, 1963; Newman, Newman, 1972; Alexander et al, 1977), we generated charts and diagrams that compared the domains of control for plans and sections of different building types.
Findings

Visual analysis of the scaled drawings of the different settings revealed very great differences in scale of both plans and sections. Linear measures showed an almost five fold difference (4.7) between the horizontal distance from sidewalk to bedroom between the typical single family house (51 feet) and the typical nursing home (244 feet). The similarity of the plans of the single-family houses and the other most home-like residences (e.g. certain group homes, walk-up apartments) was very great. There was far less similarity between the plans of the most institutional buildings, corroborating the evidence from the analysis of checklist items.

Study of diagrams of residences indicated that the three distinct patterns of connection between spaces we had identified were related to certain types of functional relationship. Linear connections were typical of circulation spaces; fan shaped connections typified rooms connected by a shared hall; and a pattern more rare, we found living room, dining room and kitchen spaces all connected in a triangle pattern in some single-family residences and apartments. In the single-family dwellings, these types of spaces provide different kinds of control and access. Linear and fan-shaped spaces provided more control, spaces connected triangularly offered less controlled, easier access. In the single family dwelling, the spaces related to the privacy gradient in three ways. The linear spaces created a gradient to the outdoor, public arena; the fan shaped spaces controlled access to spaces typically inhabited by one or two people (bedrooms and bathrooms); and the connected spaces created accessibility to all residents, typically no more than 6 (although on special occasions the number might be greatly increased). Examining these patterns in apartment buildings found similar patterns within the units. But for the relation between the units, access to the unit front door was now at the building interior with additional interior linear connections invisible to public scrutiny between the unit and the building entry.

In residences rated as institutional such as hospitals or dormitories the three patterns had different relationships than in the residences. We found no examples of spaces connected triangularly; the fan-shaped spaces, instead of connecting a hall to three to five rooms, connected the hall to as many as 92 interior spaces on a single level. In this situation that the degree of privacy was clearly more directly related to the numbers of people who had access to a space than it was related to the syntactical structure of the architecture, or even to the size of the space. This caused us to examine the different kinds of spaces relative to the numbers of people normally using them in different types of buildings, which indicated a greater range of domains than the privacy gradient such as that developed by Newman could explain. Using research on social aspects of space and observations about space use, we created a diagram of 7 domains of privacy gradient based on maximum numbers of people generally found such spaces, that we subsequently used to compare building types. The analysis of building types in terms of the seven domains (public urban, public neighborhood, semi-public neighborhood, semi-private neighborhood, private household, intimate household, intimate) indicated that in the most home-like building types the 5 or 6 intimate private and public domains that were represented formed a gradient with no domains missing. In the most institutional settings, typically, public and intimate domains were represented, but since the private domains were missing, there was no gradient.

Another great contrast, this time between institutional types of building was the position of the bathroom and bedroom relative to the hall. In the more home-like building types the unit bathroom was typically at a great distance from public spaces, also distant from private spaces (living room, dining room and kitchen) and directly linked by a corridor to 1 to four bedrooms. In the institutional buildings the bathroom was located in different places. In most hospitals, nursing homes and some dormitories, the bathroom was located adjacent to the bedroom and the
bedroom was located off a hallway that was accessible to the general public, thus defined as a public neighborhood space. In some dormitories the bathroom itself was shared by 30 people, thus itself was a semi-public neighborhood space, and was along a hall that was accessible to 100 or more people, thus a public neighborhood space. The lack of a privacy gradient explains one reason why in comparison to other forms of housing, institutions are not considered desirable places to live. The variety of pattern of location of bedroom, bathroom and corridor among the institutions indicates that physically the category institution is not as unified a category as is the single-family house.

Summary of Phase 2 Findings

Our study did tend to validate the continuum of perception of housing that we had found. Study of how student raters perceived housing based upon rating of slides and photographs showed a high level of consistency. Student raters were able to discern graduated differences between 29 examples of housing based on rating of slide images of these settings as institutional and/or homelike. Physical variables, however tended to indicate that the housing fell into three groups, a homelike group, an institutional group, and an ambiguous group.

Very few students spontaneously applied the institution-home terminology. But a variety of descriptors emerged that showed consistent patterns. In free sort of photographic images of the housing, students tended to categorize exteriors of housing differently from interiors. Exteriors were generally categorized by building type (four building types were commonly identified for the housing shown, house, hospital, apartment building and dormitory). Interiors generally were categorized by room type (e.g. living room, dining room, kitchen, bathrooms, hall, stairs, and bedroom). When the group of students participating in the multiple sort study were asked to sort the images of housing into opposite categories, although few selected “institutional” and “homelike” as terms for the opposition, the predominant group sorted housing into two groups that had been evaluated earlier as either more institutional or more homelike, thus supporting the use of these terms as opposites. However, the terms most commonly selected were home, non-home or some variant of that, suggesting that the home pole was more widely understood, and that images were more often being evaluated relative to the home pole, rather than between institution and home. This was supported by the cluster analysis of checklist items in which the group of buildings associated with the homelike pole were very closely correlated to each other, whereas the group of buildings associated with the institutional pole were relatively disassociated with each other. From this we conclude that the homelike polarity, being linked to a single referent building type, the single-family dwelling, has relative conceptual unity whereas institutionality, having a variety of quite different building types as referents is more divergent conceptually.

Nevertheless, when yet another group of students was asked to rate the slides along a variety of dimensions including institutional and homelike as independent descriptors, the evaluations for homelike were found to be opposites to the evaluations of institutional.

Comparing the assessments of housing to the Checklist items using discriminant analysis, we were able to validate 193 of the 236 items, or eighty percent. While the inventory could not be used identify items that we had previously omitted, it did serve to refine the 5-point Robinson / Graff / Ingenmey/Thompson Measure by adding greater detail to create the Institution-Home Assessment Measure for Living Rooms. The 27 items were transformed into 32 measures.
The Inventory used in Phase II was also developed into a more sophisticated measure called the Architectural Inventory Measure that could be used to describe architectural variables systematically in such a way that they could be analyzed using statistical measures.
Appendix 2

Phase 1 – Design Principles:
Robinson/Emmons/Graff Architectural Checklist Validation
& Image Assessment Ratings
Appendix 2A
Robinson/Emmons/Graff Architectural Checklist¹ Validation
(Copyright 1983, Julia W. Robinson, Minneapolis, MN)

The Robinson/Emmons/Graff Architectural Checklist was developed along with the Design Principles, to make the principles more specific, and as an hypothesis of the critical architectural variables. The checklist uses inclusiveness to provide the most complete description possible. This is in contrast to other available checklists that use the minimum number of salient features needed to measure the degree of normalization provided by a specific setting. Inclusiveness is used for two reasons. First, an architectural setting provides redundant cues; for this reason, a measure based on selected items may well be inaccurate. Second, 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 define 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 residential design covered in the design principles: context/site (1-36), building (37-87), and room/space (88-236).

In Phase 2, we evaluated at least one living room in each building of the 27 settings documented using the Architectural Checklist. These measures were correlated with the overall homelike rating for the settings in a graphic analysis. Since each checklist item is evaluated based on a limited number of buildings, the validation study is indicative, but cannot be called definitive.

The graphic analysis lists the buildings by building type from most to least homelike or institution-like, and then shows the rating for that checklist item, whether 1 (institutional) or 2 (homelike). We have marked the checklist items in one of four ways.

1. (+) Those checklist items that demonstrated a strong pattern of institution-home variation are marked with a plus (showing a clear distinction between institution and home, mostly ones at the institution end, and mostly twos at the homelike end, with some mixture in the middle).

2. (√) Those with a weak pattern of covariance we have checked, indicating that the validity was suggested, but not strongly indicated (mostly ones at the institutional or twos at the homelike end with a mixture in the middle).

3. (x) Those with no clear pattern of variance or with a negative pattern, we have marked with an x to indicate that these were found invalid.

A few of the checklist items were appropriate for selected types of settings and not across all settings (for example items 214 which deals with the number of sinks, an indicator for communal bathrooms was documented only in the dormitories), and thus did not show a strong pattern of variance. These are considered to be weakly validated and so are marked with a check.

¹ The Robinson/Emmons/Graff Architectural Checklist (Copyright 1983, Julia W. Robinson, Minneapolis, MN) was originally published in the monograph Towards an Architectural Definition of Normalization (Julia W. Robinson, Travis Thompson, Paul Emmons and Myles Graff, with Evelyn Franklin, Minneapolis, MN: University Center for Urban and Regional Affairs, School of Architecture & Landscape Architecture, Department of Psychology and the Graduate School, 1984)
<table>
<thead>
<tr>
<th>Context/Site Feature</th>
<th>Institutional</th>
<th>Homelike</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ 1. Adjacent ten buildings are at least 60 percent residential</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✗ 2. Stores for shopping are out of neighborhood</td>
<td>within walking distance</td>
<td></td>
</tr>
<tr>
<td>✗ 3. Public parks or recreation areas are out of neighborhood</td>
<td>within walking distance</td>
<td></td>
</tr>
<tr>
<td>✗ 4. There are paved pedestrian paths no</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>+ 5. Lot size of building is different from adjacent lots</td>
<td>like adjacent lots</td>
<td></td>
</tr>
<tr>
<td>+ 6. Distance of building from street is different from adjacent buildings</td>
<td>similar to adjacent buildings</td>
<td></td>
</tr>
<tr>
<td>+ 7. Distance between building and those adjacent is different from neighboring structures</td>
<td>similar to neighboring structures</td>
<td></td>
</tr>
<tr>
<td>+ 8. Front of building approx. same width as nearby buildings no</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>+ 9. Number of storeys of building is same as nearby buildings no</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>+ 10. Building depth (length from streetside to rear) is same as nearby bldgs. no</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>+ 11. Building material &amp; color are similar to nearby structures no</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>+ 12. Driveway or other access point is similar in design to neighboring housing no</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>+ 13. Unlike nearby housing, on the site there is a parking lot</td>
<td>no parking lot</td>
<td></td>
</tr>
<tr>
<td>+ 14. There is a loading dock yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>+ 15. Trash is stored in a dumpster</td>
<td>in cans near house or garage</td>
<td></td>
</tr>
<tr>
<td>✓ 16. If adjacent structures have yard -- it has similar provisions for privacy (fence, shrubs, etc.) no</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>CONTEXT/SITE FEATURE</th>
<th>INSTITUTIONAL</th>
<th>HOMELIKE</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ 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</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✓ 18. Yard has permanent courts for organized games</td>
<td>no fixed courts for games</td>
<td></td>
</tr>
<tr>
<td>+ 19. Yard is park-like with paved paths &amp; benches</td>
<td>small, or large, with small areas for informal activities like cooking, eating, gardening</td>
<td></td>
</tr>
<tr>
<td>+ 20. Ratio of building to open yard space is different from neighbor-structures</td>
<td>similar to neighboring structures</td>
<td></td>
</tr>
<tr>
<td>+ 21. Ground area in front of residence is similar in size &amp; shape to adjacent residences</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 22. Ground area in back of building is similar in size &amp; shape to nearby buildings</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 23. Design of path from street to entry is similar in material, length &amp; configuration to adjacent residential buildings</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 24. Entry path has no distance between street &amp; entrance, or straight path with no change in level</td>
<td>change in level between street &amp; entrance, or a change in direction of path from street</td>
<td></td>
</tr>
<tr>
<td>+ 25. Amount of grass and plants in front yard is similar to nearby housing</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✓ 26. Arrangement of trees, shrubs and flower plantings is different from neighboring housing</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 27. Rear yard has as much grass, shrubs, &amp; trees as adjacent residential buildings</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>CONTEXT/SITE FEATURE</td>
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<td>HOMELIKE</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------</td>
<td>-----------</td>
</tr>
<tr>
<td>✓ 28. Building is</td>
<td>built as one large mass</td>
<td>built as several masses or with more than one roof direction</td>
</tr>
<tr>
<td>+ 29. Building roof is</td>
<td>flat</td>
<td>pitched</td>
</tr>
<tr>
<td>+ 30. Building facade is</td>
<td>plain</td>
<td>broken up with balconies, bay windows, porches, window boxes, etc.</td>
</tr>
<tr>
<td>+ 31. Building material is primarily</td>
<td>brick, concrete block, concrete, or stone or metal panels</td>
<td>wood or stucco</td>
</tr>
<tr>
<td>+ 32. Building surfaces are</td>
<td>smooth and uniform</td>
<td>varied and have texture (e.g. foundation or dormer a different material)</td>
</tr>
<tr>
<td>+ 33. Building windows</td>
<td>are all alike, or have continuous glass walls or strip windows</td>
<td>have a variety of size and shape</td>
</tr>
<tr>
<td>+ 34. Windows are</td>
<td>metal frame</td>
<td>wood frame</td>
</tr>
<tr>
<td>+ 35. Building entrance has a front entry stair over 5 feet wide</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 36. Building entrance</td>
<td>has a large (over 30 ft) portico or no portico</td>
<td>has a small (up to 30 ft) portico, front porch, or recessed entry</td>
</tr>
<tr>
<td>BUILDING FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>+ 37. There is</td>
<td>more than one door at entry</td>
<td>one door at entry</td>
</tr>
<tr>
<td>√ 38. Front door is</td>
<td>sliding, revolving</td>
<td>hinged</td>
</tr>
<tr>
<td>+ 39. Front door is made of</td>
<td>metal or metal &amp; glass</td>
<td>wood or wood &amp; glass</td>
</tr>
<tr>
<td>+ 40. There is a designated area (recess or stoop) outside the unit entrance</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 41. Unit entry area includes a coat closet or coat hanging area</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 42. Unit entry area has space for furniture (table or chair) to set mail or</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>possessions on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 43. Front door (not including storm door)</td>
<td>opens out</td>
<td>opens in</td>
</tr>
<tr>
<td>+ 44. Front door opens with a</td>
<td>handle, grab bar, push stop, or</td>
<td>knob</td>
</tr>
<tr>
<td>automatic door opener</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 45. Door at building entry is</td>
<td>open to public</td>
<td>usually locked &amp; requires someone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to ring doorbell before it is</td>
</tr>
<tr>
<td>+ 46. There is</td>
<td>a building directory,</td>
<td>no information or security desk at</td>
</tr>
<tr>
<td></td>
<td>and/or an information desk at</td>
<td>building entrance</td>
</tr>
<tr>
<td></td>
<td>building entrance</td>
<td></td>
</tr>
<tr>
<td>+ 47. Inside, unit entry area has decorative light fixtures or wall decorations</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 48. Inside, unit entry area is spacially defined as</td>
<td>an undifferentiated part of the</td>
<td>a distinct area for receiving or</td>
</tr>
<tr>
<td></td>
<td>circulation area</td>
<td>part of the living room</td>
</tr>
<tr>
<td>+ 49. There is on the interior</td>
<td>an area especially designed for</td>
<td>no area designed especially for</td>
</tr>
<tr>
<td></td>
<td>waiting, such as lobby or enlarged</td>
<td>waiting such as lobby or enlarged</td>
</tr>
<tr>
<td></td>
<td>entry vestibule</td>
<td>entry vestibule</td>
</tr>
<tr>
<td>+ 50. Entry point to individual dwelling unit is capable of being locked</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Building Feature</td>
<td>Institutional</td>
<td>Homelike</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>51. Mailboxes are provided outside of building or in entry vestibule area accessible directly to postman</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>52. Social spaces (kitchen, dining &amp; living rooms, etc.) are</td>
<td>dispersed</td>
<td>grouped together</td>
</tr>
<tr>
<td>53. There is clear demarcation between social spaces &amp; bedroom &amp; bathroom areas, i.e. separation by level or a horizontal distance of at least 8 ft between openings and/or doors</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>54. There is an administrative office at entry area</td>
<td>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</td>
<td>located together in area separated from the entry and public spaces</td>
</tr>
<tr>
<td>55. Bathrooms are visible from public space or corridor between public spaces</td>
<td>not visible from any area defined as public (entry, living &amp; dining rooms, kitchen, etc.)</td>
<td></td>
</tr>
<tr>
<td>56. Bathrooms open directly onto a social space</td>
<td>open into a circulation space or bedroom</td>
<td></td>
</tr>
<tr>
<td>57. Building entrance is located near social spaces &amp; away from bedroom &amp; bathroom areas</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>58. Living room is not next to unit entry</td>
<td>not visible from unit entry</td>
<td>visible from unit entry</td>
</tr>
<tr>
<td>60. Living room interior is not visible from unit entry</td>
<td>visible from unit entry</td>
<td></td>
</tr>
<tr>
<td>BUILDING FEATURE</td>
<td>INSTITUTIONAL</td>
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</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>+ 61. All hall or corridor continuous lengths (including turns &amp; jogs) are</td>
<td>over 18 feet</td>
<td>18 feet or less</td>
</tr>
<tr>
<td>+ 62. Corridors (linear circulation areas) are</td>
<td>over 5 ft in width &amp; not room-like vestibules</td>
<td>5 ft or under in width or room-like vestibules</td>
</tr>
<tr>
<td>✓ 63. Floors of horizontal circulation spaces are</td>
<td>resilient flooring (linoleum, vinyl) concrete or terrazzo</td>
<td>wood or carpet</td>
</tr>
<tr>
<td>✓ 64. Horizontal circulation spaces are lit at least in part by natural light from windows</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 65. Lighting fixtures in horizontal circulation spaces are</td>
<td>fluorescent</td>
<td>incandescent</td>
</tr>
<tr>
<td>+ 66. Halls or corridors have exit signs</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 67. In circulation areas there are</td>
<td>fire extinguishers</td>
<td>no fire extinguishers</td>
</tr>
<tr>
<td>✓ 68. Lighting fixtures in horizontal circulation spaces are</td>
<td>purely functional</td>
<td>decorative (consider shape, material, character of light)</td>
</tr>
<tr>
<td>+ 69. In circulation spaces there are</td>
<td>exit signs</td>
<td>no exit signs</td>
</tr>
<tr>
<td>+ 70. Horizontal circulation spaces are</td>
<td>plain, undecorated</td>
<td>decorated with furniture, pictures, patterned wallpaper or other elements</td>
</tr>
<tr>
<td>+ 71. There is</td>
<td>an elevator</td>
<td>no elevator</td>
</tr>
<tr>
<td>✓ 72. If there is elevator, it is</td>
<td>not within view from front door and/or more than 15 ft away</td>
<td>located in direct line of vision of front door, or within 15 ft</td>
</tr>
<tr>
<td>+ 73. Access between horizontal circulation spaces &amp; stairs is</td>
<td>through fire door</td>
<td>open</td>
</tr>
<tr>
<td>+ 74. Stairs within the residence are</td>
<td>enclosed</td>
<td>open</td>
</tr>
<tr>
<td>BUILDING FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------</td>
<td>----------</td>
</tr>
<tr>
<td>+ 75. Stairs are</td>
<td>located at periphery of residence</td>
<td>located at center of residence</td>
</tr>
<tr>
<td>+ 76. Interior stairs of dwelling are made of</td>
<td>concrete or steel</td>
<td>wood</td>
</tr>
<tr>
<td>+ 77. Stairs are surfaced in</td>
<td>concrete, metal, or terrazzo</td>
<td>wood or carpet</td>
</tr>
<tr>
<td>+ 78. Stair rails are</td>
<td>metal, steel or aluminum</td>
<td>wood or wrought iron</td>
</tr>
<tr>
<td>+ 79. Stair rails are</td>
<td>plain</td>
<td>decorative or crafted</td>
</tr>
<tr>
<td>√ 80. Stairway incorporates a window</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 81. Stairway lighting fixtures are</td>
<td>simply functional</td>
<td>decorative</td>
</tr>
<tr>
<td>+ 82. Stairway has</td>
<td>no decoration</td>
<td>decorative things on walls</td>
</tr>
<tr>
<td>+ 83. In stairway there is</td>
<td>an exit sign</td>
<td>no exit sign</td>
</tr>
<tr>
<td>√ 84. Access to out-of-doors is</td>
<td>indirect from social spaces requiring traversing a corridor, level change, or other barrier</td>
<td>direct from a social space, kitchen, eating area, living room etc.</td>
</tr>
<tr>
<td>√ 85. A door from kitchen, dining area, living room, or other group space, opens directly onto backyard, balcony, deck or porch</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 86. Door to outside which is closest to both interior &amp; exterior group areas is</td>
<td>difficult to open (heavy, or has fast-acting automatic door closer)</td>
<td>easy to open</td>
</tr>
<tr>
<td>√ 87. Outdoor areas are easily visible from interior social area from which there is direct access</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>✓ 88. Special rooms are designated for particular activities (crafts, music, games, TV)</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 89. In addition to kitchen and bathroom, two or more rooms are designed &amp; 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.</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 90. There is an administrative office</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 91. Two or more rooms are used exclusively by staff</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 92. There are more than six residents in dwelling</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 93. There are four bedrooms or less in dwelling</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 94. All spaces are under 300 square feet in size</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 95. There is more than one space 300 sq ft in size or larger</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 96. Fireplace</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✓ 97. Corridors are enlarged to create lounge areas that have no windows to outside</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 98. There are designated exit doors with exit signs</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>✓ 99. Some doors to outside are metal clad</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 100. Some interior doors to outside have crash bars, kickplates and/or automatic door closers</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
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</tr>
<tr>
<td>---------------------</td>
<td>--------------</td>
<td>----------</td>
</tr>
<tr>
<td>+ 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)</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 102. Each social area has distinctly different treatment of wall, ceiling &amp; floor</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 103. Each social area has windows to the outside</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 104. Each social area has distinctly different light fixtures</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 105. Each social area has distinctly different types of furniture (chairs, tables, etc.)</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 106. Living room is 300 sq ft or over</td>
<td>under 300 sq ft</td>
<td></td>
</tr>
<tr>
<td>✗ 107. Living room is totally enclosed room accessible by single doors</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>✗ 108. Living room is open to other spaces, but still defined by walls, arches, etc.</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✗ 109. Living room floor is resilient flooring (vinyl or linoleum), concrete or terrazzo</td>
<td>wood or carpet</td>
<td></td>
</tr>
<tr>
<td>+ 110. Lighting is predominantly fluorescent</td>
<td>incandescent</td>
<td></td>
</tr>
<tr>
<td>+ 111. Lighting fixtures are predominantly overhead</td>
<td>all floor, table and/or wall lamps, with switches on the fixture</td>
<td></td>
</tr>
<tr>
<td>✓ 112. Living room has windows with view to outside</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✗ 113. There are sprinklers in living room</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 114. Thermostat is accessible to residents for control of heat within dwelling unit</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
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</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>---------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>+ 115. Windows are operable in living room</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 116. Habitually, living room will seat</td>
<td>more than five people</td>
<td>five people or less</td>
</tr>
<tr>
<td>+ 117. There is a sofa, loveseat or couch in living room</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 118. There are more than two sofas, loveseats, or couches in living room</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>√ 119. Seating is placed against walls</td>
<td>placed against walls</td>
<td>placed variously within the room</td>
</tr>
<tr>
<td>√ 120. Living room seating is covered with vinyl</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>√ 121. Living room seating is all one color</td>
<td>all one color</td>
<td>a variety of colors and patterns</td>
</tr>
<tr>
<td>+ 122. Living room chairs are all one style</td>
<td>all one style</td>
<td>in varying styles</td>
</tr>
<tr>
<td>X 123. Windows in living room have no covering or metal shades</td>
<td>no</td>
<td>fabric curtains or shades</td>
</tr>
<tr>
<td>X 124. Operable window coverings allow for control of privacy and light</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>X 125. Coffee table or other low surface is in front of couch in living room</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>X 126. Shelves for storing things are in living room</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 127. Walls of living room are undecorated, or decorated only with one type of object</td>
<td>decorated with variety of things: posters, paintings, hangings, photos, plants, etc.</td>
<td></td>
</tr>
<tr>
<td>+ 128. Every wall segment over 4 ft long has decoration on it or furniture (table, shelf) against it</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 129. There is a functional wall clock</td>
<td>no clock or a decorative clock</td>
<td>no clock or a decorative clock</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
<td>INSTITUTIONAL</td>
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</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>---------------</td>
<td>-----------</td>
</tr>
<tr>
<td>√ 130. Eating area (dining room or kitchen) has more than one table (not including</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>side tables)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X 131. Eating area has table that seats no more than eight people</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 132. Eating area is</td>
<td>over 150 sq ft</td>
<td>150 sq ft or less</td>
</tr>
<tr>
<td>X 133. Eating area has window with view to out-of-doors</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 134. Window in eating area is operable</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>X 135. Operable window coverings allow for control of privacy &amp; light in eating</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 136. Eating area is lit with incandescent lighting</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 137. Lighting fixtures or fixtures in eating area are decorative</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 138. Eating area has decorative elements (pictures, plants, curtains, etc.)</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>139. Kitchen counters are</td>
<td>stainless steel</td>
<td>wood, plastic laminate (formica) or ceramic tile</td>
</tr>
<tr>
<td>140. Only one stove in kitchen is standard residential size</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>141. Only one sink or double sink is standard residential size</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>142. There is more than one refrigerator or commercial-size refrigerator or walk-in cooler</td>
<td>one standard size refrigerator</td>
<td></td>
</tr>
<tr>
<td>143. Kitchen is ventilated by large commercial ventilation system</td>
<td>window, small fan, or residential-size hood or fan</td>
<td></td>
</tr>
<tr>
<td>144. Kitchen is lit by fluorescent lighting only</td>
<td>fluorescent lighting only</td>
<td>some combination of incandescent, fluorescent, and natural light from windows</td>
</tr>
<tr>
<td>145. Kitchen includes space for table for eating and other activities, or opens into nearby eating area or dining room</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>146. There is a telephone in kitchen</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>147. There is a window to see out-of-doors</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>148. Window in kitchen is operable</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>149. Kitchen size is over 150 sq ft if no eating area, over 200 sq ft if there is an eating area</td>
<td>150 sq ft or under if no eating area, or 200 sq ft or under if there is an eating area</td>
<td></td>
</tr>
<tr>
<td>150. Food is served in cafeteria line</td>
<td>cafeteria line</td>
<td>kitchen or dining room</td>
</tr>
<tr>
<td>151. Kitchen has passthrough used exclusively for serving or cleanup</td>
<td>no passthrough or a pass-through used both for serving and cleanup</td>
<td></td>
</tr>
<tr>
<td>152. No dishwasher, or only standard residential-size dishwasher in kitchen</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>+ 153. There are janitor's closets</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 154. Cleaning equipment is accessible to residents</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>X 155. Kitchen cupboards have locks</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>√ 156. Linen cupboards have locks</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>X 157. Living room storage areas have locks</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>X 158. Clothing storage areas have locks</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>√ 159. Laundry service is provided</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 160. Laundry facilities are located in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>specially designed area containing only laundry and/or ironing equip.</td>
<td></td>
<td>area used for several purposes (kitchen, bathroom, or basement general purpose area) or laundry is done in a laundromat by residents</td>
</tr>
<tr>
<td>+ 161. Laundry area is located in accessible location, within 12 ft of primary stairs or kitchen, or within general bedroom area</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>X 162. Laundry facilities have more than one washer and/or dryer</td>
<td></td>
<td>include no more than one washer and dryer</td>
</tr>
<tr>
<td>X 163. Laundry area has painted concrete floors</td>
<td></td>
<td>floors which are carpeted, wood or tiled, or if concrete, have area rugs</td>
</tr>
<tr>
<td>X 164. Laundry area is plain</td>
<td></td>
<td>painted, wallpapered, or has decorations or curtains</td>
</tr>
<tr>
<td>+ 165. Laundry area is lit with fluorescent lighting only</td>
<td></td>
<td>incandescent and/or natural lighting</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>X 166. There is</td>
<td>more than one person per bedroom</td>
<td>one person per bedroom</td>
</tr>
<tr>
<td>✓ 167. If bedrooms are shared,</td>
<td>more than two people share some bedrooms</td>
<td>no more than two people per bedroom</td>
</tr>
<tr>
<td>+ 168. Bedroom size is</td>
<td>over 170 sq ft</td>
<td>under 170 sq ft</td>
</tr>
<tr>
<td>+ 169. Bedrooms are, in general, (room proportions length: width)</td>
<td>rectangular (1.3:1.0 or greater) with short side the window wall</td>
<td>square (less than 1.3:1.0) or if rectangular, have windows in long side</td>
</tr>
<tr>
<td>+ 170. Windows are</td>
<td>over 4 ft wide</td>
<td>4 ft wide or less</td>
</tr>
<tr>
<td>✓ 171. Bedroom windows are operable</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✓ 172. Windows are</td>
<td>fixed, awning</td>
<td>double-hung, casement, or sliding</td>
</tr>
<tr>
<td>+ 173. Ceiling in bedroom</td>
<td>has track for privacy curtain</td>
<td>has no track</td>
</tr>
<tr>
<td>✓ 174. There is a built-in closet for each bedroom occupant</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✓ 175. Closet has</td>
<td>less than 3 ft of hanging rod per person</td>
<td>3 ft or more of hanging rod per person</td>
</tr>
<tr>
<td>✓ 176. Bedrooms have</td>
<td>built-in clothing storage unit</td>
<td>no built-in clothing storage unit</td>
</tr>
<tr>
<td>+ 177. General light is provided by</td>
<td>fluorescent light on wall or ceiling</td>
<td>incandescent light fixture on wall by door or in center of ceiling</td>
</tr>
<tr>
<td>+ 178. Task lighting is provided by</td>
<td>no fixture, fixed lamp, or lamp switched elsewhere than on fixture</td>
<td>movable lamps with switch on fixture</td>
</tr>
<tr>
<td>+ 179. Task lighting is</td>
<td>fluorescent</td>
<td>incandescent</td>
</tr>
<tr>
<td>✓ 180. Task lighting is controlled</td>
<td>at the door</td>
<td>at a lamp</td>
</tr>
<tr>
<td>X 181. Ceilings are</td>
<td>suspended tile</td>
<td>plaster, gypsum board, plaster board</td>
</tr>
<tr>
<td>+ 182. Floor material is</td>
<td>resilient flooring, terrazzo, ceramic tile, concrete</td>
<td>wood or carpet</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>√ 183. There are area rugs</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 184. Bedroom door has</td>
<td>handles</td>
<td>knobs</td>
</tr>
<tr>
<td>× 185. Bedroom door has</td>
<td>automatic door closer</td>
<td>no automatic door closer</td>
</tr>
<tr>
<td>+ 186. Bedroom has</td>
<td>smoke detector or sprinkler</td>
<td>no smoke detector or sprinkler</td>
</tr>
<tr>
<td>+ 187. Each bedroom is different shape</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 188. Each bedroom has windows located in different place</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 189. Each bedroom has different color wall, curtains and/or carpet</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 190. Each bedroom has different styles and kinds of furniture</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 191. Bedroom windows have</td>
<td>no window covering, or plastic, vinyl or metal shades or blinds</td>
<td>fabric curtain or shade</td>
</tr>
<tr>
<td>× 192. Operable window coverings allow for control of privacy &amp; light in bedroom</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>√ 193. There is a free-standing dresser or chest of drawers for each person</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>× 194. There is a bookshelf in the room</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>× 195. One desk, table, or other work surface is provided in the room for each person</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>× 196. Decorations are on the wall (pictures, photos, posters)</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>× 197. There is one upright chair for each person</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>× 198. There is an easy chair or other upholstered chair</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>✓ 199. There is a mixture of styles and types of furniture in each bedroom</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✓ 200. Beds have</td>
<td>metal headboard</td>
<td>wood headboard or no headboard</td>
</tr>
<tr>
<td>✓ 201. Bed height is</td>
<td>over 2 ft</td>
<td>2 ft or under</td>
</tr>
<tr>
<td>✓ 202. Upright chair is</td>
<td>metal</td>
<td>wood or molded plastic</td>
</tr>
<tr>
<td>✓ 203. Comfortable chair is covered with</td>
<td>vinyl</td>
<td>woven fabric</td>
</tr>
<tr>
<td>✓ 204. There is a wardrobe</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>✓ 205. Bedrooms have</td>
<td>metal wardrobe</td>
<td>no wardrobe, or wooden wardrobe</td>
</tr>
<tr>
<td>✓ 206. Bedside table is</td>
<td>fixed or has casters</td>
<td>free-standing with no casters</td>
</tr>
<tr>
<td>✓ 207. There is a mirror over each dresser</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✓ 208. There is</td>
<td>no clock or a fixed wall clock</td>
<td>small alarm clock sitting on horizontal surface (or clock radio)</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------</td>
<td>----------</td>
</tr>
<tr>
<td>X 209. Bathrooms are within 10 ft of each bedroom door</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>X 210. Trip between any bedroom &amp; its associated bathroom requires passing rooms such as living room, den, kitchen, office, etc.</td>
<td>does not require passing any room other than bedrooms or other private spaces</td>
<td></td>
</tr>
<tr>
<td>X 211. Bathroom has a medicine cabinet or shelf</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>X 212. Linen closet is in bathroom or within 6 ft of door</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✓ 213. Bathrooms are shared by no more than four people</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>✓ 214. Bathroom has two or more sinks</td>
<td>one sink</td>
<td></td>
</tr>
<tr>
<td>✓ 215. Bathrooms are 70 sq ft or under in size</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 216. Bathroom has stand-up shower</td>
<td>tub or tub and shower</td>
<td></td>
</tr>
<tr>
<td>✓ 217. Bathroom has gang shower or more than one bathing fixture</td>
<td>single tub or shower</td>
<td></td>
</tr>
<tr>
<td>✓ 218. Bathroom has more than one toilet</td>
<td>one toilet</td>
<td></td>
</tr>
<tr>
<td>✓ 219. There are toilet stalls</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>+ 220. There are shower or tub stalls</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>✓ 221. Distance between any of the fixtures, toilet, tub/shower, and sink is over 6 ft</td>
<td>no more than 6 ft</td>
<td></td>
</tr>
<tr>
<td>✓ 222. Bathrooms segregated by sex</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>X 223. Wall materials are ceramic tile up to 3 ft</td>
<td>plaster or wallpaper except around tub/shower</td>
<td></td>
</tr>
<tr>
<td>+ 224. Floor has bare tile</td>
<td>carpet or area rugs</td>
<td></td>
</tr>
<tr>
<td>✓ 225. There is a floor drain</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>X 226. Bathroom has one or more urinals</td>
<td>no urinals</td>
<td></td>
</tr>
<tr>
<td>✓ 227. Bathroom has sanitary napkin disposal units</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>ROOM/SPACE FEATURE</td>
<td>INSTITUTIONAL</td>
<td>HOMELIKE</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>+ 228. Toilet seats are</td>
<td>u-shaped</td>
<td>round</td>
</tr>
<tr>
<td>+ 229. Paper towel dispensers are in bathroom</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>X 230. Wastebaskets are</td>
<td>large, over 2 ft tall</td>
<td>small, under 2 ft tall</td>
</tr>
<tr>
<td>X 231. Wastebaskets are made of</td>
<td>metal</td>
<td>wood, vinyl, plastic, straw, cardboard</td>
</tr>
<tr>
<td>+ 232. Decorative elements are on the walls (pictures, plants, wallpaper, etc.)</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 233. Curtains, shower curtains, and/or towels are colorful</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 234. Bathroom has window</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 235. Bathroom window operable</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>+ 236. Curtains, shades, or other devices in bathroom window to allow for control of privacy</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>
Appendix 2B
Design Principles: Ratings of Drawing Pairs
(From Robinson, Thompson, Emmons & Graff 1984)

During the first phase of our research we tested the degree to which the drawings that represented the terms institutional and homelike in the design principles represented the institution/home opposition. During Phase 1, Part 2, students rated the individual drawings from the design principles along a five-point semantic differential scale between institutional and homelike. The students’ evaluations of the drawing pairs were tested for the significance of their opposition using a T-test, which are listed below. A few of the drawings which were not found to be opposite (all plans) were revised or redrawn afterwards to create a greater sense of human scale. Several pairs of drawings were added after the evaluation and thus are not rated.

The following lists represent (1) the design principles, (2) the T-test ratings indicating the significance of the opposition (3) whether or not the drawings were revised (4) the checklist items that correlate to the illustration pairs.
# APPENDIX 2B
## DESIGN PRINCIPLES
### RATINGS OF DRAWING PAIRS

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

<table>
<thead>
<tr>
<th>Design Principles</th>
<th>Ratings*</th>
<th>Revisions</th>
<th>Correlated Checklist Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context/Site</td>
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<tr>
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<td>NR</td>
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* Note: All Drawing pairs which are rated over p=.001 are drawings
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<thead>
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<th>Design Principles</th>
<th>Ratings</th>
<th>Revisions</th>
<th>Correlated Checklist Items</th>
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Appendix 3

Phase 2-Evolution of Descriptive & Evaluative Architectural Measures
Appendix 3A

Robinson/Ingenmey/Graff/Thompson Living Room Measure

The Robinson/Ingenmey/Graff/Thompson Living Room Measure was an evaluative assessment developed early in the Phase 2 research based on the initial student ratings of environments and architects’ evaluations of the same settings. It was refined and validated later in the study based upon the physical measurements taken in the Preliminary Architectural Inventory.
### Appendix 3 Phase 2-Evolution of Descriptive & Evaluative Architectural Measures

<table>
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<td>-1+ FLOOR &amp; OTHERS</td>
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<td>1 CEILING</td>
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<td>WOOD &amp; AREA RUGS</td>
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<td>RADIATOR WITH EXPOSED</td>
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<td>-NO EXPOSED HEATING</td>
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<td>AGAINST WALL (NO PIPES)</td>
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## Appendix 3 Phase 2-Evolution of Descriptive & Evaluative Architectural Measures

<table>
<thead>
<tr>
<th>AMOUNT OF SEATING</th>
<th>5 OR LESS</th>
<th>6-7</th>
<th>8-9</th>
<th>10-11</th>
<th>12+</th>
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<th>SPACE</th>
<th>5+</th>
<th>4</th>
<th>3</th>
<th>2 OR LESS</th>
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<table>
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<tr>
<th># OF TYPES OF HORIZONTAL SURFACES</th>
<th>10+</th>
<th>8-9</th>
<th>5-7</th>
<th>3-4</th>
<th>2</th>
<th>0-1</th>
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<table>
<thead>
<tr>
<th># OF OBJECTS ON HORIZONTAL SURFACES</th>
<th>5+</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>0-1</th>
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</table>

<table>
<thead>
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<th># OF DECORATIONS ON WALL</th>
<th>5+</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>0-1</th>
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<table>
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<tr>
<th>FURNITURE COVERING</th>
<th>ALL CLOTH</th>
<th>MOST CLOTH WITH 1 VINYL</th>
<th>MOST CLOTH WITH 2+ VINYL</th>
<th>VINYL</th>
<th>ALL VINYL</th>
<th>VINYL &amp; WOOD</th>
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<table>
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<tr>
<th>STYLE OF SEATING WITH ARMS</th>
<th>3 STYLES WHICH 1 IS</th>
<th>2 STYLES WHICH 1 KIND NO LESS THAN 1/4 TYPE OF TOTAL SEATING</th>
<th>3/4+ OF TOTAL SEATING THE SAME STYLE</th>
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</table>

<table>
<thead>
<tr>
<th># OF SEATING WITHOUT ARMS</th>
<th>2-</th>
<th>4</th>
<th>5+</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>FURNITURE POSITION</th>
<th>AGAINST WALL &amp; AWAY FROM WALL, WITH NO BARE AREAS</th>
<th>AGAINST WALL &amp; AWAY FROM WALL, WITH BARE AREAS</th>
<th>ALL NEXT TO WALL, TOTALLY OPEN AREA IN THE MIDDLE OF ROOM</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>BUILDING CODE &amp; SPECIFIC FEATURES</th>
<th>NONE</th>
<th>SMALL SMOKE</th>
<th>ONLY SPRINKLERS</th>
<th>EMERGENCY EXIT</th>
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<tbody>
<tr>
<td></td>
<td>ALARM</td>
<td>EXTINGUISHER</td>
<td>EXIT SIGNS</td>
<td>SPRINKLERS</td>
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<tr>
<td></td>
<td></td>
<td>EMERGENCY LIGHTS</td>
<td>LARGE SMOKE ALARM</td>
<td>FIRE ALARM</td>
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Appendix 3-B

Preliminary Architectural Inventory

The Preliminary Architectural Inventory was the first attempt to develop complete descriptive measures based on the concept of the specification. It was a rather crude measure and was more successful at describing salient features of interior spaces than features of the building exterior.
Preliminary Architectural Inventory

**CONTEXT/SITE FEATURES AND BUILDING FEATURES**

<table>
<thead>
<tr>
<th>Global Measure:</th>
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<tbody>
<tr>
<td>residential flavor 1 2 3 4 5 non residential flavor</td>
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<tr>
<td>02001.00 yard: 02003.00</td>
</tr>
<tr>
<td>02002.00 spatial sequence: 02004.00</td>
</tr>
<tr>
<td>02005.00 (ID) adjacent properties are:</td>
</tr>
<tr>
<td>.01 # residential (single family duplex, townhouse, highrise, etc.)</td>
</tr>
<tr>
<td>.02 _ institutional (school, museum, hospital, library, fire station, etc.)</td>
</tr>
<tr>
<td>.03 _ commercial (retail, shopping, offices, wholesale, etc.)</td>
</tr>
<tr>
<td>.04 _ recreational (theater, open park, play courts, parkway, etc.)</td>
</tr>
<tr>
<td>.05 _ industrial</td>
</tr>
<tr>
<td>.06 _ vacant</td>
</tr>
<tr>
<td>.07 _ other (specify)</td>
</tr>
<tr>
<td>02006.00 street traffic consists of:</td>
</tr>
<tr>
<td>.01 _ lanes moving vehicles</td>
</tr>
<tr>
<td>.02 _ lanes parked vehicles</td>
</tr>
<tr>
<td>(note time of day for traffic volume)</td>
</tr>
<tr>
<td>02007.00 street circulation pattern is:</td>
</tr>
<tr>
<td>.01 _ rectilinear</td>
</tr>
<tr>
<td>.02 _ curvilinear</td>
</tr>
<tr>
<td>.03 _ one way</td>
</tr>
<tr>
<td>.04 _ two way</td>
</tr>
<tr>
<td>.05 _ dead end</td>
</tr>
<tr>
<td>.06 _ limited access (no semi-trailers, vehicles with weight limits)</td>
</tr>
<tr>
<td>.07 _ traffic direction divided by median strip or other separation</td>
</tr>
<tr>
<td>02008.00 street material at subject front is:</td>
</tr>
<tr>
<td>.01 _ asphalt</td>
</tr>
<tr>
<td>.02 _ concrete</td>
</tr>
<tr>
<td>.03 _ gravel</td>
</tr>
<tr>
<td>.04 _ dirt (unsurfaced)</td>
</tr>
<tr>
<td>.05 _ other (specify)</td>
</tr>
<tr>
<td>02009.00 condition of street at subject front is:</td>
</tr>
<tr>
<td>.01 _ continuous, smooth</td>
</tr>
<tr>
<td>.02 _ chipped, cracked, broken in spots</td>
</tr>
<tr>
<td>.03 _ entirely cracked and broken</td>
</tr>
<tr>
<td>02100.00 condition of curb at subject front is:</td>
</tr>
<tr>
<td>.01 _ continuous, smooth</td>
</tr>
<tr>
<td>.02 _ chipped, cracked, broken in spots</td>
</tr>
<tr>
<td>.03 _ entirely cracked and broken</td>
</tr>
<tr>
<td>02101.00 condition of walk at subject front is:</td>
</tr>
<tr>
<td>.01 _ continuous, smooth</td>
</tr>
<tr>
<td>.02 _ chipped, cracked, broken in spots</td>
</tr>
<tr>
<td>.03 _ entirely cracked and broken</td>
</tr>
</tbody>
</table>

---

**2013.00 pedestrian circulation pattern and material is:**

| 02013.00 pedestrian circulation pattern and material is: |
| .01 _ parallel to street |
| .02 _ adjacent to street |
| .03 _ surfaced path of gravel |
| .04 _ surfaced path of concrete |
| .05 _ surfaced path of asphalt |
| .06 _ surfaced path of brick |
| .07 _ unsurfaced path (dirt) |
| .08 _ unplanned path |
| .09 _ surfaced path of multiple materials (i.e. concrete with brick edging, asphalt with concrete edging, etc.) |
| .10 _ other (specify) |
| 02014.00 adjacent parking is: |
| .01 _ on street |
| .02 _ surface parking in driveway |
| .03 _ garage (residential) |
| .04 _ garage (public parking ramp) |
| .05 _ garage (private parking ramp) |
| .06 _ metered parking |
| .07 _ carport |
| .08 _ surface parking in lot |
| .09 _ off street, along alley |
| .10 _ other (specify) |
| 02013.00 adjacent lots contain: |
| .01 _ front yard |
| .02 _ side yard(s) |
| .03 _ back yard |
| .04 _ no yard |

**2016.00 adjacent lots landscaping in front include:**

| 02016.00 adjacent lots landscaping in front include: |
| .01 _ mature trees |
| .02 _ young trees |
| .03 _ lineal ft. shrubs |
| .07 _ lineal ft. plantings |
| .09 _ square ft. grass coverage |
| .11 _ square ft. pavement coverage |
| .13 _ square ft. other ground coverage (specify) |

**12017.00 adjacent lots landscaping in back include:**

| 12017.00 adjacent lots landscaping in back include: |
| .01 _ mature trees |
| .02 _ young trees |
| .03 _ lineal ft. shrubs |
| .07 _ lineal ft. plantings |
| .09 _ square ft. grass coverage |
| .11 _ square ft. pavement coverage |
| .13 _ square ft. other ground coverage (specify) |

**2018.00 general adjacent subject dimensions are:**

| 2018.00 general adjacent subject dimensions are: |
| .01 _ height (# stories) |
| .09 _ width (approx. ft.) |
| .05 _ depth (approx. ft.) |
| (please note distance between subject and adjacent subjects, verify on site plan) |

---

**2019.00 adjacent facade materials, hue and texture include:**

| 2019.00 adjacent facade materials, hue and texture include: |
| .01 _ brick |
| .03 _ wood siding |
| .05 _ metal siding |
| .07 _ composition siding |
| .09 _ stucco |
| .11 _ stone in mortar |
| .13 _ metal panels |
| .15 _ glass block |
| .17 _ glass curtain wall |
| .19 _ exposed concrete |
| .21 _ concrete block |

---

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Preliminary Architectural Inventory

02020.00 adjacent subject roots are:
- lot A  lot B
- .01 .02 flat (built-up)
- .03 .04 gabled
- .05 .06 hip
- .07 .08 gambrel
- .09 .10 mansard
- .11 .12 combination (describe)
- .13 .14 other (specify)

02021.00 subject lot is:
- .01 corner lot
- .02 mid block lot
- .03 other (specify)
(verify with site plan, verify also lot configuration, and orientation)

02022.00 subject lot topography is:
- .01 flat
- .02 sloping
- .03 hilly
- .04 combination (i.e. flat with sloped boundaries, etc.)

02023.00 subject utilities visible from public front include:
- .01 overhead electric wires from utility pole
- .02 gas meter
- .03 electric meter
- .04 adjacent fire hydrant
- .05 transformer
- .06 other (specify)

02024.00 subject parking is:
- .01 on street
- .02 surface parking in driveway
- .03 metered parking
- .04 garage (residential)
- .05 garage (public parking ramp)
- .06 garage (private parking ramp)
- .07 carpet
- .08 surface parking in lot
- .09 off street, along alley
- .10 other (specify)

02025.00 subject has:
- .01 driveway from street to building area
- .02 own parking lot
- .03 shared parking lot
- .04 drop off area of street edge
- .05 service drive at rear (or alley)

02026.00 subject parking lot/driveway configuration is:
- .01 straight, with direct street access
- .02 curved
- .03 looped
- .04 other (specify)

02027.00 subject parking lot/driveway material is:
- .01 asphalt
- .02 concrete
- .03 loose gravel or small stones
- .04 dirt (unsurfaced)
- .05 other (specify)

02028.00 subject parking lot/driveway is:
- .01 flat
- .02 sloped
- .03 hilly
- .04 same as lot topography
- .05 different from lot topography

02029.00 subject parking lot/driveway is located at:
- .01 front of subject (access from street)
- .02 back of subject (access from alley)
- .03 side of subject (access from street)

02030.00 subject parking area is:
- .01 visible from street
- .02 not visible from street
- .03 visible from subject
- .04 not visible from subject

02031.00 other structures on lot (in addition to subject) include:
- .01 detached garage
- .02 storage shed
- .03 covered shelter
- .04 playhouse
- .05 other (specify)
(please note lot maintenance equipment and location)

02032.00 additional visible lot features include:
- .01 bicycle(s)
- .02 lawn maintenance equipment
- .03 lawn furniture
- .04 clothes
- .05 other (specify)

02033.00 subject lot contains:
- .01 front yard
- .02 side yard(s)
- .03 back yard
- .04 no yard

02034.00 subject lot front yard is separated from street/walk by:
- .01 hedges (describe)
- .02 change of ground cover (describe)
- .03 shrubs
- .04 young trees
- .05 mature trees
- .06 gate (describe)
- .07 chain link fence
- .08 woven wire fence
- .09 stone wall
- .10 brick wall
- .11 change in topography
- .12 no visible separation
- .13 other (specify)

02035.00 subject lot landscaping in front includes:
- .01 mature trees
- .02 young trees
- .03 lineal ft. shrubs
- .04 lineal ft. plantings
- .05 square ft. grass coverage
- .06 square ft. pavement coverage
- .07 square ft. other ground cover (specify)

02036.00 subject lot and adjacent lot yards are separated by:
- .01 change of ground cover (describe)
- .02 shrubs
- .03 young trees
- .04 mature trees
- .05 chain link fence
- .06 woven wire fence
- .07 wood fence
- .08 stone wall
- .09 brick wall
- .10 change in topography (describe)
- .11 surfaced wall
- .12 unsurfaced wall
- .13 no visible separation
- .14 other (specify)
Appendix 3 Phase 2—Evolution of Descriptive & Evaluative Architectural Measures

Preliminary Architectural Inventory

02037.00 subject lot with side and/or back yard contains:
.01 surfaced patio (describe)
.02 raised deck (describe)
.03 vegetable garden
.04 flower garden
.05 swing set
.06 sandbox
.07 bird feeder
.08 clothes line
.09 barbecue
.10 movable benches or seating area
.11 fixed benches or seating area
.12 greenhouse fixed to building
.13 greenhouse separate from building
.14 surfaced playing court (specify court material and game designation)
.15 other (specify)

02038.00 subject lot landscaping in back includes:
.01 mature trees
.02 young trees
.03 lineal ft. shrubs
.04 lineal ft. plantings
.05 square ft. grass coverage
.06 square ft. pavement coverage
.07 square ft. other ground cover (specify)

02039.00 defined service area of subject includes:
.01 loading dock
.02 unloading area (other than loading dock)
.03 access from street
.04 access from alley
.05 special lighting (describe)
.06 fenced (secure) area
.07 other (specify)

02040.00 trash is stored:
.01 in dumpster near service area
.02 in cans near subject or garage

02041.00 back path to subject is:
.01 concrete
.02 asphalt
.03 brick
.04 stone set in mortar
.05 loose gravel or small stones
.06 unsurfaced
.07 other (specify)

02042.00 configuration of back path (from alley) to subject is:
.01 straight (direct access)
.02 irregular (indirect access) (specify)

02045.00 side paths around subject area:
.01 concrete
.02 asphalt
.03 brick
.04 stone set in mortar
.05 loose gravel or small stones
.06 unsurfaced
.07 other (specify)

02044.00 main front path to subject entry is:
.01 concrete
.02 asphalt
.03 brick
.04 stone set in mortar
.05 loose gravel or small stones
.06 unsurfaced
.07 other (specify)

02045.00 configuration of front path from street (or sidewalk) to subject is:
.01 straight (direct access)
.02 irregular (indirect access) (specify)

02046.00 front path to subject encounters:
.01 no level change
.02 changes in direction (specify)
.03 discrete level changes (steps, stairs)
.04 gradual level changes (slope, ramp)
.05 handicap ramp
.06 other (specify)

02047.00 path to subject with steps or stairs, level change occurs:
.01 near street
.02 at subject entry
.03 with yard
.04 other (specify)

02048.00 postal delivery occurs at:
.01 street
.02 subject exterior
.03 subject interior

02049.00 location of subject mailbox is:
.01 post mounted at street (or in yard near street)
.02 post mounted at subject exterior near main entry
.03 wall mounted on subject exterior near main entry
.04 at subject interior within main entry
.05 at subject exterior at individual units
.06 other (specify)

02050.00 subject mailbox is:
.01 lockable gang mailbox
.02 shared open slot mailbox
.03 individual open slot mailbox

02051.00 subject lot lighting includes:
.01 low (ground) lighting along front path (describe)
.02 overhead lighting along front path (describe)
.03 site flood lighting focused on subject
.04 site flood lighting focused on landscaping, signage, etc.
.05 lighting at back path (describe)
.06 post mounted yard light (describe)
.07 other (specify)

02052.00 subject lighting at exterior includes:
.01 wall mounted door light on front entry
.02 overhead mounted door light at front entry
.03 wall mounted door light at back entry
.04 overhead mounted doorlight at back entry
.05 other (specify)

02053.00 subject signage occurs:
.01 in front yard of street (on pedestal mounted in ground)
.02 in front yard on signpost
.03 at subject exterior near front entry on signpost
.04 at subject exterior, wall mounted near front entry
.05 on or near roof of subject
.06 other (specify)

02054.00 subject signage includes:
.01 subject address
.02 subject name (title)
.03 subject use
.04 advertisement (describe)
.05 other (specify)
Preliminary Architectural Inventory

02055.00 general subject dimensions are:
  .01 height (approx. ft.)
  .02 ___ width (approx. ft.)
  .03 __ depth (approx. ft.)

02056.00 subject roof is:
  .01 flat (built-up)
  .02 gabled
  .03 hip
  .04 gambrel
  .05 mansard
  .06 combination (describe)
  .07 other (specify)

02057.00 subject roof level(s) is:
  .01 single leveled, continuous
  .02 multi-levelled (describe)

02058.00 subject roof edge(s) is:
  .01 simple fascia, unarticulated (describe)
  .02 complex fascia, articulated (describe)

02059.00 subject roof construction includes:
  .01 metal gutter
  .02 metal downspout
  .03 built-in gutter
  .04 built-in downspout
  .05 metal drip edge/gravel stop
  .06 roof drain with interior downspout
  .07 roof scupper
  .08 other (specify)
  (please specify roof finish material, hue and texture)

02060.00 average subject roof overhang is:
  .01 ft. at subject
  .02 ___ ft. at adjacent subjects

02061.00 facade planes at subject front include:
  .01 flat, single plane facade
  .02 layered, multi-planar facade
  .03 curved planar facade
  .04 other (specify)

02062.00 facade planes at adjacent subject fronts include:
  .01 flat, single plane facade
  .02 layered, multi-planar facade
  .03 curved planar facade
  .04 other (specify)

02063.00 subject facade materials, hue and texture include:
  material hue texture
  .01 brick
  .02 wood siding
  .03 metal siding
  .04 composition siding
  .05 stucco
  .06 stone in mortar
  .07 metal panels
  .08 glass block
  .09 glass curtain wall
  .10 exposed concrete
  .11 concrete block
  .12 vinyl siding
  .13 aluminum siding
  .14 masonite siding
  .15 other (specify)
  (please specify material pattern)

02064.00 subject facade includes:
  .01 symmetrical window/door pattern (arrangement)
  .02 asymmetrical window/door pattern (arrangement)
  .03 bay windows
  .04 dormers
  .05 arched windows
  .06 continuous window bands
  .07 window shutters
  .08 window boxes
  .09 operable (permanent) window washer
  .10 operable awnings or sun/weather screens (describe)

02065.00 subject from building entry, there is:
  .01 raised porch (describe material and configuration, steps, enclosure condition)
  .02 concrete pad (size)
  .03 wood deck (describe)
  .04 enclosed porch (screened)
  .05 enclosed porch (glass)
  .06 covered porch area, besides roof overhang (describe material and configuration)
  .07 gate (describe)
  .08 no visible porch destination
  .09 enclosed vestibule (describe material and configuration)
  .10 furniture, movable (describe)
  .11 furniture, fixed (describe)
  .12 benches
  .13 doormat (describe)
  .14 plantings - in pot, box or hanging (specify)
  .15 decoration - sculpture, wind chimes, etc. (specify)
  .16 other (specify)

02066.00 subject from building entry, describe:
  .01 exterior door(s) layout
  .02 door and frame material
  .03 door quantities
  .04 direction of egress
  .05 handicaps accessibility (if entry contains vestibule, include entire vestibule in description)

02067.00 front entry door, action is:
  .01 swinging (hinged)
  .02 sliding
  .03 revolving
  .04 rolling
  .05 other (specify)

02068.00 front entry door (including vestibule) hardware and other features include:
  .01 knob
  .02 handle
  .03 lever
  .04 door lock
  .05 grab bar
  .06 push stop
  .07 kick plate
  .08 automatic door opener
  .09 door bell/horn
  .10 door knocker
  .11 intercom
  .12 other (specify)

02069.00 front entry door(s) is:
  .01 open to public (24 hrs/day)
  .02 locked after hours, requiring key/entry access
  .03 locked at all times, requiring key/entry access
  .04 or admittance from resident (or staff)
  .05 or admittance from other (specify)
Appendix 3 Phase 2-Evolution of Descriptive & Evaluative Architectural Measures

Preliminary Architectural Inventory

<table>
<thead>
<tr>
<th>AREA or ROOM:</th>
<th>UNIT:</th>
<th>DATE:</th>
<th>RESEARCHER:</th>
</tr>
</thead>
</table>

**GLOBAL MEASURES**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>15001.00 temperature:</td>
<td>2 3 4 high</td>
</tr>
<tr>
<td>15002.00 odor:</td>
<td>2 3 4 unpleasant</td>
</tr>
<tr>
<td>15003.00 noise:</td>
<td>1 2 3 4 ordered</td>
</tr>
<tr>
<td>15004.00 appearance:</td>
<td>1 2 3 4 high</td>
</tr>
<tr>
<td>15005.00 overall pleasantness:</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>15006.00 colors:</td>
<td>homelike  institutional</td>
</tr>
<tr>
<td>15007.00 rate room or area:</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>15008.00 room temperature:</td>
<td>°F</td>
</tr>
</tbody>
</table>

**ADJACENCIES**

adjacent spaces and closets link opening door

<table>
<thead>
<tr>
<th>Room Materials and Finishes</th>
</tr>
</thead>
<tbody>
<tr>
<td>wall materials</td>
</tr>
<tr>
<td>material</td>
</tr>
<tr>
<td>15014.00</td>
</tr>
<tr>
<td>15018.00</td>
</tr>
<tr>
<td>...</td>
</tr>
</tbody>
</table>

(continued)
## Preliminary Architectural Inventory

### DOOR

<table>
<thead>
<tr>
<th>15018.00</th>
<th>15019.00</th>
<th>15020.00</th>
<th>15021.00</th>
<th>15022.00</th>
<th>15023.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>opening</td>
<td>frame</td>
<td>material</td>
<td>operation</td>
<td>hardware</td>
<td>lock</td>
</tr>
</tbody>
</table>

### DOOR, cont.

<table>
<thead>
<tr>
<th>15024.00</th>
<th>15025.00</th>
<th>15026.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>panels</td>
<td>door</td>
<td>window</td>
</tr>
</tbody>
</table>

### WINDOWS

<table>
<thead>
<tr>
<th>15027.00</th>
<th>15028.00</th>
<th>15029.00</th>
<th>15030.00</th>
<th>15031.00</th>
<th>15032.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>opening</td>
<td>frame</td>
<td>glass type</td>
<td>operation</td>
<td>hardware</td>
<td>covering</td>
</tr>
</tbody>
</table>

### Specifications

- Material: wood, metal, glass, vinyl, steel, other
- Operation: swing, sliding, folding, bi-fold, etc.
- Hardware: knobs, latches, locks, deadbolts, etc.
### Preliminary Architectural Inventory

#### LIGHTING

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Rent</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

#### UTILITIES (HEATING, VENTILATING, AIR CONDITIONING, PLUMBING, ELECTRICAL)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Rent</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

#### FIXED FURNISHING

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Rent</th>
<th>Cost</th>
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<tr>
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</tbody>
</table>
# Preliminary Architectural Inventory

## NON. FIXED FURNISHING - SEATING

<table>
<thead>
<tr>
<th>Description</th>
<th>Item</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Wood</th>
<th>Metal</th>
<th>Glass</th>
<th>Other</th>
<th>Painted Wood</th>
<th>Chrome Finish</th>
<th>Glass Finish</th>
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<tbody>
<tr>
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</tr>
</tbody>
</table>

Row 15036.00
### Preliminary Architectural Inventory

#### NON-FIXED FURNISHING · OTHER ·

| Item | Description | Height | Width | Depth | Round/Curved | Square | Wood | Metal | Plastic | Painted Finish | Frame Finish | Base Finish | Color | Leg Type | Stone | Glazed | Wood Grain | Board | Metal Dunit | Metal Bunkbed | Metal Hanger | Metal Hooks | Metal Hinges | Metal Drawers | Metal Doors |
|------|-------------|--------|-------|-------|--------------|--------|------|-------|---------|-----------|-------------|-------------|-----------|-------|---------|--------|---------|-----------|-------|------------|------------|------------|-----------|------------|-------------|-------------|
|      |             |        |       |       |              |        |      |       |         |           |             |             |          |       |         |        |         |            |       |            |             |            |           |            |             |             |
|      |             |        |       |       |              |        |      |       |         |           |             |             |          |       |         |        |         |            |       |            |             |            |           |            |             |             |

#### NON-FIXED FURNISHING · BED ·

| Item | Description | Height | Width | Depth | Round/Curved | Square | Wood | Metal | Plastic | Painted Finish | Frame Finish | Base Finish | Color | Leg Type | Stone | Glazed | Wood Grain | Board | Metal Dunit | Metal Bunkbed | Metal Hanger | Metal Hooks | Metal Hinges | Metal Drawers | Metal Doors |
|------|-------------|--------|-------|-------|--------------|--------|------|-------|---------|-----------|-------------|-------------|-----------|-------|---------|--------|---------|-----------|-------|------------|------------|------------|-----------|------------|-------------|-------------|
|      |             |        |       |       |              |        |      |       |         |           |             |             |          |       |         |        |         |            |       |            |             |            |           |            |             |             |
|      |             |        |       |       |              |        |      |       |         |           |             |             |          |       |         |        |         |            |       |            |             |            |           |            |             |             |
|      |             |        |       |       |              |        |      |       |         |           |             |             |          |       |         |        |         |            |       |            |             |            |           |            |             |             |
Preliminary Architectural Inventory

**APPLIANCES**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15039.00</td>
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</tr>
</tbody>
</table>

**DECORATIONS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15040.00</td>
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</tr>
</tbody>
</table>

**PLANTINGS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15041.00</td>
<td></td>
</tr>
</tbody>
</table>

**TRASH CONTAINER**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15042.00</td>
<td></td>
</tr>
</tbody>
</table>

**CLOCK**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15043.00</td>
<td></td>
</tr>
</tbody>
</table>

**PERSONAL OBJECTS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15044.00</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3C

Graphic Analysis of Preliminary Inventory Variables (Selected Living Room Measures)

The discriminant analysis presented here uses measurements taken using the Preliminary Architectural Inventory. These measures are analyzed individually or in combination where their variation proved to be related to patterns of institution or home. This analysis forms the basis for the Institution-Home Assessment Measure for Living Rooms (Appendix 3D), a refined version of the Robinson/Ingenmey/Graff/Thompson Living Room Measure.
1: CONFIGURATION

ROOM SIZE

Institution-Home Assessment Measure for Living Rooms

<table>
<thead>
<tr>
<th>Room Size</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 ft² +</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>less than 125 ft²</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>300-349 ft²</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>250-299 ft²</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>125-249 ft²</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Original Checklist Description:

106. Living room is 300 sq.ft. or over under 300 sq.ft.

Evidence from Inventory:

Size of LR organized along the I-H continuum

Reference: size of room has been entered directly from inventory in sft.
1: CONFIGURATION (Cont.)

HEIGHT OF ROOM

Institution-Home Assessment Measure for Living Rooms

NONE - No discernible pattern found

Original Checklist Item

NONE

Evidence from Inventory:

Room Height ordered along the I-H rating continuum

Reference: height of room was directly entered from inventory
2. MATERIALS

FLOOR MATERIAL

Institution-Home Assessment Measure for Living Rooms

<table>
<thead>
<tr>
<th>Floor Material</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete, Terrazzo</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Plain Resilient Material</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Plain Wood</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Residential Wood + Area Rugs</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Tubular</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

Original Checklist Description:

Institutional Homelike

109. Living room floor is resilient flooring (vinyl or wood or carpet linoleum) concrete or terrazo

Evidence from Inventory Data

Floor Material rating organized along the I-H rating continuum

All LRs considered

Floor Material rating organized along the I-H rating continuum

I LR per Setting

<table>
<thead>
<tr>
<th>Material</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCRETE</td>
<td>LINOLEUM VINYL</td>
</tr>
<tr>
<td>TERRAZO</td>
<td>INDUSTRIAL CARPET</td>
</tr>
<tr>
<td>ONLY WOOD</td>
<td>MIXED (tile+carpet)</td>
</tr>
</tbody>
</table>

326
2. MATERIALS (cont)

CEILING MATERIAL

Architectural Inventory Measure Description

<table>
<thead>
<tr>
<th>Institution</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Home</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling</td>
<td>Plaster/gyp w Glossy Paint or</td>
<td>Acoustic Tile</td>
<td>Pl/gyp-Semigl Plain</td>
<td>Wood Beams w Pl/gyp-Matte</td>
<td>Matte</td>
</tr>
</tbody>
</table>

Original Checklist Description:

NONE

Evidence from Inventory Data:

Ceiling Material rating ordered along the H-I rating continuum

All LRs considered

1 LR per Setting

Material 1 (+Inst) | Material 2 | Material 3 | Material 4 | Material 5 (+H) |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed Concrete</td>
<td>Acoustic Tile</td>
<td>Matte Finish Plaster</td>
<td>All Wood</td>
<td>Matte Finish with Molding</td>
</tr>
<tr>
<td>Glossy Finish &amp; Molding</td>
<td>Inlaid Tile</td>
<td>Inlaid Panels</td>
<td>Without Molding</td>
<td>Wood Beams</td>
</tr>
<tr>
<td>Glossy Finish Plaster with Molding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spraycrete</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reference:

material 1 (+Inst) material 2 material 3 material 4 material 5 (+H)
2. MATERIALS (cont.)

WALL MATERIAL

Architectural Inventory Description:

<table>
<thead>
<tr>
<th>Floor</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete, Terrazzo</td>
<td>Plain Resilient</td>
<td>Residential</td>
</tr>
<tr>
<td>TerrazzoMaterial</td>
<td>Resilient +Area</td>
<td>Res Carpet + Area</td>
</tr>
<tr>
<td>Indus Carpet</td>
<td>Plain Wood</td>
<td>Ceramic</td>
</tr>
<tr>
<td></td>
<td>Resilient +Area</td>
<td>Ceram Tile +Area</td>
</tr>
<tr>
<td></td>
<td>Plain Brick/Stone</td>
<td>Bricks/Stone +Area</td>
</tr>
</tbody>
</table>

Original Checklist Description:

NONE

Evidence from Inventory Data:

Wall Material ordered along the I-H rating continuum

All LRs considered

<table>
<thead>
<tr>
<th>Material</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>concrete (Inst)</td>
<td>concrete block</td>
</tr>
<tr>
<td>vinyl wall</td>
<td>painted plaster (glossy)</td>
</tr>
<tr>
<td>wall</td>
<td>wood like panel</td>
</tr>
<tr>
<td>plain wall</td>
<td>plain wall (w/plain mixed ceiling of same type)</td>
</tr>
<tr>
<td>mixed</td>
<td>(brick=plain)</td>
</tr>
<tr>
<td>real wood panel</td>
<td>many mixed</td>
</tr>
</tbody>
</table>

1 LR per Setting
3. SYSTEMS & EQUIPMENT

LIGHTING TYPE

<table>
<thead>
<tr>
<th>Architectural Inventory Measure Description</th>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Home</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Light</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>all fluorescent</td>
<td>mixed fluorescent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and other</td>
<td>all nonfluorescent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Original Checklist Description:

110. Lighting is predominantly fluorescent incandescent

Evidence from Inventory Analysis:

Lighting Type rating along the I-H rating continuum

All LRs considered             1 LR per Setting

Reference
1= ALL FLORESCENT— 2= MORE FLOR THAN INCAN; PATTERNED INCAN — 3= SAME # OF INCAN & FLORESCENT; PATTERNED INCAN & INCAN ALONE— 4= MORE INCAN THAN FLORESCENT— 5= ALL INCANDESCENT WITHOUT PATTERN
3. SYSTEMS AND EQUIPMENT (cont.)

LIGHTING POSITION

Architectural Inventory Measure Description

<table>
<thead>
<tr>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Light Fixture</td>
<td>1</td>
</tr>
<tr>
<td>ceiling recessed mounted</td>
<td>2</td>
</tr>
<tr>
<td>wall mounted table lamps</td>
<td>3</td>
</tr>
<tr>
<td>ceiling surface</td>
<td>4</td>
</tr>
<tr>
<td>hanging lamps</td>
<td>5</td>
</tr>
<tr>
<td>floor lamps or</td>
<td></td>
</tr>
</tbody>
</table>

Original Checklist Description:

111. Lighting fixtures are predominantly overhead all floor, table and/or wall lamps, with switches on

Evidence from Inventory Analysis:

Architectural Inventory Measure Description:

Lighting Position rating ordered along the I-H rating continuum

All LRs considered

1 LR per Setting

Reference
0 = DON'T KNOW — 1 = ALL CEILING — 2 = ALL WALL / -2 = CEILING & OTHERS — 3 = WALL AND TABLE / -HANGING LAMPS — 4 = ONE CEILING & TABLE(S) — 5 = ALL FLOOR / ALL TABLE / -1 = FLOOR & OTHERS WITH NO MORE THAN 1 CEILING
4. FURNITURE

CHECKLIST ITEM: NUMBER OF SEATS

Institution-Home Living Room Assessment Instrument

<table>
<thead>
<tr>
<th>Institution/Home</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td># Seats</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>10-14</td>
<td></td>
<td></td>
<td>1-2</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>8-9</td>
<td></td>
<td>8-9</td>
<td></td>
<td>3-4</td>
<td>5</td>
</tr>
<tr>
<td>6-7</td>
<td></td>
<td></td>
<td>6-7</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

Original Checklist Description:

116. Habitually, living room will seat more than five people five people or less

Evidence from Inventory:

Number of Seating order along the I-H rating continuum

All LRs considered

Reference: number of seating was entered directly from inventory/slide
4. FURNITURE (Cont.)

SOFAS

Architectural Inventory Measure Description

<table>
<thead>
<tr>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Home</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sofas</td>
<td>0 sofas</td>
<td>2 sofas</td>
<td>1 sofa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Original Checklist Description:

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

Evidence from Inventory Analysis of Slides:

Precense of Sofa, Loveseat or couch in LR ordered along the I-H rating continuum
All LRs considered 1 LR per Setting

Reference
1= No, there is none — 2= Yes, there is at least one
## 4. FURNITURE

### FURNITURE MATERIAL

**Institution-Home Living Room Assessment Instrument**

<table>
<thead>
<tr>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair/</td>
<td>Vinyl</td>
<td>Vinyl w</td>
<td>Cloth</td>
<td>Cloth</td>
<td>Cloth</td>
<td>50%+ vinyl</td>
</tr>
<tr>
<td>Upholst w Metal Frame</td>
<td>Wood Frame w Metal or</td>
<td>MixedVinyl</td>
<td>w Wood Frame</td>
<td>w Wood Frame</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Original Checklist Description:**

120. Living room seating is covered with vinyl  

<table>
<thead>
<tr>
<th>Evidence from Inventory Analysis of Slides:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Furniture Material rating ordered along the I-H rating continuum</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1 LR per Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Reference*

1= ALL VINYL; METAL; PLASTIC— 2= VINYL; VINYL & WOOD— 3= MOST CLOTH WITH 2+ VINYL; METAL & CLOTH— 4= MOST CLOTH WITH 1 VINYL; CLOTH & WOOD— 5= ALL CLOTH; NATURAL WOOD
5. DECORATION

DECORATION ON WALLS

<table>
<thead>
<tr>
<th>Institution-Home Living Room Assessment Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>Home</td>
</tr>
<tr>
<td># Dec on Walls</td>
</tr>
<tr>
<td># Types of Wall Dec</td>
</tr>
</tbody>
</table>

Original Checklist Description:

127. Walls of living room are undecorated, or decorated with variety of only with one type 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

(See next page for Evidence from Analysis of Slides)
5. DECORATION (cont.)

DECORATION ON WALLS (cont.)

Evidence from Inventory Analysis of Slides:

*Decoration on Walls ordered along the I-H rating continuum*

*All LRs considered*  
1 LR per Setting

*Number of Decoration on Walls ordered along the I-H rating continuum*

*All LRs considered*  
1 LR per Setting

Reference
1= UNDECORATED OR DECORATED WITH ONLY 1 TYPE OF OBJECT — 5=DECORATED WITH 5+ TYPES OF OBJECTS

Reference
1= NONE—ONE — 2= TWO — 3= THREE — 4= FOUR — 5= FIVE+
Appendix 3D

Institution-Home Assessment Measure for Living Rooms

The Institution-Home Assessment Measure for Living Rooms is a further development of the Robinson/Ingenmey/Graff/Thompson Living Room Measure. Measures taken using the Preliminary Architectural Inventory were analyzed using the discriminant analysis technique presented in Appendix 3C, which validated the revised measures that are presented here. As with the Checklist, however, the comprehensiveness, exclusiveness, or relative significance of the measures has not been assessed with empirical research.
### THE INSTITUTION-HOME ASSESSMENT MEASURE FOR LIVING ROOMS

#### LOCATION AND CONFIGURATION

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance to Entry</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>50 -100 ft</td>
<td>31-50 ft</td>
<td>22-30 ft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONFIGURATION</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Size</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>400 ft² or more</td>
<td>less than 125 ft, 350 to 399 ft²</td>
<td>2300 -349 ft²</td>
</tr>
<tr>
<td>Proportion of Open Wall</td>
<td>over 35%</td>
<td>0-9%</td>
</tr>
<tr>
<td>Room Entrance</td>
<td>5 or more entrances</td>
<td>1 entrance by a single dr</td>
</tr>
<tr>
<td>Windows</td>
<td>No windows to the exterior, and/or presence of interior windows</td>
<td>only one ext. window, or 3 or more ext. windows on one wall</td>
</tr>
</tbody>
</table>

#### MATERIALS

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall Material</td>
<td>1 2 3 4 5</td>
<td>5</td>
</tr>
<tr>
<td>Plain concrete</td>
<td>Plain concrete bd w. glossy paint (Plain or with wood) Painted concrete block- matte</td>
<td>Plaster/Gypsum bd w. semi-gloss Paint Plain Tile, Paint Brick, or Plain stone</td>
</tr>
<tr>
<td>Plain concrete block w wood</td>
<td>Plain concrete block- glossy/semi-gloss</td>
<td>Wood and Plaster/Gypsum bd - Matte Paint</td>
</tr>
<tr>
<td>Plaster/gypsum bd w vinyl</td>
<td>Painted concrete block- matte</td>
<td>Plaster/Gypsum bd - Matte - Wall Paper</td>
</tr>
<tr>
<td>Plaster/gypsum bd w glossy paint or</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ceiling Material</th>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plaster/gypsum bd w glossy paint or</td>
<td>Acoustic tile</td>
<td>Plaster/gypsum bd w semi-gloss paint</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plaster/gypsum bd- matte paint</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exposed wood beams wi plaster/ gyp bd- matte paint</td>
</tr>
</tbody>
</table>
### Floor Material

<table>
<thead>
<tr>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>Wood + area rugs</td>
</tr>
<tr>
<td>Terrazzo</td>
<td></td>
</tr>
</tbody>
</table>

### Systems & Equipment

#### Heating, Cooling & Ventilating

<table>
<thead>
<tr>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Windows</td>
<td>metal fixed only</td>
</tr>
<tr>
<td></td>
<td>no window</td>
</tr>
</tbody>
</table>

| Heating     | baseboard heaters | floor vents |
|             |                   | floor mounted |
|             |                   | cast iron |
|             |                   | radiators |
|             |                   | wood stove |

| Cooling     | built-in air conditioners | floor vents |
|             |                           | window-mounted |
|             |                           | air conditioners |
|             |                           | no cooling |
|             |                           | devices |

#### Lighting

<table>
<thead>
<tr>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Number of Light Fixtures</td>
<td>all fluorescent</td>
</tr>
<tr>
<td>2 or more Ceiling with table or floor mounted</td>
<td>ceiling or wall vents</td>
</tr>
<tr>
<td>2 or more Ceiling with combination of table and/or floor mounted</td>
<td>window/wall mounted air exchange unit</td>
</tr>
<tr>
<td>2 or more Ceiling with hanging lamp</td>
<td>wall plus table</td>
</tr>
<tr>
<td>Combination of floor and/or table lamps</td>
<td>Only 1 ceiling with hanging lamp</td>
</tr>
<tr>
<td>Combination of ceiling and wall mounted light</td>
<td>Combination of table and/or floor mounted light</td>
</tr>
</tbody>
</table>
### TOTAL SEATING

<table>
<thead>
<tr>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th># Seats</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15 or more</td>
<td>10-14</td>
<td>1-2</td>
<td>3-4</td>
</tr>
<tr>
<td>8-9</td>
<td></td>
<td>6-7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th># Styles</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>more than 6 seats of any one style</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### UPHOLSTERED SEATING

<table>
<thead>
<tr>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Upholstered Seats</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 or fewer</td>
<td>8-10</td>
<td>3-4</td>
<td>6-7</td>
<td>5</td>
</tr>
<tr>
<td>11 or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sofas</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 sofas</td>
<td>2 sofas</td>
<td>1 sofa</td>
<td></td>
</tr>
<tr>
<td>3 or more</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chairs-Upholstered</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7 or more</td>
<td>5-6</td>
<td>3-4</td>
<td>1-2</td>
</tr>
<tr>
<td>3 or more</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chairs-Upholstered-Material</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 50% are vinyl w metal or plastic frame</td>
<td>Over 50% are vinyl w wood frame</td>
<td>Over 50% are cloth w metal frame or mixed cloth and vinyl</td>
<td>50-99% cloth w wood and/or plastic frame</td>
<td></td>
</tr>
<tr>
<td>100% cloth w wood frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### NON-UPHOLSTERED SEATING

<table>
<thead>
<tr>
<th># Plain Chairs</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7 or more</td>
<td>5-6</td>
<td>2-4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chair Action/Material</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal folding</td>
<td>Plastic &amp;/ or Metal Stacking</td>
<td>Metal- fixed All Plastic-fixed</td>
<td>Wood Folding</td>
<td>Solid wood</td>
</tr>
<tr>
<td>Wood folding</td>
<td></td>
<td></td>
<td></td>
<td>Wood w fiber (rush, wicker, etc.)</td>
</tr>
</tbody>
</table>

### OTHER FURNITURE

<table>
<thead>
<tr>
<th>Institution</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coffee Tables</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 or more</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End Tables</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5 or more</td>
<td>2</td>
<td>0</td>
<td>1-2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tables Reg Height</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 or more</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other One-of-a-Kind Furniture</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No one-of-a-kind furniture in addition to chairs &amp; tables</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

### FURNITURE PLACEMENT & DENSITY

341
### Architecture of Institution & Home: Architecture as Cultural Medium

#### Furniture Position

<table>
<thead>
<tr>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furniture at room edges (gap of 8’+)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Furniture evenly distributed</td>
</tr>
<tr>
<td>Furniture evenly distributed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Furniture all in the middle</td>
</tr>
<tr>
<td>Furniture all in the middle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Furniture in the middle and at the edges</td>
</tr>
<tr>
<td>Furniture in the middle and at the edges</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Furniture Density

<table>
<thead>
<tr>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 10 items of furniture per 100ft² or fewer than 2 items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Over 2 items per 100 ft² and less than 4 total or between 9 &amp; 10 total</td>
</tr>
<tr>
<td>Over 2 items per 100 ft² and less than 4 total or between 9 &amp; 10 total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4-6 times per 100 ft²</td>
</tr>
<tr>
<td>4-6 times per 100 ft²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Over 6 items per 100 ft² and less than 9 total</td>
</tr>
</tbody>
</table>

### DECORATION

#### LIVING ROOM DECORATION

<table>
<thead>
<tr>
<th>Window Coverings</th>
<th>Institution</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>No window covering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shade only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloth curtain only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only venetian blinds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloth curtain + shade/blinds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheer only</td>
<td></td>
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<tr>
<td>Cloth curtain + valence (shutters only)</td>
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<tr>
<td>Cloth curtain + sheer</td>
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<td>3+ layers of: cloth curtain, shade, sheer, blinds, valence (shutters)</td>
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<td>Vinyl curtain only</td>
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<td>Only venetian blinds</td>
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<td>Cloth curtain + shade/blinds</td>
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<td>Cloth curtain + valence (shutters only)</td>
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<td>Cloth curtain + sheer</td>
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<td>3+ layers of: cloth curtain, shade, sheer, blinds, valence (shutters)</td>
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<td>(Shutters + 1 additional layer)</td>
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Appendix 3E

Architectural Inventory Measure (AIM) -Sample Pages

The Architectural Inventory Measure, developed as an un-weighted measure as a product of the Phase 2 investigation, was used as a weighted measure in Phase 3. The weighted measure identified a number of institutional architectural features of environments that were significantly correlated with particular behaviors (Thompson et al, 1997a & b). It is a more detailed and specific measure than its predecessor.
4. CONFIGURATION

4.1. FLOOR AREA (in ft.)

4.1.1. Floor Geometry of Room

4.1.1.1. Floor Geometry

4.1.1.1.1. rectangular or square
4.1.1.1.2. L-shaped
4.1.1.1.3. polygon

4.1.1.1.3.1. number of sides
4.1.1.1.4. Circular/oval
4.1.1.1.5. other, describe

4.1.1.2. Dimensions (in feet)

4.1.1.2.1. Room Length
4.1.1.2.2. Room Width
4.1.1.2.3. Floor Area of this Room

4.1.1.3. Number of levels

4.1.1.4. Vertical Transitions (between different floor levels)

4.1.1.4.1. No Transition
4.1.1.4.2. Step
4.1.1.4.3. Ramp

4.1.2. Floor Geometry of Whole System of Corridors

4.1.2.1. Overall layout shape

4.1.2.1.1. rectangular or square
4.1.2.1.2. H-shaped
4.1.2.1.3. L-shaped
4.1.2.1.4. T-shaped
4.1.2.1.5. U-shaped
4.1.2.1.6. W-shaped
4.1.2.1.7. curved
4.1.2.1.8. other, describe

4.1.2.2. Total Number of Segments
4.1.2.3. Total Length of All Segments
4.1.2.4. Total Floor Area of all Segments
4.1.2.5. Number of levels
4.1.2.6. Number of Open Connections to Other Floors (no doors)

4.2. WALL

4.2.1. Number of walls defining the room

4.2.2. Length of Each Segment of Wall

4.2.2.1. Wall 1
4.2.2.2. wall 2
4.2.2.3. wall 3
4.2.2.4. wall 4
4.2.2.5. wall 5

4.3. COLUMNS

4.3.1. Number of Columns

4.3.2. Pattern of Columns

4.3.2.1. No Pattern
4.3.2.2. Grid Pattern
4.3.2.3. Linear Pattern
4.3.2.4. Other Pattern, describe

4.3.3. Dimensions of each columns (in inches)
   4.3.3.1. minimum plan dimension
   4.3.3.2. maximum plan dimension

4.4. CEILING
   4.4.1. Ceiling Configuration
       4.4.1.1. flat - one level
       4.4.1.2. flat - multiple level
       4.4.1.3. pitch - single
       4.4.1.4. pitch - multiple
       4.4.1.5. arched
       4.4.1.6. domed
       4.4.1.7. other, describe
   4.4.2. Dimensions (in feet)
       4.4.2.1. Height at the Lowest Point of the Ceiling
       4.4.2.2. Height at the Highest Point of the Ceiling
       4.4.2.3. Average Ceiling Height
   4.4.3. Ceiling Penetration
       4.4.3.1. skylight

4.5. DOORWAY
   4.5.1. Total Number of Doorways in Room
   4.5.2. Total Number of Doorway Types
   4.5.3. Describe Each Doorway Type Using the Same Following Format (exclude closet and partition doorways)
       4.5.3.1. Total Number of Doorways of This Type
       4.5.3.2. Dimensions of doorway (in inches)
           4.5.3.2.1. opening width
           4.5.3.2.2. opening height
           4.5.3.2.3. depth of wall at opening
       4.5.3.3. Frame Material
           4.5.3.3.1. wood
           4.5.3.3.2. metal
           4.5.3.3.3. same as wall
           4.5.3.3.4. none
       4.5.3.4. Total number of doors within this doorway
       4.5.3.5. If Doorway has NO door, then finish Doorway Format, else continue
           4.5.3.5.1. Number of panels in doorway
           4.5.3.5.2. Door Material by percentage
               4.5.3.5.2.1. glass
               4.5.3.5.2.2. fabric
               4.5.3.5.2.3. metal
               4.5.3.5.2.4. vinyl
               4.5.3.5.2.5. wood
               4.5.3.5.2.6. other, describe
           4.5.3.5.3. Door Rigidity
               4.5.3.5.3.1. Rigid
               4.5.3.5.3.2. Flexible
           4.5.3.5.4. Door Operation
               All
4.5.3.5.4.1. bifold
4.5.3.5.4.2. bypass
4.5.3.5.4.3. Dutch door
4.5.3.5.4.4. folding (accordion)
4.5.3.5.4.5. pivot
4.5.3.5.4.6. revolving
4.5.3.5.4.7. rolling
4.5.3.5.4.8. sliding & folding
4.5.3.5.4.9. sliding-bypass (multiple panels)
4.5.3.5.4.10. sliding-pocket
4.5.3.5.4.11. sliding-wall-hung slides against wall
4.5.3.5.4.12. swinging
4.5.3.5.4.13. swinging & pivoting
4.5.3.5.4.14. other, describe

4.5.3.5.5. Door Hardware
4.5.3.5.5.1. Point of Operation
   4.5.3.5.5.1.1. handle
   4.5.3.5.5.1.2. knob
   4.5.3.5.5.1.3. lever
   4.5.3.5.5.1.4. panic bar
   4.5.3.5.5.1.5. push plate
   4.5.3.5.5.1.6. other, describe
4.5.3.5.5.2. other door hardware
   4.5.3.5.5.2.1. none
   4.5.3.5.5.2.2. door stop
   4.5.3.5.5.2.3. elevator call button
   4.5.3.5.5.2.4. elevator floor/arrival designator
   4.5.3.5.5.2.5. hinges
   4.5.3.5.5.2.6. kickplate
   4.5.3.5.5.2.7. lock
   4.5.3.5.5.2.8. mechanical door closer
   4.5.3.5.5.2.9. mechanical door opener
   4.5.3.5.5.2.10. other, describe

4.5.4. End of Doorway format, repeat as necessary

4.6. WINDOW OPENINGS
4.6.1. Total Number of Openings in Room other than Doorways
4.6.2. Total Number of Openings Types
4.6.3. Describe Each Opening Type Using the Same Following Format
   4.6.3.1. total number of openings of this type
   4.6.3.2. dimensions of the opening (in inches)
      4.6.3.2.1. width
      4.6.3.2.2. height
      4.6.3.2.3. height from floor to sill
      4.6.3.2.4. rough depth of sill
   4.6.3.3. opening and wall-plane relationship
      4.6.3.3.1. corner wrapped window
      4.6.3.3.2. bay window
      4.6.3.3.3. flat window
   4.6.3.4. other, describe
   4.6.3.5. frame material
4.6.3.4.1. none
4.6.3.4.2. wood
4.6.3.4.3. steel
4.6.3.4.4. aluminum
4.6.3.4.5. vinyl clad
4.6.3.4.6. other, describe

4.6.3.5. Direction Faced (From Plan Analysis. Confirm in site)
4.6.3.5.1. north
4.6.3.5.2. south
4.6.3.5.3. east
4.6.3.5.4. west
4.6.3.5.5. northeast
4.6.3.5.6. southeast
4.6.3.5.7. southwest
4.6.3.5.8. northwest

4.6.3.6. Total number of windows within this opening
4.6.3.7. If opening has NO windows, then finish Window/Openings Format, else continue
4.6.3.7.1. number of panels in this window opening
4.6.3.7.2. UnglazedOpening, Percent
5. MATERIALS

5.1. WALLS

5.1.1. Number of Types of Wall Materials

5.1.2. Wall Surface Materials, by percentage

- 5.1.2.1. brick-masonry unit
- 5.1.2.2. brick-imitation
- 5.1.2.3. carpet
- 5.1.2.4. ceramic-tile
- 5.1.2.5. concrete masonry
- 5.1.2.6. fabric
- 5.1.2.7. fiberglass
- 5.1.2.8. glass block
- 5.1.2.9. glass panel
- 5.1.2.10. gypsum board
- 5.1.2.11. metal panel or sheet
- 5.1.2.12. plaster finish coat
- 5.1.2.13. poured concrete
- 5.1.2.14. stone-panel
- 5.1.2.15. stone-tile
- 5.1.2.16. synthetic stone
- 5.1.2.17. terrazo
- 5.1.2.18. tile
- 5.1.2.19. wall paper
- 5.1.2.20. wood-imitation
- 5.1.2.21. wood-panel
- 5.1.2.22. wood-plywood
- 5.1.2.23. wood-strip
- 5.1.2.24. wood-tile
- 5.1.2.25. other, describe

5.1.3. Texture of the Wall Materials, by percentage

- 5.1.3.1. relief (3 D)
- 5.1.3.2. rough
- 5.1.3.3. smooth

5.1.4. Finish of the Wall Materials, by percentage

- 5.1.4.1. brushed
- 5.1.4.2. clear-sealed
- 5.1.4.3. enamel
- 5.1.4.4. exposed/unfinished
- 5.1.4.5. fabric
- 5.1.4.6. painted-gloss
- 5.1.4.7. painted-matte
- 5.1.4.8. painted-semigloss
- 5.1.4.9. polished
- 5.1.4.10. stained
- 5.1.4.11. varnished
- 5.1.4.12. vinyl-smooth
- 5.1.4.13. vinyl-textured
- 5.1.4.14. wallpaper
5.1.4.15. other, describe

5.1.5. Wall Details

5.1.5.1. Baseboards

5.1.5.1.1. Percentage of room walls without baseboards

5.1.5.1.2. Number of types of Baseboard

5.1.5.1.2.1. Describe each Baseboard type using the same following format

5.1.5.1.2.1.1. Percentage of this type
6. SYSTEMS

6.1. ARTIFICIAL LIGHTING

6.1.1. Number of Fixtures

6.1.2. Number of Fixture Types

6.1.3. Describe each Fixture type using the same following format

6.1.3.1. Number of Fixtures of This Type

6.1.3.1.1. type of lamp

6.1.3.1.1.1. incandescent
6.1.3.1.1.2. fluor, conventional
6.1.3.1.1.3. fluor, compact
6.1.3.1.1.4. halogen
6.1.3.1.1.5. neon
6.1.3.1.1.6. other, describe

6.1.3.1.2. character of fixture

6.1.3.1.2.1. exposed
6.1.3.1.2.2. functional
6.1.3.1.2.3. decorative
6.1.3.1.2.4. ornate

6.1.3.1.3. mounting

6.1.3.1.3.1. free standing floor
6.1.3.1.3.2. free st-furniture
6.1.3.1.3.3. recess ceil mtd
6.1.3.1.3.4. surface ceil mtd
6.1.3.1.3.5. track ceil mtd
6.1.3.1.3.6. pendant ceil mtd
6.1.3.1.3.7. recess wall
6.1.3.1.3.8. surface wall
6.1.3.1.3.9. track, wall
6.1.3.1.3.10. extended wall
6.1.3.1.3.11. furniture mounted
6.1.3.1.3.12. luminous ceiling,
6.1.3.1.3.13. cove wall/ceili
6.1.3.1.3.14. other, describe

6.1.3.1.4. percentage of structure/base material

6.1.3.1.4.1. concealed
6.1.3.1.4.2. metal
6.1.3.1.4.3. plastic
6.1.3.1.4.4. cer/porce/gl
6.1.3.1.4.5. wood
6.1.3.1.4.6. other, describe

6.1.3.1.5. lens material

6.1.3.1.5.1. no lens
6.1.3.1.5.2. glass
6.1.3.1.5.3. plastic
6.1.3.1.5.4. other, describe

6.1.3.1.6. shade material

6.1.3.1.6.1. exposed lamp
6.1.3.1.6.2. fabric
6.1.3.1.6.3. glass
6.1.3.1.6.4. integral/sculptural
6.1.3.1.6.5. metal
6.1.3.1.6.6. paper
6.1.3.1.6.7. plant material
6.1.3.1.6.8. plastic
6.1.3.1.6.9. other, describe

6.1.3.1.7. switch
6.1.3.1.7.1. switch location,
6.1.3.1.7.1.1. on fixture
6.1.3.1.7.1.2. on wall
6.1.3.1.7.1.3. in power cord
6.1.3.1.7.1.4. other, describe

6.1.4. End of Fixture type format, repeat as necessary

6.2. OTHER ELECTRICAL SERVICES
any presence of meter, elevator, security

6.2.1. number of electric meter
6.2.2. length of conduit (in feet) 6.2.3. number of power outlets
6.2.3.1. typical height above finished floor (in inches)

6.2.4. number of elevator call buttons
6.2.5. number of elevator floor designator panels

6.2.6. Security Alarm and Detection
6.2.6.1. No
6.2.6.2. Yes

6.2.7. Number of telephones
6.2.7.1. portable
6.2.7.2. wall mounted
6.2.7.3. pay phone
6.2.7.4. multi-function

6.2.8. Communication

6.3. HEATING AND COOLING
6.3.1. Total Number of Primary Heating/Cooling Units in Room
6.3.2. Total Number of Types of Primary Heating/Cooling Units in Room
6.3.3. Describe Each Heating/Cooling Type Using the Following Format
6.3.3.1. Type of primary heating/cooling unit
6.3.3.2. total number of heating/cooling units of this type
6.3.3.3. heating/cooling delivery
    6.3.3.3.1. cast iron rad
    6.3.3.3.2. oth flr rad
    6.3.3.3.3. wall radiator
    6.3.3.3.4. baseboard
    6.3.3.3.5. floor vent grill
    6.3.3.3.6. wall vent grill
    6.3.3.3.7. ceiling vent grill
    6.3.3.3.8. duct with vent grill
    6.3.3.3.9. indep thro-wall htr
    6.3.3.3.10. indep thro-wall AC
    6.3.3.3.11. indep wind mtd htr
    6.3.3.3.12. indep wind mtd AC
6.3.3.13. **other, describe**

6.3.3.4. dimensions of the unit (in inches)

6.3.3.4.1. **height**

6.3.3.4.2. **width/length**

6.3.3.4.3. **depth**

6.3.4. **End of Heating and Cooling Type Format, repeat as necessary**

6.3.5. **Supplemental Heating, indicate number**

6.3.5.1. **fireplace**

6.3.5.2. **woodstove**

6.3.5.3. **portable electric heater**

6.3.5.4. **portable kerosene heater**

6.3.5.5. **oil or gas stove**

6.3.5.6. **other, describe**
7. FURNITURE

7.1. SEATING

7.1.0. Total number of seating positions in room
7.1.1. Total number of pieces of seating furniture in room
7.1.2. Total number of types of seating furniture in room
7.1.3. Describe each type of seating furniture using the same following format

7.1.3.1. total number of units of this type
7.1.3.2. total number of units matching this type style
7.1.3.3. seat type

7.1.3.3.1. table/desk chair
7.1.3.3.2. easy chair
7.1.3.3.3. sofa/couch
7.1.3.3.4. stool
7.1.3.3.5. highchair
7.1.3.3.6. bench
7.1.3.3.7. ottoman
7.1.3.3.8. pillow, cushion, or bag chair
7.1.3.3.9. other, describe

7.1.3.4. plan shape

7.1.3.4.1. round or oval (5 or more sides)
7.1.3.4.2. triangle
7.1.3.4.3. square or rectangular
7.1.3.4.4. irregular

7.1.3.5. dimensions (in inches)

7.1.3.5.1. largest outside dimensions

7.1.3.5.1.1. height
7.1.3.5.1.2. width
7.1.3.5.1.3. depth

7.1.3.5.2. inside width/seating width

7.1.3.6. percentage of the following materials

7.1.3.6.1. wood
7.1.3.6.2. metal
7.1.3.6.3. plastic
7.1.3.6.4. fabric
7.1.3.6.5. upholstery
7.1.3.6.6. glass
7.1.3.6.7. stone
7.1.3.6.8. tile
7.1.3.6.9. plant material
7.1.3.6.10. other, describe

7.1.3.7. mobility

7.1.3.7.1. built-in
7.1.3.7.2. attached
7.1.3.7.3. free-standing
7.1.3.7.4. other, describe

7.1.3.8. action

7.1.3.8.1. none
7.1.3.8.2. reclining
7.1.3.8.3. rocking
7.1.3.8.4. swinging
7.1.3.8.5. swivel
7.1.3.8.6. up and down
7.1.3.8.7. rolling/casters
7.1.3.8.8. other, describe

7.1.4. End of type of seating furniture Format, repeat as necessary

7.2. TABLE/DESK

7.2.1. Total number of tables and desks in room
7.2.2. Total number of types of tables and desks in room
7.2.3. Describe each Table/Desk type using the same following format

7.2.3.1. total number of units of this type
7.2.3.2. table/desk types
7.2.3.2.1. desk
7.2.3.2.2. drafting table
7.2.3.2.3. end table/stand
7.2.3.2.4. dining table
7.2.3.2.5. coffee table
7.2.3.2.6. side/serving table
7.2.3.2.7. tray table
7.2.3.2.8. picnic table
7.2.3.2.9. dressing table
7.2.3.2.10. other, describe

7.2.3.3. plan shape
7.2.3.3.1. round or oval (5 or more sides)
7.2.3.3.2. triangle
7.2.3.3.3. square or rectangular
7.2.3.3.4. irregular

7.2.3.4. largest outside dimensions (in inches)
7.2.3.4.1. height
7.2.3.4.2. width
7.2.3.4.3. depth

7.2.3.5. Percentage of the following materials
7.2.3.5.1. brick
7.2.3.5.2. concrete masonry
7.2.3.5.3. fabric
7.2.3.5.4. glass
7.2.3.5.5. metal
7.2.3.5.6. plant material
7.2.3.5.7. plastic
7.2.3.5.8. stone
7.2.3.5.9. tile/ceramic
7.2.3.5.10. upholstery
7.2.3.5.11. wood
7.2.3.5.12. wood composite board
7.2.3.5.13. other, describe

7.2.3.6. mobility
7.2.3.6.1. built-in
7.2.3.6.2. attached
7.2.3.6.3. free-standing
7.2.3.6.4. rolling/caster
7.2.3.6.5. other, describe

7.2.3.7. action
  7.2.3.7.1. swivel
  7.2.3.7.2. folding
  7.2.3.7.3. hinged
  7.2.3.7.4. none
  7.2.3.7.5. other, describe

7.2.4. End of Table and Desks Type Format, repeat as necessary

7.3. **BED** (a sofabed is a sofa)
  7.3.1. Total number of beds in room
  7.3.2. Total number of types of beds in room
8. OTHER OBJECTS & DECORATIONS

8.1. WALL DECORATIONS

PERSONAL OBJECTS

8.1.1. number of framed 2D art or photos
8.1.2. number of unframed 2D art or photos
8.1.3. number of 3D art
8.1.4. number of Glass, Crystal and China
8.1.5. number of Handicrafts (baskets, pottery, needle point)
8.1.6. number of awards, diploma or plaques
8.1.7. number of religious or devotional objects
8.1.8. number of mementos (snap-shots, cards, children's art)

INSTITUTIONAL OBJECTS

8.1.9. number of official notices (bills, schedules)

8.2. HORIZONTAL SURFACE (Shelf, Window sill or ledge)

PERSONAL OBJECTS

8.2.1. number of framed 2D art or photos
8.2.2. number of unframed 2D art or photos
8.2.3. number of 3D art
8.2.4. number of Glass, Crystal and China
8.2.5. number of Handicrafts (baskets, pottery, needle point)
8.2.6. number of awards, diploma or plaques
8.2.7. number of religious or devotional objects
8.2.8. number of mementos (snap-shots, cards, children's art)

INSTITUTIONAL OBJECTS

8.2.9. number of official notices (bills, schedules)

8.3. FLOOR

PERSONAL OBJECTS

8.3.1. number of 3D art
8.3.2. number of Handicrafts (baskets, pottery, needle point)
8.3.3. number of religious or devotional objects
8.3.4. number of other type I, describe

INSTITUTIONAL OBJECTS

8.3.5. number of other type II, describe

8.4. CEILING

PERSONAL OBJECTS

8.4.1. number of 3D art
8.4.2. number of Handicrafts (baskets, pottery, needle point)
8.4.3. number of religious or devotional objects
8.4.4. number of other type I, describe

INSTITUTIONAL OBJECTS

8.4.5. number of other type II, describe

8.5. CLOCKS

8.5.1. Total number of types of clock in room

8.5.2. Describe each type using the same following format

8.5.2.1. Number of clocks by type
8.5.2.1.1. alarm clock
8.5.2.1.2. clock radio
8.5.2.1.3. chime clock
8.5.2.1.4. cuckoo clock
8.5.2.1.5. part of appliance
8.5.2.1.6. [Change to industrial]
8.5.2.1.7. other, describe
8.5.2.2. location
  8.5.2.2.1. wall hung
  8.5.2.2.2. floor standing
  8.5.2.2.3. on desk/table
  8.5.2.2.4. on a shelf
  8.5.2.2.5. on appliance
  8.5.2.2.6. other, describe

8.5.3. End of Clock Type format, repeat as necessary

8.6. PLANTS/FLOWERS

8.6.1. Total number of plant/flowers in room by size (cylindrical volume)
  8.6.1.1. small ([d and h] < 1ft.)
    8.6.1.1.1. number of silk or plastic flowers and plants
    8.6.1.1.2. number of fresh-cut flowers
    8.6.1.1.3. number of dried flowers/plant
    8.6.1.1.4. number of live plant (specify)
  8.6.1.2. medium (1 ft < [d and h] < 2.5 ft.)
    8.6.1.2.1. number of silk or plastic flowers and plants
    8.6.1.2.2. number of fresh-cut flowers
    8.6.1.2.3. number of dried flowers/plant
    8.6.1.2.4. number of live plant (specify)
  8.6.1.3. large (2.5 ft < [d and h] < 4 ft)
    8.6.1.3.1. number of silk or plastic flowers and plants
    8.6.1.3.2. number of fresh-cut flowers
    8.6.1.3.3. number of dried flowers/plant
    8.6.1.3.4. number of live plant (specify)
  8.6.1.4. very large ([d and h] > 4 ft.)
    8.6.1.4.1. number of silk or plastic flowers and plants
    8.6.1.4.2. number of fresh-cut flowers
    8.6.1.4.3. number of dried flowers/plant
    8.6.1.4.4. number of live plant (specify)

8.7. TRASH CONTAINERS

8.7.1. Total number of types of trash container in room
8.7.2. Describe each Trash Container type using the same following format
  8.7.2.1. number of trash container of this type
  8.7.2.2. dimensions (in inches)
    8.7.2.2.1. height of top from floor inches
    8.7.2.2.2. diameter of trash container in inches
  8.7.2.3. material
    8.7.2.3.1. metal
    8.7.2.3.2. wood
    8.7.2.3.3. plastic
    8.7.2.3.4. plant material (wicker/basketry)
    8.7.2.3.5. ceramic

8.7.3. End of Trash Containers format, repeat as necessary
8.8. SIGNAGE

8.8.1. Total number of signage

8.8.2. Number of signage by type

8.8.2.1. building identifier
8.8.2.2. directional
8.8.2.3. directory
8.8.2.4. exit
8.8.2.5. location map
8.8.2.6. name plate, room identifier
8.8.2.7. no smoking
8.8.2.8. product advertisement
8.8.2.9. room number
8.8.2.10. other, describe
Appendix 4

Photographs & Ratings from Phase 2 Research
### APPENDIX 4 A

**List of Photographs & Ratings from Phase 2 Research**

(Some dissertation illustrations were not part of the study)

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#### Key

**Building Types**

- **D=** Dormitory
- **G=** Group Home
- **H=** Hospital
- **M=** Mid-Highrise Apt
- **N=** Nursing Home
- **P=** Public Housing
- **R=** Rooming House
- **S=** Single Fam Dwelling
- **T=** Town/Row house
- **W=** Walk-Up Apartment

**Areas**

- **BA=** Bathroom/toilet
- **BR=** Bedroom
- **DR=** Dining Room
- **EXT=** Exterior
- **HA=** Hall
- **KIT=** Kitchen
- **LAUN=** Laundry
- **LDR=** Living/Dining Rm
- **LO=** Lounge/Living Rm
- **LOB=** Lobby/Living Rm
- **LR=** Living Room
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Appendix 4B

Photographs Used in Phase 2 Research
Appendix 5

Selected Examples of Building Types:
Plans, Elevations & Syntax Diagrams
Appendix 5A

List of Drawings, Diagrams & Charts
### Appendix 5A

**Selected Examples of Building Types: List of Drawings & Diagrams**

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Appendix 5B

Comparative Drawings of Building Type Exemplars
Appendix 5 Selected Examples of Building Types: Plans, Elevations & Syntax Diagrams
Appendix 5C

Dormitory
Appendix 5 Selected Examples of Building Types: Plans, Elevations & Syntax Diagrams
Dormitory D-1 Syntax Diagram
Appendix 5D

Group Home
Appendix 5 Selected Examples of Building Types: Plans, Elevations & Syntax Diagrams

CONTEXT
SITE/FLOOR PLANS
UNIT & ROOM PLANS

EAST ELEVATION

FIRST FLOOR
SECOND FLOOR
SECOND FLOOR PLAN
Appendix 5E

Hospital
Hospital H-2 Syntax Diagram
Appendix 5F

Mid-Highrise Apartment Building
Appendix 5 Selected Examples of Building Types: Plans, Elevations & Syntax Diagrams

THIRTY-SIXTH FLOOR PLAN

ENTRY & LOBBY - 1ST FLOOR

UNIT PLAN
Appendix 5 Selected Examples of Building Types: Plans, Elevations & Syntax Diagrams

Mid-Highrise M-3 Space Syntax Diagram
Appendix 5G

Nursing Home
NURSES STATION / TRIPLE BEDROOM
Nursing Home N-1 Syntax Diagram
Appendix 5H

Public Housing (Townhouse)
Public Housing (Townhouse Type) P-3 Syntax Diagram
Appendix 5I

Single Family House
Appendix 5 Selected Examples of Building Types: Plans, Elevations & Syntax Diagrams

FIRST FLOOR PLAN

SECOND FLOOR PLAN

BASEMENT FLOOR PLAN
Single Family Dwelling S-2 Syntax Diagram
Appendix 5J

Walk-Up Apartment Building
Appendix 5 Selected Examples of Building Types: Plans, Elevations & Syntax Diagrams

W2 - CONTEXT

GROUND FLOOR PLAN

WEST ELEVATION

EAST ELEVATION
Walk-Up Apartment Building W-2 Syntax Diagram
Curriculum Vitae:
Julia Williams Robinson

Birth
Washington, D. C. United States of America 1947

Secondary Education
High School diploma, Academy of the New Church Girls School, Bryn Athyn, PA (with honors) 1964

Advanced Education
M.A. Anthropology, University of Minnesota 1980
Bachelor of Architecture, Univ.of Minnesota (with distinction) Bachelor of Arts. (Arch. Major), Univ. of Minnesota 1971 1968

Registration
Registered Architect, Minnesota 1982-present

Academic Positions
University of Minnesota, Department of Architecture
Professor 1994-present
Chair, College Faculty Assembly 1998-present
Director of Graduate Studies, Architecture 1991-96, ’02-3
Associate Professor with Tenure 1985-1994
Assistant Professor 1980-85
Lecturer 1975-80
Director, Arch Dept Netherlands Travel Program 1999, ’02, ‘04
Eindhoven Technical University, Visiting Professor 1994
Massachusetts Institute of Technology, Visiting Scholar 1988-89

Selected Academic Service
Conference Chair, Environmental Design Research Assoc (EDRA) “People Shaping People Shaping Places” 2003
Architectural Research Centers Consortium (ARCC), President (1992-4) & other Board positions 1986-1998
Internatl Assoc. for Person-Environment Studies (IAPS) Board 1986-1994

Selected Research
“Affordable Housing” US Dept of Housing & Urban Dev 2004-
“Design Monitoring” Minn. Dept of Natural Resources 1998-2003
"Housing Form: Empirical Description", PI, NEA 1984-1986

Selected Publications
The Discipline of Architecture, book co-edited with A. Piotrowski, Minneapolis, University of Minn Press 2001
“Architecture and Stigma,” with T. Thompson, for Measuring Enabling Environments, E. Steinfeld & G. Danford (eds), Plenum 1999
Programming as Design, monograph w. J. S. Weeks, School of Arch & Landscape Arch, Univ of Minnesota 1984