

1986

Maslow Interpreted for the Residential Environment

Leslie Marie Poirier
University of Rhode Island

Follow this and additional works at: <https://digitalcommons.uri.edu/theses>

Terms of Use

All rights reserved under copyright.

Recommended Citation

Poirier, Leslie Marie, "Maslow Interpreted for the Residential Environment" (1986). *Open Access Master's Theses*. Paper 621.

<https://digitalcommons.uri.edu/theses/621>

This Thesis is brought to you by the University of Rhode Island. It has been accepted for inclusion in Open Access Master's Theses by an authorized administrator of DigitalCommons@URI. For more information, please contact digitalcommons-group@uri.edu. For permission to reuse copyrighted content, contact the author directly.

MASLOW INTERPRETED
FOR THE RESIDENTIAL ENVIRONMENT

BY
LISA MARIE POIRIER

A Research Project Paper
submitted in Partial Fulfillment
of the Requirements for the Degree of

MASTER
IN
COMMUNITY PLANNING

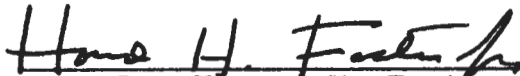
UNIVERSITY OF RHODE ISLAND

1986

MASTER OF COMMUNITY PLANNING
RESEARCH PROJECT
OF
LISA MARIE POIRIER

Approved:

Major Professor


Dr. Howard H. Foster Jr.

Acknowledged:

Director


Dr. Howard H. Foster Jr.

UNIVERSITY OF RHODE ISLAND

1986

TABLE OF CONTENTS

List of Illustrations.....	i
List of Tables.....	ii
Preface.....	iii
CHAPTER	
I.....	1
Introduction.....	1
Significance of the Issue: The Meaning of the House.....	3
II. Current Literature on the Relationship between Residential Quality and Residential Satisfaction.....	7
III. Issue Identification: Maslow's Hierarchy of Prepotent Needs.....	12
Physiological Needs.....	15
Lighting.....	16
Sound.....	19
The Thermal Environment.....	21
Free Anatomical Movement.....	25
Need for Safety.....	32
Need for Love and Belongingness.....	40
Need for Self-Esteem.....	47
Need for Self-Actualization.....	55
IV. Conclusion.....	58
Footnotes.....	62

ILLUSTRATIONS

1. Maslow's Hierarchy of Needs and Supportive Environmental Attributes.....14
2. Tolerance and Comfort with Temperature and Duration.....24
3. Key to Dimensions of Body Sizes.....28

LIST OF TABLES

1. Distribution of Body Sizes.....	27
2. Common Hardware Problem Areas.....	33
3. Peripheral Motives Derived from Safety Needs.....	36
4. Peripheral Motives Derived from Love and Belongingness Needs.....	42
5. Peripheral Needs Derived from Esteem Needs.....	50

PREFACE

The concept for this study emanated from an enlightening experience I once had while touring several "governmentally - planned" residential developments in northeastern Greece as part of the University of Illinois Summer Program in Greece, 1984. This was my first introduction to the devastating effects of poor planning.

The Greek people in this part of the country have a close relationship with their land which is central to their way of life. The residential developments I witnessed were the antithesis of the residents' natural and rural nature which has been part of their culture for centuries.

The houses were large, concrete structures of three, four, and five stories which seemed to isolate the residents from the land as well as from each other. The land lots which fronted the buildings were conspicuously small and rectangular, intersected by cement sidewalks and pathways. In my wildest imagination, I could not conceive of these natural people adapting to such foreign structures. It seemed to me that absolutely no consideration was made of precisely who would be living in

their buildings and what their needs and desires might be. Basic to my way of thinking, is the belief that designing for people and understanding their needs is the only sound approach to designing and planning residential environments.

In adopting Maslow's Model of Prepotent Needs as a way of understanding basic human needs, and applying this model in the consideration of design criteria, I feel I have touched upon the fundamental rudiments of man-environment relationships. The field of Man-Environment Studies, or Environmental Psychology, is a relatively new yet rapidly growing discipline which has received a great amount of support. There are still many unanswered questions; however, pertaining to the ways in which man and his environment interact. The present study is made in an attempt to creatively respond to some of these questions.

I would like to acknowledge my Research Committee, Dr. Howard H. Foster Jr., Dr. Irving Spaulding, and Dr. Farhad Atash for all their help and guidance in seeing me through this project. I am greatly indebted to Dr. Paul W. Dahlgren and the Office of Residential Life for giving me the time to complete this project and the support I needed. And finally, I would like to thank Mr. Christopher M. McGreavy and Ms. Louise A. Poirier for their unending encouragement which they generously gave from the beginning.

CHAPTER I

Introduction

Planners and developers have been criticized for designing residential environments which do not meet the needs of the resident-user. There exists a gap between the expectations of the planner-developer and those of the resident-user. This condition results in residents' lack of satisfaction with the area in which they live.

Residential satisfaction could be enhanced if consideration were given during the design of a residential area to the effects of the physical and social residential environment and the psychological needs of its inhabitants.

Planners should understand the basic and inherent needs of residents who will live in the buildings they are designing; these needs are complex, individual and changing. However, Abraham Maslow's Hierarchy of Prepotent Needs is a framework of use for generalizing about these needs. (1)

The present study begins by introducing the meaning of the house in different cultures. A discussion follows

of current literature on the concepts of residential quality and satisfaction. The needs of the residents are described with Abraham Maslow's Hierarchy of Prepotent Needs which consists of the psychological needs; the needs for safety; the needs for love and belongingness; the needs for esteem of self and others; and the needs for self-actualization.

The Significance of the Issue:

The Meaning of the House

The house is an important and meaningful aspect of the built environment. It is argued that the house "embodies not only personal meaning but expresses and maintains the ideology of prevailing orders." (2) As a significant cultural object, the house is endowed with meaning according to the world view and ethos of the designers, builders, users, and observers of the house in its final form. (3) There are diverse meanings people ascribe to houses from one culture to another. (4) (5)

In many traditional societies, for example, houses enclosed sacred space: deities dwelt there, religious rituals were performed while profane activities were proscribed, and the hearth, like the temple, helped to unify natural, social, and super-natural realms and to resolve symbolically the conflicts among them. (6)

Attitudinal differences also exist within cultures. A 1980 study conducted by James S. Duncan of the social worlds of two elite groups within an Indian city discovered two strikingly opposing attitudes towards the house,

especially with regards to status achievement. The old elite achieve status through group-oriented activities demonstrated by spending large sums of money on weddings, funerals, and large parties for relatives and friends. Prestige is granted to those group members who bestow their wealth to their extended family and status peers. The old elite are sentimental towards their house. They hope that the house will be passed along from one generation of the family to another. However, despite its transfer from one family member to another, the house is considered a private container of the extended family rather than an arena of status display.

Conversely, the new elite achieve status through individualistic spending patterns. They place an emphasis on purchasing consumer goods. The house serves as the most important status object for this group since it is a showcase for the other goods that this group collects for itself.(7)

For most groups in our culture, the house is considered the central or "anchoring" point of the larger community setting. The typical person spends most of his time in the house; the house is one's most valuable possession; the house is endowed with a great emotional meaning; and the house is increasingly the center of recreation previously taking place elsewhere.(8)

In a series of interviews with a panel of white, middle-income persons in the Seattle area, R.M. Rakoff

reveals attitudes towards the house reflective of mainstream American culture. For many panel members, the house is a commodity or an investment opportunity to be bought and sold for profit in addition to being a place to live. The house is defined as the place where child rearing takes place, making the common distinction between house and a home. The house is an indicator of personal status and success. The house renders a sense of permanence and security. Panel members mention the desire of "sinking roots," "nesting," and generally settling down. Relative to permanence and security, the house is described as a powerful symbol of order, continuity, physical safety, and a sense of place or physical belonging. There exist sharp differences in these meanings; however, since some panel members consider the permanence of the home as "a positive antidote to the felt chaos of the outside world, while others experienced that permanence negatively as a trap, a symbol of lost hope for change, a mark of personal indecision or failure." (9) Closely tied in with this thought is the feeling that the house provides a refuge from the outside world. This search for refuge brings with it the following:

A desire to escape from other people and from social involvement, the establishment of a place from which others could be excluded, and where, consequently, one could truly be oneself in control, 'more of an individual,' capable of loving, and fully human. (10)

A final attitude reported in the study is that ownership is necessary for actualizing any or all of the above feelings. Those panel members who rent their houses are also in agreement with this attitude. Ownership is considered a necessary ingredient of freedom. The freedom gained from ownership is expressed as the ability to change physical structures and personal behavior, the freedom from other's control, the freedom from the responsibility to others and their property, or the freedom from the perceived uncertainty of the outside world. Most importantly, the "freedom that people associate with owned houses express their belief, that these private spaces are a real and proper realm of self-fulfillment." (11)

CHAPTER II

Current Literature on the Relationship Between Residential Quality and Residential Satisfaction

As described in the previous section, one's attitude towards his life and the outer world are closely related to one's attitude towards his residential environment. Residential environment in this case refers to one's dwelling unit plus the immediate area surrounding the dwelling unit. This relationship between attitudes is described in terms of satisfaction by Campbell, Converse and Rodgers in their 1976 study of the quality of American life. With respect to residential environments they write:

Satisfaction with community is strongly related to satisfaction with the neighborhood, and satisfaction with neighborhood shows a strong relationship to housing satisfaction. Satisfaction with these domains of the environment are also related to satisfaction with other domains of life experience. Finally, satisfactions with these residential environments, as well as satisfaction with other domains of life experiences, are related to expressed satisfaction with life as a whole. (12)

The type of relationship between life satisfaction and

residential satisfaction, suggested by Weidemann, et al., is its relation to a larger concern for quality of life. However, the measurement of residential satisfaction does not depend on life satisfaction but rather on the satisfaction of specific aspects of the residential environment.

Satisfaction with one's own residential environment is an important issue since "even though a person's assessment of his financial well-being, family life, and health are more germane to the overall quality of life... the residential environment is subject to greater alteration by design and planning than any of the other situations of the individual." (13)

Evaluation of residential environments made in the past by planners and designers have been based on several criteria. Among these are economic criteria which consider the relationship between rent and income; physical criteria which consider the structural quality of the dwelling; and social criteria which consider the incidence of disease and the degree of resident crowding. It is argued that these criteria are insufficient for evaluating residential environments since they ignore the quality criteria of the residents themselves. (14)

The use of residential satisfaction as a criterion for evaluating the quality of the residential environment is a concept initially suggested by Fried and Gleicher in 1961; they state that "of the many varieties of resident

perceptions and behaviors, residents' satisfaction might be a more appropriate criteria for evaluating the quality of housing than characteristics such as plumbing or structure." (15) Since 1961, there have been many attempts to investigate and understand the physical as well as social aspects of the residential environment and how they relate to residential quality. (16) (17) (18)

There is little disagreement that the residential environment is a highly complex concept. F.C. Ladd points out the "complexity and interdependency of attributes associated with residential environments as well as the groups that determine where residences are located, what they look like, and, to some extent, how they are used." F.C Ladd proposes three sets of factors to suggest the complex nature of residential environments: "perceiver groups" such as residents, developers, mortgage bankers, politicians, planners, architects, urban designers, and real estate board members; "environmental factors" such as the region, urban, suburban and rural neighborhood configuration, and house type; and "associated factors" such as density, crowding, privacy, security, location, and spatial layout. (19)

To further complicate this system, "changes in the socio-cultural context, in economic events, media-influenced styles, and the moment in history may change the salience and evaluation of environmental qualities." (20)

Yet another obstacle to consider in evaluating

residents' perceived evaluation of their environments lies in problems with valid measurement; among these is the problem of dissonance reduction.

This concern is related to the problem of dissonance reduction - the tendency for an individual to avoid conflict between past actions and the resultant current attitudes. It has been argued that people often refuse to recognize or admit their dissatisfaction with a past decision such as the selection of their present place of residence. This refusal to recognize or admit dissatisfaction may occur at the conscious or subconscious levels. In a similar vein, it has been suggested that some people have a tendency to respond in ways which are socially desirable or positive. (21)

A great deal of effort has been exerted to understand ways of improving and evaluating the quality of residential environments. The use of perceived residential satisfaction has received substantial support and is favored in comparison to objective measurements of physical characteristics. Attempts to assess residential satisfaction however, have faced several problems due to the complex, individual, and ever-changing concept of perceived residential satisfaction. Some authors have focused on user needs of residents to improve residential quality and this concept has also received some criticism.

Campbell, et al., point out three problems in applying the concept of residential satisfaction to the quality of life experience based on user needs. First, individual needs differ among individuals from time to time. Second,

a sense of satisfaction is a personal experience influenced by past experiences and current expectations of individuals. Third, the question must be raised about whether the quality of life of a society can be measured by the extent to which its overall needs are satisfied. Campbell sites John Stuart Mill's suggestion that "it is better to be a human being dissatisfied than a pig satisfied; better to be Socrates dissatisfied than a fool dissatisfied." (22)

Campbell's criticisms against the use of user needs as criteria for residential quality are strong; however, there exists a psychological model for understanding human needs which responds favorably to these criticisms. Abraham Maslow's hierarchy of prepotent needs provides a model for understanding human needs which allows for individual differences yet maintains that humans possess five intrinsic needs common to all. These needs are hierarchially arranged in a sequence. A lower level need must be satisfied to an unspecified extent before the level above it can be satisfied. However, this sequence is not fixed and more than one need may dominate at the same time; therefore it follows the personal developmental pattern of the individual. Maslow's model does not require that all needs be met at the same time but rather the individual strive at his own pace towards the satisfaction of the final and ultimate need, self-actualization.

CHAPTER III

Issue Identification:

Maslow's Hierarchy of Prepotent Needs

Abraham Maslow is known as one of the founders of humanistic psychology; a "positive theory of human motivations". (23) By 1968, the humanistic movement had grown to such an extent that it is referred to as a strong third alternative to behavioristic psychology and orthodox Freudianism, two prevalent theories at that time. (24)

Maslow developed five levels of human needs: physiological, safety, love and belongingness, esteem of others and self, and self-actualization. These needs are arranged in ascending order. As each level of need is attained and satisfied, people strive to reach higher levels, the ultimate being self-fulfillment.

All people are born with these five basic needs. In his article entitled "Toward a Clarification of the Need Hierarchy Theory," Charles Brockett states that "at the heart of Maslow's work are the assumptions that 'the individual is an integrated, organized whole', that the primary motivational forces in human behavior are intrinsic

'instinctoid needs'." (25)

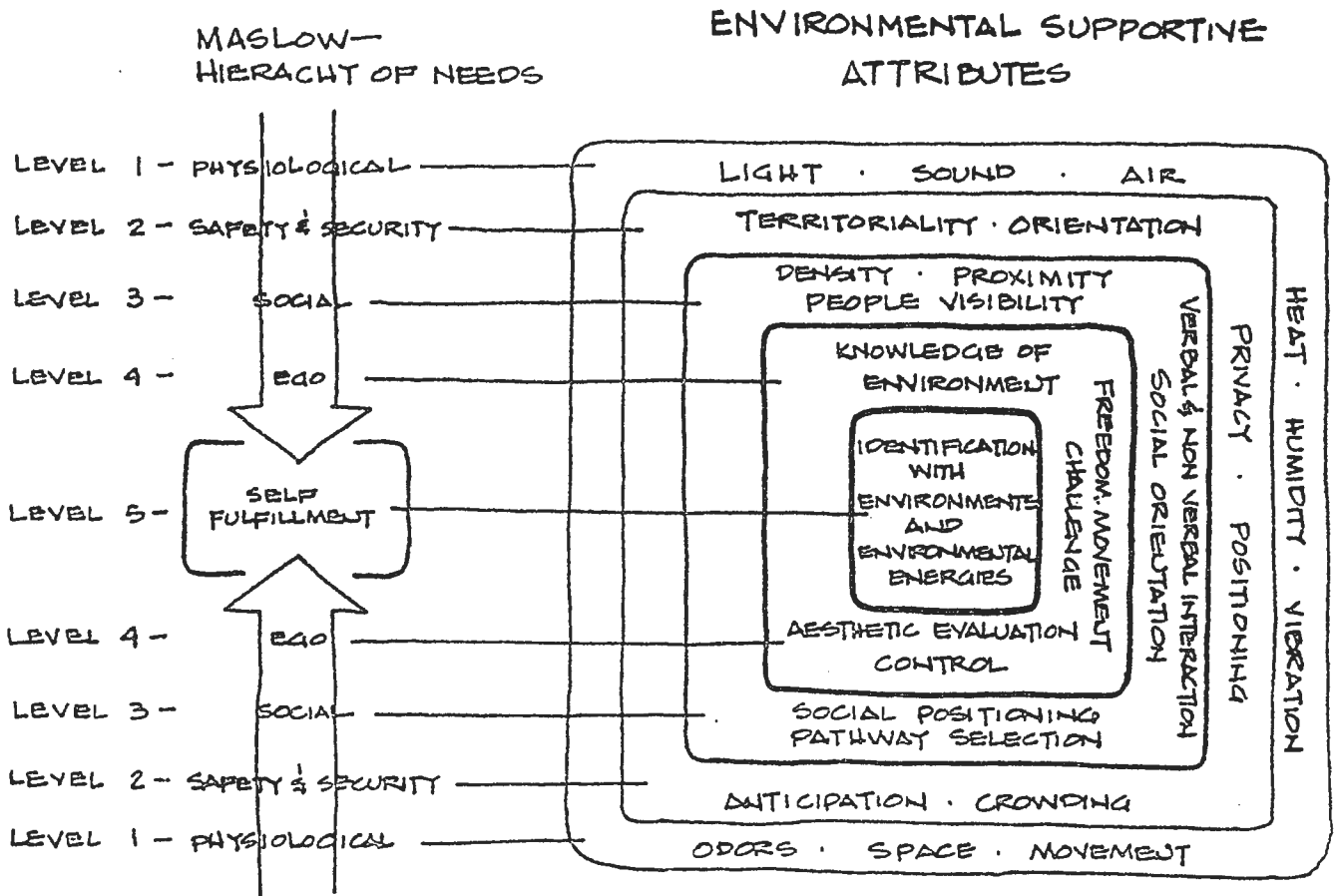
Maslow's theory has received a substantial amount of examination and support, and has been applied to other disciplines outside the psychological field. (26)

Maslow's hierarchy of prepotent needs is applied as a framework for "encompassing the concept of human needs of the attributes of biological, social and psychological behavior" of people in the work environment. (27)

Another application of Maslow's model is in D. Lester's development of a questionnaire to measure the level of people's satisfaction at each of the five levels in the hierarchy described by Maslow. The questionnaire was administered to 166 college undergraduate students. As expected, the level of basic needs satisfaction was found to be related to scores on measures of neuroticism and of belief in an internal locus of control.(28)

The five basic needs within Maslow's hierarchy model are elaborated on individually in the following section. A framework for applying Maslow's model is borrowed from A. Kaplan and is used as a guideline in the following analysis. (See Figure 1) Each need is discussed relative to considerations that could be made in the planning and design of residential environments to create a supportive environment which encourages an individual in fulfilling his needs. The considerations proposed are from literary sources as well as personal creative input. Further suggestions for design ideas which support the efforts of

Figure 1
 Maslow's Hierarchy of Needs
 and Supportive Environmental Attributes



SOURCE: Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July, 1976):p.248.

individuals in satisfying their basic needs are highly encouraged and are limited only by one's imagination.

Physiological Needs

Maslow is quoted as saying that "to survive, man needs food, clothing and shelter. These represent the most essential need." The need for shelter is related to the residential environment and is expressed as sufficient degrees of light, sound, thermal conditions, and free anatomical movement.

The importance of considering these factors in the residential environment is reflected in A. Kaplan's interpretation of Maslow's physiological need as applied to the work environment:

work environments: shelter for the work situation includes the ambient factors of sufficient intensities of light, sound, air, and heat. These factors must be considered in proper balance with human sensory stimulation requirements and tolerances for physiological well-being and productive work performance, for, no matter how well programmed and designed a space is, people cannot work well, or at all, without properly controlled ranges of ambient factors. ...Anatomical movement should be included on this level, for, with lack of movement, there is stagnation of body fluids and its ensuing discomfort. (29)

The physiological needs of adequate light, sound, thermal conditions, and anatomical movement are analyzed in their relation to design considerations of the residential

environment in the following section.

Lighting

The natural and artificial lighting of residential environments is an important design criterion as it potentially affects residents' health and safety, performance, comfort, aesthetic appreciation and color effects. (30) Sufficient lighting enhances residents' health and safety since "more illumination would increase the probability of seeing hazards and reduce the likelihood of accidents. In three European industrial site studies where in-force lighting was increased from about 15 to 100 footcandles, accidents dropped about 50 percent". (31) The information gained from this study can be incorporated into the design of residential environments.

Extreme levels of light, bright and dark, affect the health of the eye. Extreme brightness may burn the retina of a human eye while extreme darkness may cause eye strain and produce damage over the long run. It is also suggested that insufficient lighting may have nonvisual health effects as well. (32)

Human performance can be enhanced by planning various levels of lighting intensity according to the activities taking place in a specific area. If the activities generally taking place in an area are important and difficult requiring a lot of detail, illumination levels should be higher. Conversely, illumination should be lower

where more relaxed and less important activities take place. (33) The use of different lighting sources according to different activities is also an efficient, energy-saving concept.

A design suggestion along the lines of practicality and lighting according to activity is that if "lighter surfaces (ceilings, walls, floors, furniture) are used they will reflect more light, and the room will be brighter. If dark woods, fabrics, and paints are used in places where important seeing is required, either more light will have to be provided, or there will be a risk of poor seeing."

(34)

Overly bright light alone, or together with contrasting light sources, creates a glare which results in discomfort and difficulty in seeing. If a source of light is bright enough, its background light is highly contrasting, and the light is directed at a person's eyes, that person experiences disability and possibly discomfort. A good example of this is the headlights on an approaching car in the evening hours. The amount of disability and discomfort experienced by a person depends on the size of the light source, the contrast of the light and its background, and the direction the light is coming from.

To avoid the discomfort and difficulty in seeing caused by glare, the amount of luminance introduced into a room should reflect the direction a person is facing and the frequency with which the person looks in that

direction. For example, if a person looks up towards the ceiling from a seated position and it is necessary to look in this direction frequently, the amount of luminance from a lighting fixture on the ceiling should be relatively low to prevent glare. Additionally, windows may produce glare problems if the ground is snow-covered or if the sun is visible. To prevent such glare problems, standing and sitting positions should be located either where the user does not directly face the window or where he can pull the blinds. (35) Three factors are found to enhance aesthetic pleasantness: pleasantness, visibility, and spaciousness.

Pleasant lighting consists of a combination of different lighting systems. Best is the combination of overhead diffuse and downlighting and peripheral lighting. A visibility factor emerges - the more illumination the lighting system produces, the higher the judged visibility factor. The amount of illumination is unrelated, however, to lighting pleasantness. The third factor, spaciousness, is greater when peripheral lighting is used - when the walls were light. Spaciousness is also somewhat higher with illumination. (36)

Color is considered an important aspect of the luminous environment; however, the majority of conclusions from research performed on the effects of color are loosely supported. It is suggested that this may be due to poor research or that many reactions to color are very small effects. (37)

The most commonly studied reaction to color is color

pleasantness or preference. Results from various studies generally show that: warm colors such as reds, yellows, and oranges are less preferred than cool colors such as blues, greens, and purples; there is a growing preference for increasing lightness in hues. Black and white is preferred to gray; and high-lightness-contrast combinations of object and background colors are highly liked, low-lightness-contrast combinations are liked less. That is, preferred combinations are light object colors with dark background colors, or vice-versa. (38) One study consisted of judges relating certain moods to color hues: blue connotes moods and feelings such as security, comfortableness, tenderness, soothing, calm, and serene; red connotes moods such as exciting, protective, defending, and defiant; orange connotes moods such as distressed and upset; black connotes moods such as despondent and powerful; purple connotes moods such as dignified; and yellow connotes moods such as cheerfulness. Although color is thought to convey emotions, there is little evidence in support of this notion.(39)

Sound

Noise is an increasing problem in our civilization. Noise levels in the United States are reported to be doubling every ten years. However, sounds and sound levels can be controlled through proper planning and design with the purpose of enabling individuals to hear desired sounds and to avoid unwanted sounds, otherwise known as noise.(40)

The level and quality of sound in residential environments potentially effects the health, performance, comfort, and perceived pleasantness of its residents.

A health-related issue of environmental noise is that "as people in our society get older, they experience a further reduction in sensitivity at higher frequencies (of sound). The ensuing loss in hearing ability for higher-frequency music and for women's voices is believed to be due to exposure to a variety of noises of civilization."
(41)

It is suggested that a concern with noise and hearing loss is that the symptoms of these problems are hidden. A person may experience a temporary loss of hearing following exposure to a high dosage of noise; however, without protection and prevention this person may have acquired a permanent hearing loss. (42) Although inconclusive, research suggests a possible correlation between exposure to high levels of noise and problems in the nervous and reproductive systems. (43)

A noisy environment is said to effect performance levels. Among these possible effects are six factors: (1) steady (white) noises have no performance effects unless greater than .90 decibels (dB); (2) lower-intensity, irregular bursts may have performance effects; (3) higher-frequency sounds have greater effects than those of lower frequencies; (4) noise may increase the variability of performance. Thus, if work is influenced by the speed of machines in the work environment rather than self-paced,

performance decrements might take place; (5) noise may effect the quality rather than quantity of performance; and finally (6) complex tasks are more likely to be adversely influenced than simpler tasks. Some of these effects may be transitory and therefore take place only at the beginning of the noise; some effects may take hours to develop. Also, distraction plays a significant role in both these effects and in the resulting performance loss. (44)

Discomfort from noise is referred to as annoyance. It is known that relatively pure tones are more annoying than more complex sounds; in addition, sound frequencies most sensitive to the ear such as speech frequencies are annoying.

To reduce noise levels stemming from outside the home, outside-wall insulation should be installed. In the case of multi-dwelling units such as apartment complexes, sound reducing partitions should be installed. Within the house itself, noise sources can be controlled through the use of carpets, draperies, and sound-absorptive ceilings. (45)

Music is considered a popular sound-pleasantness condition; however, a problems exists in the use of music since people have diverse musical tastes and a concensus may be difficult to attain. (46)

The Thermal Environment

Humans gain or lose heat from three primary sources

of heat transfer within the environment: conduction, convection, and radiation. Conduction is heat transfer through direct contact with materials such as copper pipes and other metals. Convection is heat transfer through media such as moving air. The movement is based on adjacent thermal differences; for example, hot air rises. Radiation is heat transfer from a source through air without an intervening media. A window or wall that is hotter or colder than room air temperature may be heat radiated. There may be severe heat radiation to workers from furnaces or ovens. Evaporation is the mechanism by which humans cool off in hot environments. As persons perspire in an overly hot environment, the sweat evaporates, and the person is then cooled. (47)

The thermal environment is composed of four factors which affect human thermal comfort: temperature, humidity, velocity, and radiation sources. Other important factors are insulation, such as clothing, and activity level. Thermal comfort is considered a primary criterion for interior spaces. Safety and performance are also highly relevant factors. (48)

Although there are individual differences in conditions at which people report thermal comfort, people are generally comfortable in temperatures in the upper seventies ($^{\circ}\text{F}$), and are only "slightly cool" or "slightly warm" in temperatures ranging from 68°F (20°C) to 86°F (30°C). Thus, people can be comfortable at a wide range of

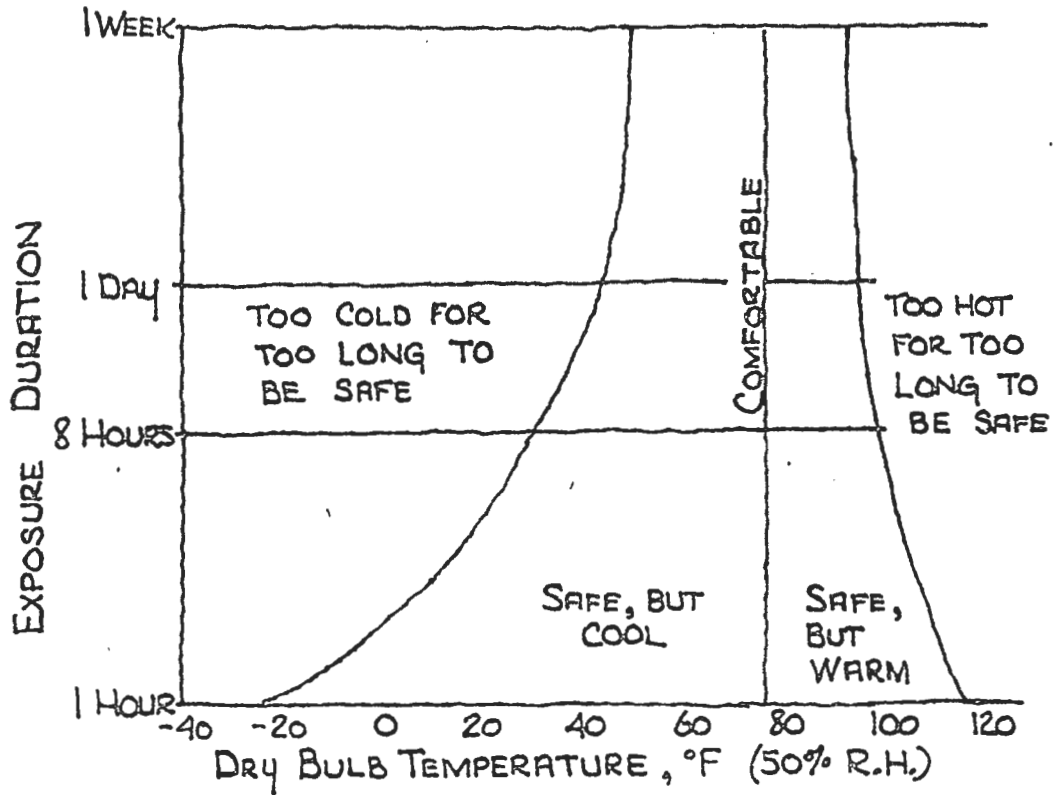
temperatures. (49)

Studies of the effects of room temperature on performance suggest that fairly extreme and uncomfortable levels of heat and cold are necessary to have an effect. Some effects of more typical, but warm, room temperatures have resulted in slight performance loss.

A study of the effects of temperature on crowding in interior spaces reports that under high temperature and crowded conditions, subjects were less happy and less likely to like another (hypothetical) person. Both effects of high heat and of crowding may intensify any existing feelings, whether positive or negative. (50)

Human tolerance for extreme temperatures, under clothed conditions, is analyzed. (See Figure 2) The right hand curve shows that humans can endure (stay alive) at temperatures as high as 90° F (32°C) indefinitely and temperatures above 110° F (43°C) for brief periods. The left hand curve shows that humans can stand temperatures as low as 50° F (10°C) indefinitely and as low as -25° F (-39°C) for a brief period. It is thought that healthy, appropriately dressed people can tolerate these extreme temperatures; however, there are reports that deaths in hospitals increased when room temperatures went outside the 60-80° F (16-27° C) range. The center vertical line proposes that comfort occurs at 78° F (25°C) regardless of duration. The far right and left regions are too hot or too cold for the given duration to be safe. The inner

Figure 2
 Tolerance and Comfort with
 Temperature and Duration



SOURCE: Corwin Bennett, Spaces for People: Human Factors in Design, (New Jersey: Prentice-Hall, Inc., 1977) p.129.

regions are too warm or too cool for comfort. It is important to note that the above description does not consider the varying effects of humidity, activity, and acclimatization which may alter the figures significantly. (51)

Free Anatomical Movement

Residential environments could be enhanced if consideration were made of anthropometric factors, the measurements of man, and of how man physically fits into his environment with the intention of enhancing free anatomical movement. Attention should be paid to body size, seating, and hardware such as handles for doors, lighting, and controls.

Factors such as age, evolution, sex differences and cultural differences influence body size. The process of aging is the most significant of these factors as reflected in the growth of the body during the first two decades of life. Over centuries of evolution, people are getting larger; they are taller as well as heavier. Our body size decreases by a fraction of an inch during the course of one day due to the weight of the body on the spine; this results in compression of the discs within the spine. Men and women differ in height: women average 5'3" (159cm) in height, men 5'8" (172cm), thus average adults are 5'5" (166cm) tall. There are also body size differences among cultural groups: "Americans are among the largest peoples

of the world. West Europeans are quite large. Orientals are smaller." (52) When designing environments for a large, diverse population, the sum of mean estimates alone is inadequate. Designers should attempt to accommodate the greatest percentage of people possible by adjusting the mean figures accordingly.

Suppose a console is intended to be low enough for seated people to see over. The mean sitting eye height for a 16-inch (41cm) high seat is about 46 inches (117cm) from the floor. But if we design the console to be 46 inches high, then fully half of the population would not be able to see over it easily! If we set the height equal to that of the smallest 5 percent of the population, that is at 44 inches (112cm), then 95 percent should be able to see over it readily. In some cases it is so inexpensive to accommodate a large fraction of the population that we extend this common 95 percent design goal and design for almost everyone. The standard 6'8" (203cm) door height is tall enough for more than 99 % of the population. (53)

Useful anthropometric studies have been carried out listing a variety of body measurements. A brief summary of average sizes of various sections of the human body, and the location of these body sections in relation to other sections of the body is available to the planner and designer. (See Table 1 and Figure 3) All linear measures are in inches, with centimeters in parentheses, with the exception of weight which is in pounds; kilograms are in parenthesis. The "50%" numbers, the 50th percentile, are the medians. Half the people are smaller

Table 1

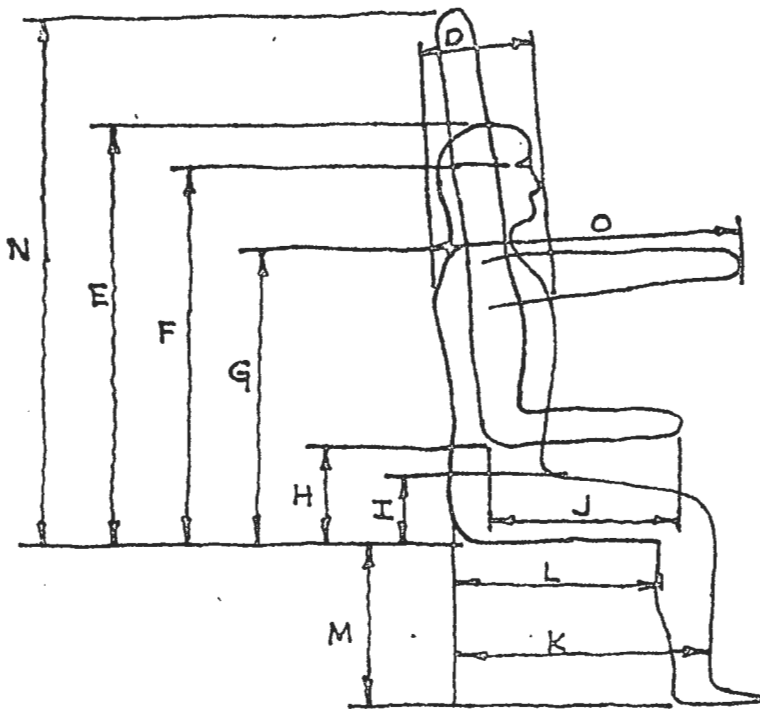
Distribution of Body Sizes

Dimension*	Women					Men				
	1%	5%	50%	95%	99%	1%	5%	50%	95%	99%
A Weight	93(42)	104(47)	137(62)	199(91)	236(107)	112(51)	126(57)	166(76)	217(99)	241(110)
B Standing Height	57(144)	59(149)	63(159)	67(170)	69(175)	62(157)	64(162)	68(172)	73(184)	75(190)
C Shoulder Breadth	13(34)	14(36)	15(39)	17(44)	18(45)	15(39)	16(41)	17(44)	19(45)	20(47)
D Chest Depth	6(15)	6(16)	7(19)	8(21)	9(22)	6(16)	7(18)	8(20)	9(23)	9(24)
E Sitting Height	30(75)	31(78)	33(84)	36(90)	37(93)	32(81)	33(84)	36(91)	38(96)	39(99)
F Sitting Eye Height	26(67)	27(69)	29(74)	31(79)	32(82)	28(71)	29(73)	31(78)	33(84)	34(88)
G Sitting Shoulder Height	20(52)	21(53)	23(56)	25(60)	26(66)	21(52)	21(54)	23(59)	25(64)	26(65)
H Sitting Elbow Height	6(16)	7(18)	9(23)	11(28)	12(30)	6(16)	7(19)	10(24)	12(29)	12(32)
I Sitting Thigh Height	—	—	—	—	—	4(10)	5(12)	6(14)	6(16)	7(17)
J Elbow to Finger Tips	—	—	—	—	—	17(43)	18(45)	19(48)	20(51)	21(53)
K Buttocks to Front of Knee	20(51)	21(53)	22(57)	24(61)	25(63)	20(51)	21(54)	23(59)	25(64)	26(66)
L Buttocks to Back of Knee	16(41)	17(43)	19(48)	21(53)	22(56)	16(42)	17(44)	20(50)	22(55)	23(57)
M Floor-to-Sitting Height	14(36)	15(37)	16(41)	18(44)	18(46)	15(39)	16(40)	17(43)	18(46)	19(48)
N Upward Reach from Seat	—	—	—	—	—	—	52(130)	55(139)	59(150)	—
O Forward Reach from Back	28(71)	29(73)	31(79)	34(85)	34(87)	31(78)	32(81)	35(88)	37(94)	39(98)

* Dimensions A, B, C not portrayed. Other dimensions shown in Figure 3.1. First units are inches or pounds (second units are centimeters or kilograms).

SOURCE: Corwin Bennett, Spaces for People: Human Factors in Design, (New Jersey: Prentice-Hall, Inc., 1977) p.32.

Figure 3
Key to Dimensions of Body Sizes



SOURCE: Corwin Bennett, Spaces for People: Human Factors in Design, (New Jersey: Prentice-Hall, Inc., 1977)p.33.

than these values, half are larger. The other points, the 1st, 5th, 95th, and 99th percentiles, tell what size exceeds only one percent, five percent, 95 percent, or 99 percent of the people. Data in Figure 3 show that sitting eye height is the distance from the seat to eye level: 95 percent of the women have sitting heights of 36 inches (90cm) or less.

Seating is a consideration of vital importance from designing for people. As a basic rule, good seating design uses the maximum possible body area in support of the body (54)

"Static work" is the term used to describe the difficulty in seat comfort.

In the usual dynamic work some part of the body is moving, for example, in walking or lifting. In static work no movement takes place. Such work leads to physical fatigue because of the inadequate exchange of chemical products in the muscles and elsewhere. For example, if the seating is inadequate the lower arms or back must be held by the body in position rather than being supported by chair arms or back. Static work is stressful to particular muscles, as certain muscles must contract to maintain the static position. (55)

There are "design do's and don'ts" with regard to seating design. The following list includes ten considerations that should be made when designing seating accommodations for people:

1. There is no one healthy human posture. Posture designs should fit the activity taking place while a person is seated.
2. A person's trunk should be nearly upright.
3. A person's back should be supported up to the shoulder blades; this protects the lower back.
4. Seats should permit anatomical movement; highly contoured seats meant to fit the body should be avoided.
5. Some upholstery is desirable; over padding which locks the body into one position and restricts movement should be avoided.
6. Proper seat base height is important. If the seat base is too low, the thighs will be raised off the seat base and the buttocks, which should support most of the weight, will only be partially on the seat. If the seat base is much too low it places the trunk and thighs at an acute angle and compresses the internal organs. At this low height it is also difficult to get on and off for the tall, heavy, old, or otherwise disabled. If the seat base is too high the lower legs will dangle at the knees rather than being supported by the feet, producing heavy stress on the underside of the thighs. An adjustable seat base height ranging from 15 inches (37cm) to 18 inches (45cm) is desirable although expensive.
7. Seat bases should be the proper depth. If the seat bases is too short, the weight will be supported by an inadequate portion of the buttocks and thighs if the seat

base is too long it will place pressure on the back side of the calves.

8. Arm rests are necessary for proper body support.

9. Foot rests may be needed if seat height is too great to permit resting the feet flat on the floor. The foot rest should measure at least 2 feet by 2 feet to permit change of position of the feet.

10. For some activities stools are desirable. Stools are preferred to chairs when activity requires the ability to alternately sit and stand frequently. Stools should have back rests for support. (56)

A final consideration here for enhancing the anatomical movement of individuals is the importance of designing locations and functions of hardware within the residential environment. Designers need to consider various aspects of hardware including location, size, and force requirements in terms of the human user. Hardware should be safe, efficient, readily operated, comfortable when used, and good looking. The designer must be "concerned, think through how the hardware will be used, and test it. Consider such straightforward ideas as putting a door handle on the opening side of the door instead of in the middle or making a handle fit the hand - not too large or small or ornate, not requiring too much force for many people." (57)

A list of hardware needs for consideration in the design of interiors provided and can be adapted to the

design of the residential environments. (See Table 2)

The Need for Safety

According to Abraham Maslow, "when psychological needs are satisfied, man wants to keep and protect what he has. He starts to try to stabilize his environment for the future". (58)

The need for safety is characterized by the desire for an understandable, secure, and orderly world. Maslow categorized the manifestations of the safety needs as the needs for "security, stability, dependency, protection, freedom from fear, from anxiety and chaos, need for structure, order, law, limits, and strength in the protector". A common factor underlying all the above needs is the "need for prediction and control". (59)

When these needs are not satisfied, individuals may view the world and others as "unsafe, unjust, inconsistent, or unreliable". (60) Also, peripheral motives may develop which act as coping devices which serve to reduce the anxiety of the individual. However, coping effects are merely temporary and do not cure the situation completely because "they do not eliminate the past threat upon which the anxiety is based". (61) The peripheral motives derived from safety needs and their respective behavioral descriptions are provided. (See Table 3)

A. Kaplan provides a useful framework for applying Maslow's safety needs to the work environment which can be

Table 2
Common Hardware Problems Areas

Windows

- Ease of opening, closing, locking, unlocking
- Ease of cleaning both sides
- Ease of seeing that the window is closed so that people do not walk through, push furniture through, or fall through
- Ease of use as an emergency escape route

Doors

- Ease of opening, closing, locking, unlocking
- Clearance for both people and furnishings
- Weather-proof
- Nonsticking, nonrattling
- Soundproof
- Fireproof
- Ventilation through
- Seeing that sliding glass door is closed so that people do not walk through
- Clearance around in order to get past or get wheelchair into room
- Emergency door hardware operable by weakest from a wheelchair
- Opens with, not against traffic flow
- Door locations to east traffic flow, expedite emergency escape, control noise

Stairs

- Optimize for user(s), not for leftover space
- Accessible for both people and furnishings
- Handrails to fit both children and adults, to prevent children from falling through or getting stuck in
- Minimize number of continuous steps to conserve energy and minimize stress
- Have ramps for wheelchairs

SOURCE: Corwin Bennett, Spaces for People: Human Factors in Design, (New Jersey: Prentice-Hall, Inc., 1977) pp. 53-55.

Table 2, Cont.

Hallways

- Passage to fit capacity (furniture as well as people)
- Straight, not curved or changing pathway (consider rush, bottlenecks, intersections)
- Signs, markings to help one find his way
- Illuminate
- No large fillets at base of wall that people might step on
- No slick floors
- No visual glare at ends of hallway

Cabinetry

- Design to fit articles to be stored, not just to fit leftover space
- Drawer slides for heavy loads—provide stops
- Watch for door-fold interference, drawer clearance
- Handles that fit, not just pretty or absent or camouflaged
- Doors that stay open or closed
- Locks on critical doors or drawers
- Avoid deep inaccessible cupboards or drawers

Plumbing / Fixtures

- Splash
- Bumping head
- Handles that fit, operate logically, easily, accurately
- Contact hazard removal
- Handrails, handholds
- Nonslick surfaces
- Accessible for repair
- Do not produce noise, vibration
- Consider potential leak problems

Built-in Light Fixtures / Switches

- Right location (illuminate task, not observer)
- Access for relamping, cleaning
- Optimize light distribution (minimize shadow, glare)
- Locate switches so they can be found, reached

Electrical Conveniences

- Adequate number, located where needed
- Accessible not only to normal adults but also to children, wheelchair operator
- Make childproof

Table 2, Cont.

- Make shockproof

Heating / Cooling System & Equipment

- Ventilation not degraded when doors are closed.
- Continued ventilation when power fails
- Understandable controls
- Automatic sensors(s) located where they sense the pertinent conditions
- Locate vents for optimum performance, not ease of installation
- Vents that can be controlled (reliable, do not break off or not close completely)
- Watch out for noise produced by system or that passes through system

Storage

- Space should fit purpose
- Space should be convenient, accessible
- Space should be illuminated
- Consider fire, explosion hazards
- Consider closure requirements (ease of, locking, interference)
- Storage fixtures, shelving to fit

Most Common User-Interface Failure Points

- People have to locate themselves with respect to parking, building, entrance, interior hallway, doors, spaces.
- People have to see where they are going (illumination).
- People have to manipulate—doors, windows, drawers, faucets, thermostats, etc.
- People have to see signs, printed matter, written material, instrument faces, etc. (color, brightness, contrast, format, illumination).
- People have to maintain balance and posture control, have help to move (handholds, handrails).
- People have to move themselves or furnishings about—clearance (doors, hallways, stairs); stairs.
- People have to clean, replace, refurbish, repair.
- People need to store things.
- People may have to escape in a hurry—routes, more than one exit, emergency illumination, etc.
- People need peace and quiet, also need to have their fun without bothering others.
- People need power conveniences for their electrical add-ons, tools, hobbies, etc.
- People need reasonable thermal environment and good ventilation.

Table 3
Peripheral Motives Derived from Safety Needs

<i>Peripheral Motive</i>	<i>Behavioral Definition</i>
1. Abasement	To blame oneself; to surrender, apologize, confess, atone, comply, and accept punishment.
2. Dependence (succorance)	To seek aid, protection, sympathy, or help.
3. Approval (deference)	To admire, emulate, cooperate with, yield eagerly to, and willingly serve a leader.
4. Order	To structure events through controlling the arrangement of persons and objects, such as:
Rejection	to exclude or ignore others;
Contrarience	to assume a negative or oppositional stance in relation to others;
Acquisition	to work for possessions;
Conservance	to collect, repair, or preserve objects;
Retention	to be miserly in retaining possession of objects.

SOURCE: Joel Aronoff and John R. Wilson, Personality in the Social Process (New Jersey: Lawrence Erlbaum Associates, 1985) p.41.

extended and adapted to an analysis of the residential environment (62) Five aspects of the need for safety, or security subneeds, are proposed: territoriality, privacy, orientation, positioning, and anticipation.

The first security need, territoriality, is expressed by Kaplan in his framework, as a need which is "human, not animal, by design features of borders, edges and other devices which give definition to space". (63)

Territoriality is expressed by others as the need to "possess a defended space as an innate, universal characteristic of humans" and "that our attachment to property is of an ancient biological order...man has an inherent drive to gain and defend an exclusive property." (64)

Geographer J.D. Porteous outlines three territorial satisfactions which the ownership of a house provides: "control over space, personalisation of space as an assertion of identity, and stimulation which is accomplished by defending one's territory." Security, Porteous maintains, is "both physical and psychic and it can be obtained in the home and also in its individual cores, usually bedrooms, boudoirs or studies." (65) Porteous continues by suggesting that "the rectangular, single-family structure standing on its own yard is that which is preferred in the Western World." (66)

The use of fences and other physical barriers such as the planting of trees and shrubs is considered effective in

expressing needs for territoriality in that they define borders and give definition to space.

...the fence offered protection, made the property look neat, aided in cleaning, clearly delineated private from public property, revealed residents' concern about their property and trespassing, and suggested that outsiders who invaded could anticipate a hassle with the resident, and would be hard put to justify their entry. Thus a fence provides clearer boundary definitions, facilitates access control, aids in maintenance of the space, and confers stronger proprietary rights upon the resident. (67)

Privacy is Kaplan's second security need which he expresses as "the need to be undisturbed by others when desired, provided by the structure of the environment". (68)

In her book entitled The Need for Roots, Simone Weil claims that private property is "a vital need of the soul".

The soul feels isolated, lost if it is not surrounded by objects which seem to it like an extension of the bodily members. All men have an invincible inclination to appropriate in their own minds anything which over a long, uninterrupted period they have used for their work, pleasure or the necessities of life. It is desirable that the majority of people should own their own house and a little piece of land round it. (69)

Privacy, therefore, is a crucial need and substantial effort should be made to plan and design residential environments allowing for the maximum amount of privacy

possible.

A. Kaplan proposes a third security need, the need for orientation, and refers to this as "the need to know one's relative position in time and space by the use of environmental cues." (70)

Charles Brockett supports this view in maintaining that "much of Maslow's discussion on the safety needs can be understood as an explanation of the need for the 'frame of reference' -and as indirectly applying to 'physical safety'."(71) Brockett states further that "growth proceeds better when the body is protected from injury and the mind from 'too much' disorientation. As explained by E. Fromm in The Sane Society, the latter need (a frame of reference) refers to the need for a context by which one can understand and deal with the world. He argues that there are two dimensions to this need, dimensions which correspond to the reasoning and feeling capabilities (frames of orientation and devotion, respectively). This need (on both dimensions) is created by the awareness of oneself and of the world outside oneself. Such a framework can be adequate for sanity regardless of its validity, he claims, since illusions can be functional. The development of reason is important; however, since by leading to a more accurate picture of reality it can create greater happiness and serenity, and certainly greater potential for growth." (72)

Design considerations for the residential environment which address the "need to know one's relative position in

need to emerge is what Maslow refers to as the need for love and belonging.

Once the physiological and safety needs 'are fairly well gratified' the individual 'will feel sharply the pangs of loneliness, of ostracism, of rejection, of friendlessness, of rootlessness'. The individual's well-being requires that these needs be gratified. (75)

The love and belongingness needs evolve around the desire to experience intimate relationships with other people. Along with this desire come the desires for contact, intimacy, warm and friendly relationships, and to function well in interpersonal situations. (76)

There is also the broader need to belong to a wider group. At this stage it is important for an individual to identify with group goals or a place within a group. (77)

A common issue underlying this need is the need for intimacy. If a person experiences difficulty in loving relationships, he is in a state of intimacy deprivation. Feelings of anxiety emerge which lead to the development of coping mechanisms to reduce the anxiety.

An outline is provided of six mechanisms commonly used to cope with a loss of intimate feelings which permit an individual to be "included, or to participate, in the lives of others without risking the vulnerability of fusion of identity". (See Table 4) The term "inclusion" is used to describe this general desire. (78)

time and space" could include the following: the use of windows in every room to continually inform the resident of time; the placement of clocks, calendars, and seasonal decoration throughout the residential environment.

The need to know one's position in space could be obtained through the use of area maps as wall hangings, placemats, decorative items, etc. Physical design such as outside porches overlooking yards, open areas and roadways in rural and suburban areas; verandas, and terraces in urban areas.

The security need for positioning is fourth on Kaplan's list of security needs and is described as the "disposition of our bodily orientation relative to walls, windows, doors, openings, etc., leading to feelings of safety and security". (73)

The need for positioning is closely related to the need for orientation; however, positioning refers more to one's familiarity with the physical layout of an interior environment.

The final security need suggested by Kaplan is the need for anticipation: "the need to prepare for the immediate, instantaneous future. The environment, in its design and structure, must meet our perceptual and cultural expectations:(74)

The Need for Love and Belongingness

Once a persons' need for security is sufficiently satisfied and his environment becomes more stable, the next

The first type of behavior or "mode", "passive compliance", refers to the person who achieves participation through passively joining the activities of the group. This type of person wants intimacy; however, he makes no emotional demands and gives no intimacy to others. In the second mode the person "earns the right of participation by overestimating the worth of other members and relates to them through admiration and flattery." This behavior protects the individual from intimacy by creating a distance between himself and other people. The third mode permits the person to participate in interpersonal relationships by entertaining others. In the fourth mode, the person becomes involved by making himself the scapegoat of the group. The fifth mode tests the limits of other's tolerance for aversive behavior to witness the concern for the individual. The sixth and final mode is the "investment of the self in an abstract concept of the group. Through pledging fidelity to the nonpersonal aspect of the group, this individual is able to avoid the personal aspect of intimacy and still achieve membership into a wider entity. Whatever the variant, inclusion is most fundamentally an attempt to find some guarded form of involvement with others so that some degree of intimacy can be achieved". (79)

Once an individual has sufficiently satisfied his need for intimacy, love and belongingness, and the anxiety associated with the deprivation of this need has

Table 4
 Peripheral Motives Derived from
 Love and Belongingness Needs

<i>Peripheral Motive</i>	<i>Behavioral Definition</i>
1. Recognition	To attempt to command respect by drawing the attention of others to one's actions, through the seeking of honors, or by succeeding at extremely difficult feats.
2. Dominance	To establish one's worth by controlling, persuading, dictating, and directing others.
3. Nurturance (generativity)	To establish and maintain one's sense of worth by responsibly caring for the development of persons, generations, and institutions, as well as the quality and significance of achievements and products.
4. Achievement	To be competitive in meeting standards of excellence across a wide range of transactions with the world.

SOURCE: Joel Aronoff and John R. Wilson, Personality in the Social Process (New Jersey: Lawrence Erlbaum Associates, 1985) p.45.

dissipated, he feels a stronger subjective sense of "rootedness and membership in psychologically meaningful groups".

...these people begin to have a wider identification with the species and a greater understanding of their place in the significant community. Through these developments, these wider social referents become an integral part of their personality. These strengths, together with those achieved at prior stages, increase these individuals' sense of well-being by permitting them to enjoy social relations in a more complex and integrated way. (80)

The design of residential environments influences the extent to which an individual's need for love and belongingness is satisfied by creating opportunities for interaction and by not inhibiting social satisfaction. (81)

A. Kaplan proposes three levels of social interaction for consideration in the design of interiors and site planning which can be extended to the residential environment:

1. The most basic level which fulfills an elemental social need is seeing people and their activities.
2. The intermediate level of social satisfaction is the expression of emotion, giving vent to the feelings of current and recent experiences.
3. The highest level of social interaction is the expression and exchange of ideas and is how the world comes

together. (82)

Kaplan has provided a broad and seemingly sound outline for considerations in the design of interior; however, something must be said about adequate amounts of interaction, and adequate types of interaction, within the residential environment.

A 1978 study conducted by D. McCarthy and S. Saegert entitled "Residential Density, Social Overload, and Social Withdrawal" proposes the need for adequate amounts of social interaction. (83) The McCarthy and Saegert study compares the effects of residential density on tenants in 14-story apartment buildings and tenants in 3-story walkups within the same low-income housing project. The following is hypothesized:

Tenants in the high-rise buildings would come into contact with large numbers of others in the public spaces of their buildings. As these contacts exceed resident's interaction capacity or ability to process relevant incoming social stimuli, tenants would experience social overload. This experience would be manifested by tenants' perceptions of crowding in the building, feelings of less control, safety, and privacy in the immediate residential environment, problematic social relationships among tenants and alienation and dissatisfaction with the residential environment generally. These experiences were not expected to occur for tenants in the low-rise walkups. (84)

The hypotheses proposed are supported by interview

data. It is also revealed that high-rise apartment residents were "less socially active beyond their building and felt a greater sense of powerlessness in effecting management decisions". (85)

The study raises the question about the extent to which building design can alleviate the experience of social overload, even when densities are high. It is suggested that building designers create manageable subgroups of residents which would lessen the probability of social overload. The support for creating "psychological units" within the residential environment is provided.

Clearly, all our respondents viewed their buildings as a unit of some kind. For the low-rise apartment residents, this was a unit to which they belonged, in which they felt some sense of trust, social involvement, and responsibility and which served as a base from which to extend their social commitments into the outer world. In contrast, high-rise apartment residents saw the building as a dangerous conglomerate of alien spaces and mainly threatening people. They made some differentiation between their own floors and the rest of the building but their orientation toward the building did flow over into their feelings about the floor to the extent that they felt less safe in the hall than did low-rise apartment tenants. These tenants made it clear that their major identification was with their own apartments. They neither identified with nor took responsibility for the people and spaces of the building or the project as a whole. In fact, withdrawal from external social contacts characterized their responses to a wide range of questions. (86)

These findings support the suggestion that designers seriously consider the importance of creating environmental units with which residents can identify.

Need for Self-Esteem

Once an individual has sufficiently satisfied his need for physiological factors, security, and love and belongingness, a fourth need emerges called the need for self-esteem.

According to Maslow, people desire a "stable, firmly based, usually high evaluation of themselves". The need for self-esteem is characterized by two dimensions: self-esteem or the "desire for strength, for achievement, for adequacy, for mastery, and competence,... and for independence and freedom"; and the esteem of others through reputation, prestige, dominance, recognition, attention, dignity, or appreciation. (87)

Maslow makes a qualitative distinction between self-esteem based on the opinion of others and that based on their deserved respect: "it is useful to distinguish the actual competence and achievement that is based on their will power, determination, and responsibility, from that which comes naturally and easily out of one's own true inner nature, one's constitution, one's biological fate or destiny', or as Horney puts it, out of one's Real Self rather than out of the idealized pseudo-self". (88)

The importance of achieving self-esteem to an

individual is stressed and elaborated on by G.F. Kawash and G.W. Scherf.

There is probably no personality trait more significant in the context of total psychological functioning than self-esteem, a characteristic that has been related, either empirically or theoretically, to much vital phenomena as depression, satisfactory levels of functioning in interpersonal relations, and material acceptance of children. A low self-esteem is almost certainly an impediment to intimate interpersonal functioning. The continual self-depreciation, lack of confidence, and uncertainties would be a source of irritation to, say, a marital partner who could not empathize with these behaviors. For people to be married for a substantial period of time, either compatible levels of self-esteem would be necessary or else some relationship between them would develop whereby an acceptance of differences (and consequently thereof) would be worked out. (89)

When an individual satisfies his need for self-esteem, he begins to feel that "challenges can be met with confidence, that required skills exist or can be attained, and that one's abilities can be relied upon." (90)

Individuals begin to welcome responsibility for their actions as ways of proving their competence and the world is considered an arena that provides desirable opportunities to exhibit one's competence and skill.

When experiences fail to provide rewards such as competence, the individual is deprived of his self-esteem and the concomitant feelings that he has "not been fully

effective, cannot rely on his or her abilities, and thus is searching for experience that will develop a strong sense of self-worth". (91)

Maslow explains that when an individual becomes frustrated in attempts to gain self-esteem, he experiences "feelings of inferiority, of weakness, and of helplessness" feelings which can cause either "basic discouragement" or neurotic tendencies. (92)

Anxiety develops and the individual becomes frustrated through need deprivation. As a result, the individual develops coping devices through which he seeks partial gratification. These devices are peripheral motives which, as in the previous cases, do not completely fulfill the need since they do not address the underlying source of anxiety.

Four major peripheral motives are suggested which are concerned with establishing or maintaining a strong degree of positive self-evaluation: recognition, dominance, nurturance (generativity) and achievement. (See Table 5)

A. Kaplan renames the need for self-esteem as "Ego Needs" and refers to Maslow's statement that "there are the needs that related to one's self-esteem - needs for self-confidence, independence, achievement, competence, knowledge". Kaplan continues by proposing that " the environmental design principle which most permits achievement of this higher level is control - the individual's ability to have control over his environment;

Table 5
Peripheral Motives Derived from Esteem Needs

<i>Peripheral Motive</i>	<i>Behavioral Definition</i>
Inclusion	To participate in the lives of others through: <ol style="list-style-type: none"> a. passive compliance; b. overestimation and flattery of others' virtues; c. being entertaining; d. being a scapegoat; e. provoking others to test the limits of their tolerance; f. pledging fidelity to an abstract concept of the group.

SOURCE: Joel Aronoff and John R. Wilson, Personality in the Social Process (New Jersey: Lawrence Erlbaum Associates, 1985) p.47.

the capacity to modify the environment in order to achieve personal short and long term goals and objectives. Control is effective through the use of control devices: on-off switches, etc., they describe adjustment through manual manipulation. Arrangement of furniture, equipment, etc. is made through the selection and change of environmental surfacing, material and color... Control is achieved by having alternatives and options in order to be able to choose between alternative states. Environment conditions must be selected. All levels of needs must be satisfied by choosing routes and pathways. Environmental control and alternatives lead to coping and personal feelings of being free in contrast to a lack of control leading to feelings of frustration and impotence." (93)

The importance of a sense of control in one's house as a component of self-esteem is also supported by J. Agnew who states that although he finds conflicting meanings and a variety of individual experiences, there is a "shared emphasis 'on the importance of the individual's increasing search for a realm of personal control in a world where he or she generally feels impotent'" (94)

Agnew maintains that the single-family detached house is a sufficient symbol of self-sufficiency and personal autonomy because of its "greater isolation and insulation from others". (95)

Agnew refers to a study conducted by R.M. Rakoff entitled "Ideology in Everyday Life: The Meaning of the

House" which focuses on informant's attitudes toward the owned house relative to personal control: "first, having control over one's own private space gave people a feeling of freedom from the control and intrusion of others...Second, and more importantly, people feel that by being in control of their own private space, they had the power and opportunity to make something of themselves to be more of an individual; to achieve a kind of self-fulfillment". (96)

It is further suggested by A. Rapoport that a sense of "perceived control, mastery, and competence can be achieved not only through the choice of a particular environment but also through professional activities, social achievement and other means as well as, or instead of, through dwelling personalisation: the link and explanatory variable is lifestyle." (97)

Rapoport predicts that personalisation of the residential environment is important as a means of indicating self-identity among individuals who cannot achieve a sense of mastery and self-identity through their occupation, and profession. (98)

The social status of a group should be considered in designing residential environments due to some existing differences in the ways these groups identify with their home and the way this identification is made known to others.

In support of this, Rapoport describes a study which

compares the extent to which residents of two areas of Milwaukee asserted personalisation of their homes. One area is the South Side, a blue-collar area, and the other area is the Upper East Side, a professional and academic area. It is reported that the blue-collar residents asserted an extremely high degree of personalisation for the external residence, whereas residents of the upper-class area did not assert any personalisation. Rapoport proposes that the reason for this is that the group norm of the upper-class group is the acceptance of stately old houses within the Upper East Side. Thus it is "the fact of living in that area, of having chosen it, which is the environmental way of establishing identity." Self-identity is achieved for this group more in terms of professional and academic achievements and recognition than through personalisation of the home.

Suburban-status homes are also analyzed in terms of residents' attempts to demonstrate identity through personalization of their homes.

In their analysis of the various functions of the Canadian middle-class suburban house, Seeley, Sim and Loosley describe the house as a stage which has been designed at great expense to be impressive to visitors and reflect the social standing of the owners. The hall or reception room, the living-room, dining-room and recreation room are the rooms that receive the most attention in terms of decorating and housekeeping. They state that the use of picture windows in the front overlooking the street rather than in the back with a view of the garden

illustrates this 'staging or display orientation'. Through these windows, the mildly curious passing observer may identify where the drapes permit, the owner of a chandelier, or a striking red brocade chair. (99)

In a study of a New York suburban community, presentation of the self extends from the interior "...to the facade of the house, the front garden and the neighborhood...The social characteristics of families are judged by others on the basis of their residential landscapes with attention to such small details as mailboxes ...and such details can also be used as an effective objective measure of certain social characteristics". (100)

Self-Actualization

The fifth and final need felt by an individual is the need for self actualization: this is one's need for full exercise of one's ability of awareness and understanding after one's earlier needs have been expressed and satisfied. Maslow refers to this need of the individual as "the capstone of all his other needs, man wants to realize the full range of his individual potential as a human being". (101)

A. Kaplan reports on his study of Maslow's need hierarchy interpreted for the work environment:

This level is an environmental issue only in that all other levels must usually be arrived at first. To become self-fulfilled in Maslow's terms calls for growth, self-development and self-actualization. This is an inner human consciousness which is, in part, derived from a comprehension and internalization of the roles and meanings of all interwoven environments and environmental energies and the total identification with them. (102)

Similarly, in the residential environment the final need of self-actualization is not transferred to design criteria but rather achieved through the fulfillment of the

previous needs within the self-actualizing process.

Individuals who have reached this level have been referred to as "Self-Actualizers"; they are people who "have developed or are developing to their full capacities. Characteristically, these people have a superior perception of reality, increased acceptance of self, and increases in spontaneity, detachment, autonomy, and creativity." (103)

In a comparison of self-actualizing and non-self-actualizing individuals, the personality dimensions of time usage and autonomy have been measured using Strostrom's Personal Orientation Inventory (POI). J.A. Goldman and P.V. Olczak administered the POI to study participants and report the following regarding time usage and autonomy of the self-actualizer's personality.

The self actualized person is time competent and thus appears to live more fully in the here-and-now. He appears to be less burdened by guilts, regrets, and resentments from the past than is the non-self-actualized person, and his aspirations are tied meaningfully to present working goals. In other words, a self-actualized individual is one who is more efficient in his use of time than a non-self-actualized individual.

The autonomy dimension of personality is discussed in terms of one's inner-directed and other-directed orientation.

The inner-directed person is guided by a small number of principles initiated by internalized parental values that are adhered to rigidly. The other-

directed person receives guidance from others and is directed by his contemporaries. Approval from others becomes his highest goal, and he tends to invest all power in the actual imaginary approving groups. Manipulation in the form of pleasing others and insuring constant acceptance becomes his primary method of relating. An Autonomous person is independent of extreme other-directedness, which results in a liberation from social pressures and social expectancies. (104)

Underlying the precondition for self-actualization is awareness: "insight into oneself and the outer world, including the culture. Whatever restricts such awareness, then, will undoubtedly diminish the opportunities for self-actualization - or at least adversely influence its course." (105)

By becoming aware of oneself and one's environment, one can better understand the ways the environment affects him. With this understanding comes a sense of control over the environment. Individuals can manipulate the design of their residential environments to meet their needs, and therefore create an atmosphere which supports the process of self-actualization.

CHAPTER IV

Conclusion

The thesis proposed in the present paper can be integrated into the comprehensive-rational planning process. This is a five-step continuing process consisting of: inventory, goal articulation, development of alternatives, analysis and selection of alternative; implementation, and evaluation.

In the inventory stage of the planning process, planners and designers should learn as much as possible about the people who will inhabit the residential area they are designing in the pre-construction stage. Objective as well as subjective sources of information about the residents should be investigated. Objective characteristics of the residents could include such indicators as age, ethnic background, socio-economic status, profession, and so forth. Subjective characteristics of the residents could include attitudinal surveys and personal interviews.

In addition to learning as much as possible about the future residents, planners and designers should

inventory the physical, social, economic, political, and cultural characteristics of the region where the residential site is planned. It is important for the planner and designer to know about characteristics such as climate conditions, regional economic trends, town and city political administrations and their policies, and local and regional socio-economic conditions.

The information obtained in the inventory stage of the planning process should be integrated and compiled into a profile of potential residents. This resident profile should be referred to continually and systematically updated.

In the second stage of the planning process, planners and designers should articulate the goals of their clients. A special emphasis should be made to consider the needs of future residents as a primary goal in light of the information presented in this thesis.

The development of alternative design plans in the third planning stage should be based upon the needs of the residents as outlined in this thesis. In the fourth planning stage, the alternative which best meets the needs of the residents should be selected. The plans for implementing the selected alternative is through the actual construction of the residential development and area is the fifth stage. Once the construction is completed and residents have begun to move into the residential development, planners and designers should institute an

evaluation program to continually monitor the physical and social quality of the residential area.

It is important to emphasize that the planning process is an ongoing process and does not end once the development has been constructed. Once the planner has completed the evaluation stage of the process, it is vitally important to return back to the inventory stage and follow through the process again, and perhaps again, in a constant effort to improve what has been built.

The information obtained in the evaluation stage of the planning process as well as any information obtained throughout the process should be considered in the second planning process. The value of the comprehensive -rational planning process is that it allows for changes discovered through the inventory stage to be considered. In addition, the process is self-correcting, thus allowing for any discrepancies discovered in the evaluation stage to be rectified in the following process.

Abraham Maslow's Hierarchy of Prepotent Needs model provides planners and designers with a unique and useful model for understanding basic human needs which can be well-integrated into this planning process.

There are deep-rooted and personal meanings attached to the home :a "man's castle is his home". The amount of consideration made in the planning and design of residential environments should reflect the meaningful nature of the home. Every effort should be made to

improve the quality of the residential environment beginning with the most basic elements of residential satisfaction, the extent to which user needs are met.

FOOTNOTES

- (1) Abraham Maslow, Motivation and Personality (New York: Harper & Brothers, 1954)pp. 1-411.
- (2) James S. Duncan,ed., Housing and Identity (New York: Holmes & Meier Publishers, Inc., 1982),p.1.
- (3) Robert M. Rakoff, "Ideology in Everyday Life: The Meaning of the House," Politics and Society 7 (1977):85.
- (4) Ibid., p.85.
- (5) Amos Rapoport, "Identity and Environment: A Cross-Cultural Perspective," in Housing and Identity: Cross-Cultural Perspectives, ed. J.S. Duncan (New York: Holmes & Meier Publishers, Inc., 1982),p.21.
- (6) Robert M. Rakoff, "Ideology in Everyday Life: The Meaning of the House," Politics and Society 7 (1977):85-86.
- (7) James S. Duncan, "From Container of Women to Status Symbol: the Impact of Social Structure on the Meaning of the House," in Housing and Identity: Cross-Cultural Perspectives, ed. James S. Duncan (New York: Holmes & Meier Publishers, Inc., 1982)pp.36-37.
- (8) Amos Rapoport, "Identity and Environment: A Cross-Cultural Perspective, " in Housing and Identity: Cross-Cultural Perspectives, ed. James S. Duncan (New York: Homes & Meier Publishers, Inc., 1982) p.21.
- (9) Robert M. Rakoff, "Ideology in Everyday Life: The Meaning of the House," Politics and Society 7 (1977):94.
- (10) Ibid., p.94.
- (11) Ibid., p.94.
- (12) Angus Campbell, Philip E. Converse, and

Willard L. Rodgers, The Quality of American Life: Perceptions, Evaluations, and Satisfactions (New York: Russell Sage Foundation, 1976)p.265.

- (13) Sue Weidemann and James R. Anderson, "Residents' Perceptions of Satisfaction and Safety: A Basis for Change in Multifamily Housing," Environment and Behavior 14(b) (November 1982):698.
- (14) Ibid., p.695.
- (15) Ibid., p.698.
- (16) Ibid., p.697.
- (17) Kenneth H. Craik and Ervin H. Zube, eds., Perceiving Environmental Quality: Research and Applications (New York: Plenum Press, 1976)pp.132-133.
- (18) Angus Campbell, Phillip E. Converse, and Willard L. Rodgers, The Quality of American Life: Perceptions, Evaluations, and Satisfactions (New York: Russell Sage Foundation, 1976),pp.264-265.
- (19) Kenneth H. Craik and Ervin H. Zube, eds., Perceiving Environmental Quality: Research and Applications (New York: Plenum Press, 1976)pp.150-151.
- (20) Ibid., pp.150-151.
- (21) Ibid., p.134.
- (22) Angus Campbell, Phillip E. Converse, and Willard L. Rodgers, The Quality of American Life: Perceptions, Evaluations, and Satisfactions (New York: Russell Sage Foundation, 1976),pp.9-10.
- (23) Charles Hampden-Turner, Maps of the Mind: Charts and Concepts of the Mind and its Labyrinths, (New York: Collier Books, MacMillan Publishing, Co., 1982)p.118.
- (24) Charles Brockett, "Toward a Clarification of the Need Hierarchy Theory: Some Extensions of Maslow's Conceptualization," Interpersonal Development 6(2) (1975-76):77.
- (25) Ibid., p.78.
- (26) Ibid., p.77.
- (27) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):246.

- (28) David Lester et al., "Maslow's Hierarchy of Needs and Psychological Health," Journal of General Psychology 109(1) (July 1983):83-85.
- (29) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):247.
- (30) Corwin Bennett, Spaces for People: Human Factors in Design, (New Jersey: Prentice-Hall, Inc., 1977)p.87.
- (31) Ibid., p.88.
- (32) Ibid., pp.88-89.
- (33) Ibid., p.92.
- (34) Ibid., p.91.
- (35) Ibid., p.100.
- (36) Ibid., p.102.
- (37) Ibid., p.104.
- (38) Ibid., pp.106-107.
- (39) Ibid., p.109.
- (40) Ibid., p.113.
- (41) Ibid., p.115.
- (42) Ibid., p.117.
- (43) Ibid., p.118.
- (44) Ibid., pp.119-120.
- (45) Ibid., p.123.
- (46) Ibid., pp.124-125.
- (47) Ibid., p.128.
- (48) Ibid., p.128.
- (49) Ibid., p.131.
- (50) Ibid., pp.130-131.
- (51) Ibid., pp.129-130.
- (52) Ibid., p.29.

- (53) Ibid., p.30.
- (54) Ibid., p.35.
- (55) Ibid., p.38.
- (56) Ibid., pp.38-42.
- (57) Ibid., p.52.
- (58) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):247.
- (59) Joel Aronoff and John R. Wilson, Personality in the Social Process (New Jersey: Lawrence Erlbaum Associates, 1985) p.20.
- (60) Ibid., p.20.
- (61) Ibid., p.40.
- (62) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):246.
- (63) Ibid., p.246.
- (64) Nancy G. Duncan, "Home Ownership and Social Theory," in Housing and Identity: Cross-Cultural Perspectives, ed. James S. Duncan (New York: Holmes & Meier Publishers, Inc., 1982)pp.112-113.
- (65) Ibid., pp.112-113.
- (66) Ibid., pp.112-113.
- (67) Kathleen H. Dockett, Sidney Brower, and Ralph B. Taylor, "Territorial Cognitions of Threat and Defense in the urban Residential Environment," Papers in the Social Sciences: a Journal of the College of Liberal and Fine Arts, University of the District of Columbia 1(1981):31.
- (68) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):246.
- (69) Nancy G. Duncan, "Home Ownership and Social Theory," in Housing and Identity: Cross-Cultural Perspectives, ed. James S. Duncan (New York: Holmes & Meier Publishers, Inc., 1982)p.112.

- (70) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):247.
- (71) Charles Brockett, "Toward a Clarification of the Need Hierarchy Theory: Some Extensions of Maslow's Conceptualization," Interpersonal Development 6(2) (1975-76):82.
- (72) Ibid., p.82.
- (73) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):247.
- (74) Ibid., p.247.
- (75) Charles Brockett, "Toward a Clarification of the Need Hierarchy Theory: Some Extensions of Maslow's Conceptualization," Interpersonal Development 6(2) (1975-76):43-44.
- (76) Joel Aronoff and John R. Wilson, Personality in the Social Process (New Jersey: Lawrence Erlbaum Associates, 1985) p.21.
- (77) Ibid., p.21.
- (78) Ibid., pp.44-45.
- (79) Ibid., pp.44-46.
- (80) Ibid., p.22.
- (81) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):247.
- (82) Ibid., p.247.
- (83) Dennis McCarthy and Susan Saegert, "Residential Density, Social Overload, and Social Withdrawal," Human Ecology 6(3) (September 1978).
- (84) Ibid., p.253.
- (85) Ibid., p.253.
- (86) Ibid., p.270.
- (87) Charles Brockett, "Toward a Clarification of the Need Hierarchy Theory: Some Extensions of Maslow's Conceptualization," Interpersonal Development 6(2) (1975-76):79.

- (88) Ibid., p.79.
- (89) George F. Kawash and Gerhard W. Scherf, "Self-Esteem, Locus of Control, and Approval Motivation in Married Couples," Journal of Clinical Psychology 31(4) (October 1975):715.
- (90) Joel Aronoff and John R. Wilson, Personality in the Social Process (New Jersey: Lawrence Erlbaum Associates, 1985) p.22.
- (91) Ibid., p.23.
- (92) Charles Brockett, "Toward a Clarification of the Need Hierarchy Theory: Some Extensions of Maslow's Conceptualization," Interpersonal Development 6(2) (1975-76):79.
- (93) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):247.
- (94) John Agnew, "Home Ownership and Identity in Capitalist Societies," in Housing and Identity: Cross-Cultural Perspectives, ed. James S. Duncan (New York: Holmes & Meier Publishers, Inc., 1982)p.76.
- (95) Ibid., p.76.
- (96) Ibid., p.76.
- (97) Amos Rapoport, "Identity and Environment: A Cross-Cultural Perspective," in Housing and Identity: Cross-Cultural Perspectives, ed. James S. Duncan (New York: Holmes & Meier Publishers, Inc., 1982)p.22.
- (98) Ibid., p.22.
- (99) Nancy G. Duncan, "Home Ownership and Social Theory," in Housing and Identity: Cross-Cultural Perspectives, ed. James S. Duncan (New York: Holmes & Meier Publishers, Inc., 1982)p.120.
- (100) Ibid., pp.120-121.
- (101) Archie Kaplan, "Maslow Interpreted for the Work Environment," Man-Environment Systems 6(4) (July 1976):247.
- (102) Ibid., p.247.
- (103) Jeffrey A. Goldman and Paul V. Olczak, "Self-Actualization and the Act of Volunteering: Further

Evidence for the Personal Orientation Inventory:
Further Evidence for the Personal Orientation Inventory,"
Journal of Clinical Psychology 31(2) (October
1975):287.

(104) Ibid., p.228.

(105) Charles Brockett, "Toward a Clarification of the Need
Hierarchy Theory: Some Extensions of Maslow's
Conceptualization," Interpersonal Development 6(2)
(1975-76):87.