HUMAN INTERACTION IN RESIDENTIAL ENVIRONMENTS

by

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HUMAN INTERACTION IN RESIDENTIAL ENVIRONMENTS

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ACKNOWLEDGMENTS

INTRODUCTION

The idea for this report was stimulated by two simultaneous activities: reading the book Vertical Ghetto,[1]* and reviewing a student design which I had previously completed. The design was eventually to house between 250-300 low to moderate income families on approximately seven acres. The project was all hypothetical in nature. A parallel was developed between the book which dealt with the social ills[2] of a high-rise public housing project and the design project (see Appendix A). As a designer, I was trying to avoid promoting social ills portrayed in the book, reacting through the physical development of the design. Immediately I stereotyped high-rise public housing, as well as any other form of mass housing, as undesirable.

I am disturbed to realize now that as a designer, I had begun to suggest social dictates[3] which I thought were best for the inhabitants of a newly designed environment!

*Denotes number of footnote located at end of each part.

Although I was only translating my thoughts on a hypothetical problem, into two-dimensional symbolization on paper, I wondered what would happen if this design were to become a reality. Would the spaces provided adequately fill the needs of the inhabitants? Upon what were my decisions based?

Since this was a student project, and therefore simply an exercise in my educational experience, I changed, by half, the density originally asked for in the program. I assumed that the density asked for on the particular site was inhumane. How could any architect allow people to be housed in such close proximity?

My design proposal (see Appendix A) included nine to ten single detached two story dwelling units per cluster, including private patio, laundry, mail at front door, and play and parking areas close to the unit. I hoped to be a 'humane' architect with the final design; that is, I had good intentions. My design decisions were shaped by emotions and my past life experience - being brought up in a white, middle-class society. This appears to be the same attitude, that is taken by many architects whose designs are based upon their private assumptions and standards.

The architect of today, as in the past, is the organizer of the elements found in our man-built environments both internal and external. He must be aware when designing a residential environment that it will be not only a complex

of interacting residents, but an interaction of human behavioral, physical, economic and environmental phenomena as well. Add new technological advancements in building construction to this mix and it is easy to see that the architect has quite a burden to bear in producing an environment that meets the demands of society. The architect must be willing to listen to, and in many cases work together with, future inhabitants, as well as behavioral and environmental scientists. New ways to look at relationships between individuals and their environments must be explored. Theodore Liebman suggested, "It is our own conviction[5] that only through conscientious and continuous effort to ascertain human responses to the built environment can we be informed on the relevant issues of housing design."[6] Such a process can aid the architect in making design decisions which would meet known and predictable needs and activities.

In determining what some of man's basic human needs are, we must look at new methods of obtaining the answers. The architect, others in related fields, are responsible for informing residents of these needs. Such attempts to inform others of a relevant need is presented in this report. Namely, a definition of what human interaction is, and some theories and thoughts about it are presented. Theories and findings of others are also presented herein to support my own conclusions.

The objectives of this report are presented in hope that the information gathered can offer additional criteria to aid architects in attempts to successfully structure newly built residential environments to meet one basic need - human interaction.

The general objective of this report is to develop an understanding of the complex relationships that exist between human interaction and physical design within residential environments, and to graphically represent these relationships. More specific objectives of the report are: to define what constitutes human interaction, to develop a hierarchy of interaction, and to look at the influences that propinquity may or may not have on human interaction, within the residential environment.

FOOTNOTES

1. William Moore, Jr., <u>The Vertical Ghetto</u> (New York: Random House, 1964).

2. Social ills here refers to conflict, dilemma, alienation and other social discrepancies found between the needs of housing project residents and their present conditions.

3. Social dictates - i.e. the way I expected people to behave and react to each other and to a space.

4. *Richard H. Uhlig, <u>Planning in the Urban Environment</u>, <u>Technical Report #6</u>* (City of Philadelphia, Community Renewal Program, 1965), p. 1.

5. The convictions are those assumed by the New York State Urban Development Corporation.

6. Theodore Liebman et al., "Housing Criteria Drawn From Human Responses," <u>AIA Journal</u> (March, 1974), p. 46.

PART I

SOCIETY AS A SOCIAL RELATIONSHIP

HUMAN INTERACTION - A DEFINITION

In its most general terms then, "society" in which man lives together with others refers merely to human association. Human beings, as "social animals and not isolated creatures"[1] continually interact. If all individuals were isolated, there would be no society. Society is composed of interacting individuals.[2] When man interacts, either with another individual or within a group of individuals, when each "possesses reciprocal expectations concerning the other's behavior, a social relationship may be said to exist."[3] This relationship consists of a pattern of interaction, the pattern being the medium in which all social systems perform and carry out their purposes. The medium of human interaction, without which society may not be able to survive, must include the "interchange of ideas, feelings, information, and other behavioral performances."[4] For example, the family system would be seriously threatened

if there were no interaction for the purposes of information, exchange, and socialization between parents and children.

The patterns of interaction vary as do the requirements of the social context in which individuals interact. The family context will have a different pattern of interaction than will a student-teacher or salesman-buyer.[5]

Beyond certain essential physical needs, i.e. eating, breathing, sleeping, and excreting, there are certain biological needs that act as a foundation for subsequent social behavior which "man shares with other animals."[6] "These needs . . . for contact with other animals . . . for social interaction within small clans and family groups, all derive from our prehuman origin."[7] Finrow concludes that being social implies contact. Being social is defined as "living or disposed to live in companionship with others, or in a community, rather than in isolation."[8] If man is totally deprived of contact, he is then isolated. Yet being isolated denies human tendencies. Man must have, at the very least, the opportunity, or choice, to interact.

Amos Rapoport[9] has concluded that human interaction is one of five basic human needs[10] which affect built form. He writes, "The meeting of people is also a basic need, since man has been defined as a social animal."[11] Doxiadis, who also believes that man should not be deprived of contact with fellow men, wrote, "We very badly need natural physical contact between people and the benefits from it."[12]

In defining human interaction four criteria[13] must first be recognized and defined by each individual interacting. He must, first, be able to define the situation in which he finds himself, and in which his interaction takes place. Secondly, he must be able to recognize the relationship of the others with whom he interacts. Thirdly, he must be able to define his own position or role within the interaction and, finally, he must be able to define the role played by any non-human objects involved in the interaction.[14] Of course, not all people will respond consciously. For instance, one may misinterpret a situation and get into difficulty as a result. Individuals interpret situations by using "concepts and symbols"[15] which they have learned. The behavior of individuals interacting is related to the culture to which they belong. The culture provides "a foundation from which interaction emerges."[16]

The following definition is being presented as a foundation to build upon. It is neither exhaustive of all criteria nor immune to controversy.

> Human interaction occurs whenever human beings stimulate and respond to one another, using the range of different types of contact made between two or more individuals which are: visual (V), audible/aural (A), and physical (P). A fourth contact type referred to as emotional (E) will govern the intensity of any given level of interaction. The levels of interaction will vary depending on the combination of contact types and distances between individuals as defined by Hall.[17]

The different types of contact (i.e., visual, audible/

aural and physical), and the distances mentioned by Hall,
are observable and measurable, and may be collected, analyzed
and put into usable data for architects. Conversely, the
emotional contact, the determinant of the intensity of inter-
action, is an intangible phenomena which cannot be easily
measured and put into usable concrete data. The architect
may feel that he, as well as anyone, can speculate on this
emotional phenomena, and may consequently fall back into
using his own judgment to decide why one person may inter-
act in one physical or social setting and not another.

INTERACTION CONTINUUM

Since there are many different ways to look at inter-
action one must be able to differentiate one level of inter-
action from another. However, until recently, no one including
Hall has characteristically defined a spectrum of interaction.
At best only one or two forms of interaction, such as intimate
or urban have been defined. Perhaps such lack of more of
understandable definition of interaction is due to difference
of approaches in research, opinions, cultural backgrounds,
stages in life cycle, and environmental criteria among those
who deal with the problem of interactions. Perhaps the
primary reason is that what is lacking in theory, is actually
existing in practice. Visual observations indicate that
different levels of interaction do indeed occur. It is only
because of the overlappings that occur between different

levels of interaction that it becomes difficult to distin-
guish one level of human interaction from the other. Con-
ceptualization could remedy this. Since overlapping means
solid continuity, a continuum between the lowest level of
intimate interaction at one end and urban interaction at
the other, as illustrated in Figure I, does exist. Between
intimate interaction, which is defined as 'close interaction'
and urban interaction, which is defined as 'distant inter-
action,' we may and ought to have all other levels of inter-
action intermittently scaled, differentiated and thus become
conceptually comprehensible at each level.

ALL OTHER LEVELS OF INTERACTION

|—————————————————————————————|

INTIMATE   URBAN
INTERACTION   INTERACTION

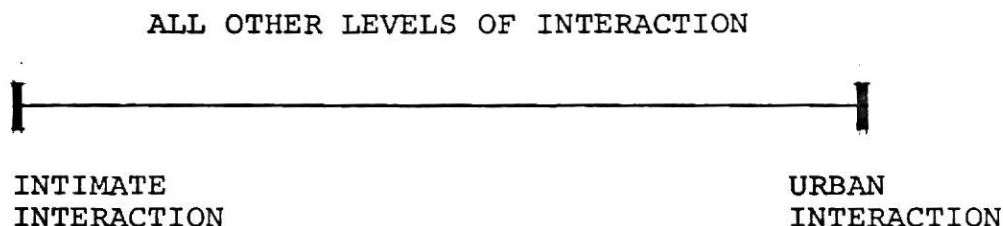FIGURE I - INTERACTION CONTINUUM

Two different definitions of levels of interaction, by
two different authors are presented below. Their definitions
are not those used in this report, but do illustrate different
viewpoints of the need for characterizing different levels
of interaction.

People who live in the city "fulfill specific roles,
rather than act in full relationships to each other."[18]

Christopher Alexander[19] refers to this type of role as
secondary contact. These are the roles played by the
salesman-buyer, disc jockey-fan, and the lawyer-client.
He considers these trivial and without meaning to the in-
dividual. He contends that what is needed in the city are
intimate contacts. This stems from his argument that as
one's total number of contacts increases, one's contacts
with any individual become shorter, less frequent and in
most cases less intimate.

Intimate contact, as Alexander defines it, is the
close contact between two or more people in which they
reveal themselves in all their weaknesses and without fear.
Two requirements are necessary to maintain intimacy: 1)
that persons meet often, in an informal manner, and 2)
that "their behavior is not prescribed by role playing."[20]
This allows them to meet as individuals, and thus intimate
contact can then be achieved.

Toward the other end of the continuum is the interaction
level championed by Jane Jacobs.[21] She contends that public
contact is necessary for each individual. This is the con-
tact that is found on city sidewalks and in parks. Jacobs
feels that city sidewalks, by providing the opportunity for
public interaction, bring together people who do not know
each other in an intimate way and in most cases do not care
to know each other in the fashion[22] prescribed by Alexander.
"The sum of such casual, public contact at a local level . . .

is a feeling for the public identity of people, a web of
public respect and trust, and resource in time of personal
or neighborhood need."[23] These contacts are made loitering
on the street corner, talking to the butcher, or in a
passive conversation on an apartment stoop.

One reason man interacts with others is that many goals
and satisfactions are often more easily obtainable through
association with others. Of the many kinds of human
activities that Hall has labeled Primary Message Systems,[24]
interaction and association are two. Festinger[25] has
summarized the desire to interact by association with others
in the following way: groups frequently expediate the attain-
ment of important individual goals; the activities in which
the group engages are frequently attractive to the member;
and almost all groups are, at least in part, attractive
because people have needs that can be satisfied only by
personal relationships with others.[26] Because one relation-
ship in a group is spread over many individuals, and
because one gets to know the names and interest of the
others in the group, this kind of interaction will be termed
for now 'social' interaction, because it implies being
sociable. This level of interaction falls somewhere between
intimate and urban interaction on the continuum.

Alexander contends that "A society can only be a
healthy one if each one of its individual members has three
or four intimate contacts at every stage of his existence.[27]

There is little available evidence to support an argument
that general good health will not come about if intimate
or any other level of interaction is not achieved. There
is some evidence that does suggest an "extreme lack of
contact causes extreme and well defined social pathologies
like schizophrenia and delinquency."[28] Some evidence has
been found that shows paranoia and schizophrenia have high-
est rates of incidence among hotel boarders and lodgers.
It is not known though if the hotel environment is the
cause or if this is due to pre-existing conditions which
caused individuals to migrate to hotels. But people who
live "in a disintegrated society with no contacts of any
sort have much higher rates of psycho-physiological,
psychoneurotic, and sociopathic disorders,"[29] than those
that live in a more traditional community. Two cases of
extreme neglect illustrate unhealthy situations. An
illegitimate child lived virtually alone with her deaf
mute, divorced mother in an upstairs room for six years.
She had no chance to learn to speak. She was, however,
making some gestures and did make a "strange croaking
sound."[30] Due to her actions it first appeared that she
could not hear and therefore appeared to be "uneducable."[31]
However, due to skillful efforts she eventually gave the
impression of being a "very bright, cheerful, energetic
little girl."[32]

Another case noted similar early experiences - for six

years this child had only minimal interaction and care. Unfortunately she did not respond to treatment as well as the first child mentioned.

Though not documented, there are stories of feral children - those who presumably lived with wild animals of one type or another. These children learned through imitation to behave in the manner of the animals with whom they were reared. In one case, however, through human interaction a child was able to behave in the usual human manner.

A study of mental disorders in New York indicated that people who admitted to having less than four friends had a higher chance of mental disorder than the people who admitted to having more than four friends.[33]

The exact effects that isolation has on society as a whole is not completely clear nor understood at this time. The evidence provided thus far however suggests that ultimately mental disorder may become apparent through isolation. The degree of isolation which may cause this situation will vary with each individual. Perhaps if these isolated individuals could achieve interaction at any level, mental disorder could be reduced and possibly prevented.

NON-MECHANICAL AND MECHANICAL INTERACTION

As suggested in "Human Interaction - A Definition," interaction is perceived as a necessary function of our social system. One means of human interaction, communica-

tions, is achieved through technology. Technology has pro-
vided our society with the telephone, the radio, and the
television. This is a far cry from our forefathers' days.
The people in primitive villages communicated by using
what was referred to by Doxiadis as 'natural' means of
communications.[34] These natural means require no mechanical
devices. In the past, people communicated with their eyes,
ears, mouth and body gestures, these methods being termed
here "non-mechanical." Man should be given the choice to
use these non-mechanical interaction methods with others in
our society.

Non-mechanical is defined as G_d-created means of
interaction; mechanical is defined as being interaction
based on the creativity of man. As stated earlier, for
interaction with others to occur three types of contact are
necessary. The three types of contact as mentioned in the
definition are visual (V), audible/aural (A), physical (P).
The fourth type, which determines intensity of a given
interaction, is the emotion (E) of the individuals at the
time of interaction.

In Table 1, page 16, the first column lists the four
types of contact. The two forms of interaction are in
columns two and four, and are non-mechanical and mechanical
respectively. The third and fifth columns labeled "Place,"
indicate whether a type of interaction contact will occur
Internally (I) or Externally (E) in relation to the home

Table 1   NON-MECHANICAL and MECHANICAL INTERACTIONS
            WITHIN THE RESIDENTIAL ENVIRONMENT

Contact Type	Non-mechanical	Place	Mechanical	Place
Visual (V)	Sighting	I,E,I-E,E-I	Television	I,E

Audible/ Aural (A)	Talking
	Crying
	Singing
	Clapping
	Whistling
	Knocking
	Child noises
	Humming
		I,E,I-E,E-I
		I,E
		I,E,I-E,E-I
		I,E
		I,E,I-E,E-I
		I,E;I-E,E-I
		I,E,I-E,E-I
		I,E
			Telephone
			Television
			Radio
			Doorbell
			Stereo
			Musical
			  instruments
			Auto noises:
			  car horn
			  others
			Household
			  noises:
			  air cond.
			  vacuum
			  mixer, etc.
				I,E-I
				I,E
				I,E,I-E,E-I
				E,I
				I,E,I-E,E-I
				
				I,E
				
				E,E-I
				E
				
				I
				I
				I

Physical (P)	Touching
	Embracing:
	  kissing
	  hugging
	  holding hands
	Sexual activities
	Hitting:
	  kids fighting
	  parents
	    striking
	  bumping
		I,E
		
		I,E
		I,E
		I,E
		I,E
		
		I,E
		
		I,E
		I,E
			Hit by an
			  object:
			  bat
			  rake
			  ball, etc,
				
				I,E
				E
				I,E

Emotional (E)	This is the contact type that allows an individual to intensify or halt any given interaction			

Key

I   Internal
E   External
I-E Internal-External
E-I External-Internal

environment. For example: one can interact by talking while both parties are inside (I) or both parties outside (E), or one party inside and one party outside (I-E), or vice versa (E-I). Also, when one cries, (also non-mechanical) either while inside or outside, one does not consciously direct the cry from inside out, or from outside in.

Television, a mechanical form of interaction is seen and heard while being inside or outside. But, rarely will one turn a T.V. on in the den and then go outside to watch it. A radio though, by its nature, is different. By just increasing the volume it can be turned on in the den and heard outside while doing yard work, etc.

The fourth type of contact (not explored greatly in this report), emotional, is definitely the least understood type of interaction. This contact type determines whether one desires continuing to see, talk - listen, and touch the other, and to what intensity an interaction may develop.

HUMAN SCALE ENVIRONMENT

There are many instances in which today's residential environments in cities inhibit an individual from the opportunity to use non-mechanical means of interaction. In many situations the city has taken away from the inhabitants the human scale. "Ninety-nine percent of all cities before the 18th century"[35] were conceived in order to accommodate

man and his senses. For example, the overall dimensions
of villages were generally limited by the maximum distance
a man could walk to and from the fields and still put in a
good day's work. Today we often have to travel to work by
vehicle because the walking distance is too great. Doxiadis,
in reference to the 'human bubbles' that Hall has indicated
surround every man, suggests that when the bubbles are on
the same level (horizontal), man is naturally inter-
connected, but "when arranged vertically, on different
levels, when head corresponds to feet and not head to head,
they lost their contact."[36] This argument seems to reflect
our vertical urban centers and mass housing projects, which
now seem to be the rule rather than the exception.

Today, the loss of human scale has come about by having
to walk more than ten minutes in order to get to large
shopping areas and cultural facilities. However, this is
being remedied, at least conceptually, by planners of new
towns, both in Europe and the United States. The concept
of Cumbernauld New Town, Scotland, for instance, is "Every-
where residents are able to walk easily (no greater than
1/4 mile) to shops, schools, medical centers and all other
facilities."[37]

Due to the automobile and telecommunications, the
boundaries of our cities, communities, and even neighborhoods
have expanded. Telecommunications have given us the advantage
of staying in our office or home, and at the same time,

communicating over long distances. The telephone company's
advertising campaign suggests that "calling is the next
best thing to being there" and "Good friends are for keeps,
so keep in touch by long distance"[38] help illustrate this
point. In addition, the automobile has allowed us to travel
great distances over relatively short periods of time. The
combination of auto and phone has expanded the human scale
environment (where man is basically horizontally connected),
into a larger scale environment, one in which individuals
are both horizontally and vertically inter-related. This
effect has prevented to some degree the opportunity for
natural (non-mechanical) contacts. However, it must be
realized that it has also helped to enhance the opportunity
to interact both mechanically and non-mechanically for many
who might otherwise have been able to interact only in a non-
mechanical way.

Human scale environments nevertheless are still necessary
for a large segment of our society. The elderly, many of
whom do not drive, children, the physically and mentally
handicapped, and those who cannot afford the luxury of a
car or mass transportation, must rely on other forms of
transportation, such as walking and bus pools. For these
individuals a human scaled pedestrian environment offers the
opportunity for non-mechanical contacts. It is not suggested
here the elimination of the car or the telephone, for they
are both an integral part of the complexities of our daily

activities.

Human scale environments have been helpful in promoting
non-mechanical contacts. One example can be sighted in a
case in Athens, circa 1830. Two planners proposed widening
a commercial street from approximately twenty-five feet to
sixty feet. The people who used the street daily protested
bitterly. Their argument was based on the potential loss
of natural contacts. The people protested that "they would
no longer be able to talk to one another from one side of
the street to the other."[39] If widening were allowed, it
would deprive the people of the existing human scale environ-
ment that had become a way of life. It would also prevent
the opportunity for many contacts to be initiated or even
maintained, thus promoting non-mechanical contacts.

In our cities where many of the major streets are
eighty feet wide, and even residential and other minor
streets are thirty-five feet wide, an urban, not a human
scale, exists. This is not proper justification, however,
to suggest that we either neglect or abandon the cities'
residential environments. The cities still have the
magnetism which draws people into them for their services,
for exchange of goods, and ideas. Hopefully, they will
provide the opportunity for human interaction to foster
rather than inhibit the opportunities for human interaction.
It is these functions and cultural and intellectual interest
which make up the rationale for the city's existence in the
first place.

FOOTNOTES

1. Ely Chinoy, Sociological Perspective (New York: Random House, 1967), p. 9.

2. Ibid., p. 29.

3. Ibid., p. 20.

4. Arnold Bernstein and Henry L. Lennard, Patterns in Human Interaction (San Francisco: Jossey-Bass, Inc., 1969), p. 174.

5. See Interaction Continuum, (Part I), for Alexander's description of student-teacher or salesman-buyer roles.

6. Glenn M. Vernon, Human Interactions: An Introduction to Sociology (New York: The Ronald Press, 1965), p. 81.

7. Thomas R. Detwyler and Melvin G. Marcus, Urbanization and Environment (Belmont: Duxbury Press, 1972), p. 272.

8. The Random House Dictionary of the English Language (New York: Random House, 1973), p. 151.

9. Amos Rapoport is a widely traveled architect who has studied extensively mankinds' dwelling in relation to a complex interaction of man's culture, climatic conditions and materials used.

10. The five basic needs which affect built form are: Some basic needs, family, position of women, privacy, and social intercourse (interaction).

11. Amos Rapoport, House Form and Culture (Englewood Cliffs: Prentice-Hall, 1969), p. 68.

12. Truman B. Douglas and Constantinos A. Doxiadis, The New World of Urban Man (Boston: United Church Press, 1966), p. 69.

13. Vernon, op. cit., p. 62.

14. Vernon, op. cit., p. 96.

15. Vernon, op. cit., p. 92.

16. Vernon, op. cit., p. 92.

FOOTNOTES

17. See Part II Edward T. Hall for breakdown of distance zones.

18. Christopher Alexander, "The City as a Mechanism for Sustaining Human Contact," People and Buildings, Robert Gutman, ed. (New York: Basic Books, Inc., 1972), p. 408.

19. Christopher Alexander is Professor of Architecture at the College of Environmental Studies at the University of California, Berkeley.

20. Ibid., p. 409.

21. Jane Jacobs is the author of Death and Life of Great American Cities.

22. Jane Jacobs, "Use of Sidewalks: Contact," in Environmental Psychology, Harold M. Proshansky, et al., eds. (New York: Holt, Rinehart and Winston, 1970), p. 312.

23. Ibid., p. 313.

24. Edward T. Hall, The Silent Language (Garden City: New York, 1959), pp. 38-39.

25. Leon Festinger is Professor of Psychology at the New School for Social Research and senior author of Social Pressures in Informal Groups.

26. Leon Festinger, "Architecture and Group Membership," Surviving the City, John Gabree, ed. (New York: Ballantine Books, 1973), p. 92.

27. Alexander, op. cit., p. 412.

28. Alexander, op. cit., p. 412.

29. Alexander, op. cit., p. 413.

30. Glenn M. Vernon, Human Interaction An Introduction to Sociology (New York: The Ronald Press, 1965), p. 77.

31. Ibid., p. 77.

32. Ibid., p. 77.

FOOTNOTES

33. Alexander, op. cit., p. 413.

34. Douglas and Doxiadis, op. cit., p. 65.

35. Douglas and Doxiadis, op. cit., p. 65.

36. Douglas and Doxiadis, op. cit., pp. 63-64.

37. This quote was taken from a public relations pamphlet titled Welcome to Cumbernauld.

38. These are two of several advertisements on television, sponsored by Southern New England Telephone Company.

39. Douglas and Doxiadis, op. cit., p. 66.

PART II

THE INTERACTION HIERARCHY

In searching for available literature on Human Interaction in Residential Environments, there are three works by different authors which are significant contributions leading to the development of a Hierarchy of Human Interaction. The most widely known of the three works is Edward T. Hall's[1] study of distance zones that exist between interacting individuals. Recently, a study by Oscar Newman[2] of defensible space, termed "a model for residential environments which inhibit crime by creating the expression of a social fabric which defends itself,"[3] has been presented to architects, sociologists and police as well, for review. In his work Newman develops a hierarchy of defensible space. An order that can allow for balance of both community (interaction) and privacy, is presented in the work of Christopher Alexander and Serge Chermayeff,[4] in their analysis of the physical residential environments. The two authors present a hierarchy of domain classifications.

A description and hierarchy of order of the three philosophies is presented as a review, necessary background information in the development of a hierarchy of human interaction.

Edward T. Hall

Hall, an anthropologist, has used the study of proxemics to help "define the interrelated observations and theories of man's use of space."[5] He further divides proxemics into a classification system: infraculture, precultural, and microcultural, the last being the one in which most proxemic observations are made. Microculture is composed of three aspects: fixed feature, semi-fixed feature and informal space. Informal space is considered the most significant because it includes the distances which are maintained in encounters with others. It is these distances upon which Hall's distance zones are based.

Four distance zones have been determined through observation, research and interviews, "with middle-class, healthy adults, mainly natives of the northeastern seaboard of the United States."[6] The four distances were found to be consequences of sensory shifts. The four distances are:

I. Intimate Distance   0-18 Inches

> At intimate distance, the presence of the other person is unmistakable and may at times be overwhelming because of greatly stepped up sensory inputs. Sight (slightly distorted), olfaction, heat from the other person's body, sound, and smell of the breath all combine to signal unmistakable involvement with another body.

II. Personal Distance   1-1/2' - 4'

Term originally used by Hediger[7] to designate the
distance consistently separating the members of non-
contact species. It might be thought of as a small
protective sphere or bubble that an organism maintains
between itself and others.

III. Social Distance   4' - 12'

Intimate visual detail in the face is not perceived,
and nobody touches nor has intention to touch another
person unless there is some special effort. Conversa-
tions can be overheard at a distance even beyond twelve
feet.

IV. Public Distance   12' - 25'

Several important sensory shifts occur in the transi-
tion from personal and social distances to that of
public, which is well outside the circle of involvement.[8]

It must be remembered that specific distances depend

upon the transaction, "the relationship of the interacting

individuals, how they feel, and what they are doing at the

time."[9] The four distances defined become even more apparent

to us when one interacts, with foreigners, who for different

cultural reasons organize and perceive their spaces differently.

Oscar Newman

Oscar Newman has based a study on "the forms of our

residential areas and how they contribute to our victimiza-

tion by criminals."[10] Most of the examples cited by Newman

to illustrate poor 'defensible space' design are found in

New York City. The New York City Housing Authority keeps

more detailed and comprehensive information about its

tenants than any American city. Along with the typical

information such as age, sex, background, etc., the Authority
also keeps records of the nature of crimes committed within
a project and pinpoints the exact location of the crime.
With this data it is "possible to determine exactly where
the most dangerous areas of buildings are, as well as to
compare crime rates in different building types and project
layouts."[11]

Newman proposes an alternative to housing which may be
unlivable due to crime and vandalism, a way for restructuring
the residential environment so it may be more livable, enjoy-
able and controllable. He says that environments can and
should be controlled by the residents and not by the police.
Newman contends that crime can be inhibited by creating a
physical expression of a social fabric which begins to
suggest that the community defend itself. Several examples
have been shown where the form of the building, and/or the
composition of other buildings, seem to either discourage or
encourage residents to actively take part in policing their
own territory. It may be either a conscious or subconscious
effort of the residents when using human interaction as a
tool in deterring crime.

The architectural design, Newman contends, can make it
evident by the use of real and symbolic barriers[12] that
certain areas are controlled literally under the eye of a
particular group. This in turn can suggest the type of
activities that may happen within a given territory, and

also who the participants are and should be.

Defensible space theory does not end with the boundaries of the immediate living unit area, but extends to the hall-ways, entries and public grounds of the environment as well as into the street.
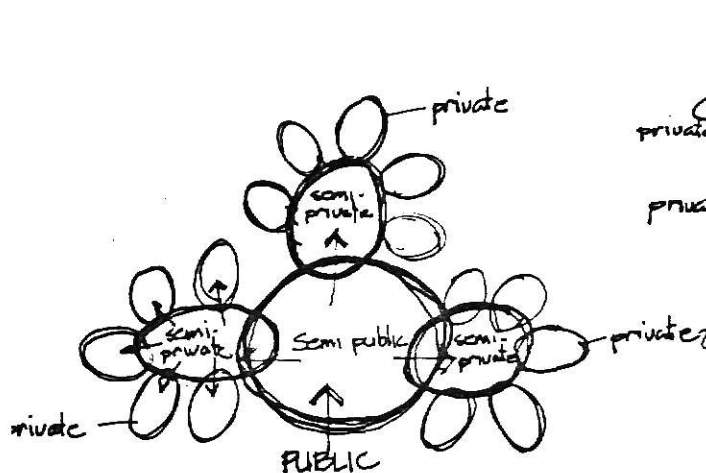
FIGURE II HIERARCHY OF
DEFENSIBLE
SPACE[13]
(horizontal)
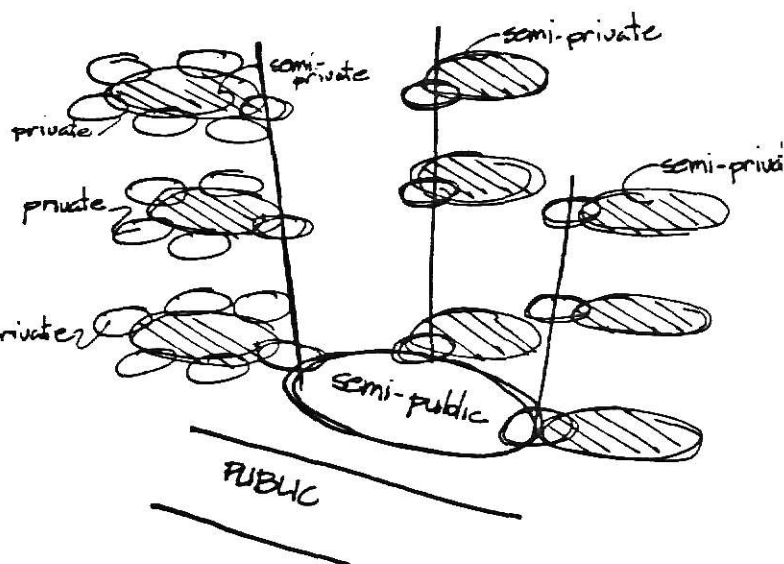
FIGURE III HIERARCHY OF
DEFENSIBLE
SPACE[14]
(vertical)

Working definitions of the hierarchy of defensible space follows:

I.   Private

Small clusters of apartments at each level of a multi-story building or a single dwelling unit, where occupants can be made to extend the realm of their homes and responsibilities.

II. Semi-private

The common entry and circulation paths within the residential buildings.

III. Semi-public

The clustering of the buildings which define a project's grounds and entries.

IV. Public

Where the housing environment stakes its claim on surrounding urban streets.[15]

Newman attempts to show that through physical design, inhabitants of residential environments can control their living environments rather than be the victims of their own environments.

Alexander and Chermayeff

The authors of Community and Privacy[16] contend that there is a precious ingredient in housing which has existed in the past which may be in danger of extinction in the present. This ingredient is privacy. It is in danger because many newly designed residential environments are failing to produce an environment that can provide for privacy. The individual needs a place to contemplate, withdraw, have quiet, and relax from the hustle-bustle of modern day society. One must have the opportunity for privacy to help maintain "health and sanity . . . in the world of mass culture,"[17] just as one must have the opportunity for interaction. The place for privacy is where the individual lives, in his own dwelling unit and immediate environment. The stresses and strains of the outside world tend to build up and extend into the home environment. This, as the authors

point out, is particularly true with respect to traffic
and noise. The analysis of spaces and realms surrounding
the urban, as well as suburban dwellings begins to provide
clues for fewer intrusions and therefore achieve greater
privacy from a physical design standpoint. This is the
criteria that is set up within the levels of the hierarchy
of domain classifications that Alexander and Chermayeff
have offered. The authors have hoped that a new 'anatomy
of urbanism'[18] can be developed that can give order; an
order that can allow for the 'balance' of both privacy
(at least from noise and the automobile) and interaction.

The hierarchy of Alexander/Chermayeff's urban domains is:

I. Urban Public

   The places and facilities in public ownership: high-
   ways, roads, paths and civic parks.

II. Urban-Semi-public

   The special areas of public use under governmental
   and institutional controls.

III. Group - Public

   The meeting ground between public services and utilities
   and private property requiring joint access and
   responsibility.

IV. Group - Private

   Residential components under control of management
   acting on behalf of public or private interest for the
   benefit of tenants or other legal occupants.

V. Family - Private

   The spaces within the private domain controlled by a
   single family.

VI. Individual - Private

The "room of one's own," the innermost sanctum to which individuals may withdraw from their family.[19]

Ratner's Hierarchy of Interaction

Earlier, in the discussion of the "Interaction Continuum," Part I, it was suggested that one must be able to clearly differentiate one form of interaction from another. The hierarchy that is presented is intended to do such. It will first clarify what constitutes any given level of interaction and secondly, will give order to the relationship of human interaction within the residential environment.

After reviewing the three previous hierarchies presented in this chapter, I have contrived five levels of human interaction which potentially exist within our residential environments. Not all levels of human interaction will exist in every residential environment. In addition, not all levels, can or will be achieved by the inhabitants of the particular environment.

Mayer Spivak has derived thirteen settings[20] which are "necessary for the total human behavior spectrum."[21] Five settings are directly related to human interaction between two or more people. Spivak refers to these thirteen settings as "Archetypal Places."[23] He contends that if all archetypal places are not provided within the home range (the total range of archetypal places) or within the larger community

environment, then we can expect an impaired society.
People may fail to "maintain deep, lasting interpersonal
relationships, . . . play, to meet with their peers . . ."[23]
If one is not provided with this range or fails to reach
enough of these settings in the residential environment
then an individual may have an improper balance of behavior
patterns. This may also be true when one fails to reach any
of the levels of human interaction, as illustrated prior in
reference to isolation and mental disorders.

In existing environments whether or not human inter-
action occurs may often depend on the scale and surroundings.
Many residential environments do not provide for easy access
to urban interaction, either because of the arrangement of
spaces or the lack of proper dimensions. The reason for
this will become more apparent in the graphic representations.

In Table 2, pages 33 through 36, titled "A Hierarchy
of Human Interaction," the relationships believed to exist
between Hall's distance zones, and Newman's and Alexander/
Chermayeff's classification of residential domains are
graphically presented. Alexander/Chermayeff include one
category that is not included within the limitations of
this report. It is the domain 'Individual-private' which
involves only one individual, 'Urban-public' spaces are
usually outside the range of many residential environments,
but are included in this report.

The interaction diagram developed when comparing Hall's

TABLE 2   A HIERARCHY OF HUMAN INTERACTION

Hall's Distance Zones	Newman's Space Hierarchy	Alexander/Chermayeff's Residential Domains	PARTNER'S HIERARCHY OF HUMAN INTERACTION
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
			INTIMATE
			INTIMATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
			PRIVATE
			PRIVATE
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
			SOCIAL
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
			PUBLIC
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN

Most likely to occur ▬▬▬

Likely to occur ▬▬

Least likely to occur ▪ ▪ ▪

INTIMATE ▬▬
PRIVATE ▪▪▪
SOCIAL ▬▬
PUBLIC ▬▬
URBAN

TABLE 2 A HIERARCHY OF HUMAN INTERACTION

Hall's Distance Zones	Newman's Space Hierarchy	Alexander/Chermayeff's Residential Domains	Palmer's Hierarchy of Human Interaction
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
			INTIMATE
			INTIMATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
			PRIVATE
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
			SOCIAL
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
			PUBLIC
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN

Most likely to occur ▬▬▬
Likely to occur ▬▬▬
Least likely to occur ▬ ▬ ▬

INTIMATE
PRIVATE
SOCIAL
PUBLIC
URBAN

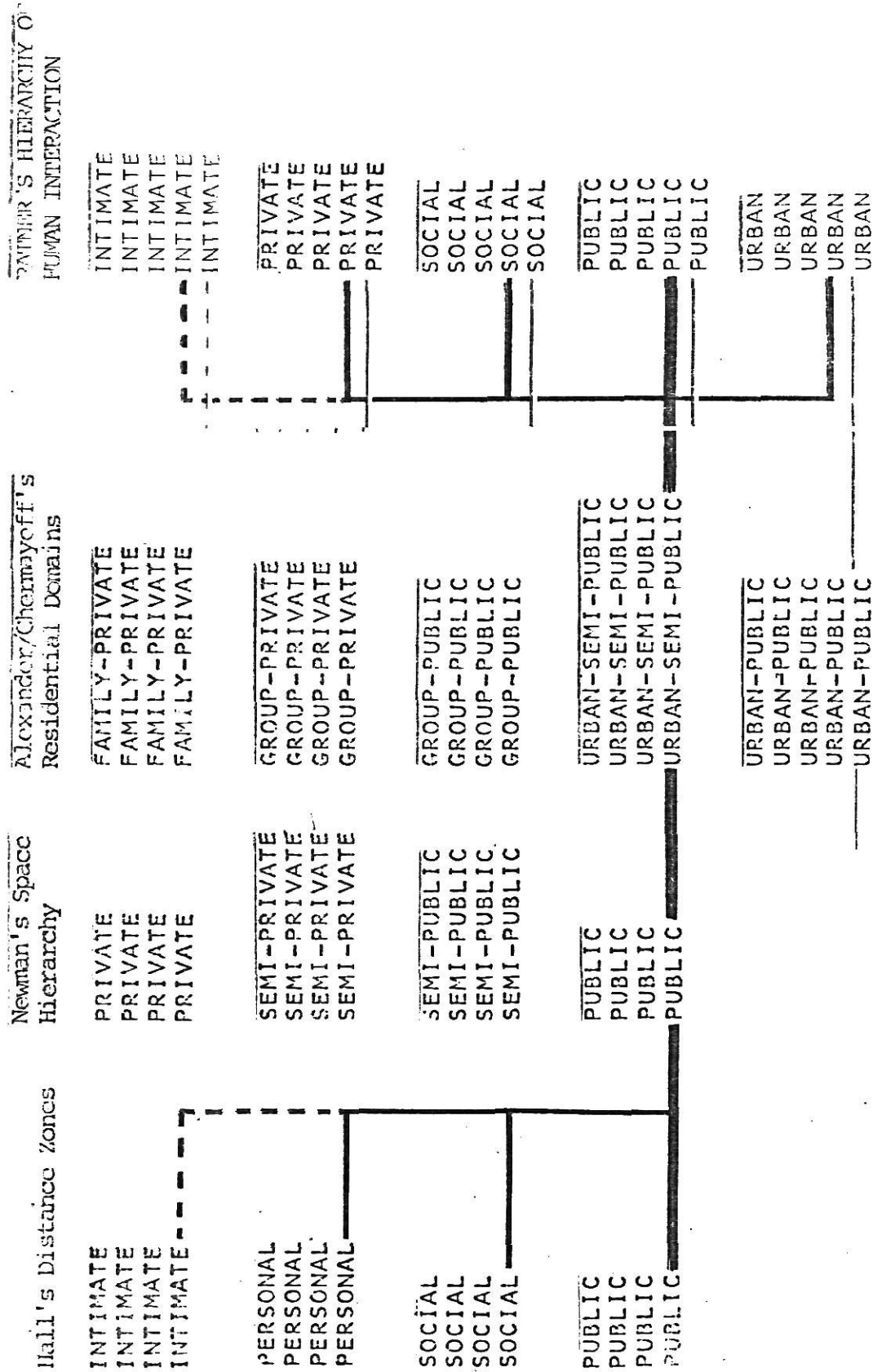TABLE 2 A HIERARCHY OF HUMAN INTERACTION

Hall's Distance Zones

INTIMATE
INTIMATE
INTIMATE
INTIMATE

PERSONAL
PERSONAL
PERSONAL
PERSONAL

SOCIAL
SOCIAL
SOCIAL
SOCIAL

PUBLIC
PUBLIC
PUBLIC
PUBLIC

Newman's Space Hierarchy

PRIVATE
PRIVATE
PRIVATE
PRIVATE

SEMI-PRIVATE
SEMI-PRIVATE
SEMI-PRIVATE
SEMI-PRIVATE

SEMI-PUBLIC
SEMI-PUBLIC
SEMI-PUBLIC
SEMI-PUBLIC

PUBLIC
PUBLIC
PUBLIC
PUBLIC

Alexander/Chermayeff's Residential Domains

FAMILY-PRIVATE
FAMILY-PRIVATE
FAMILY-PRIVATE
FAMILY-PRIVATE

GROUP-PRIVATE
GROUP-PRIVATE
GROUP-PRIVATE
GROUP-PRIVATE

GROUP-PUBLIC
GROUP-PUBLIC
GROUP-PUBLIC
GROUP-PUBLIC

URBAN-SEMI-PUBLIC
URBAN-SEMI-PUBLIC
URBAN-SEMI-PUBLIC
URBAN-SEMI-PUBLIC

URBAN-PUBLIC
URBAN-PUBLIC
URBAN-PUBLIC
URBAN-PUBLIC
URBAN-PUBLIC

Palmer's Hierarchy of Human Interaction

INTIMATE
INTIMATE
INTIMATE
INTIMATE
INTIMATE
INTIMATE

PRIVATE
PRIVATE
PRIVATE
PRIVATE
PRIVATE

SOCIAL
SOCIAL
SOCIAL
SOCIAL
SOCIAL

PUBLIC
PUBLIC
PUBLIC
PUBLIC
PUBLIC

URBAN
URBAN
URBAN
URBAN
URBAN

Most likely to occur ▬▬
Likely to occur ▬▬
Least likely to occur ■ ■ ■

INTIMATE ▬
PRIVATE ▬
SOCIAL ▬
PUBLIC ▬
URBAN

TABLE 2   A HIERARCHY OF HUMAN INTERACTION

Hall's Distance Zones	Newman's Space Hierarchy	Alexander/Chermayeff's Residential Domains	Rapoport's Hierarchy of Human Interaction
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
INTIMATE	PRIVATE	FAMILY-PRIVATE	INTIMATE
		FAMILY-PRIVATE	INTIMATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
PERSONAL	SEMI-PRIVATE	GROUP-PRIVATE	PRIVATE
			PRIVATE
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
SOCIAL	SEMI-PUBLIC	GROUP-PUBLIC	SOCIAL
			SOCIAL
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
PUBLIC	PUBLIC	URBAN-SEMI-PUBLIC	PUBLIC
			PUBLIC
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN
		URBAN-PUBLIC	URBAN

Most likely to occur ▬▬
Likely to occur ▬▬
Least likely to occur ▬ ▬ ▬

INTIMATE
PRIVATE
SOCIAL
PUBLIC
URBAN

distance zones which are most likely to occur or can occur
within one level of the space hierarchies of Newman and
Alexander/Chermayeff. For instance, it seems from visual
observation, more likely that intimate distance (Hall) will
likely take place in 'private' (Newman) or 'family private'
(Alexander/Chermayeff) spaces of residential environments
than within a 'semi-private or group private' type of space.
Hall's distances, as well as the contact types, determine
the level of interaction in which one is involved within any
given residential domain.

Table 2 also illustrates that though intimate interaction
is most likely to occur in 'private' or 'family-private'
spaces, 'private' and/or 'social' interaction is also likely
to occur. The physical dimensions of any room for instance,
might be sufficient to allow public interaction, but more
likely than not it will not have sufficient dimensions to
allow for urban interaction. At the other end of the hier-
archy, a space that can support urban interaction will also
support public, social, and private interactions as well,
but social norms will probably not allow intimate inter-
action to take place.

The five levels of interaction are:

I.   Intimate Interaction   0-18 Inches

      Intimate interaction is when two or more people are in
      unmistakable presence of each other. The full range
      of contact types are present, i.e., those interacting
      can see, talk and listen to each other as well as touch
      and emotionally react to each other.

II.   Private Interaction   1-1/2' - 4'

Personal interaction is when two or more people are in
presence of each other. The full range of interaction
contact types are present as they are in intimate
interaction with greater distances between those inter-
acting being the only major difference.

III. Social Interaction   4' - 12'

Social interaction differs from intimate and private
interactions in that physical interaction-contact type
is not necessary, but is possible. Two or more people
can touch if within four or five feet of each other,
but cannot touch if within eleven or twelve feet of
each other. (See Table 3, page 39.)

IV.   Public Interaction   12' - 25'

Because of the distance involved in public interaction
only the visual, audible/aural and emotional contact
types are present. It is rather obvious that physical
contact is improbable with a 12' - 25' distance between
interactees.

V.   Urban Interaction   Beyond 25'

In urban interaction only the visual and emotional
contact types are definitely involved with audible/
aural likely but not necessary. Physical contact is
impossible with the distance between any two people
interacting being 25' or greater.

Table 3 shows how the contact types of interaction are
needed along with certain distances, which are acquired from
Hall[24] in order to indicate what level of interaction is
taking place. Table 3 is a combination of both the contact
types and distances. If an individual sees another sitting
and sits down within four feet of the individual, but does
not look at or talk to the individual, then interaction is
said to be non-existent.

Table 3   INTERACTION CONTACT TYPE MATRIX PLUS DISTANCE

Interaction contact type

	visual	audible/ aural	physical	emotional	distance
	V	A	P	E	
intimate	+	+	+	+	0"-18"
private	+	+	=	+	1-1/2'-4'
social	+	+	=	+	4'-12'
public	+	=		+	12'-25'
urban	+	=		+	beyond 25'

Human Interaction Levels

+ necessary,   = not necessary but possible

The Handicapped and Elderly

There are unfortunately many individuals who are considered only in passing in the design of most residential environments, unless they are specifically oriented toward the handicapped. The handicapped are often neglected outright or overlooked.

The extent of handicap varies with different individuals. A person may be blind in one eye only, partially blind in both, or totally blind. This will not allow the levels of human interaction to remain constant with each individual. A handicapped person who is paralyzed might not be able to achieve intimate interaction with others as a physcially abled person might. But private interaction as perceived in this report, to the world of the handicapped, might be

considered intimate, and social as private and so on.

The elderly who may be considered handicapped as well, might have sight failure, poor hearing, and a lack of mobility, all causing them to perceive the levels of interaction differently.

This may also be true for a wide range of groups such as children, blacks, chicanos, etc. They might have different meanings of public or intimate interaction in their world. However, their psychological make-up and actual limitations make their habits and traits seem foreign to us.

It is with regret that these groups are not considered any further in this report. It is realized, however, that different research is necessary for understanding their needs for human interaction.

FOOTNOTES

1. Edward T. Hall is a widely traveled anthropologist. Recently, he has been a consultant to business and government agencies in the field of intercultural relations.

2. Oscar Newman is the driving force behind the Project for the Security Design of Urban Residential Areas, sponsored by the National Institute of Law Enforcement and Criminal Justice of the U.S. Department of Justice.

3. Oscar Newman, <u>Defensible Space</u> (New York: MacMillan Co., 1972), p. 3.

4. Christopher Alexander, Serge Chermayeff, <u>Community and Privacy</u> (Garden City: Doubleday, 1963)

5. Hall, op. cit., p. 1.

6. Hall, op. cit., p. 116.

7. H. Hediger, a famous Zurich animal psychologist, first described important aspects of territoriality and the mechanisms by which it operates.

8. Hall, op. cit., pp. 116-125.

9. Hall, op. cit., p. 128.

10. Newman, op. cit., p. iii.

11. Newman, op. cit., p. xiv.

12. Newman, op. cit., p. 3.

13. Newman, op. cit., p. 9.

14. Newman, op. cit., p. 10.

15. Newman, op. cit., pp. 9-10.

16. Alexander and Chermayeff, <u>Community and Privacy</u> (Garden City: Doubleday, 1963).

17. Ibid., p. 37.

18. Ibid., p. 118.

FOOTNOTES

19. Ibid., pp. 121-122.

20. Mayer Spivak, Archetypal Place, Environmental Design Research Vol. I, (of Community Development Series, 6 vols.; Stroudsburg, Pennsylvania: Dowden, Hutchinson & Ross, Inc., 1973), p. 37. See Appendix B.

21. Ibid., p. 33.

22. Ibid., p. 33.

23. Ibid., p. 35.

24. See pages 25 and 26.

PART III

PROPINQUITY, Homogeneity and Heterogeneity

PROS AND CONS OF PROPINQUITY

The effect which propinquity has on human interaction
is one of the main concerns to the architect when dealing
with the residential environment. Sociologists have asserted
that architects think architectural design has a direct and
determinate effect on the way people behave. Broady wrote:

> The architect who builds a house or designs
> a site plan, who decides where the roads will
> and will not go, and who decide which direc-
> tion the houses will face and how close they
> will be, also is, to a large extent, deciding
> the pattern of social life among the people
> who will live in these houses.[1]

This suggests that residents are molded by the environ-
ment with which they interact. Herbert Gans[2] believes that
human interaction is influenced and explained by propinquity,[3]
that is, interaction is affected by the way units relate to
each other and their proximity to each other. Whyte refers
to this as a "cause-and-effect relationship"[4] between the
physical layout and the way people behave.

43

The architect must deal with what Gans refers to as a "potential environment and effective environment."[5] Man-built environments are only a potential environment because they provide for social behavior. Gans' effective or total environment is "the product of these patterns plus the behavior of the people who use them."[6]

It has been written that specific social interactions between residents of an environment can be achieved through design of the potential environment, particularly when arranging the site plan and spatial relationships of the dwelling units. The architectural organization of these elements will determine how close, in physical terms, inhabitants will live to each other. Thus, propinquity may be a major contributing factor leading to potential human interaction, or, as often may be the case, the desire for lack of such interaction among residents.[7]

The strongest argument for interaction influenced by propinquity is that it may lead to visual contact between neighbors. This will naturally lead to more face to face interactions than if the units were an appreciable distance apart. If physical distance between the units is negligible, for example, those who share a common hallway, residents may interact rather quickly. Those who live on different floors or around the corner are less likely to interact because there are fewer opportunities for visual interactions to occur.[8]

The relationship of the dwelling units is as important as the distance between them. Considering, the relationship of the front and rear doors of nearby units is important to the concept of propinquity. If the front doors face each other, or if residents share a common garage, trash receptacle, or mailbox area, then face to face interaction may be inevitable. Propinquity not only initiates interactions but as Gans indicates, also plays an important role in maintaining the less intensive ones, for the mere fact of living together encourages "neighbors to make sure that the relationship between them remains positive."[9]

Children, due to their lack of mobility, are more likely to choose their playmates on a purely propinquitious basis, i.e., if the parent does not prevent the child from interaction based on personal upbringing.

The importance that propinquity has upon interaction among adults seems to vary with sex and class.[10] Mothers of small children who may choose or have to stay within the home environment are more likely to interact with other women who live nearby and are in similar constraints. In general terms, the 'higher' the economic class, the greater the range for both visiting and entertaining because of the opportunity afforded by physical mobility.[11] On the other hand, the 'lower' the economic class, the less mobile it is, may tend to choose their friends based on propinquity.

In a study to determine the distribution of residents'

five closest personal ties in Boston's West End,[12] a
strong ethnic-working class compositional area, over 60
percent responded that all or most all are from the West
End.[13] The response was attributed in part to the "local
physical space . . ."[14] which seemed to provide ". . . a
framework within which some of the most important social
relationships were embedded."[15]

The architect concerns himself with developing a
site plan that Leon Festinger suggests supplies an organi-
zation of planes, solids and voids, which meet the physical
convenience, spatial organization, and satisfying physical
needs, local codes, and of course, which has an aesthetic
appeal. A plan of married veteran student housing project
at MIT called Westgate,[16] was done in this manner. One
hundred single and semi-detached houses - which were
arranged in groups of 8-13 dwelling units in a U-shaped
fashion, around a grassy court (see Figure IV). The open
end of the U faced the street which cut the project in
half. "In order to have the street appear lived on"[17]
the dwellings at the end of each U were turned away from
the grassy courts, and instead fronted the street.

Each family was assigned a house in the order in which
their name appeared on the housing waiting list. The study
undertaken by Festinger found that friendships existed more
frequently between next door families, and less frequently
between families which were separated by another house. It
was very rare to find friendships between families if the

families were separated by four or more houses.

service road

parking

ROAD
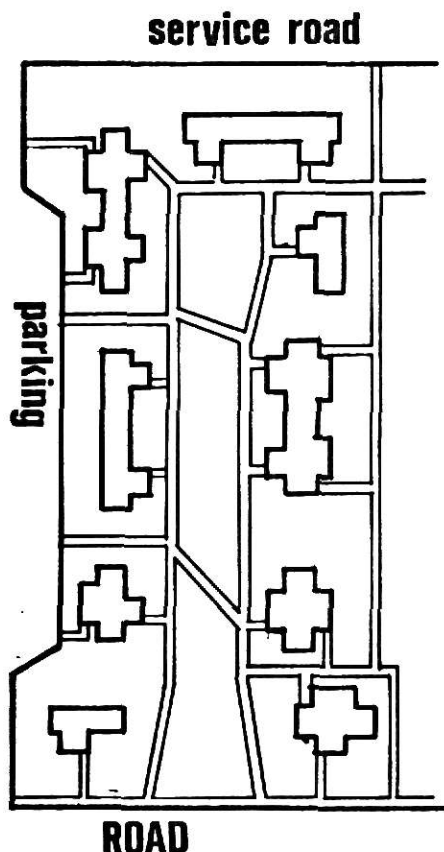
TYPICAL COURT LAYOUT

FIGURE IV - SCHEMATIC OF A WESTGATE COURT LAYOUT[18]

Also, "people tended to make friends with those whose houses faced their own."[19] The conclusion becomes more evident with the fact that the houses at the ends of the U were faced away from the court and "they (the inhabitants of these houses) had less than half as many friends in the project as did those whose houses faced the court area."[20]

The findings illustrate that the orientation of the end houses "had made involuntary social isolates out of the persons who lived in them."[21] Festinger summarized from these conclusions that the two major factors affecting friendships were "sheer distances between houses and the direction in which a house faces."[22]

Another study of an adjoining project, Westgate West,[23] also for married veteran students and their families, was undertaken by Festinger's group. This project consisted of thirteen apartment buildings, ten apartments per building, with two floors of five apartments each. Few friendships existed between residents of different floors, and even fewer between residents of different buildings. A great number of interactions occurred between people living on the same level, especially next door neighbors, though this number decreased as the distance between units on the same level increased.

In these two projects the people had few, if any, previous contacts with each other.[24] Therefore, new contacts were likely to develop on the basis of brief voluntary or involuntary visual contacts which were made traveling within the neighborhood. After several visual contacts, verbal contact takes place, and eventually one of the levels of human interaction described in Ratner's Hierarchy of Inter-action may be reached. Two factors are responsible for the formation of these environmental interactions: physical

distance and functional distance.[25]

Visual contacts are determined by the required paths followed in entering or leaving one's home for any purpose. Thus, "the smaller the physical distance the greater the number of required paths neighbors are likely to share and the greater the probability of passive contacts."[26] What this means is that while sitting on one's porch one is more likely to interact with next door neighbors rather than neighbors who live a few houses away. The design of a building and the "positional relationships among a group of houses"[27] also affects the development of human interactions. The relationships will determine which people will meet. Functional distance then "is measured by the number of passive contacts that position and design encourage."[28]

To illustrate the effect of physical distance on the formation of human interaction, the front of a Westgate West building as illustrated in Figure V will be used. One important factor is that the only means of egress is the door opening onto the porch area. The effects of physical distance to sociometric[29] choices are:

People living in same building, same floor

Greatest percentage of interactions were made with next door neighbors.

The percentage of interaction decreased constantly with an increase of physical distance between units.

Only 10 percent responded that relationships were exchanged between four units away, i.e., between those who were at opposite ends

(#6 and #10) of the same floor.[30]

People living in the same building but on a different floor

Those people having the smallest physical distance, i.e., between units 7 and 1 were found to have highest percentage of friendships.

Only approximately 6 percent responded that interactions were exchanged between those of greatest physical distance, i.e., between units 9 and 3, and 3 and 8.[31]
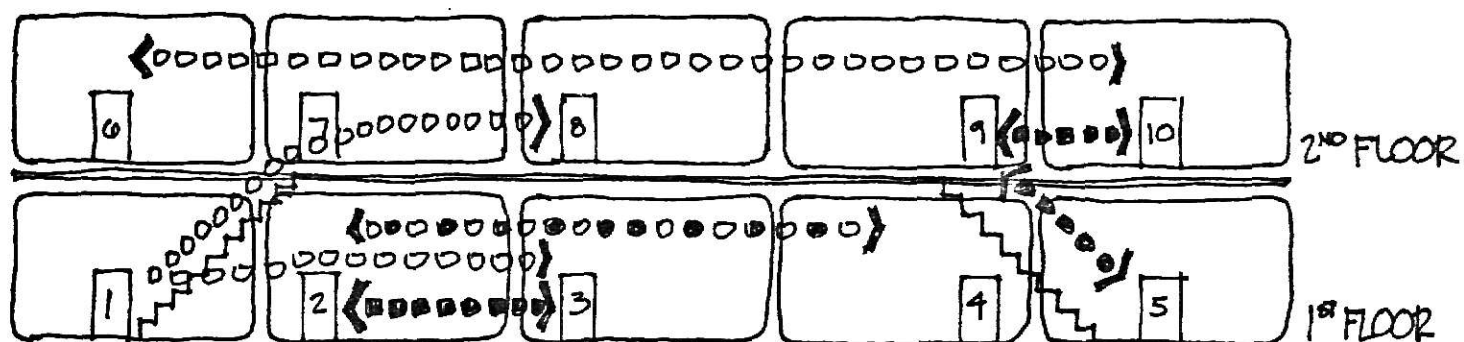
DIAGRAM ILLUSTRATING RELATIONSHIP OF PHYSICAL DISTANCE

most likely to interact---
less likely to interact---as found by Festinger
least likely to interact--
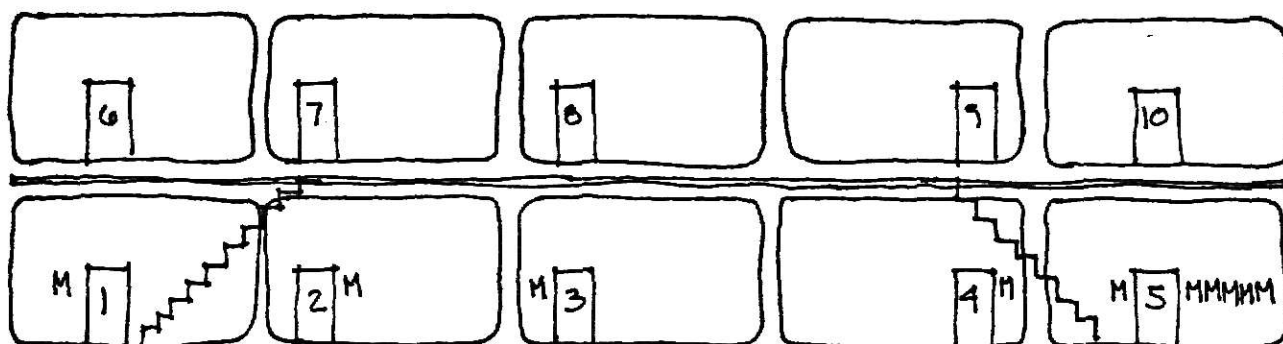
DIAGRAM ILLUSTRATING RELATIONSHIP OF FUNCTIONAL DISTANCE
refer to pages 51 and 52 for explanation

FIGURE V - SCHEMATIC DIAGRAMS OF A WESTGATE WEST BUILDING.[32]

Figure V is used again to help illustrate the findings
of functional distance on the formation of friendships. One
assumption made in the study was that residents would use
the shortest path between the apartment and their destination.[33]
In addition to the already mentioned egresses another important
feature is the location of the mailboxes. On level A the
mailbox is directly adjacent for each doorway marked 1-5.
Near door 5 is a cluster of five mailboxes which serve the
upper level B apartments, 6-10. The arrangement of these
two features themselves will determine the paths to and from
the building. From these details four derivations about the
relative frequency of interaction and sociometric exchange
among residents of the same building were summarized by
Festinger:

1) People at the end apartments of the lower
level should receive from and give to those
on the upper level more sociometric choices
than those of units 2, 3, or 4.

2) Apartments 1 and 6 should exchange more
choices than 2 and 9, the same for 5 and 10
as compared to 4 and 9 respectively.

3) Apartment 7 will choose 6 more than it will
choose 8; apartment 7 will choose 10 more
than it will choose 8.

4) Upper floor choices apartment 1 gives and
receives should be concentrated in apartments
6 and 7 and should taper off for apartments
8, 9 and 10. The upper floor choices of
apartment 5 should be greatest from apartments
9 and 10 and they should decrease for units
8, 7, and 6.[34]

Explanation of number 2: apartments 1 and 6,
and 2 and 7 are the same distance apart. How-
ever, in using the left-hand stairway, the

people living in 6 must pass 1, whereas
people in 7 will not pass 2. Therefore, we
can expect that there will be more passive
contacts between 1 and 6 than between 2 and
7, and consequently, there should be more
interaction between 1 and 6 than between 2
and 7.[35]

Another example of the relationship or propinquity to
human interaction is that of Park Forest, Illinois.[36] It
has been described by Whyte as "like other suburbs, only
more so."[37] Whyte, who spent three and a half years study-
ing the flow of 'social traffic'[38] of the suburb, contends
that in conditioning friendship "there is just more down-
right propinquity in suburbia than in most places."[39] The
social patterns of any particular court at Park Forest were
based on the court layout. The study looked at the back-
grounds, religious beliefs, education, interests and even
economic status, and "we correlated this way and that way,
but when we were finished . . . we were right back where we
started from . . . it was the layout that was the major
factor."[40] Whyte described seven design influences[41] of
social traffic in Park Forest, of which four have a direct
relationship with propinquity as described in this report.
They are:

Placement of driveways and stoops:[42] The adjoining
back porches in the courts and the area around
adjacent driveways of homes . . . make a natural
sitting, baby watching, and gossip center.

Play areas: Because the children can't use their toy
vehicles in the backyard, they play in the front
yard where there is pavement for easy 'wheeled'
traffic. Therefore, when mothers go visiting with

neighbors they tend to stay within visual and audible/aural contact of their children.

Lawns: The front lawn is the thing on which home-
owners expend most time, and the sharing of tools, energies, and advice that the lawns provoke tends to make the family friendships go along and across the street rather than over the backyards.

Centrality:[43] The location of one's home in relation to others not only determines your closest friends; it also determines how popular you will be.[44]

Research by Rothblatt of Marlboro Houses[45] indicated that apartments with a communal terrace per floor had a higher degree of interaction on a whole as did the traditional double loaded corridor apartments.[46] This was attributed to the fact that families had "an easily accessible outdoor area where they could loiter in close proximity to other adults doing the same."[47] In the traditionally designed apartment, a higher number of interactions 'on same floor'[48] occurred between those who lived on the first three floors than residents of floors four through seven. This was attributed to the relative ease of the lower floor families to get outside the buildings as compared to those living in the upper floors.[49]

In the terraced apartments studied, again the lower floor families had more interactions than the upper floor families. However, because the terraces were used readily by the upper floor families there were numerous interactions between same floor residents as opposed to those in the lower floor, who got outside and whose interactions were more distributed.[50]

Merton indicated that close personal ties in Craftown[51] ". . . were largely a product of residential propinquity."[52] Each one-story building had a maximum of four dwelling units. However, 19 percent of all friendships included people living in the same building. The odds were 38 to 1 that any individual had a friendship within the same building. The odds were 22 to 1, for an adjacent building, 13 to 1 for across the street and 1 in 2 that any individual achieved interaction elsewhere.[53]

At Craftown some differences in the position of the units in relation to each other contributed largely to the formation of friendships. This was particularly striking in friendships which were across the street. The differences from four percent of interactions to 23 percent interactions in zones[54] 1 and 5, with a zone being the distance from the Community Center. Spatial orientation varied between buildings at right angles to the stret, and those which were parallel to the street. Those residents living in units at right angles faced only a court along with others on the same side of the street. Those parallel to the street faced directly at their neighbors directly across the street. Initially, the increase of friendships between the zones was attributed "wholly in terms of joint interests and compatibility of personalities."[55] However, further observation illustrated that spatial orientation indeed was a contributing factor toward interaction.[56] Between

zones 1 and 5, the percentage of street versus court
orientation rose from 41 percent to 83 percent respectively.[57]
Of eighty-two interactions reported with those who live
directly across the street, 74 percent indicated that both
friend and informant lived in street oriented dwellings,
22 percent where one lived in street oriented dwellings and
only 4 percent where neither across street friends lived in
street oriented dwellings.[58] Though not conclusive by
itself, this still illustrates that at Craftown the attain-
ment of interaction can be attributed in part to propinquity.

The University Village, a study housing project, which
consists of fifty married veteran couples with children,[59]
was the subject of a study by Caplow and Forman at the
University of Minnesota. The basic instrument used was a
Neighborhood Interaction Scale[60] which is based on the
science of sociometry. This scale permits the diagramming
of relationships and the graphic analysis of group organiza-
tion. Figure 6, illustrates the student housing layout,
and Figure 7, illustrates the sociometric interactions
within the site. It is clearly seen that the findings of
Festinger are duplicated in this study. The sheer physical
distance between houses and the direction in which a house
faced affected interactions. Thirty-two families had close
relationships with two adjacent families and of the forty
units that faced each other, there were 48 interactions
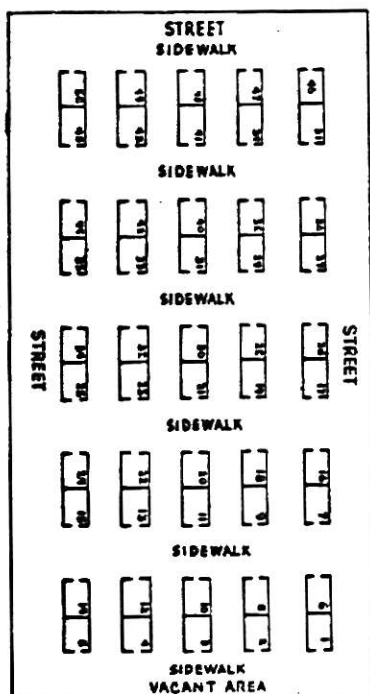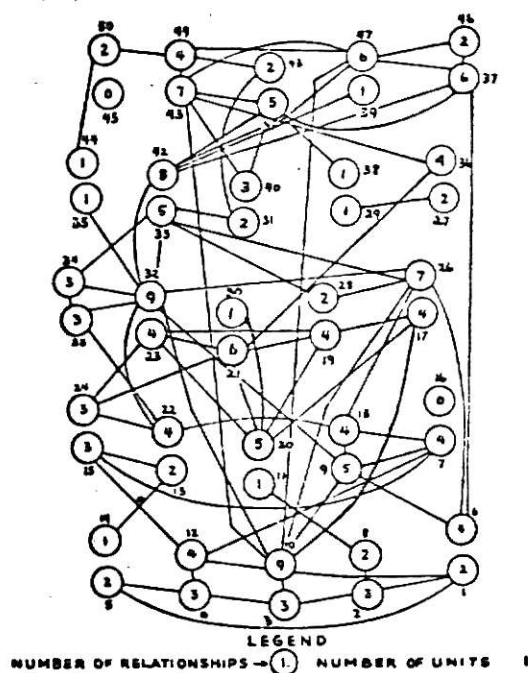indicated.

FIGURE VI- STUDENT HOUSING
LAYOUT - SCHEMATIC[61]

FIGURE VII-SOCIOMETRIC
INTERACTIONS[62]

A study of social interaction among occupants of military barracks was undertaken by Blake.[63] Three open barracks, ones with no interior partitions, and three closed barracks, ones with partitions each enclosing six bunks were studied. Findings illustrated that barriers decrease overall interaction, but increased interaction among those within the enclosed barracks.[64] This is concurrent with the explanation provided by Festinger, that friendships are based on those in closest

physical distance. Interaction was found significantly more intense within closed barracks and more distributed within an open barracks.

One who lived in a closed cubicle was less able to initiate potentially more satisfying interactions with others outside of his area because there were less visual and verbal interactions.[65]

There was also cause for isolation within a closed cubicle. It was reasoned that "physical proximity creates conditions for further interaction which may increase inter-personal friction, rather than lead to their resolutions."[66] This leads us to the arguments against the role of propinquity within a residential environment. Propinquity does provide an opportunity for visual interaction, either voluntarily or involuntarily, yet individuals and families "may equally well wish to defend themselves against their neighbors as to welcome every opportunity to meet them."[67] No one should be forced into any interactions not of his choosing.[68]

At Braydon Road,[69] a residential unit of ninety families, the visual awareness of side neighbors is most important. The families enter their homes by the side of their houses. A narrow lane, divided by a wire fence separates two entrances which are directly opposite each other. When the doors are left open one can see through the kitchen into the dining area. A personal conflict arose between two side neighbors of these common lanes. To avoid further involuntary

face to face interactions a trellis was agreed to be built, thus blocking out the view into each others kitchens. Seven months later this was not done, and yet they avoided each other at their back doors, "a considerable feat, involving reconnaissance every time the housewife plans an exit from her house."[70]

The layout of the cul-de-sacs at Braydon also caused some irritation, because of the orientation of the houses. Mr. Dudley, a resident, was quoted:

> There is no privacy . . . you look across at the houses there - they must feel as though you are looking at them. You look out of the bedroom windows into their bedrooms . . . You turn the corner coming home and everybody's eyes are on you in the cul-de-sac,[71]

and Mrs. Dudley told of how embarrassed she was when she kissed her mother in the street. She thought she was being watched by all her neighbors.[72] Of course, this may also be attributed to just plain nosey neighbors. The orientation caused another resident to remark, "You don't really feel free to walk about the house as you like,"[73] for one looks out the kitchen, for example, he is looking into another's kitchen.

One new development actually had social and architectural aims to stimulate "social contact between the new inhabitants by means of unusual features in its design."[74] The unique feature was the design of street decks into a high-rise apartment complex, where children would play and where parents could meet with each other and interact. The decks

were located on every third floor. Hopefully this concept would provide more interaction than a more traditionally designed apartment. Ironically, the development seemed inconducive to social interaction. Approximately fifty percent of contacts were with "off the estate friends or relatives."[75] This number was far greater than interactions on the same deck (only thirty percent), and interactions between different decks (only nineteen percent). The only areas that seemed 'alive'[76] and achieved more interactions per deck, were the top three decks. The study concluded that "the relatively low level of visiting between decks might lead one to conclude that the inconvenience of lift or stair access may be sufficient to deter casual, essentially local neighborhood contacts."[77] This suggests that the architects "tried too hard to bring people together."[78] Perhaps people try to minimize interaction with neighbors in order to prevent possible disagreements.

Propinquity Alone?

Propinquity does affect interaction between individuals of residential environments, as illustrated. What other factors or characteristics can attribute to human interaction? Social scientists contend that an individual's desire to achieve interaction may be based on homogeneity, that is, people tend to choose their friends on the basis of similarities of backgrounds, or on interest, or of values.

The homogeneity and/or the heterogeneity among residents
of any housing sector is usually determined long before the
design by the architect. Heterogeneity and homogeneity do
not refer to the style of architecture used, but to the
characteristics of people. Gans contends that with homo-
geneity more intensive social relations are likely to develop,
and excessive "heterogeneity can lead to coolness between
neighbors regardless of their propinquity."[79] The degree in
which to achieve either homogeneity or heterogeneity is
usually based on value judgments of financiers, sociologist
and other support personnel prior to reaching the architect's
drawing board.

The studies by Festinger's group of Westgate consisted
of families which were similar in marital status, age,
economic level and to a certain degree, educational experi-
ence and goals. The role which propinquity and homogeneity
shared both attributed to friendship interactions. Socio-
logists generally agree that similarities in "what people
think and do"[80] are more important than similarities of
background factors. Life-cycle stage and class are considered
the two most important characteristics.[81] Race is also an
important characteristic "primarily because it is a highly
visible - although not necessarily accurate - symbol of
class position."[82]

If differences between residents are small perhaps
residents could learn to tolerate each other. But with

extreme heterogeneity this is unlikely. Wood presents the argument that a heterogeneous urban neighborhood could survive because "the mature urban community . . . is characterized by its variety of land uses, conditions of buildings and homes, households and persons . . . Heterogeneity appears in the city as a whole."[83]

In order for a community to exist, the people who live together must relate to one another and work together as a whole. To help achieve a balanced community as Wood describes can exist "should be left up to the people who come to live together."[84]

FOOTNOTES

1. Maurice Broady, <u>Planning for People</u>: Essays on the Social Context of Planning (London: Bedford Square Press), p. 18.

2. Herbert Gans is assistant professor of city planning, Univ. of Penn. He has studied the processes of new suburban community formation.

3. Propinquity will be discussed not only in terms of physical closeness of individuals, but also the nearness of building elements, their physical and architectural form and their organization on the site layout.

4. W. H. Whyte, Jr., <u>The Organization Man</u> (New York: Simon & Schuster, 1957), p. 332.

5. Maurice Broady, "Social Theory in Architectural Design," <u>People and Buildings</u>, Robert Gutman, ed. (New York: Basic Books, 1972), p. 181.

6. Ibid., p. 181.

7. Privacy over interaction may be wanted by residents.

8. Herbert Gans, "Planning and Social Life," <u>Journal of Social Issues</u> (May 1961), p. 134.

9. Ibid., pp. 135-136.

10. Ibid., p. 138.

11. Ibid., p. 138.

12. Marc Fried and Peggy Gleicher, "Some Sources of Residential Satisfaction in an Urban Slum," <u>Journal of the American Institute of Planners</u> (November 1961), p. 305.

13. Ibid., p. 310.

14. Ibid., p. 310.

15. Ibid., p. 310.

16. Leon Festinger, "Architecture and Group Membership," <u>People and Buildings</u>, Robert Gutman, ed. (New York: Basic Books, 1972), p. 125.

FOOTNOTES

17. Ibid., p. 126.

18. Leon Festinger, et al., <u>Social Pressures in Informal Groups</u> (New York: Harper and Row, 1950), p. 134.

19. Festinger, op. cit., p. 126.

20. Festinger, op. cit., p. 126.

21. Festinger, op. cit., p. 126.

22. Festinger, op. cit., p. 127.

23. Festinger, op. cit., p. 149.

24. Festinger, et al., op. cit., p. 34.

25. Festinger, et al., op. cit., p. 35.

26. Festinger, et al., op. cit., p. 35.

27. Festinger, et al., op. cit., p. 35.

28. Festinger, et al., op. cit., p. 35.

29. Festinger chose to study a group in terms of the interpersonal attractions and relationships of its members. His method of measurement for this purpose permits "expression of preference for particular companions in some sort of activity. Thus, the question "What three people of Westgate or Westgate West do you see most of socially? Is a sociometric question.

30. Festinger, et al., op. cit., p. 39.

31. Festinger, et al., op. cit., p. 40.

32. Festinger, et al., op. cit., p. 36.

33. Festinger, et al., op. cit., p. 49.

34. Festinger, et al., op. cit., pp. 51-54.

35. Festinger, et al., op. cit., p. 52.

36. Park Forest, Illinois, is a suburban community consisting of single detached homes for sale, and apartment complex.

FOOTNOTES

37. Whyte, op. cit., p. 331.

38. Whyte, op. cit., p. 330.

39. Whyte, op. cit., p. 330.

40. Whyte, op. cit., p. 333.

41. Whyte, op. cit., pp. 342-348.

42. See Part I Interaction Continuum, of Jane Jacobs' public interaction.

43. See discussion of physical and functional distance Part III.

44. Whyte, op. cit., pp. 342-348.

45. Marlboro Houses, is a New York State-aided low-rent public housing project, located at the southern edge of New York City. Within the site there are 25 seven-story doubly-loaded halled buildings and 3 sixteen-story buildings with a communal terrace on each floor.

46. Donald N. Rothblatt, Housing and Human Needs," Town Planning Review (April 1971), pp. 135-136.

47. Ibid., p. 136.

48. Ibid., p. 136.

49. Ibid., p. 136.

50. Ibid., p. 137.

51. Craftown is a mutual homeownership community, with the greater part of its population in the skilled, lesser middle income range.

52. Robert Merton, "Social Psychology of Housing," Current Trends of Social Psychology, Dennis Wayne, ed. (Pittsburgh: Univ. of Pitt., 1951), p. 204.

53. Ibid., p. 205.

54. Households in Craftown were classified to be in one of five concentric zones based upon their distance from the Community Center.

FOOTNOTES

55. Merton, op. cit., p. 207.

56. Merton, op. cit., pp. 204-205.

57. Merton, op. cit., p. 207.

58. Merton, op. cit., p. 208.

59. Theodore Caplow and Robert Forman, "Neighborhood Interaction in a Homogeneous Community," _American Sociological Review_ (June 1950), p. 359.

60. Ibid., p. 358.

61. Ibid., p. 361.

62. Ibid., p. 362.

63. Robert Blake, et al., "Housing Architecture and Social Interaction," _Sociometry_ (June 1956), pp. 133-139.

64. Ibid., p. 137.

65. Ibid., p. 138.

66. Ibid., p. 139.

67. Maurice Broady, _Planning for People_: Essays on the Social Context of Planning (London: Bedford Square Press, 1968), p. 18.

68. Gans, "Planning and Social Life," p. 140.

69. Braydon Road is a residential unit in the urban area of Houghton, a neighborhood unit on the outskirts of Coventry.

70. Leo Kuper, "Neighbor on the Hearth," _Environmental Psychology_, Proshansky, et al., eds. (New York: Holt, 1970), p. 251.

71. Ibid., p. 253.

72. Ibid., p. 253.

73. Ibid., p. 253.

FOOTNOTES

74. David Bryant and Dick Knowles, "Social Contacts on the Hyde Park Estate, Sheffield," <u>Town Planning Review</u> (April 1974), p. 207.

75. Ibid., p. 209.

76. Ibid., p. 210.

77. Ibid., p. 210.

78. Ibid., p. 213.

79. Gans, "Planning and Social Life," p. 136.

80. Herbert Gans, "The Balanced Community," <u>Journal of Social Issues</u> (1951), p. 176.

81. Gans, "Planning and Social Life," p. 136.

82. Gans, "Planning and Social Life," p. 137.

83. Gans, "Planning and Social Life," p. 137.

84. Wood, <u>A New Look at the Balanced Community</u>, p. 11.

PART IV

FRONT PORCH, REAR PORCH AND YARD

During the past few months an observational survey was
conducted, by the author, of a nearby residential complex.
The following part reports on some observations regarding
architectural design and its relationship to human inter-
action.

The complex consists of thirty-four dwelling units.
Valley Townhouses is a public housing development in New
Haven, Connecticut, completed in 1975. The units are three,
four and five bedroom, two story townhouses grouped in
clusters from two to four units (see 'Site Map 2' next page).
Each unit has a front door opening onto a small concrete
slab, semi-enclosed and roofed porch, with a concrete side-
walk across a small unfenced (upon completion) front yard.
Each unit also has a rear door opening on to an even smaller
but similar porch. The complex is boarded on the north by a
two lane, heavily traveled road and to the south by a dense
woods. To the west and east are residences. All the resi-

WOODS

SEE! WEST ROCK

ON! U OMOBILE! TRAFICK! VALLEY S REET! ZOOM. OOM! CAR! SPEED! TRANSPOR TION

NATURE! GREEN TREES! moss&fern, bushes & shrubs, NEW ENGLAND stream.

COMMUNITY HOUSE

DANCE
AFTERNOON TEA

GREEN GRASSY LAWN

SLIDE

RUN AND
SIT WATCH
BABY BUGGY
HELLO! HOW ARE YOU?
GOSSIP
WALK
GROCERY BAG
WALK ON

WALK
SIT
PATH
SIT WAITS
HI!
WALK

SIDEWALK AND GRANITE CURB

P ARK
P ARK
STOP
GO

WALK ON
SIT AND WAIT
NEXT
WALK ON
PATH
INTO
YOU
JUMP
PATH
WANDER
HELLO!
SIT
SIDEWALK

HIT AND RUN
OUTER
S BALL
STOP THAT BOY!
MORNIN
WALKAWAY
SIT
NOW YOU HEAR!
WALK

P ARK
P ARK
WALK
SIDEWALK
SIDEWALK

SITE
MAP 2

SITE MAP 2

dents except one family are black.

Presently the complex is one hundred percent occupied, which is not always the case in similar type complexes. Low income and working class people have often wanted to move back to their original 'slums' (providing they still exist) even though the new physical facilities were superior dwellings, because the new residential environment "did not facilitate"[1] the types of preferred social conditions that existed in their previous environment.

As noted in Part III the work by Festinger et al. and Gans, have attempted to explain some of the phenomena for the development of human interactions, be it casual acquaintances or 'good friends.'[2] Both men agreed and their research verified that proximity and/or functional distance are major determinants of human interaction. Gans, though considering proximity as a criteria also found that similar values and stages in life cycle were also important regardless of distance.

Ratner's Hierarchy is not trying to determine good friends from mere acquaintances, this is up to the individuals interacting. What architectural decisions (from what material to what shape) can help facilitate the range of human interaction though, is important. By taking one through a few of the design decisions which were applied at Valley Townhouses, then perhaps the Hierarchy of Human Interaction in a residential environment can be better understood.

The architects[3] of Valley Townhouses came up with a two dimensional abstraction of physical activities and other social phenomena which they thought might occur at the complex (see Site Map 2). This drawing was done prior to construction. The architects have not been questioned[4] on how the design was affected by this attempt to promote human interaction. An assumption is made that the final plans, both in two dimensional abstraction and ultimately in three dimensional reality were to 1) facilitate the best housing possible and 2) to provide the choice of human interaction.

The first statement is, of course, important. Residents spend a substantial amount of time within their dwelling unit. It is essential that the architect designs to meet the spatial needs which will allow the residents to feel at home. The greatest degree of intimate and private interaction take place within the dwelling unit. It is unlikely that urban interaction in the Hierarchy could even take place within the Townhouses due to the distance involved.

However the second statement 'to provide the choice' of interaction will be reviewed with respect to outside the home. The 'Site Map' illustrates possible activities and interactions that are to occur on the front stoops, bench areas, play areas and internal pedestrian spine. In this environment the full range of interaction, from intimate to

urban, has the potential to take place.

Because there are many features which can have a direct affect on human interaction, it is impossible to deal with all of them and it is necessary to limit discussion to the following areas of design: the front porch, the rear porch and rear yard.

The Front Porch

There are two different front porch designs which are significantly different in the way they function with respect to human interaction. The plans for the two porches are below in Sketch 1A and 1B.
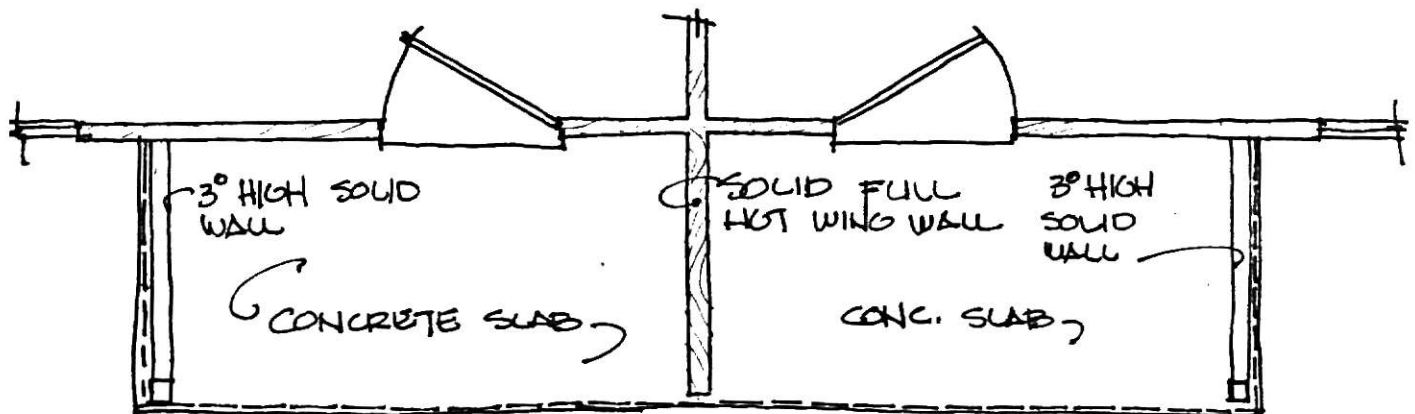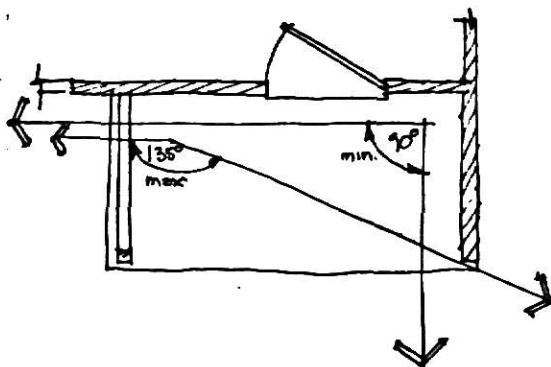

SKETCH 1A - FRONT PORCH
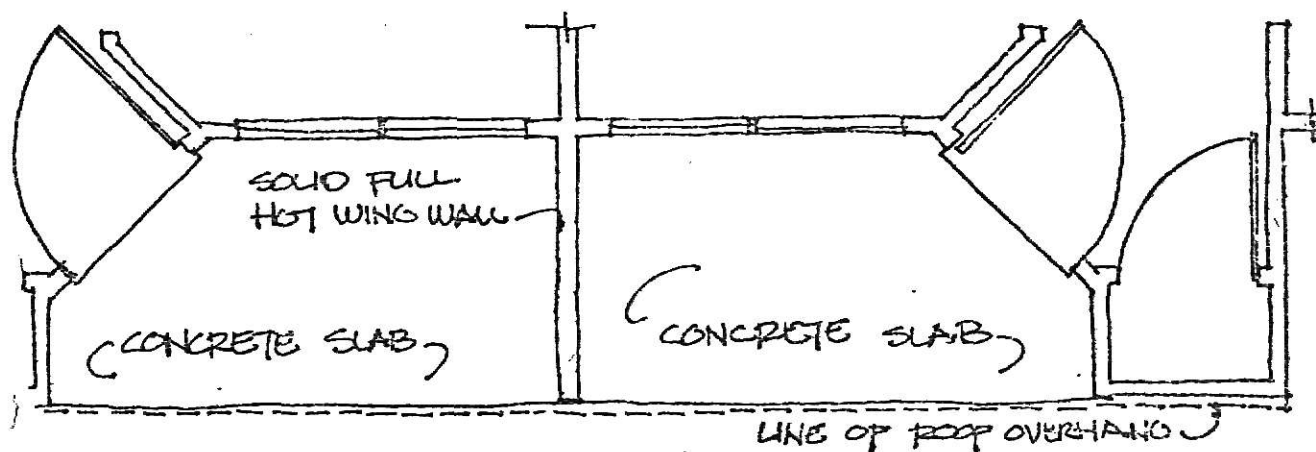
SKETCH 1B - FRONT PORCH

The front porch sketched in 1B offers a minimum viewing
angle of sixty degrees to a maximum viewing angle of 135 degrees
as illustrated in 1B1. Porch 1A allows, even if one is
sitting, urban interaction to occur immediately to the left
upon eye contact, if sitting in the position illustrated in
1A1. With only a three foot high wing wall it allows an
adult to have visual contact, down the walk. The person
then has time to make the decision to complete the full
range of human interaction or not to, as described in Part II.
With the more limited angle, illustrated in 1B1, one may be
forced to interact because of a lack of time to make the
decision to interact or not. This limited viewing angle
does not provide for urban and social interactions to occur

by choice. This could also happen to an individual while on the other porch as well.


SKETCH 1A1-VIEW ANGLES   SKETCH 1B1-VIEW ANGLES
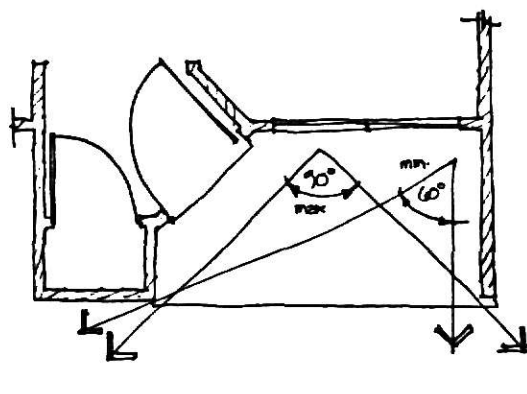
The close proximity of front porches to the pedestrian walk, see Photograph A, as short as seven feet, allows for a range of urban, public or social interaction between those on the front porch and those on the walk. This, perhaps is desirable by residents until they are sure they wish to interact. The distance between them may make the residents feel more comfortable or feel intruded upon if the walk allowed others to be within private distance.

Front porches across from each other allow for greater ease of interaction to occur among residents then do two adjacent porches, because of the solid full height wall between the porches. (See Photograph B.) Since visual contact is necessary for any level of human interaction as described in this report, it would be necessary for one of the two neighbors to step off the porch. If it is inclement

weather interaction may be an inconvenience. But, the wing wall as designed does have some advantages such as 1) it helps to give individual identity to the dwelling unit, 2) helps to define a territory of the resident and 3) allows for greater privacy between adjacent dwelling units.
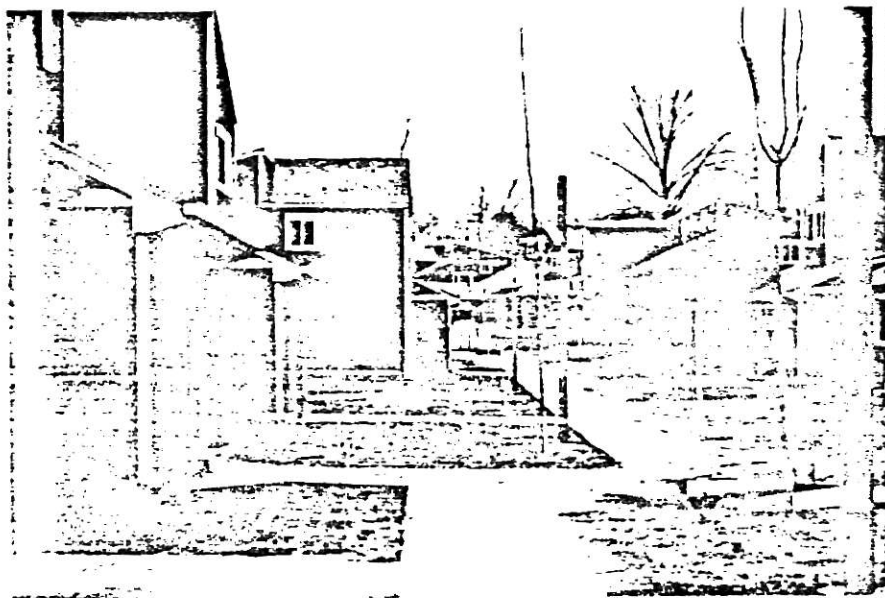

PHOTOGRAPH A - Relation of Pedestrian Walk to Front Porch.
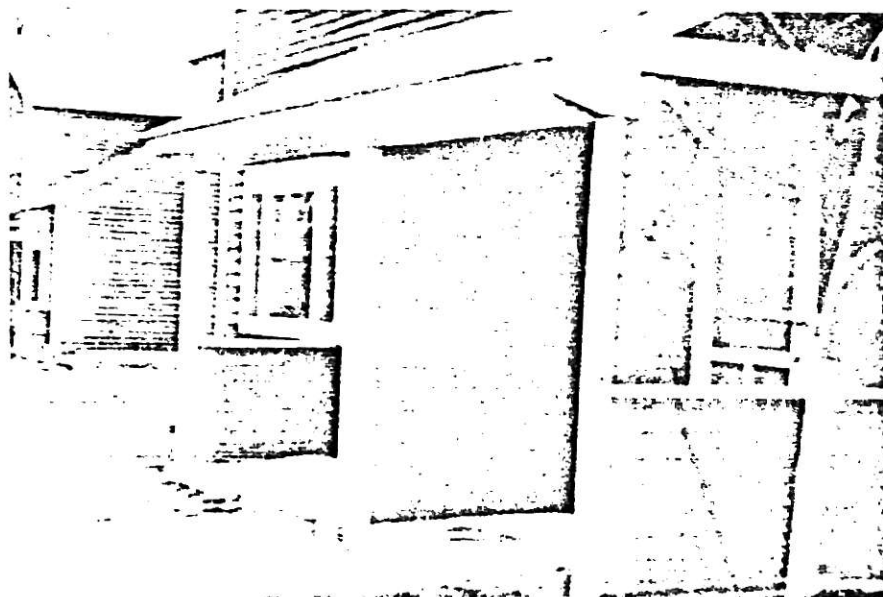
PHOTOGRAPH B - Solid Wing Wall Between Front Porches

It was observed that adult residents of the same sex often got together. The men gathered either in the sitting areas, the parking lot around their cars or the rear yard (see Rear Porch and Yard this part). As many as four people could sit comfortably on the porch sketched in 1A when speaking of square footage only. This would allow for private and social interaction to occur on the porch. However, due to the door location, chairs are often spread out (see Photograph C) to allow for ease of circulation to and from the house. This traffic was observed to be predominantly generated by children and teens. This often would allow no more than three on the porch with the fourth on the walk or front yard. There would then be a greater distance between those interacting, though not necessarily desired.
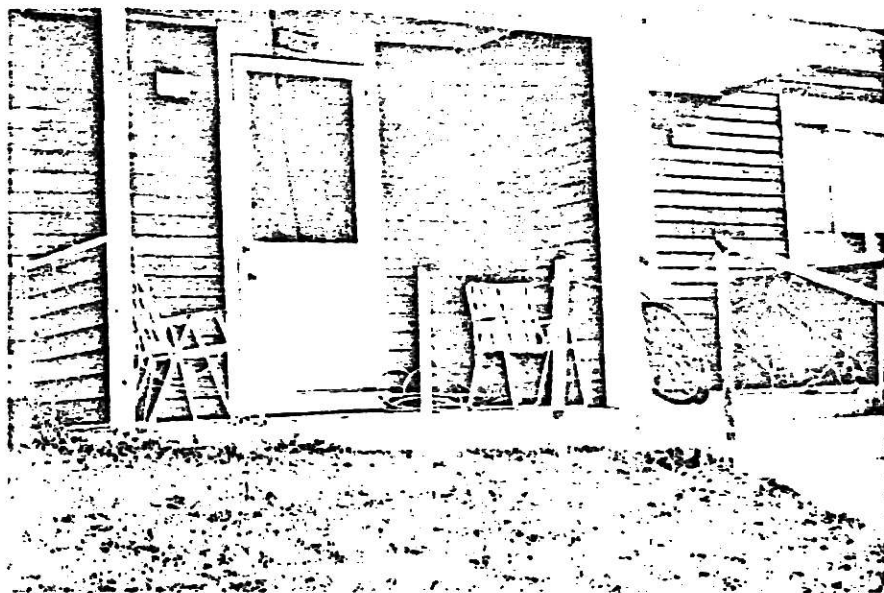
PHOTOGRAPH C - Chairs on Porch.

From observation the front porch was used largely as
a place to sit and interact for adults (predominantly female)
and acted as a territory which young children would play.
The teenagers of the complex were the most mobile group
observed and seemed to interact while on the move, that is,
playing basketball, or frisbee, or walking along the walk,
and while on the rear porches and yards facing north (see
next section for explanation). They interacted very little
on the front porches, perhaps conscious of being under the
watchful eye of their elders.

Conclusions

As observed and indicated, the front porch is a
gathering place for women and children in particular, which
offered protection from natural elements while giving
individuality to the dwelling units. From the front porch
the total range of interactions could take place, while
on the porches themselves intimate, private and social
interaction could develop. The solid wing wall at least
gives adjoining residents some privacy, but at the same
time acts as a barrier if interaction is desired while
each wants to remain on 'their' front porches. Front
porches across from each other allow for visual, aural and
verbal contact to happen because of the short distances
between them. To some residents this may be desirable, to
others, undesirable. It is the front porches which are

used for continuing interaction among residents. For it was observed that often the small social groups consisted of the same members each time. This 'local' visiting seems to be attributed, as Gans and Festinger have found to be based upon propinquity as discussed in Part III.

By sitting on one's own front porch the resident is within aural contact with others in their dwelling unit as well as convenience of being able to run in and out to use the facilities, check the stove, etcetera and to just feel like being at 'home'.

Architecturally the front porch gives the dwelling unit a front appendage that helps to give a human scale to the dwelling unit. The solid low wing wall serves the purpose of defining the porch and also serves as a point to gather around, that is to sit on, and lean on. The front porches at Valley Townhouses are definitely conducive towards allowing interaction to foster, perhaps too much so. The closeness of front porches to each other and easy visual and aural contacts takes away privacy perhaps desired by other residents. On the other hand this could be beneficial and was observed to be so. When one mother had to go in she might ask her next door neighbor or neighbor across the way to watch her children. For this, and interactions of residents who need or desire interaction with others then the front porches are a success, as the activities that were perceived in 'Site Map 2' have been observed to occur.

The Rear Porch and Yard

    As is the case of the front porch there are two different rear porch designs as well. The plans of the two porches are sketched in 2A and 2B. In every instance the rear porches are also paired.
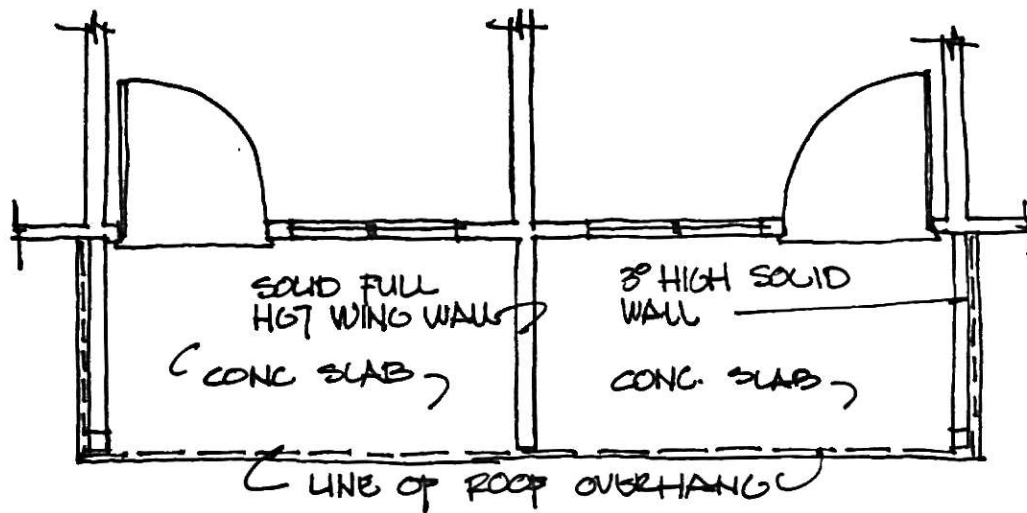
SKETCH 2A - REAR PORCH
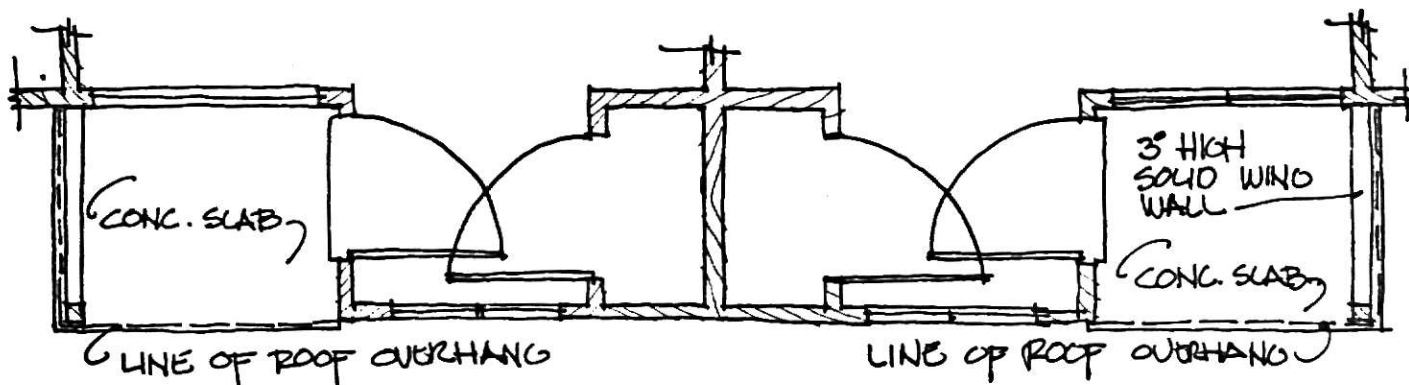
SKETCH 2B - REAR PORCH

Due to their orientation, the rear proches are used predominantly in two different ways. (See Project Cross Section - next page.) The rear porches that face south, towards the woods, are used by residents for storage of hoses, tools, barbeques, etcetera. Occasionally, it was observed that residents would sit on the porch while watching their children play, or read. Little interaction occurred between neighbors compared to those whose porches faced north. Out of the eighteen dwelling units whose rear porch faced south eleven have gardens and sixteen used their rear porch for some sort of storage. This can be explained partially by the fact the rear yard extends to a five foot high chain link fence along the property line and residents have greater control over personal belongings. Many residents on the south side have built fences along their property line to further assume greater control.

On the other hand the rear porches and yards facing north, fronting the sidewalk and street, are used by residents in an entirely different way. Both adults and teenagers, sit and loiter, while watching who is coming by. It actually appeared that those who sat on the rear porches wanted to interact, or at least be seen by others outside of their complex. These interactions, because of the distances involved are public and urban interactions. Many drivers would honk the horn, bicycle riders would shout, wave or stop altogether, and pedestrians would pause a

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PLACE	ACTIVITY most observed first	LEVELS OF INTERACTION most observed first
Rear Yard	garden, play, store, clothes hang, sit, stand, cook	social, public, urban
Rear Porch	store, sit, stand	private, social
Dwelling Unit	non-observable	non-observable
Front Porch	sit, stand, play, store	pri., social, public, urban, int.
Front Yard	play, stand, run, sit, walk	social, public, urban, private
Walk	walk, run, stand, bike, ride, sit	soc., pub., urban, pri.
Front Yard	same as other front yard	soc., pub., urban, pri.
Front Porch	same as other front porch	private, social, public, urban, intimate
Dwelling Unit	non-observable	private non-observable
Rear Porch	sit, stand, play, store	social, public, urban, private, intimate
Rear Yard	stand, play, walk, sit, garden, store	public, urban, social
Walk Street	walk, bike, ride, run, stand	urban, public, social

PROJECT CROSS SECTION

KEY

int. - intimate
pri. - private
soc. - social
pub. - public

while to say hello. Interaction occurred this way throughout the day and early evening hours. Many interactions would go from urban to private in nature. It was not only to see others but to be seen as well.

The rear yards facing north only have the city side-walks as a boundary with no planned vertical boundary. This makes circulation through these yards easier by others than those facing south. There are only five gardens on this side and only three dwelling units used the rear porch for storage of anything valuable. Thus more interactions occurred between neighbors and others from the complex taking short cuts across the yards.

The location of the door was critical to just how the rear porch functioned as an area to interact. In 2A the door locations allows for only a couple of people to sit and have easy circulation to and from the house. The porch sketched in 2B really would let only one person sit on the porch and have easy circulation to and from the house. On porch 2B it was more often observed people sitting on the low wing well or leaning up against the column then those who sat on or around porch 2A. The fact that the wing well was of sturdy construction allowed this to happen without any ill affects to the well itself.

Many residents are "dependent on the process of loitering where people pass"[5] for their interactions. For many, the activities which are generated off of the rear porch as well

as the front porch are "mechanisms and the excuse for a
social purpose: to see other people, to talk to other people
or do something with other people."[6] The rear porches
facing north serve this purpose especially for teenagers of
the complex while providing a place of shelter and at the
same time defining the resident's territory.

The weather in this area is often conducive to sitting
outside from late March to early October. The winds are
not often a factor to deter people from using the porches,
and the overhang provides a sun screen during a good part
of the day. It does rain a lot but the overhang often
allows activities to continue on the porches.

The rear yards appear to be an extension of the dwelling
unit and rear proches particularly those facing south. The
activities that were observed were similar to which Claire
Cooper observed and surveyed at Easter Hill Village[7] in
California. The major difference between the rear porches
and rear yard at Easter Hill to those at Valley Townhouse
was that there were planned three foot high wire fences which
helped to enclose the yard. Because of the lack of planned
play areas for mothers to take their children, many rear
yards became the play areas. The fence contained the children
as well as kept out those not desired by the parents. Perhaps
if Valley Townhouse, from initial occupancy had fences, the
rear yards would serve the same purpose. The play areas at
Valley Townhouse are the front porch and pedestrian walkway

even though there existed planned play areas.

The rear yards facing south at the western end of the Townhouses were observed to be a meeting place for the men who lived in those townhouses. There are five gardens in a row which nightly were watered by the men who cared for them. Consequently the men often interacted while tending to their chores. Upon completion of their chores the men often leaned against the fences and continued to interact, often until the bugs drove them into the house. No fences are solid, thus allowing children to see each other thru the fences. It was these same five townhouses where the same four of five women get together on the front porches.

Conclusions

Propinquity again seemed to be a deciding factor among those who interacted while in the rear yard. The community was fairly homogeneous in nature, that is, mostly black, low income and large families. The majority of the residents facing north have adapted to the physical conditions that exist. Many use the porches as a place to see or be seen by others. Since residents are on the porches it is easy for them to watch children play in the yard. Residents whose rear porches and yards face south have adapted in another way. Many have extended their home territory to the porch and rear yard. They have gained control of property by putting up fences to keep other out, trying to create

that balance between community (interaction) and privacy. Different physical conditions and activities of the residential environment have yielded completely different results.

Architecturally the rear porch gives the dwelling unit a rear appendage which as in the front gives a human scale to the dwelling. The solid low wing wall helps to define the porch and at the same time gives the residents something to lean and sit on. The rear porch 2A is definitely conducive towards allowing human interaction to foster, where as rear porch 2B is not as conducive. It is the rear porches facing south which are used for continuing interaction among residents, and it is the rear porches facing north which are used for continuing interaction with non-residents first, and secondly with residents who cut across their rear yards. Independent of the way the rear porches and yards are oriented, they are considered here to be successful because they are used, though perhaps differently then intended.

FOOTNOTES

1. Franklin Beecher, <u>Design for Living</u> (Center for Urban Development Research, Cornell University, Ithaca, New York, 1974), p. 174.

2. 'Good Friends' is a term used in <u>Design for Living</u> to illustrate a gross level between relationships of high intensity and involvement between residents.

3. The architects of Valley Townshouses, Alstrom and Lee who <u>were</u> partners in a local firm.

4. Presently the partnership is dissolved and neither architect could be reached after several calls and a visit to their old office.

5. Elizabeth Wood, <u>A New Look at the Balanced Community</u>, (New York: Citizen's Housing and Planning Council, 1960), p. 12.

6. <u>Ibid</u>., p. 8.

7. Easter Hill Village is a 300-unit public housing development in Richmond, California, on a hill site that was once a rock quarry, mostly one, two, and three bedroom two-story townhouses.

CONCLUSION

My goal as an architect is to design an aesthetic and
imaginative residential environment that will compliment
the priorities and needs of its inhabitants. As illustrated
in this report, human interaction within a residential
environmnet is a 'basic' human need. It is important to
point out that this report has not tried to come up with
answers on 'how to design' for human interaction in residential
environments. Instead an initial step towards introducing a
relevant theory of human interaction in residential environ-
ments has been presented. This has been done by defining human
interaction, by using other researchers' findings and digest-
ing them, and by combining them with my own conclusions to
develop a hierarchy of human interaction.

Systematic research which can be helpful to determine the
needs and priorities similar to those found and illustrated
in this report by Festinger, Jans and others must be expanded.
Existing data and even theories- such as the role which

propinquity has on interaction formation, or the theory that there is a hierarchial order of human interaction in residential environments, "little as it may be, can serve as a backdrop which he (the architect) can at least make educated guesses in the attempt to resolve design problems or make decisions."[1] It is too often that assumptions are made and left implicit and therefore unexplained and unquestioned if not untested.

In writing this report I have been constantly reminded of the quote that what is needed is a "fruitful balance between community and privacy."[2] Though the research for this report has been one sided in favor of human interaction, the need for privacy to achieve this 'fruitful balance' has become very much apparent.

This report is not conclusive, though one particular residential environment was observed and analysed, with some conclusions drawn. One residential environment can not be conclusive by itself. But if many are analysed and the data put together then a valuable tool is gained and can be used. This report is a small part of that tool and acts as a foundation to build on for this author and perhaps others as well.
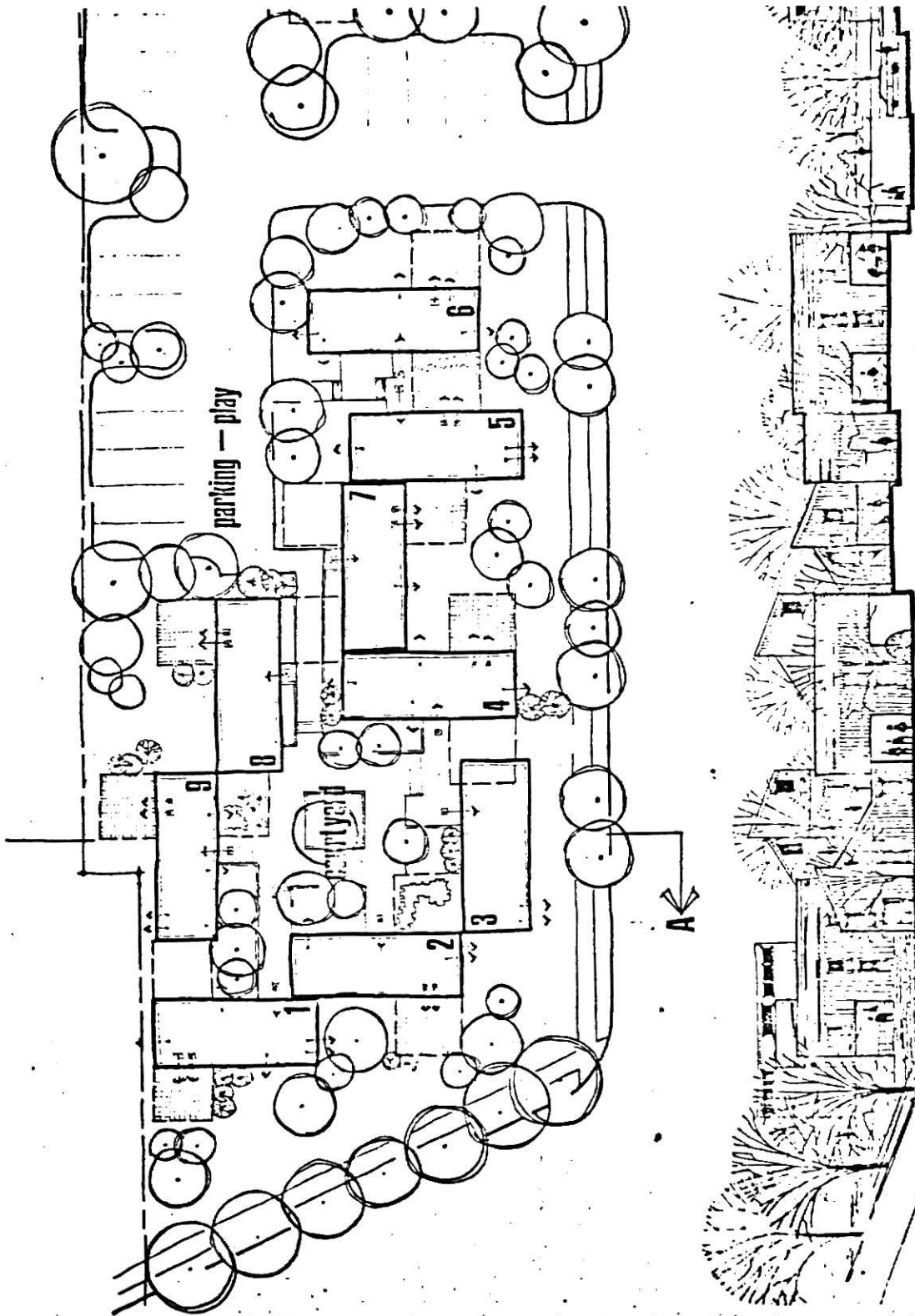
FOOTNOTES

1. Jon Lang, et. al., eds., <u>Designing for Human Behavior</u> (Stroudsberg: Dowden, Hutchinson and Ross, Inc., 1974), p. 79.

2. Alexander and Chermayeff, <u>op. cit.</u>, p. 37

APPENDIX

DESIGN PROPOSAL STUDENT DESIGN PROJECT BY AUTHOR SPRING, 1972

parking — play

APPENDIX B

TOTAL SET OF BEHAVIORALLY DEFINED ARCHETYPAL PLACES

1. Shelter

2. Sleep

3. Mate

4. Groom

5. Feed

6. Excrete

7. Store

8. Territory

9. Play

10. Route

11. Meet

12. Compete

13. Work

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HUMAN INTERACTION IN RESIDENTIAL ENVIRONMENTS

by

ARTHUR LEE RATNER

B. Arch., Kansas State University, 1972

A MASTER'S REPORT

ABSTRACT

submitted in partial fullfilment of the

requirements for the degree of

MASTER OF ARCHITECTURE

Department of Architecture

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1977

MASTER'S REPORT

ABSTRACT

This report investigates the relationship of human
interaction and the residential environment. The architect
must give more attention to social implications in residential
design. There are many projects whose primary goal was for
providing housing for individual families, with little under-
standing towards development of community and neighborhood.
The development of community and neighborhood is derived
through human interactions. Human interaction in this report
is defined as interaction between two or more people who
use all or a combination of four types of contact: visual (V),
audible/aural (A), physical (P) and emotional (E). Thus this
report shows that human interaction, if achieved in the
residential environment can be benefical to the inhabitants,
not only for the purpose of community and neighborhood, but
for the family system to function as well.

The Hierarchy of Interaction developed and illustrated in
this report provides a full range of interaction, from intimate
to urban, which can be found in residential environments. Not
all levels of interaction can take place in all residential
settings, and each interaction that does take place will have
varying degrees of signifigance and intensity.

The work of others; Edward T. Hall and his study of dis-
tance zones, Oscar Newman and his development of a 'hierarchy
of defensible space', and Christopher Alexander and Serge

Chermayeff and their 'hierarchy of domain classifications' all contributed in the maturation of the Hierarchy of Interaction discussed above.

Propinquity, homogeneity, and heterogeneity are also discussed. Research by Leon Festinger and Herbert Gans have illustrated that propinquity does have an effect on human interactions. This effect is most significant with initial interactions, for it often allows inhabitants to come into visual contact with each other. The inhabitants then have the choice to continue to interact or not. Gans' research has indicated that homogeneity and heterogeneity of residents is often the criteria which governs repetitive interactions among residents.

Valley Street Townhouses, a project observed and discussed was used to illustrate the relationship of a particular architectural design and what effects the design can have on human interactions. The conclusions drawn illustrate that a certain design will not have the same effect on all inhabitants. It is this point which the architect must address himself. The architect must do his best give more attention to understand the social implications which his design will encounter. Understanding the need to interact among residents and what levels to achieve, though only one of many aspects of the overall design process, will be to the advantage of the architect and not a hindrance to him.