DESIGNING FOR HUMAN USE:
RECREATIONAL USE OF RESIDENTIAL STREETS

by

Wayne Earl Moody
B. Arch., University of California (1962)

Submitted in partial fulfillment of the requirements for the degree of MASTER OF CITY PLANNING at the MASSACHUSETTS INSTITUTE OF TECHNOLOGY June, 1967

Signature of Author
Department of City and Regional Planning
May 19, 1967

Certified by
Thesis Supervisor

Accepted by
Chairman, Departmental Committee on Graduate Students
DESIGNING FOR HUMAN USE: RECREATIONAL USE OF RESIDENTIAL STREETS
By Wayne Moody

Submitted to the Department of City and Regional Planning on May 19, 1967 in partial fulfillment of the requirement for the degree of Master of City Planning

Abstract
A large problem as I see it is the need to find a fairly simple, yet relatively accurate, method of determining client values for use in many phases of the design process. This paper attempts to develop and partially test such a method.

The method is basically one of research, observation/interview, and test by simulation of the proposed environment. The particular problem chosen to be dealt with is the design of residential streets for recreational use, and the particular street is Pine Street in a low-income neighborhood in Cambridge. Criteria were developed after each phase of the process, often changing or becoming clearer as a result of further study. As a result of the process, the following criteria were developed:

1. provision of changing novelty, diversity, and complexity, not only of stimuli, but also of activities;
2. provision of semi-defined activity settings close to each living unit;
3. activity locations to be flexible, able to shift positions;
4. novel, diverse, and complex elements to be manipulable, making activity settings adaptable for changing activities;
5. provision of minimum level of upkeep;
6. maintenance of accessibility to other areas within and without the neighborhood;
7. provision for meeting and viewing places, for adults as well as children, within a marginal distance of activity settings.

Several problems with the process become evident but have good possibilities of being ironed out. One of the problems is a lack of hypotheses from the beginning, causing information overload and resulting in several temporarily unexplainable relationships which should be studied before making drastic design decisions. Another major problem is still the inability to get concrete information from the client group itself, which, for several reasons, seemed especially defensive in the particular study area.

Combined with a constant evaluation of environmental changes, however, the method appears to have widely applicable potential to other design problems. Use of the method certainly enables one to gain a more sympathetic understanding of particular clients' needs.

Thesis Supervisor: Kevin Lynch
Title: Professor of City Planning
# Table of Contents

Prologue .......................... 4

**Part One: Designing for Human Use**
Toward Developing a Method ........... 5
The Problem ........................ 6
Developing a Method of Attacking the Problem .......... 12

**Part Two: Recreational Use of Residential Streets**
A Partial Test of the Method ......... 26
The Problem ........................ 27
Implications of the Research .......... 33
Implications of Observation and Interview .......... 36
Testing Alternative Designs .......... 58
Summary of Findings: Implications for Design .......... 63

**Part Three: Evaluation of the Method**
Implications for Future Use .......... 66

Appendix ........................... 73
Questionnaire for Children .......... 74
Questionnaire for Adults .......... 75
Photographs of Model, Design Alternatives .......... 76

References and Bibliography .......... 82
Prologue

This paper is more a developing philosophy rather than a "thesis." I do not consider it really an "intensive" or intellectual" pursuit of a particular problem; rather, I have tried to synthesize my educational experience of the immediate past several months at M.I.T. As a whole, the paper is based not only on the reference sources listed at the end, but also (and primarily) on past educational and professional experience. In the paper I have tried to develop a broad framework for future personal study and have concentrated only slightly on a particular problem for illustrative purposes.

Particularly evident in this paper will be the influence, I hope, of previous professors and students in the City Planning Department at M.I.T., notably that of Kevin Lynch. This influence is difficult to document, so let it suffice to say that I am very grateful for the opportunity afforded me at M.I.T.—grateful not only to those who made it possible to attend but also to the quality of the program itself. The experience gained here, while making evident how much is yet unknown in the field of planning and designing human environments, has given me the sense of purpose and the confidence to begin to explore areas which I otherwise would have left untouched.
PART ONE: DESIGNING FOR HUMAN USE
Toward Developing a Method
The Problem

This paper concerns a large problem as I see it. The paper attempts to identify the problem in some detail, develop a method whereby the problem can be alleviated, and then test the method at least partially. An incidental by-product of the paper will be a set of criteria for designing and judging a particular environmental use: recreational use of residential streets.

At the end of the Fall semester last January, a classmate made an individual presentation at the final jury for our Collaborative Design Studio. The audience included instructors, his classmates, and representatives of Neighborhood Four in Cambridge, the neighborhood which concerned the class for the entire semester. The classmate's subject was multiple use of neighborhood streets, and the focus was on ways to make the streets better places in which to play. During the presentation many of his classmates looked around at each other and smiled casually. After the presentation he was well criticized by the various instructors and students alike for his lack of preciseness and inability to back up his ideas with reasons. No one came right out and said so, but it was obvious that the general opinion was that it was a rather poor presentation of poorly-gathered data. The most interesting aspect of the presentation, however, was the fact that a Neighborhood representative said that it was the best thing he'd seen in a long time and thought that the ideas were extremely
good and that the project had particular relevance to the problems of the neighborhood. Although the ideas presented may have been sketchily drawn, the Neighborhood representative thought they were quite good while the students and instructors thought they were somewhat dull, unimaginative, and irrelevant.

It seems to me, now, that the major problem was not that his ideas were poor—they may actually be quite good—but that there was really no way to judge them; he was unable to back up his designs by stating that he had satisfied certain goals and that those goals were relevant to the particular problem. In other words, there were no criteria established by which the ideas could be meaningfully evaluated by others. This seems to happen so often, not only in city design, but especially in architectural design. At best, the criteria will be in terms of area standards, circulation efficiency, and cost in dollars of capital outlay or direct maintenance.

Criteria are rarely, if ever, expressed in terms of human behavior, a factor so critical to the well-being of society. Recent reports from almost every field imaginable—sociology, psychology, medicine, management, political science, law, anthropology, and combinations of any of these—including city planning, urban design, and architecture, are pointing out at an increasing rate that our physical environment is not measuring up to the standards which would make it a happy, healthy place in which to live. Many of
the reports have been so bold as to suggest methods for alleviating the problems, and a few of these have even attempted to identify the criteria on which the method for reform has been based. As examples, let me cite a couple of the better and more recent writings which seem to typify the increasing concern. Halprin, as an urban designer, suggests that our cities should provide a "creative environment" in which "people are the generators," making possible "a rich and biologically satisfying life for all the city's people." He seems to be a very sensitive observer of people interacting with the environment; however, most of us are not so fortunate: we cannot readily tell when people are happy or unhappy, "biologically," in their environments nor what parts of their environments are affecting their happiness. Haworth, a philosopher, points out that "inhabitants of cities cannot hope to affect the quality of their lives unless they find ways of controlling their institutions." In other words, if I may paraphrase him, social values must be at the heart of physical changes if "quality" is to be affected. From a design standpoint, then, we cannot really hope for a "Good City" unless those with the power to design and make design decisions at every level are able to understand how changes in form affect "institutions," or behavior, and how behavior of the particular groups being designed for affects the formal counterparts of their "institutions."
More and more, planners at least are looking at patterns of human behavior, not only because they feel that it is wise to include human goals in the design process, but also because it seems to be a good strategy for implementing design decisions. A critical problem arises, however, in communication: how do we determine what are the important and relevant human goals for the particular problem and scale at which we are working? Sociologists are very emphatic about the need to solve this problem, yet are quick to admit that it is extremely complicated and time-consuming to find a workable solution. Gans emphasizes that "only by a sympathetic understanding of the culture, and the attitudinal system of the persons involved can the planner see which behavior patterns will change with a change in context, and which will be retained, whatever the context." Whyte was able to get this "sympathetic understanding," but he changed his life-style and spent three years observing and interviewing and a couple more years evaluating the experience. He didn't even want to make any physical changes, only "to learn about cornerville life, not to pass judgement on it." Gans hastens to say that designers cannot expect to get meaningful criteria by interviewing the people who will be affected by the design. Meanwhile the bulldozer moves on, unwilling to wait, propelled by political power; the designers walk in after, seize upon the essence of the site, envision a new, beautiful scheme for the physical integration of new and old, and march off to the drawing boards; the developer carefully controls his payments to
the designers, needing to be certain that his new structure will appeal to the people who can pay for it; the builder puts it up, cutting corners as best he can to make a buck; other people have to use it.

At the same time bulldozers and more efficient demolition machines are clearing sites for new environments, the process of design is being put under great pressure to economize its methods of synthesizing form. Alexander and others have made large strides in systematizing the design process, while Levin has pointed out the large informational gaps which cause even the most humanely-motivated designers to fall back on intuition, rules of thumb, or pure formal criteria. "In this atmosphere," says Alexander, "the designer's greatest gift, his intuitive ability to organize physical form, is being reduced to nothing by the size of the tasks in front of him. What is worse, in an era that badly needs designers with a synthetic grasp of the organization of the physical world, the real work has to be done by less gifted engineers, because the designers hide their gift in irresponsible pretention to genius."

It should be obvious by now what I am trying to establish, but in summary let me just list what I believe to be the major problems:

1. As it exists today, the design of environments is not meeting the desires, let alone the needs, of the people who end up using them.
2. There is a lacking body of knowledge concerning the relationship of human behavior to environmental form, information which is so critically important to the happiness of society.

3. Although designers may intuitively be able to shape form to serve real human values, they are, as a whole, unable to communicate their ideas and reasons in a language understandable to those who turn form to reality.

4. We have not yet been able to find an efficient, workable method for determining meaningful human values and translating these values into formal requirements.

While Gans and other sociologists are pointing out the great difficulties and time involved in familiarizing oneself with human behavior, Alexander and other designers are devising more efficient and faster methods for translating criteria into form. Lacking, it seems to me, is some bond between the two: we need a simplified, quicker method for establishing criteria based on human behavior which can be fed into the form process at many levels, particularly at the design level.
Developing a Method for Attacking the Problem

By looking at the way environments are made into reality from the point of conception, some insight may be gained as to where the possibilities are for infusion of human criteria into the form process. The planning process, through the political process, allows various goals, plans, and ideas of various groups and individuals to be evaluated. Implementation without evaluation by society could be disastrous and there is much information to support that the time lag between the conception and inception of an idea is necessary for ordinary people to become accustomed to the proposed change and to enable necessary modification of the idea for various unforeseen reasons.

Presumably, in the planning process, the reason for proposing any changes is to make life better for some group of people. Filtering through the political process, the proposed change should come out with the potential of making life better for the group in question while not lessening the benefits of life for the remainder of the people, or at least potential benefits to society should exceed the costs. The implementation of the change should lose as little as possible in the translation from objective to reality. From the standpoint of the people for whom the change was proposed and of the people who must live with the change, the critical factor of the planning process should be efficiency: how much better or
worse is life after the change is implemented than that which was envisioned when the change was originally proposed?

Since we don't really have very good techniques for measuring the difference, we have a difficult time evaluating the planning process. Many people have suspected, though, that in some cases a great deal is lost between the conception and inception of an idea. The Urban Renewal Program has undergone much modification and surgery since its inception partly because social and economic costs were far outweighing the benefits, even in the long run, and partly because the effects of the program on the people who would ultimately be affected by it were not sufficiently recognized prior to its inception.

Short of completely re-evaluating and restructuring the planning process (although minor modifications are being made consistently), there may be simpler ways to strengthen the connection between people and ideas on the one hand and the implementation of ideas on the other. The design process is used in every stage of the planning process. Design may be used to inject an idea into the bloodstream of the planning process; design may be used in the political process to test implications of, or find limitations to, policy proposals; finally, design may be used during implementation of ideas which somehow made it through the political maze. Infusing the needs of people (the real clients) into the design process
may help factors in the planning and political processes to be constantly aware of social consequences due to policy proposals and their implementation.

In the design process itself there are areas where the designer might easily become more aware of user-motivated criteria. Levin, again, sheds some light on the subject in his discussion of how the design process is used in planning:

So far as the design process is concerned, identification (of criteria, variables, relationships, etc.) amounts to the generation of information, and to answer the question "how is identification done?" one must find out where the information comes from. There seem to be five major sources of information: (1) knowledge of user requirements; (2) knowledge of practical considerations; (3) conjecture; (4) knowledge of previous designs; and (5) the processing of other information within the design process itself.

It seems that often it is only by actually designing that a designer will become aware of problems such as the conflict of two user requirements. It is certainly true that the information gained from evaluating a design in terms of performance criteria could be obtained only with very great difficulty if that design had not been formulated in the first place. As far as the designer is concerned, a design process must in some respects clearly be a learning process. It is not inconceivable that the need to learn about the problem and the need to produce a solution might on occasion conflict (like in the writing of this thesis), especially when time is limited, and one may wonder whether the former receives the attention it deserves.
Designers are constantly looking for limits within which they may design. Constraints are what makes design necessary and also workable. In addition to those usually imposed by outside sources, constraints are self-imposed by the designer to help him begin the design process. Usually the constraints imposed by outside sources are not those which are based on the needs and values of the people ultimately affected by the final implemented design, but are called "economic," "efficient," "aesthetic," "orderly," or "simple"—all vague concepts which have many meanings depending on whom one talks to. Even well-meaning programmers and designers who are genuinely concerned with the needs and values of users of the environment and have the opportunity to influence the planning process do not have enough knowledge about needs and values to use as arguments for design proposals, let alone as constraints in the design process.

A designer may be perfectly capable of designing the perfect home to suit his own needs, but turn him loose on a plan for housing itinerant laborers and he may have a few difficulties justifying any alternative solution. Ideally, as one alternative, he should know the group of itinerant laborers as well as he knows himself and therefore be qualified to make decisions for them. Gans would seem to have it this way. Another alternative, however, would be to give each itinerant laborer the education, tools, and economic means so that he may build his dwelling how and where he wants it. In the first case we run into communication and time problems; in
the second case we not only have time problems but economic and social ones as well. In either case we seem to lack the necessary capabilities to solve them. In both cases, the problems seem insurmountable at present. Other alternatives, then, would try to circumvent the insurmountable problems and attempt to capitalize on the advantages of each previously-mentioned alternative.

In spite of Gans's insistence, one of the compromise alternatives would be to ask the itinerant laborers what kinds of things they want and how they would like to live. Assuming they could answer the questions and the designer could not only understand the answers but also translate the answers into compatible forms, this might not be a bad solution. This method has been tried in varying degrees, but, as one might expect, the communication problems are difficult to resolve, people often do not know what their own real problems are (much less how to solve them), and there are problems knowing what questions to ask and how to ask them.

Another alternative is to observe itinerant laborers' living habits and speculate, based on existing knowledge, how to solve some of the observed existing problems. Some of the drawbacks with this method are that, even if we knew how to translate observed problems into real solutions, we can't observe everything and what we observe as problems may in fact be assets for the itinerant laborers.
One of the hindering misconceptions, though, in both of these compromise alternatives, is that we need to "design" forms which satisfy perfectly every human need and desire exactly. We can design environments which satisfy needs that people cannot control by themselves; we can leave the rest flexible enough so that the problems we can't observe can be solved individually by the users. Another misconception, I think, is that designs are static goals. We cannot, even if we had the knowledge and the tools, solve every physical and social problem overnight; further, even if we could solve them today, we have no guarantee that tomorrow wouldn't bring us a different problem. So we have a chance to make partial solutions, observe the results (which we seldom ever do), determine the "misfits" between our perceived solutions and the real results of those solutions, and change our criteria and forms accordingly. The drawbacks to some of the compromise alternatives, therefore, may not be so serious: more important, though, the drawbacks should not keep us from even attempting the alternatives.

We need not pursue each alternative separately or alone; in fact, it may be helpful to combine the two. By observation we may know better what questions to ask, by asking questions we may know better what to observe. Whyte, during his investigation of "Cornerville," affirmed this method and says, "I found that what people told me helped to explain what had happened and that what I observed helped to explain what people told me, so that it was helpful to
observe and interview at the same time." This dual-natured process may help circumvent some of the "insurmountable" problems mentioned previously. The hope is that, by the use of this tool, meaningful constraints can be extracted based on the real clients' needs so that designers will have a more substantial basis for influencing decisions in the planning process. By the use of this method, the design process may, over a period of time, begin to establish a set of working criteria and build up a body of information which will be extremely useful not only for evaluating designs but also for testing real environments. The questions now are: Where and how do we start? What do we observe? What questions do we ask? Who do we talk to?

Determining the clients for whom we wish to design would seem to be the logical place to begin. Except in the case of an individual home, the real client is not, usually, only the person who pays us our fees, although the temptation to believe so is great: the real client is the entire group of users of the formed design. For the moment, in order to simplify the problem somewhat, let us assume that for any given environment the clients will not change over a short period of time. There are bodies of information concerning various client groups. We can begin by finding the information relevant to our particular design problem, although it is usually not in the form which is immediately useful to us: we must search and re-search. We could presently catalogue this information if we
knew in what form cataloguing would be most useful. In the mean-
time, we must guess what information is meaningful for our purposes
and build a test for its relevance.

Based on this new knowledge of client behavior we can better tell
what to observe and what questions to ask, although we must be
careful to remain flexible in our biases. Combined observation
and interview as described previously can help to affirm or revise
hypotheses and data. Structuring an interview is difficult and
seems to depend almost entirely on the particular problem and
client group and interviewer involved. There have been multitudes
of interviews conducted, however, and certain common problems do
exist. It is generally conceded that asking the same question in
many ways tends to eliminate the problem of misunderstanding between
the interviewer and the subject. Also, when the interviewer does
not know specifically what he wants to find out (which is the
position we must take to cancel some of the effect of our own
biases), he must be careful not to ask questions which are too
detailed. Payne lists the merits of the free-answer-type question:

pp 49-50 (The free-answer question is uninfluenced, it elicits a wide
variety of responses, it makes a good introduction to a subject,
it provides background for interpreting answers to other
questions. It can be used to solicit suggestions, to obtain
elaborations, to elicit reasons, to evaluate arguments, to
explore knowledge and memory, and to classify respondents.
it gives the respondent a chance to have his own say—so with
ideas which more restrictive types of questions would not
permit him to express... (It) is of value especially as a preliminary aid in drafting other questions... (It is a) preliminary step to preparing questions on any unexplored issue. (my parentheses)

Results from interviews can be compared with personal field observations and information based upon the original research, and discrepancies noted. Lynch has noted the uses of this method in the design process for visual form of the city. Similarly, we might adapt the method, with some revisions, to the smaller scale of neighborhood or building or even room. Relevant criteria seem easier to grasp at the smaller scale where there are fewer variables, both social and physical. Just as the designer needs to break complex problems into parts in order to better understand them, we might similarly break our complex environment into parts for analytical purposes.

Assuming we now have a set of relationships between behavior and form, we can make some hypotheses as to how certain changes in form will affect behavior and also how existing behavior will help us to change form. We may decide to abandon the project if existing behavior patterns will be able to cope with environmental problems without the aid of forced design. Or we may decide that very little designed change is necessary to provide a catalyst for people to be the "generators," as Halprin puts it. These are design strategies which can be employed. Chances are, as designers by nature, we will decide that certain physical
changes will be necessary in order to facilitate the observed "misfits" in the existing environment. As a designer, one can choose his own method for translating criteria into formal statements, whichever suits him best, but before a final design is selected, shouldn't the clients have a chance to evaluate the alternatives? In practice, designers today must constantly allow their fee-paying clients to evaluate alternative designs. In reality, since there is presently no established precedent nor method for designers to subject alternatives to the real client-users, the designers must take the initiative and allow the real clients an opportunity for a voice in their future. This of course may produce schizophrenic designers, but that problem will have to be saved for another day.

Short of building laboratory environments—we are doing this every day but we haven't yet developed a system of evaluating them in terms of human behavior—we must at least synthetically subject the clients to our planned environments and somehow test their reactions. Here we run into the problem which Haworth points out and which I have discussed previously: divorcing physical form from social actions allows the observer and the client to lose the overall conceptual scheme of the environment. We are developing more realistic simulations of environments through model-making, photography, movies, television, and computers with videoscopes, but there is much work to be done and often the methods are
cumbersome and time-consuming. For the time being, we must pick the method which is simplest for our particular task.

Before making the decision on the final design, we can now return to Gans's approach and evaluate the alternative designs according to his three viewpoints: (1) our own values, (2) the values of the clients in question, and (3) the values of the community affected by and affecting the clients.

To my knowledge there has never been any environment constructed exactly according to the original design, no matter how detailed the plans have been. Changes are often made based on completely irrelevant criteria; often these conflict with client-based criteria, sometimes they do not, sometimes we can't determine, but usually we forget what the original criteria were. The present system of designer-builder relationships usually does not allow for client participation. Moore has circumvented the problem by allowing the real clients to participate not only in the design process but also in the construction process. We must concentrate further on the problem to see if there are effective ways to accomplish the same ends in environments more complicated than single play spaces. Reform in existing construction practices is obviously necessary.
Evaluating design after construction is sadly lacking, as mentioned previously. Once environments are constructed based on these new client-criteria, we can return to the scene instead of rushing off in search of another job. Obviously there are time and money problems involved which point toward either revisions in professional practice or new governmental policies, or both. Much more study is needed. Evaluating new environments, we can at least ask ourselves the following questions: Are the people who use the environment really those for whom it was designed? Does the environment function as it was envisioned? Are people making noticeable changes in the environment to satisfy particular problems? Would people like to make changes which they are unable to make? There are undoubtedly many others, and we must go through a similar process to the one which was used in designing the environment in the first place: research, observe, interview, test. Only then can we begin to build up a meaningful set of relationships which will be useful to us in future design.

The feedback problem will plague us until more efficient ways are found to distribute the information gained to all people concerned in the form process. Individual designers will be able to accumulate knowledge based on their particular experiences, but communicating all experiences to all designers, developers, builders, politicians, and even clients is an immense problem which only time
and concentration can begin to solve. Libraries are bulky, awkward, inaccessible to many when efficiency of communication is the criteria.

In summary, I have outlined seven steps which I feel should be employed in any design problem, large or small. Each of these steps at present has problems built in, but the problems can be tackled individually. The steps as I see them are:

1. Establish the primary client or client group, which may be different than one's employer.

2. Determine the client's program, which may be different than that which he verbally expresses. Determining the criteria for satisfying the program requires (a) research, (b) observation-interview, (c) evaluation in terms of the designer's values, the client's values, and the goals of the larger community, and (d) preliminary test.

3. Design, following the criteria established in the above process as closely as possible and bringing the clients into the design process as much as possible.

4. Evaluate, based on fits and misfits between steps 2 and 3. Change criteria or program if necessary and re-test with client group before final decision.

5. Construct the environment, making necessary changes according to finalized criteria. Keep client relationship as active as possible, given the existing procedural constraints.

6. Evaluate according to finalized criteria after construction. Common language understandable among many fields is necessary.

7. Feedback into basic information system, distributable not only to designers but to all concerned with shaping the environment.
Before we can expect acceptance of a system like this we must show its value. Testing of each step is therefore necessary to find its possibilities and limitations. As yet we have no means of testing the process completely; all tests are only partial at present because of our lack of criteria and information. We can begin, however, by performing some of the tests, crude as they are, leaving final judgments flexible.

One such test would be to evaluate any environment based on any criteria and see whether there are any fits. Another such test would be to subject particular client groups to various environments where criteria is more or less explicit and observe the reactions. Another test is to survey designers and design-decision-makers to establish the set of criteria used for any particular environment, then evaluate the environment based on these criteria. Another test would be to devise criteria based on clients' desires, testing them as realistically as possible with present techniques before building. The following pages are the results and evaluation of one of these partial tests: devising criteria based on clients' desires and testing a set of conceived forms by simulating the real environment.
PART TWO: RECREATIONAL USE OF RESIDENTIAL STREETS
A Partial Test of the Method
The Problem

The particular problem I have chosen to study is that of designing residential streets for recreational use. There are several reasons for tackling this particular problem, some of which I will explain here.

Recreation in general has received much attention because of its importance to human well-being. Streets in general have received a similar amount of attention because we all use them constantly. Streets as facilities for recreation in particular, however, have received very little attention. Cooperstock has cited their potential and has suggested various means for their improvement for recreational purposes. Bryan has suggested that recreation by children in streets helps promote social contacts between the mothers of those children. Burkhardt has developed some ideas which may be applicable in detail to a particular neighborhood. Most of the recent completed design work has dealt with completely closing streets and developing them for pedestrian "circulation" between commercial enterprises. Pedestrian malls now receive much attention as ways to make dwindling commercial enterprises viable. Goodman and Von Eckardt, concerned with the individual's sense of identification with his environment, have developed a system of rehabilitating "dead spaces" into lively, recreative areas. They consider some residential streets, especially those in high-density public housing developments, worthy of redevelopment using their system.
In lower-income neighborhoods where planners and social workers have attempted to assess some of the problems and needs, the major physical need has been for more recreational space and facilities, not only for the youngsters, but also for the oldsters. In making plans for these neighborhoods, one major problem has been that something else must be sacrificed to accommodate more play spaces. New York City has been experimenting with "vest-pocket" parks which can be planted in many small, left-over spaces. There have been earlier attempts at closing off busy streets to auto traffic and turning on fire hydrants for the enjoyment of kids during hot summers. Many streets have been closed to traffic temporarily, even without providing any additional equipment. Last summer (1966), Baltimore tried a concept which met with much enthusiasm and success. Called "Operation Champ," it was a circus-type affair which went unannounced to a different neighborhood every day, closed off a local street, and set up play equipment such as trampolines, swings, and monkey bars which were all supervised by local high school and college sports heroes. The successes of some of these programs are encouraging and point to an unfulfilled need, but they are either temporary in nature or are very expensive to operate.

It is possible that neighborhood streets could be used much more effectively and productively for recreational purposes, taking some of the burden off local parks, schools, and playgrounds.
Perhaps streets can fulfill certain functions of a recreational nature even more effectively than parks and playgrounds. Certain physical changes to a street might provide a permanent and relatively inexpensive environment in which certain types of child and adult recreation can take place. Not all residential streets, of course, are readily adaptable for such use (traffic needs far outweigh the recreational ones), but many are, or with minor changes could be, and other functions of the street such as traffic and service need not necessarily be sacrificed.

The client has not come to me with the problem; I have in a sense determined it myself. With the use of the process outlined previously, it should be able to determine whether in fact a problem exists, whether or not the street holds potential for solving the problem, and what might be some of the criteria for making future changes. For the time being I will have to assume that I have been hired by some organization, perhaps a neighborhood. I have chosen Neighborhood Four in Cambridge as a likely client, partially because I am familiar with it from previous classwork, and partially because it is in the process of making general plans for its own improvement. There is potential of using the results of this study for further evaluation by the Neighborhood and possible implementation in some form or another.
Identifying the particular clients in this Neighborhood was particularly difficult, even though I was relatively familiar with recreation activities in the area. First of all, streets which are presently used heavily for recreational purposes are in the proposed path of the inner belt expressway and trial interviews led me to believe that adults had a "don't care" attitude and had preliminary plans for moving; also, any plans developed would have a relatively slim chance of being implemented; and present planning in Neighborhood Four generally neglects this area. Secondly, much of the remaining neighborhood consists of public housing projects in which the street is only a minor area of recreational activity, most of it taking place within the project itself (this would be an interesting problem area in itself for another study). Finally, the remaining area is not used as much for recreational purposes,
and observation of activity is thus more difficult and interview respondents are therefore not as exposed to street recreation.

It was therefore decided that, at least for the interview-observation stage, the entire neighborhood could be considered as the clients, but particular attention should be given to one particular street so that a set of alternative designs could be made in the time allowed. In addition, the differences in recreational behavior among the several different types of streets and spaces seem to be important considerations in developing criteria for street recreation. Within the neighborhood planning area there are two streets, Cherry and Pine, which presently seem to be used for most of the street activity. Of those, Pine Street between Harvard and Eaton streets was chosen as the study area.
Pine Street seems to be typical of the neighborhood and contains the extremes as well as the mean. General consensus seems to rate it as the messiest. There is a range of housing density and type from single-family wood frame to four-story brick tenement. There are both owner- and renter-occupied units. Upkeep of property ranges from quite neat and well-maintained to vacant, rat-infested, and uninhabitable: Character of resident has almost equal extremes. The basketball court of the Margaret Fuller House fronts on Pine Street at the corner of Eaton. Other land uses in the study area are a small grocery at the corner of Harvard Street, a printing establishment and vacant lot across the street, and a large parking lot for Polaroid employees opposite the basketball courts.

Part of the purpose of this paper is to develop design criteria by stages to see whether any significant changes occur as a result of observation, interview, or testing by exposure to alternative designs. Therefore, an attempt has been made to keep the results separate and to point out any significant differences.
Implications of the Research

The following criteria have been extracted primarily from previous work done at M.I.T. by other students and myself and are not based on an exhaustive study done particularly for this paper. To summarize, however, the following criteria have been developed based on this research:4,6,12,28,29

Preteens (4-12 years)

1. Environmental exploration and manipulation
   a. development of initiative, self-discovery, "creativity," and inventiveness
   b. expansion of sensory experience and discovery through provision of wide range of stimuli

2. Active play—muscular exercise, mental-physical coordination, expenditure of excess energy

3. Development of skills—competence, industry, and accomplishment in mental, manual, and physical skills

4. Social awareness and development of confidence
   a. role-playing, testing, group participation
   b. contact with other diverse social groups

5. Need for security—desire to explore, but need to find "mother" easily

Teenagers

1. Social interaction and exploration—hanging around, testing new roles, studying peers, seeing and being seen

2. Active group sports for high interaction, courage-testing, competitiveness, cooperation, tension-release
3. Participation in constructive activities
   a. development of responsibility through construction, "ownership," supervision, instruction, maintenance of property, group programs, activities
   b. development of creative abilities and career formation
4. Individual development, self-identity, independence
   a. independence from family and home-life constraints
   b. need for solitude, reflection, dreaming, fantasy, romance, entertainment

Adults
1. Leisure activities (athletics)—transition from activity to moderate sports, maintenance of physical fitness, continuity of interest through observation
2. Constructive pastimes—do-it-yourself construction, maintenance of property, home, auto
3. Recognition of family, sense of accomplishment
   a. entertainment, social gatherings
   b. increased mobility, independence
   c. mixed child-adult activity for "togetherness" and to watch progress of children
4. Need for quiet

These needs all seem applicable to the street, or at least to the outdoors. Because of their lack of detail and lack of differentiation between sexes, however, many of these needs would be difficult to tie down to any particular form or character of the street. Nevertheless, a preliminary guess will have to be made about the formal criteria which might satisfy the needs. A first guess, therefore follows:
Pre-teens
1. Exposure to diverse stimuli, including mild danger
2. Possibility for manipulation of certain elements to achieve particular ends
3. Provision of several "moldable" spaces small enough for one person or a small group to control
4. Availability of a larger space to spread into for group sports

Teenagers
1. Larger area(s) for group sports like football, basketball, baseball
2. Provision of special area devoted only to them (or one which they can claim) which allows for complete responsibility for maintenance, planning, and which is large enough for dances, games, exhibitions
3. Provision of smaller space(s) for "hanging out" or meeting with others, away from home
4. Secluded, intimate spaces for thinking, romancing, reflecting

Adults
1. Visual access to street activity from inside home
2. Provision of outdoor observation areas
3. Area for setting up tables and chairs for picnic, card games, neighborhood get-togethers (assuming they are really interested)
4. Special area for auto to be cleaned or worked on

The list of needs and criteria and of formal characteristics is lengthy but certainly not inclusive; and it is still speculative, especially as it relates to the street itself. Given the problem of re-designing a street for recreation purposes, a designer could certainly create several alternatives which could be evaluated by those charged with making the final decisions. However, it would seem difficult for the designer to imagine just how a particular change would be accepted and used by the neighborhood and how the residents felt about the proposed changes. It is entirely possible that none of the needs as expressed by research should be fulfilled.
by the street, or at least by the street in front of the particular residents' homes.

Hopefully, observation and interview would help to clear up the unforeseen misconceptions so that the final plan decided upon will not only be more readily accepted by the neighborhood, but will also be used as envisioned and intended. Based on previous research, it should be easier to know what to observe; based on observation, it should be easier to know what questions to ask.

Implications of Observation and Interview

First, observation was carried on throughout the entire neighborhood over a long period of time, between September 1966 and March 1967, at random intervals. Second, interviews were conducted with adults and children in the area for a short period in March and April, 1967. Third, more detailed observation was undertaken in April. Based on the first overall observations alone, several basic relationships might be inferred:

1. Recreational use of the street appeals to a limited age group.
   a. Ages 4-7 use the sidewalks, porches, some yards, and some street areas very close to home.
   b. Ages 7-15 seem to use the street more than any others, the sidewalks and yards very seldom.
   c. Ages 13 and over use playgrounds for active sports, although football is very popular in the street, and they use street corners or other "hangouts" (drugstores,
small markets, blank walls, some semi-enclosed porches on apartment structures) for meeting and talking.

d. Adults use the street for walking, parking, working on autos, taking babies and dogs for strolls, and watching others, although watching usually takes place from windows, porches, steps, or from a chair in the front yard.

2. Use of the street for other than automobile traffic varies significantly with climate: sunshine is preferred during all seasons; and warm, sunny days immediately following cold, cloudy days are by far the most popular times for street recreation.

3. Types of team sports played in the street vary with the accepted professional sporting seasons.

a. football between September and January
b. basketball (weather permitting) between January and May
c. hockey (crude forms) during snowy season
d. baseball or stickball between April and September

4. Sports and games which require groups for their functioning vary according to the particular population of the street and to some extent on the particular character of the street, but some are more universal than others.

a. kick-the-can e. pitch pennies h. fighting
b. hide-and-seek f. cards or gambling i. foot-racing
c. hopscotch g. sliding on cars j. parading
d. four-square (during snow)

5. Individual recreative activities are much more diverse than those above and depend to a great extent on the range of available materials which can capture the participant's imagination.

a. chalk drawings on smooth asphalt or walls
b. bicycle-riding and skating or skate-boarding

c. pushing things: wheels, baby-carriages, "chariots" (an old cart)

d. making things: lemonade stand, Indian fort, houses

e. throwing things: pebbles, bottles, balls, sticks

f. watching others, imitating

6. Certain streets attract recreation activities while others do not.

a. Street recreation activity is a function of density of children, but is not directly proportional

b. Traffic volume and speed on Columbia and Windsor Sts. prevents active participation

c. Spacial enclosure and lack of traffic on Worcestor and Suffolk Sts. seems to encourage street recreation.

d. Some characteristics of the street seem to influence the type and intensity of activities.

e. Lack of yard space or play space itself is not the reason for street play.

Interviews were carried out based on these observations. The object of the interviews was to determine the general attitude toward street recreation by both adults and children, to find out whether my observations were inclusive of all things that took place in the streets, to find out what particular things about the street encouraged or constrained certain types of activities, and to see whether there were any particular ideas about how the street could be changed to make recreation better. Although a standard interview was devised for both adults and children, one for each group, (see
appendix), it didn't take very long to realize that it had to be adjusted for each subject, and the adults were generally very uncooperative.

The interview results as discussed here are largely undocumented in detail, as much of the interviewing was spontaneous and taking notes during street interviews turned out to be awkward and cumbersome: it seemed more important to be friendly rather than clinical. Approximately one dozen adults and about twenty children varying in age from seven to fourteen were interviewed; over half of the subjects in both cases were interviewed in the study area.

Most adults recognize the need for recreation space for the children and seem to realize that, due to the lack of public facilities in the neighborhood, the street must serve at least some of the recreational needs. Because of the crowded conditions at the local multi-purpose playground (Sennott Park), they seem willing to let their children seek areas outside the neighborhood and "see other things and meet other kids." One respondent out of the group, however, felt that the Margaret Fuller House provided all recreational needs for Pine Street and there is really no need for any street play. About a third of the respondents on Pine Street were concerned with vandalism and held the attitude that kids should be "kept off the street and out of trouble" (the assumption being that street activity generates trouble), although they admit that most of the problems exist at night.
Except for football, most adults seem relatively unaware of what activities are actually conducted in the street in front of them. They seem to feel that because of the proximity of the Margaret Fuller House play facilities, most recreation takes place there. Recreation to them seems to be synonymous with organized group sports; play in small groups or alone is not conceived of as serving any useful purpose. When small children are quiet by themselves or in small groups they are "playing," but when older children (12+) are idle or not participating in active group sports they either are "loitering," "wasting time," or "just fooling around."

Surprisingly, none of the adults interviewed were bothered by noise or stray objects; the major bother seems to be trespassing in yards. Every house on Pine Street which has a front setback over six feet, regardless of the number of families residing therein, has a fence at the front property line. Trespassing seems to imply danger or vandalism. One family on Pine Street keeps a snarling German Shepherd dog to assure that no trespassers encroach upon the property. Another family feels safe by displaying a small sign, "Beware of Dog!" The major source of trespassing seems to come from children taking shortcuts, chasing each other, climbing on low roofs, or playing hide-and-seek.

Many parents indicated that they liked to have their children close at hand (especially the younger ones) not only for supervision but also so they would be handy to run errands or to be called for
meals. On Pine Street there does not seem to be much concern for
the dangers of auto traffic; the adults seem to feel that their
children are safe playing on Pine Street as long as they don't
stray onto Harvard or Washington Street.

About a third of the adults complained about the relationship of
parked cars and street activity. Kids often sit on cars, lean
against them, or slide on them in the winter and scratch the paint
in the process. Occasionally a ball will hit a car, but no damage
has been done yet. During the weekdays the cars which are parked
there do not generally belong to the residents, but to "Polaroid
employees and students," so there is relatively little concern for
the safety of the cars. The general feeling was that the street
is really too narrow to adequately provide for any active sports
(24' pavement, 4' sidewalks). Prohibiting cars from parking would
certainly give more room, they admit, but that would leave no
place close to home in which to park their car, a very real concern.
Surprisingly, however, only about half the adults interviewed owned
a car.

A fairly prevalent attitude, as far as change is concerned, was
that any changes to the street would mean higher taxes and, in
view of this, they like it pretty much the way it is. They feel
that they were lucky just to get the street repaved last year and
don't want to get involved with the city again.
The children, as could be expected, held a much more liberal attitude toward street recreation and were more easily interviewed. A friendly relationship was finally established with a half-dozen kids, all of whom often played on Pine St., but not all actually lived on it. Interviews were generally conducted between 11:30 and 12:30 and between 3:00 and 5:00 on weekdays (lunch hour, after school, and before dinner), although some were done on Saturdays. Weekends in general and Sundays in particular are not particularly active as far as street recreation goes, especially with the older group (10-14), as these are the times spent exploring other areas outside the neighborhood or with the family. The children were all interviewed on the street, and often interrupted during the course of some form of recreation.

I could determine no fixed attitude toward street recreation: it just seems a "natural" thing to do. Some felt that the street is a perfectly good place to play most games. Others would rather play on a grass playfield or at a playground, but those are either "too far away" or "always crowded" or they get "kicked off." At public playgrounds they get kicked off by older kids, at Newtowne Court (housing project grass area at the corner of Washington St. and Windsor St.) they get kicked off by the management, and at M.I.T. they get kicked off by the "gardeners." Sometimes they try playing on some of the neighborhood parking lots, but often also get kicked out of those, and often there aren't enough empty
parking spaces to find an area large enough for football or softball.

For most kids, therefore, the street itself functions best for their recreational activities. Moving cars on Pine St. are not a particular bother, nor do they present much danger in the kids' opinion. Children do not always play on the street on which they live; it seems to depend on the number of kids their own age group who live on the street and the number of participants required for a particular game. For example, if football is the game desired and there are only two or three kids of the proper age (12-14) on any one street at that particular time, then those two or three will head toward a mutual friend's house in the neighborhood to hunt up a fourth, or preferably gather a total of six. At the point where the proper number of participants have been accumulated, the game begins, all other conditions being relatively equal. Sometimes they decide to go to another street because there is a larger clear area available, or because a particular resident of the street on which they presently are gets angry, or because one of the participants may want to get away from his own house and out of sight of his parents or little brother. A "football game" can be played with as few as four people (two two-man teams). Pine St. is a relatively popular street for football because it is centrally located; kids coming from both directions often meet there. It also seems popular because the Margaret Fuller basketball area is a
generator of activity; often kids will stop playing basketball to strike up a football game or a footrace spontaneously. Also, kids waiting to play basketball often will start their own game in the street adjacent to the basketball courts, depending on the kind of equipment available. The particular location in the street for a football game seems to depend to a great degree on the space available—there should be a clear area where at least three and preferably four car lengths have not been used for parking. If there is plenty of clear space, telephone poles are used for goal lines and curbs for sidelines. The sidewalks are sometimes included in the playing width, but usually create a problem because of their irregular surfaces. The need for width depends to a degree on the number who are playing, but four-man teams seem to be able to conduct a game within the curb lines. The narrow width does seem to limit the number who can play "a good game," however. Almost every child interviewed desired a wider playing area.

Another popular activity on Pine St. is "alley can," a basketball-type game in which a trash barrel is used for the goal. The barrel is placed on the sidewalk and the activity is carried out in the street. Often a game ensues, but usually the purpose is to see who can get the ball into the barrel most often. Someone has set up a basketball backboard and net in one of the yards and a crude asphalt pavement has been put down. This is used by the 10-13 year-old group, often alone for "practicing," but sometimes a two-man
game is pursued. They play there rather than at the Margaret Fuller courts because the older kids have control of the courts at the "Margaret." When asked if they would play basketball in the street, they enthusiastically said "yes" because the surface is better, however putting up a backboard and net is a problem and there is no guarantee that a car wouldn't park in the playing area.

Another popular game is four-square, a game played by bouncing a large ball into someone else's square (drawn with chalk on the pavement); the person failing to return the ball to another square must move backward or out of the game completely if someone else is waiting to play. The person in the top square is "king." Girls as well as boys can play this game and it is flexible enough for a wider-range age group (8-14) than the rougher sports. This game takes almost the complete width of the street pavement and requires an absence of a couple of parked cars. Hopscotch is a favorite with the younger girls and is played in the street, which is smoother and wider than the sidewalk. Again, chalk is used to mark off the necessary configuration of squares, and a relatively smooth surface is necessary.

Girls aged 8-11 have a series of street games which can be played alone or preferably with 2 or 3 more. Almost all of them depend on the use of a ball resembling a beachball and are quite simple, taking the form of catching it, dodging it, bouncing it a number of times and simultaneously performing a series of simple physical
movements like jumping, clapping, or turning around. Another game resembles kickball and four imaginary bases are used, located about 12' apart. Girls this age don't like to play ball with boys: "they're too rough." There was a definite indication of periodic boredom with the usual street games and they then decide to walk somewhere different, often to Central Square and even as far as Magazine Beach. Once this excitement is out of their systems, they can return to their ball games, hopscotch, and jumprope with renewed enthusiasm. I was able to find one twelve-year-old girl who participated in street activities. She feels as if she's forced to play the same games as the boys and has adopted many of their customs—swearing, fighting, loudness. She sensed a need and had a desire to be more feminine but couldn't find any girls her age with whom she liked to play.

Hide-and-seek and kick-the-can are also popular forms of street recreation which can be played by both sexes and also accept participation by a wide age range. These games require the use of adjacent properties or larger objects such as parked cars, wide trees, and fences for hiding behind. Evening is the most popular time for this game as shadows and darkness can be used to advantage. This activity seems to be the one which draws the biggest complaint from adults. Hiding in yards is a necessity, and part of the sport is to hide from the resident of the house, as well as from the one who is "it." Some kind of boundaries are always established and are based on certain houses, telephone
poles, trees, and sometimes cars. It is unsportsmanlike to be found going beyond a certain telephone or other boundary which is a certain distance from "base," which is also a telephone pole, fire hydrant, or manhole cover. Climbing on rooftops (low sheds or garages) or in cars is usually allowed, although the one hiding likes to have freedom of quick movement toward "base" if he is seen by the one who is "it." A large number of nooks and crannies or free-standing opaque objects seem to be desirable.

Softball in its many forms seems to present a problem on Pine St. and similar narrow streets, although it is still played. An absolute necessity is a lack of parked cars, not because of the fear of hitting them with a ball, but because they reduce the width of the playing area too much. An area of the street is picked where the houses are set relatively far back from the front property line. Home plate is usually a man-hole cover in the center of the street, and bases are located on the sidewalk where there are metal covers, changes in texture or material, or an object is brought to mark the base (board, box, trashcan, etc.). Curbs or fences are foul lines. Sometimes a ball hit into someone's yard or on their house is an "out," and when a ball hits a window the teams scatter and the game is over for the day. Fairly successful baseball games are played on Washington Street between the two housing projects because the buildings are relatively far apart, they are made of brick, and their window area is relatively small. When baseball is the desired game, the tendency is to search for
a larger area like a parking lot, where homes do not face on it and where a relatively wide area can be found. Adjusted linear forms of softball predominate over the "ideal" form of baseball in the street: over-the-line, three-flies-out, long ball, hit-and-run, the rules of which will not be explained here. At any rate, popular sports are adjusted to fit the characteristics of the street at the same time particular characteristics of the street are used as props for the game.

The street is used as a meeting place. Interview results indicated that kids do wait for each other in the street, often sitting on porch steps or leaning on cars or fences. Often a spontaneous activity will result because of a chance meeting on the street. Most walking takes place in the street, not on the sidewalk. The reason is difficult to determine, but it seems to be because sidewalks are too narrow and often unpaved, becoming easily obstructed by trash cans, parked cars, telephone poles, or snow, and awkward to walk on in wet weather because of mud puddles and the surface irregularities. The street itself is a much more convenient place to walk because of its width and more uniform surface. Certain types of plans are made in the street by children, like deciding what game to play, whose house to go to, or whether to play at all; perhaps getting into trouble is more desirable on a particular day. It is difficult to determine by interview or observation just exactly what factors determine what particular activities are pursued at a given instant. It seems evident, however, that what
can be seen from the particular location where plans are being made can influence the next activity pursued. If a group of older kids are playing basketball at the Margaret Fuller House, then chances are the group up the street will want to do the same. If, on the other hand, the group making plans sees another group hanging around at the corner store, then chances are they will pursue a similar activity. The street should be readily adaptable for spontaneous change, and preferably adaptable for constructive activities. Some streets seem to promote more adaptive behavior, or at least appeal to one's ingenuity more than others. On Washington Street between the housing projects the kids sometimes string up an improvised "net" to be used for a volleyball game. One child (10 yrs. old) even envisioned being able to play tennis there. All that seems to be required is two stationary vertical poles opposite each other, relatively close together so that a short rope can be strung between them without sagging too much. Another area on Suffolk Street near Norfolk opposite St. Mary's Convent is used for building things like lemonade stands and forts. Seemingly all that is required is a small dirt area adjacent to the sidewalk into which sticks may be pounded, a supply of bricks taken from the deteriorating wall of the convent across the street, and some scrap wood, boxes, or cardboard. Seven and eight-year-olds seem to enjoy this activity. Building and making things was at its heyday in the entire neighborhood during National Cleanup Week early in April. Cambridge provided special trucks to haul away unwanted junk if the residents placed it out
on the sidewalk. Parts of old pianos, beds, stoves, refrigerators and general debris were moved around on and off the street for a one-week period until the trucks came and hauled it all away. The neighborhood was an unimaginable mess, but the kids were very creative. It seemed to take a day or two, once the junk was placed out on the street, for the kids to get up the courage to begin moving items from their neatly stacked locations. For the following couple of days there was plenty of action, which seemed to taper off as the novelty wore off. Of course the truck which took away all the "junk" was followed by a large group of enthusiastic young supporters, supervising and observing. Some kids attempted to fashion a boxing ring out of rotted mattresses, boards, and rope, but were quickly refrained by parents who felt the activity was too dangerous, and the parents used the excuse that the sidewalk was being blocked.

In spite of all the activities, planned or unplanned, which children pursue in the street, they still feel that is most properly used for the movement and parking of cars. To remedy the dual need, however, few suggestions could be thought of. Almost all wanted the street wider, but recognized that houses couldn't be moved easily. Some felt that cars could park more on the sidewalk, closer to the buildings. To the suggestion that perhaps cars could be parked further away from the houses, like at a lot near the end of the block, they were lukewarm: some remarked that parked cars are sometimes used for boundaries in games, meaning I think that
they help define a space in which to play. Some suggested, however, that moving traffic be kept far to one side of the street, leaving the other side clear. Asked about whether the street surface could be changed, the immediate reaction was to make it grass, but on further thought they felt grass would get too torn up, not only by the cars, but also by playing on it; a full-time gardener would be required to take care of it. Plain dirt seemed to be more desirable than grass, although it would become muddy and unplayable at times. As a whole, after thinking the problem over, smooth asphalt seems quite adequate to them. Mention was made several times by adults as well as children how nice it was since the streets had been repaved last summer; previously there was difficulties with ruts and cracks causing people to trip or balls to be deflected.

Differentiating between results of interviewing and those of observation is difficult. Generally, interview results backed up those on the earlier observation, but much more detail was gained by interview. Following are relationships which seem to have been reinforced by the interview results and more detailed observation.

1. Although adults are not usually seen using the street for "recreational" purposes, several secondary uses must be taken into account. They do desire to see what's going on in the street, especially as it relates to their children or their property. Several of them occasionally like to sit on porch steps in the sun to watch their youngsters playing in their yard or watch other street activity. A few of the husbands use the street now for working on their auto on weekends or
after work. Almost all adults walk in the street going to and from shopping areas, church, or transit lines.

2. The street itself seems to contain a number of "territories," the origins of which are not exactly clear, but seem to be related to the following factors:

a. A very small street area will be recreationally active if the immediate surrounding homes are densely populated with children.

b. Where there is a close proximity of friendship patterns among children (which seem to be based on age, sex, and, to some extent, race) street games are likely to occur consistently.

c. The street quality for various activity settings does seem to help determine the locations of many activities. This quality depends on the useable width, surface, smoothness, amount of sunshine, (more is desired), the availability of markers or boundaries, "spaciousness", and the proximity to auto traffic (congested streets and street corners are avoided for group sports, but seem to be preferred for group "meetings").

d. Building character seems to influence the street quality as it relates to amount of sunshine, useable width, and "spaciousness": similar buildings in character and structural type with
uniform setbacks tend to define an activity area; buildings in very poor condition tend to be avoided; change in setback which provides spacial contrast tends to define an activity area.

e. Change in land use seems to help define a boundary to another territory; e.g. change from residential to vacant lot or parking, or change from residential to commercial.

These territories tend to disappear as one grows older, but some are more popular than others and tend to resist loss of territoriality with age. The lasting qualities seem to be factors "b" and "c". An entire thesis could probably be devoted to the subject.

3. The street is used as a searching and waiting area for others in the same group and could appeal more to the creative abilities and imagination of individuals who are either waiting to be found or are looking for someone else to do something with. There seems to be a tendency to wait or meet where they are able to view other activities, and also where they are able to lean against or sit on some object like fences, cars, telephone poles, walls, fire hydrant, and the like.

4. Although the kinds of major group sports vary with the corresponding professional seasons, several secondary smaller group sports fill in. These sports fulfill the need for group interaction, yet allow for a wider age range and can be played by both sexes. These sports are often spontaneous and depend to a great degree on the type of equipment and the space available at the moment. Through interview, some children stated a desire for many more diverse sports and games which they cannot play in the street now. There are others which seem to be logical possibilities:
<table>
<thead>
<tr>
<th>Played Now</th>
<th>Desired</th>
<th>Some Possibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>kickball</td>
<td>tennis</td>
<td>polo</td>
</tr>
<tr>
<td>dodgeball</td>
<td>volleyball</td>
<td>badminton</td>
</tr>
<tr>
<td>racing</td>
<td>wrestling</td>
<td>hurling</td>
</tr>
<tr>
<td>handball</td>
<td>boxing</td>
<td>body-building</td>
</tr>
<tr>
<td>soccer</td>
<td></td>
<td>gymnastics, paddle-ball, other track events</td>
</tr>
</tbody>
</table>

5. The use of private yard space for recreation, play or relaxation does not seem to appeal to any age group except perhaps the elderly. There are isolated cases of well-kept gardens in the neighborhood, and often adults do enjoy getting out and sitting in the sun. Children as young as four years seem to enjoy themselves more on the sidewalk or in the adjacent street. A widespread feeling on Pine Street, however, by both the children and the adults, is a desire that other people take better care of their yards. At present there seems to be a lack of incentive for yard upkeep. Children interviewed seem to find the yards a constraint on their activities. A comparison with middle and upper class single and family neighborhoods shows that children of the 5-10 year age group spend much more time in their yards and very little time in the street. A check on the yards in the neighborhood which are used for recreational purposes indicates that there are many diverse objects and toys which the children can manipulate. An interview with a woman on Cherry Street who lives next door to a heavily-played-in yard indicated that she felt "those middle-class kids next door have too many toys," yet complained that her kids were always straying off and getting into trouble.

6. Age-group conflicts seem to be a very minor problem, at least on Pine Street. There are other areas in the neighborhood where conflicts do occur; these are areas of relatively high neighborhood accessibility which attract all age groups, areas in which a store, teen hangout, and minor street are in close proximity.
7. The particular detailing of the street does seem to influence the types and locations of games. Smoothness is a prime necessity, not only for actively moving along it, but also for drawing on it with chalk or crayon. Street "furniture" is used as markers for bases, goal lines, or boundaries of games. Sometimes parked cars serve the same purposes and where there is not proper "furniture", other portable objects such as trash cans, boards, or boxes will do. Chalk is also a means of defining areas. For larger games like football and baseball the curb could easily be done away with, making a wider flat area, yet smaller children seem to use the sidewalk as a realm for activity. Many complaints about the irregularity of sidewalk surface point to the need of some corrective measures. It seems wiser to provide many portable markers than to specify exactly which game should be played where, because flexibility seems to be a prime necessity.

By now, one should be able to suggest answers to the questions posed earlier: does a problem exist; does the street hold potential for solving the problem; and what are some of the criteria for making future changes?

First, several problems have been implied throughout the discussion. They seem to fall into a few basic categories which are summarized as follows:

1. Lack of exposure to diverse stimuli in the neighborhood and the street;
2. Lack of interesting objects and materials to manipulate for exploring or creating new games or roles;
3. Boredom and lack of sufficient change;
4. Lack of sufficient space for space-consuming activities like
football and baseball;
5. conflict with private property;
6. safety, especially of the very young;
7. unwillingness or inability to spend money.

Second, the street does contain potential for solving some of the problems. In addition to its physical characteristics of linearity, smoothness, flatness, and its ability to be broken up into territories (at least psychologically), interview results indicated that there is potential for making changes:
1. a general recognition of need for change, both by children and adults, but uncertainty about which changes;
2. a general feeling by children and adults that the street was an adequate, or even good, place to play—as one child said, "You can meet all your friends here anytime you want."
3. a potential desire for more street activities was hinted at by children in some areas;

Third, some criteria for making future changes have been hinted at in the identification of certain problems. Others will have to be guessed at and tested in the next phase. The criteria which seem applicable at this point, as a result of research, observation, and interview, are:

1. Adaptability and flexibility for more activities
2. Manipulability of elements for satisfaction of spontaneous desires
3. Exposure to diverse activities, relationships, and stimuli
4. Provision of strategic meeting places
5. Encouragement of constant change
6. Provision of defined spaces for major sports to help eliminate conflicts with autos and property
7. Maintenance of accessibility to other areas in the neighborhood
8. Provision of ways for adults to view street activities if desired

Also, there are obviously other criteria which the street must physically satisfy, which have been assumed from the beginning to be necessary and valid:

1. Accessibility to homes for personal autos and service vehicles (fire, utilities, commercial services, snow removal, trash pick-up)
2. Durability and ease of maintenance
3. Low cost
Testing Alternative Designs

Three basic alternative designs were devised based on the criteria developed. A model of the street and adjacent buildings was made of cardboard at a scale of $\frac{1}{8}'' = 1' - 0''$, in three sections, which could be carried to and easily assembled on the street itself or in someone's home. The alternative designs could be placed on the model and each alternative had several parts which could be interchanged at will with the other alternatives. An attempt was made to design the alternatives so they could test the criteria developed previously.

Basically, the three major alternatives could be classified as follows:

1. No physical change to the street, but provision of many movable objects (poles, trees, partitions, basketball nets, autos, platforms) which could be used to define spaces, act as goals or bases in various sports, or changed at will.

2. Minor physical changes in the street and sidewalks used to define areas of activity. Car parking limited to certain specified areas, and provision made for same number of parked cars which the street can handle now.

3. Major physical changes in the street and sidewalks and inclusion of landscaped areas using some private property. Through traffic remains, but parking takes place at ends of blocks.

In addition, an attempt was made to provide for activities in the same approximate location as they are pursued now, but a few obvious changes were made to see how children felt about changing the loca-
tion of activity.

The original plan was to take the model around to the neighborhood, find groups of children playing, show them the model, and then ask them questions about each phase, step-by-step. The same would be done with adults on a house-by-house basis. Several complications arose, not all of which were able to be remedied. All in all, about a half dozen adults and ten to fifteen children on Pine Street were exposed to and asked questions about the model. About half the adults who were approached refused even to look at the model; about twice the number of children approached wanted to see it and play with it.

The reaction of the adults interviewed was encouraging, although they were all relatively passive. The prevailing attitude was that it was all very nice and they were glad that someone was working on "the problem," but wondered "how would it ever get done?" It was impossible to get any adult to manipulate the model or to make suggestions about alternate activities or alternate locations for the activities shown. In more detail, however, some of their desires were brought out:

1. Neat, landscaped areas seemed to hold most of the appeal for adults, particularly the women. The suggestion of a grassy area and trees brought complaints about messy yards on the street and wishes that something would be done about "landlords who don't give a damn".
2. Having a place to park in front of their home is not particularly important as long as there is some place "on the block" in which to park (two of those interviewed had parking space on their own property and would like to keep it that way).

3. Particular location of activities didn't seem to bother any of the adults, as long as the little kids were kept away from "heavy traffic", like at intersections. Mention was made several times that a couple of children had recently been hit by cars in the neighborhood.

4. As for particular activities, they were primarily concerned with the very young, aged six and younger, as "the older ones can take care of themselves." Envisioned were slides and swings, or "just a safe place to ride their tricycles." A large hill shown on one alternative "wouldn't give them anything to do," while a sandbox on another alternative was considered to be "a step in the right direction."

5. Using private property for public use seems to be all right if it's someone else's property, especially if any activity will be pursued on it. The indication of a large play-hill on someone's property brought much more criticism than a flat, tree-lined grass area on someone else's property.

6. A multi-purpose area (basketball, volleyball, four-square, badminton) was the most enthusiastically received of all the athletic areas, and one man said that he might even be persuaded to use it—play his next-door neighbor a game of badminton.

7. There was concern about the upkeep problem in the more elaborate, landscaped alternative. They could envision the green areas going to pot and a lack of maintenance of play facilities. They felt that, "realistically," the plan could never be built or implemented, let alone maintained properly.
The reactions of the children interviewed were surprising at first, but, looking back, should have been expected. Too much excitement ensued on the first visit with the model, too many kids of varying age groups gathered around who didn't know exactly what the purpose was without detailed re-explanation, and the degree of rowdiness threatened the safety of the model. On subsequent visits I was able to select less crowded areas and was thus better able to control the presentation and questioning. Also, an attempt was made to present the alternatives to the students in the M.I.T. Science Day Camp program under more "ideal" interviewing conditions, but again there were too many children to control at one time and they were all anxious to leave for their next class to play basketball.

It is probably relevant that some areas received little or no attention from the children, while other areas were quite enthusiastically discussed. Generally, the more novel the area, the more interest it received. Also, the more defined activities that could be crowded into one space, the more they liked it. The areas which received little or no attention were the extended flat sidewalk areas which didn't visually indicate specific activities. Asking them what kinds of things they would do there didn't get much response, but one eight-year-old boy said he would build a "giant tower thirty feet tall," where he could watch the whole neighborhood at one time.
In particular, several desires and attitudes did emerge fairly clearly:

1. Like adults, there was a strong attitude that Pine Street will never change: "it will always be a dump." There seemed to be much pessimism and a defeatist attitude.

2. Also like adults, there was much enthusiasm for neat green areas and trees, but the immediate fear was a lack of maintenance.

3. Children were most interested when activities were right in front of their own house, and especially the multi-purpose area. When children were interviewed in the area where four-square is currently played and showed a new location for four-square near the other end of the block, they expressed great reluctance in going so far to play the game.

4. One proposal was to turn the Margaret Fuller basketball courts into a small grass baseball diamond (using part of Eaton Street and some adjacent property), and locate several basketball areas spaced up and down the street. This met with mixed reactions: although they were very enthusiastic about baseball on grass, they would rather see it somewhere else, like on the parking lot on the other side of the street. Apparently they do presently enjoy the existing basketball courts.

5. The particular location of football areas didn't seem to matter much, although defining their length and marking off the pavement into yard lines was well accepted. Also desired was a place to sit and watch.

6. The inclusion of a large mound, or "play hill" was particularly important to the younger children, and when one six-year-old was told that it was half as high as the house (about 12'), he really got excited. Older children wondered what it was for, and when told it was for little kids to play on and run around, they lost interest in it.
Summary of Findings: Implications for Design

The results of the model test seemed to indicate that the criteria developed during observation and interview were mostly valid, but that the particular designs presented didn't necessarily satisfy those criteria. Also, more emphasis should probably be placed on some criteria more than others. The model test indicated a need for much more novelty, diversity, and change than could be assumed from interview and observation. Also, the seeming need for hard definition of activity spaces couldn't be confirmed with a model; instead, it would seem that softer, more flexible definitions would be desirable without sacrificing their ability to shape definite various-sized activity areas. It is probably not wise to concentrate large areas of continuous parking along one side of the street, as was shown in one scheme, because it tends to eliminate the possibilities for group participation in that area; it would be better, if parking had to take place on the street, to break up parking so that each house had some clear street area within a few feet of the front door.

Combining the criteria derived previously with the results of the interview seem to imply a certain amount of shifting of emphasis, which could be listed as follows:

1. Provide changing novelty, diversity, and complexity, not only of stimuli but also of activities.
2. Provide minimally-defined activity settings in close proximity to each living unit. "Minimal" here implies really an optimum level of definition depending on the kinds of activities desired.

3. Make activity locations flexible (moveable).

4. Make manipulable the novel, diverse, and complex elements provided in #1, above, making activity settings adaptable for changing activities.

5. Provide for ease of maintenance and a minimum level of upkeep, neatness.

6. Maintain accessibility to other areas within and without the neighborhood.

7. Provide for meeting and viewing places, for adults as well as children, within a marginal distance of activity settings.

In addition, the criteria for service, safety, cost, maintenance, and durability (within requirements for changeability) listed previously are still applicable.

These criteria are far from operational, but provide a basis for judging any alternatives. They have still been based on educated guesses, but with some degree of personal confidence; at least I know more about their importance.

In spite of my bias toward physical design, I got a distinct impression that much more "program" is necessary. In other words, it seems that once a minimum set of loosely-defined spaces is achieved, there should be a street program of changes in material, stimulus, landscape, settings, and a minimum amount of upkeep and
order. This has been implied in the criteria, but is really a beginning design solution. This would seem to imply the need for a permanent "caretaker" or some socially-motivated handyman who would be employed by the City, or, better yet, by the Margaret Fuller House. His job would be to provide materials for play or creative activity, periodically neaten-up the area to keep it from looking like a "dump," and provide a minimum amount of maintenance to the equipment provided. This should probably be top priority, as it seems a boost in confidence is necessary immediately. The proposed tot lot on Pine Street in a small lot below Eaton Street, to be supervised by the Margaret Fuller House staff, seems to be a step in the right direction. However, there seems to be potential danger if it is not constantly maintained, supervised, and available; also it should not be the only effort on Pine Street. With just a little extra effort, the indirect supervision and minimal supply and maintenance of equipment could extend throughout the street.
PART THREE: EVALUATION OF THE METHOD

Implications for Future Use
Some problems which developed during the process have been mentioned throughout the paper, and should be brought to light here. Some were foreseen from the beginning and attempts to remedy them were only partially successful. Someone much more experienced in similar studies could probably have warned against certain pitfalls, but learning by doing has certain selfish advantages. Other problems were not foreseen, the full implications of which will take time to digest.

First of all, there is still the problem of what questions to ask in order to get understandable, meaningful answers. We cannot fully understand the motivations behind many statements that people make. It is perhaps especially critical in the area under study: these people have been observed, questioned, threatened by outside forces, imposed upon, and promised various things which will never come true; they are defensive; they, or some of them, have a desire to make their own decisions and plan their own destinies and are very careful to whom they divulge their true desires, if indeed they know what their true desires are.

Second, it is much easier to observe young people and to know what kinds of questions to ask. Therefore, results will probably be biased toward this group, while the adults have the decision-making power, making implementation somewhat more difficult. On the other hand, it is difficult making the very young children understand questions or pay attention to visual presentations for specific.
purposes. Older children are sometimes very clever and can create turmoil if they aren't happy with the situation: a calm discussion in relatively uncontrolled settings can easily and quickly be turned into a free-for-all fight before critical information can be obtained.

Third, people seem to have difficulty imagining themselves carrying out activities and cannot fully project themselves into a scale model. More detail seems to help decidedly. Relating real activities to simulated environments is a further extension of not being able to verbally divulge motivations for action. Perhaps there is more potential in "movie" form, where the environment can be "blown up" to human scale. The third dimension seems essential, however. Movies allow the possibility for showing social actions, while models do not, another critical factor. This seems to have far-reaching implications for architectural and planning presentations: crisp drawings and neat models may have to give way to movies of the design proposals, with actors hired to simulate real social events; this will necessitate an immensely increased social awareness and understanding on the part of designers who wish to promote their schemes, as it will be much easier for developers, politicians, and employers to detect faults.

Fourth, there is still the problem of a limited sample, especially of adults in this case, which tends to bias our judgements towards those interviewed. In this particular case only those adults who were interested in the problem and willing to let me in the door
were interviewed; perhaps the values of the majority other group are more important to consider. Finding an objective spokesman for them might be difficult, however.

Fifth, not having a limited set of hypotheses to begin with makes information difficult to assimilate. So much information is gathered that several loose ends are bound to be left dangling and unrelated. On the other hand, beginning with an hypothesis or set of hypotheses tends to allow or force the observer to filter out or not recognize information which doesn't seem at the time to be applicable. In this particular case, although a set of criteria was developed, several loose ends are known to remain hanging; others may not even be realized. Needing to be clarified and studied in more detail are:

a. concept of territoriality within the block by age, sex, and racial groups as territories relate to particular activities and their settings;

b. concept and desirable or undesirable characteristics of meeting areas and their relationship to activities;

c. conflicts between public and private property in the pursuit of recreational activities by age groups (young and active vs. old and seemingly passive);

d. possible methods of implementing any design and assuring its continued usefulness over time and changing population patterns;

e. ways to generate designs from within the neighborhood or block itself.
One may ask, "Why weren't these the subject of the thesis?" The answer is simply that they weren't thought of in the beginning; the chance that those would have been formed as hypotheses to be checked are really quite slim, I think. Perhaps all the study has done is to identify areas which could stand further study before making further design decisions.

Sixth, in view of the previous discussion, how useful is the method, really, in making design decisions? Could we not continually study more detailed and intricate relationships ad infinitum without ever really making any changes? I think there must be a stopping point, or rather a starting point for change to begin occurring, which must be based on the time available for study and the necessity for making immediate changes. Incremental changes, or changes made with flexibility as the guide, can even help us to study not only the loose ends cited, but also the relationship between the criteria developed, the form of the change, and the resultant change, if any, in behavior. A constant evaluative process, as mentioned earlier, therefore is still necessary as part of the design process itself. Part of the usefulness of the method should be the designer's ability to make the criteria operational and list priorities so that meaningful changes can be made. Some indication has been made in the order of listing criteria at various stages that some are probably more important than others, but this still is a personal judgement. Hopefully it is a judgement more informed than at the beginning, and I feel it is.
Last, and certainly not all-inclusive of the problems, is the question of the method's applicability to other design problems, both larger and smaller in scale. Design problems are difficult to categorize similarly because of the vast range of clients and their needs. One has to assume, I think, that all clients are people and that a certain range in the spectrum of their needs must be satisfied. I advocate that a larger range than is presently being designed for is necessary, and to increase that range requires a process similar to the one employed here. Of course it must be adaptable and adapted to fit a particular problem: the questions and their structure can be changed; one may wish to observe different relationships or observe at a closer or farther distance; and the technique for presenting design alternatives can certainly be altered depending on the purpose, the size of the client group, and the techniques, time, and money available.

I don't feel that all results of the study have led to problems, however. Certainly much has been learned, at least personally, about the clients, their desires, and their problems. This is part of the test. How much they learned about the design process is another question, and whether I gained what Gans terms "a sympathetic understanding" is still another question. At least I have a better understanding and am more sympathetic.

The model technique might not be as bad as it may have appeared if it were administered under different conditions. More control
is necessary and those being interviewed should have that "sympathetic understanding" of my problem, too, before being exposed to a range of alternatives. Some hope was obtained right in the neighborhood during one interview period with three eight- and nine-year-old girls. The atmosphere was quiet; I had interviewed the girls for about a half hour before mentioning the model so they were familiar with the problem; the girls were in a listening mood and were sitting comfortably in the afternoon sun on familiar porch steps; and they were interested in making a few constructive comments to "help me on my project." After asking them all the questions I could think of, I let them just sit quietly and pensively as they were and they looked at the model, apparently involved in an activity on the multi-purpose court in front of their houses. As I began removing the modeled design from the bare framework of the model, all three of their faces turned straight, they sighed, and one disappointedly said, "There's our old street again."
Questionnaire for Children

Group 1 - Attitude toward street recreation

1. How often do you play in the street?
2. Do you like playing in the street?
3. Are there any dangers in the street? What?
4. Do you think the street is a good place to play? Why? Why not?
5. Do you like to play with neighbors, other friends, or by yourself?

Group 2 - Activities carried out in the street

1. What kinds of games do you play? What other things do you do in the street?
2. What other places do you play besides the street?
3. When do you usually play in the street? For How long?
4. What do you think the street is most useful for?
5. What was the best time you had in the street?

Group 3 - Likes and dislikes about types of sports and street characteristics

1. Describe what happens during a typical play period or sport, e.g. baseball, football game, etc.
2. What things do you use in the street to help you in your activities?
3. Are you ever bothered or helped by moving or parked autos? How?
4. Do you ever make any changes in the street to help you in your games? What types? What things do you use?

Group 4 - Possibilities for improvement

1. Can you think of any ways to make this street a better place to play?
2. Dimensions, Surfaces, Climate, Relation to other groups, New games
Questionnaire for Adults

Group 1 - Attitude toward street recreation
1. Where did you used to play when you were young?
2. How do you feel about kids playing in the street?
3. Do you think kids are bettering themselves or hurting themselves by playing in the street?
4. What are some of the alternatives to street recreation?
5. Do you like to watch kids playing in the street?

Group 2 - General benefits of street recreation
1. Do you think kids like to play in the street? Why?
2. Do you think supervision is easier when kids play in the street? Why? How could it be made better?
3. Do other people on the block take an interest in street recreation? Do you think it helps neighborhood unity?

Group 3 - Particular problems with street recreation
1. How dangerous is the traffic situation? Has anyone ever been hurt or scared?
2. Are you ever bothered by noise or had your property damaged by results of street recreation?
3. Do you ever notice any major conflicts between age groups in the street? What kind? How often?

Group 4 - Possible improvements to make the street a better place for recreation
ALTERNATIVE 2

- Parking to end of block
- Sandbox, wall, & benches for tots and supervision
- Football and other "field" games
- Basketball net
- Four-square and gathering area
- Parking
- Meeting places - walls, posts, fire hydrant, mail box, fire alarm, telephone pole

- Parking
- Meeting area, basketball net
- Benches (two-directional)
- Margaret Fuller basketball courts
- Hangout
- Football and field games

ALTERNATIVE 3

- Parking in vacant lots and end of street
- Multi-purpose: 4-square, badminton, basketball
- level grass, trees: croquet, bowling, sitting, sun-bathing
- Large landscape mound w/ race track around
- Basketball net, gathering area
- Football, field games
- Basketball net
- Meeting places as in alternative 2
- Parking
- Basketball net, gathering area
- Two-directional benches
- Enlarged Margaret Fuller property: baseball diamond, backstop, "on-deck" bench
- Football, field games
SUB-ALTERNATIVES WITHIN ALTERNATIVE 2

Most of the model pieces could be placed randomly in other areas of the model. This method was used in order to check in more detail, in selected areas of the block, whether location of certain activities made a significant difference. Also, some range of novelty or diversity and complexity could be tested in a given block location. The photographs shown here are arranged in increasing diversity, novelty, and complexity from A to E. Arrangement C received the most interest, attention, and comments by both children and adults.

A the apparent blandness of the football field, "bare" grass area, and small parking area seems to be a critical factor which points out weaknesses in the model technique.

B the introduction of the play mound and more detail, plus the change in street direction showed increased interest, but the "track" around the mound solicited very little response.

C the addition of automobiles visually increased interest, but as a design solution, does not necessarily mean more automobiles should be parked near play spaces.


4. Burkhardt, Jon E., "The Multiple Use of Street Spaces," unpublished class report for 11.05, Department of City and Regional Planning, M.I.T., 21 January, 1967


9. , "You Take the High Road and I'll Take the Street," Habitat, January-April edition, 1966


21. ______, "Quality in City Design," (mimeo), 1964
23. Massachusetts Institute of Technology, Department of City and Regional Planning, "Citizen Interview" for 4.241, Community Planning Design, Fall 1965-66
24. ______, "Open Space Interview" for 4.18, Urban Design Workshop, Fall 1965
25. ______, "Results from Questionaire: Possible Hypotheses Concerning its Implications," for 4.262, Spring 1966, by Bruton, Gelardin, Harth, and Rubin
26. ______, results of open space design from 4.263, Problems in Urban Design, Spring 1964

