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AN OPERATIONAL FRAMEWORK RELATING GENERIC ACTIVITY
PATTERNS IN THE RESIDENTIAL OPEN SPACE ENVIRONMENT
TO PHYSICAL DESIGN

by

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ABSTRACT

Behavioral research is providing meaningful information with respect to the relationship between human activities and physical design of the residential environment. While the appeal among professions and social scientists for its input into the design process seems unanimous, the failure to pool, simplify and constantly update such data, continues in it being accessible to, and usable by, only a small, enlightened and privileged minority. On the other hand, a large share of today's housing in Canada is produced by individuals and organizations, many of whom are generally familiar and concerned with neither human behavior nor basic design principles. Resultant projects invariably betray an almost single-minded approach, that of realizing a maximum number of dwellings at a minimum expenditure on amenities.

This study attempts to narrow the gap between the researcher and the practitioner. It proposes a communicable, organized approach to designing and evaluating physical components in the residential open space environment, as to their responsiveness to generic human activities. A Frame of Reference (activities and components) is developed, which generates the context and the problem for

Patterns, which, in turn, suggest solutions or platforms for discussion. The principle evolved, is then applied to site plans of three recently completed housing projects. Variables, in this model, include age of users and climate of the location.

The benefits of this approach, include prevention of the worst of open space planning, while encouraging good work to proceed. Avenues for implementing such a process are briefly explored and its application, by money-lending agencies, held as feasible.

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CHAPTER I

INTRODUCTION

This study is concerned with people, components of the residential open space environment, and the activities of people in relation to these components.

A. The Problem

"Environmental problems exist when there is a perceived difference between the present layout of the environment and that necessary to meet people's needs or desires, or when there is a difference between the present environment and one which will respond to the potential behavioral needs of people." 1+

The importance of designing environments that are responsive to human behavior has never been stressed more than at the present time. Partly this is due to new problems posed by increasing population pressures, but in some measure it probably also arises from the characteristics of human communities to show a rising level of expectation of environmental satisfaction, as society as

⁺Footnotes follow end of chapter.

a whole advances technically. In contrast to these expectations, sociological research findings have shown again and again examples of the built environment appearing to frustrate rather than assist people's normal inclinations². Misuse of environmental space and facilities, vandalism and other social phenomena are too often attributed by designers to people's natural contrariness. Housing projects, such as Pruitt-Igoe in St. Louis, confirm that designers have generally been reluctant to concede that the hunches on which their work was based, took inadequate account of the detailed way in which people actually behave and desire to behave when carrying out their ordinary daily and seasonal affairs³. This problem is aggravated where the users are not known, and that if they were, informing them about all possible alternatives and obtaining information useful and significant enough, represents an effort generally out of scale with the resources available for most projects. Therefore, in the majority of cases, hunches and past experience are all that designers have to go on, and even where they can afford to keep themselves up to date with published research in the behavioral sciences, the question remains when and how to apply it to design.

The Situation - Practice

In February 1970, the Honourable Robert Andras, Minister responsible for Housing in Canada, declared that \$200 million would be set aside in Central Mortgage and Housing Corporation's 1970 capital budget to fund innovative forms of low cost housing for families and individuals within the low income sector of the population. The aim was to supply families in the \$4,000 to \$6,000 per annum income group with new housing, as rising building costs had restricted new homes available to this group, to public housing. The program was to focus on housing needs within major urban areas where conditions of tight housing and high costs were exerting severe pressure on low income housing opportunities⁴. When first announced, this program was regarded as a bold initiative that promised the possibility of (a) seeking out new design approaches and techniques and to foster more flexible attitudes in stimulating housing production, and (b) directing of public funds to the housing needs of low income people. While the program was useful in promoting the employment of a number of cost reducing features, it fell short of producing genuine innovations in housing⁵. Indications are, that far too many of the \$200 million program projects that claimed to reach their

income targets, did so by taking advantage of windfall situations (e.g. the availability of free or below market value land), and by reducing spatial and environmental standards⁶. While an integral part of the experiment has to be an adequate observation and evaluation process to establish the degree of user satisfaction, it has already been suggested that behavioral input - a most fundamental and far-reaching determinant for innovative design - ranked very low on the list of priorities during the design stage of all but perhaps a few of the 85 projects⁷. Criticism of the traditional solution-, rather than the problem-oriented, approach to design, is, of course, not directed solely at residential projects created for low-income families, but is applicable to most housing, in varying degrees⁸.

The Situation - Research

At the moment no useful framework for the synthesis of all the social, behavioral and natural sciences that deal with (a) the interaction between man and his physical environment and (b) the interaction between man and man within it, really exists. A number of attempts have been made, however, to develop a device which extends the usefulness of traditional design principles by increa-

sing the designer's understanding of the relationships they define. Notable among these principles are (1) the development and serious implementation of the user response concept, by the Architecture Research Unit, University of Edinburgh and (2) the development of "Patterns" and "Pattern Language" by Christopher Alexander and his colleagues at the Center for Environmental Structure in Berkely.

User Response

The Architecture Research Unit has existed within the University of Edinburgh since 1959, when it was started by Professor Sir Robert H. Matthew. It is closely related to the Department of Architecture, to which it has a teaching responsibility. The Unit's policy has always been, to relate its research and teaching activities closely to practice, and it has, therefore, over the years, developed a rigorous building practice section. Their main interests, under housing, fall into two parts: (a) a concern with user response and housing appraisal and (b) the production of housing.

The Unit was founded on the concept of user response as an aid to better design and its work has deve-

veloped since the first study⁹ into a deeper concern with layout problems - the spaces around buildings - rather than with the detailed design of dwellings themselves. The Prestonpans study⁹ describes the follow-up between 1962 and 1965, by members of the Architecture Research Unit, on a project of 45 low cost, single storey courtyard houses, which they designed in the first instance for the East Lothian County Council and which was built in 1962. Similar past studies by the Unit have included investigations into aspects of traffic-separated housing layouts¹⁰, housing for old people¹¹ and high-rise living¹². A more recent study, "Low-Rise High Density Housing Study"¹³, represents the first stage of a development cycle of which the second stage is in progress. It presents design recommendations to be tested during the later stages of the project.

The Architecture Research Unit works closely with Government agencies such as the Scottish Special Housing Association, which is mainly concerned with environmental upgrading of Council housing built during the immediate post-war period. The S.S.H.A. relies heavily on feedback provided by research.

Patterns and Pattern Language

"Patterns" and "Pattern Language" are extensions of "Design Directives"¹⁴ and of ideas contained in an earlier work, "Notes on the Synthesis of Form". Christopher Alexander and his colleagues have, since 1963, developed this design principle at the Center for Environmental Structure, Berkely, which was created for this purpose. The pattern language is composed of physical or spatial elements and of rules for their combination into patterns, which, in turn, generate physical elements or components. The pattern is a physical configuration, a spatially defined image, not a verbal or quantitative performance standard and usually requires both verbal and graphic indications to define it. It always contains three distinctive parts, the first of which is the context or "if" statement that defines precisely the situation in which the pattern applies. Secondly, each contains the "then" statement which proposes a solution and, finally, the problem statement that gives the background for the pattern and the specific data, upon which it is based. The "if" statement and the problem discussion make the pattern open to criticism, modification and continual reassessment. The importance of these three fundamental aspects of patterns, which give them a certain formal

rigor, stands out sharply in the experience which has been built up in using them, as well as in the intensive theoretical effort carried out over the last nine years at the Center for Environmental Structure¹⁵.

While patterns are explicit, relatively easy to use and to formulate, given the necessary insight and feel, pattern language or the rules for combining patterns, are less so. One is required to "take the relevant patterns and grasp them as a whole structure, as a grammar of spatial relationships, to be absorbed until it is second nature"¹⁶. As an aid in helping designers acquire an easy grasp, therefore, it falls short¹⁷.

The Need

It may be summarized then, that the practitioner, in general, continues to create housing projects for the needs of users as he sees them, while research not only accumulates more and more behavioral data, but is beginning to succeed in channelling some of this into design principles. The task remains, however, to make these principles available to, and usable not only by an enlightened and privileged minority, but also by those really responsible for producing today's housing in Canada.

B. Objective and Scope

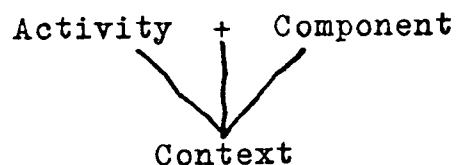
The objective of this study is to formulate a Framework to facilitate the process of (1) identifying problems of conflict and (2) designing and evaluating physical components in the residential open space environment, with respect to their responsiveness to generic human activities.

Definition of Terms

1. The Activity in a Context, in the Frame of Reference and in the Matrix of Variables, is an observable and purposive act of a general or specific nature between people, people and physical elements, e.g. "Talking" and "Sitting". Activities are generic, and by definition, carried on with minor variations, if any, by people of different socio-economic, cultural or ethnic backgrounds.
2. A Component in a Context, in the Frame of Reference and in the Matrix of Variables, is one of a number of physical elements, such as "Roads", "Carparks" and "Swings", but excluding buil-

dings, the sum of which make up the open space system of a residential area. Components are generally discussed with respect to their functional, rather than their perceptual, characteristics.

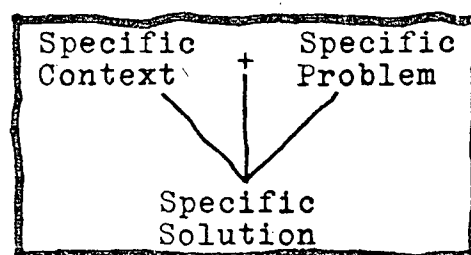
3. The Context in the Matrix of Variables, in General and Specific Patterns, refers to an activity setting, e.g. "Sitting in a Playground".



4. The Problem in a Pattern exists when there is a perceived difference between a physical Component in the residential open space environment, and that, necessary to accommodate user's tendencies. Tendencies, being concrete and observable, are the operational equivalent of needs or aspirations.

SPECIFIC
PATTERN

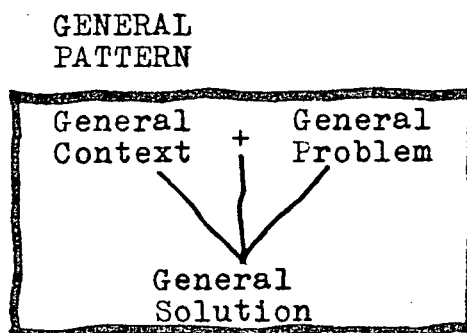
5. A Specific Pattern comprises a Specific Context derived from the Frame of Reference,



a Specific Problem and a Specific Solution
(see page 35).

6. A General Pattern

synthesizes the information developed in the Matrix of Variables, into a General Problem and a General Solution

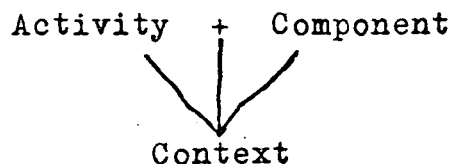


within the General Context. It serves also to direct the user of the Framework to more detailed information (Specific Patterns) for elaboration on the General Pattern (see page 33).

7. A Matrix of Variables is the means of analyzing a General Context, such as "Playing in a Car-park" or "Sitting in Community Open Space". Variables include age, climate and Activities or Components (see page 30).

8. The Frame of Reference,

tables I - XIII, is a collection of generic human Activities and



physical Components, selected on the basis of the frequency of their recurring in the open space environment of residential projects. The user of the Framework selects, from the Frame of Reference, the Activity and the Component which he wishes to examine and proceeds with the Context obtained, through either a Matrix of Variables or a Specific Pattern (see page 25).

9. The Framework is the term applied to the principle evolved in this study. It consists of (1) the Frame of Reference, (2) Matrices of Variables, (3) General Patterns and (4) Specific Patterns.
10. The Residential Environment includes low-rise medium density housing projects for low to medium income families, who own or rent accommodation. Medium density ranges from 12 to 20 units per acre.
11. User Need. Scientific investigations on the residential environment are generally conducted to identify different user groups with

respect to age, income, life style and needs. The outcome of such research is then stated in terms of user needs or requirements, preferably in the form of lists of variables. These can easily be quantified and measured, to allow verification in specific cases, so that decisions are not likely to be questioned afterwards because of conceptual vagueness or uncertainty about the actual quantities provided in a given solution. The standards of performance are then set, according to the research findings, as values or ranges of values for the variables. While it sounds inevitable to base development of the built environment upon these user needs, a number of disturbing properties can be identified, in the process of more discriminating examination¹⁸: (1) user needs change over time for the same individual, so much so as not to permit an unequivocal statement about their needs; (2) people within the same user group are different with resulting differences in their needs, and these needs do change from one identifiable group to another, some transition being automatic, such as ageing and others

random and voluntary, subject to fashion and therefore unpredictable; (3) user needs are dependent on social context, where a person may exhibit quite different needs in one society as compared to when he is moved to another; (4) the "ask the user" approach becomes suspect where the prospective user cannot develop a proper value position and make choices, being in a void remote from the actual experiences of the impending consequences of a decision. The term "user needs/aspirations", rather than "needs", is therefore generally used throughout this study, because inclusion of "aspirations" makes it quite evident that they may be conflicting, counteracting or mutually exclusive.

C. Method

In its attempt to relate human generic activities to physical components in the residential open space environment, this study

1. develops its own conceptual Framework;
2. adapts emerging design principles, notably

those pioneered and developed by Christopher Alexander, in developing General and Specific Patterns within the Framework;

3. draws on observation and empirical findings from the behavioral sciences for data.

The study is largely stimulated by Christopher Alexander's extensive work on Patterns and Pattern Language and the relative inaccessibility at present of such design principles to the larger segment of those responsible for the production of today's housing.

Chapter II presents the concept for a Framework and the three options of operating it. Step 1 in the procedure, the Frame of Reference, facilitates the combining of human generic Activities and physical Components in the residential open space environment into Specific or General Contexts. Contexts, specific as to age group, climate, Activity and Component, are examined through the corresponding Specific Pattern (Option I). General Contexts, on the other hand, i.e. the combination of a General Component with a Specific Activity (Option III) or a Specific Component with a General Activity (Option II), are analyzed against the variables of age, climate, Components or Activities in the corresponding Matrix of Variables (Step 2).

General Patterns (Step 3) are then formulated, by synthesizing the information, obtained from Step 2, into a General Problem and a General Solution within the General Context, originally identified. The General Pattern also provides direction to appropriate Specific Patterns (Step 4) for more specific information.

The Frame of Reference and the Specific Patterns are the essential parts of the Framework, providing most of the information required to formulate the Matrix of Variables and General Patterns. Steps 2 and 3, however, are incorporated into the concept to offer more than one approach to acquiring information; to facilitate the exploring of a problem at a specific as well as at a general level and to make behavioral research available to a wider spectrum of designers.

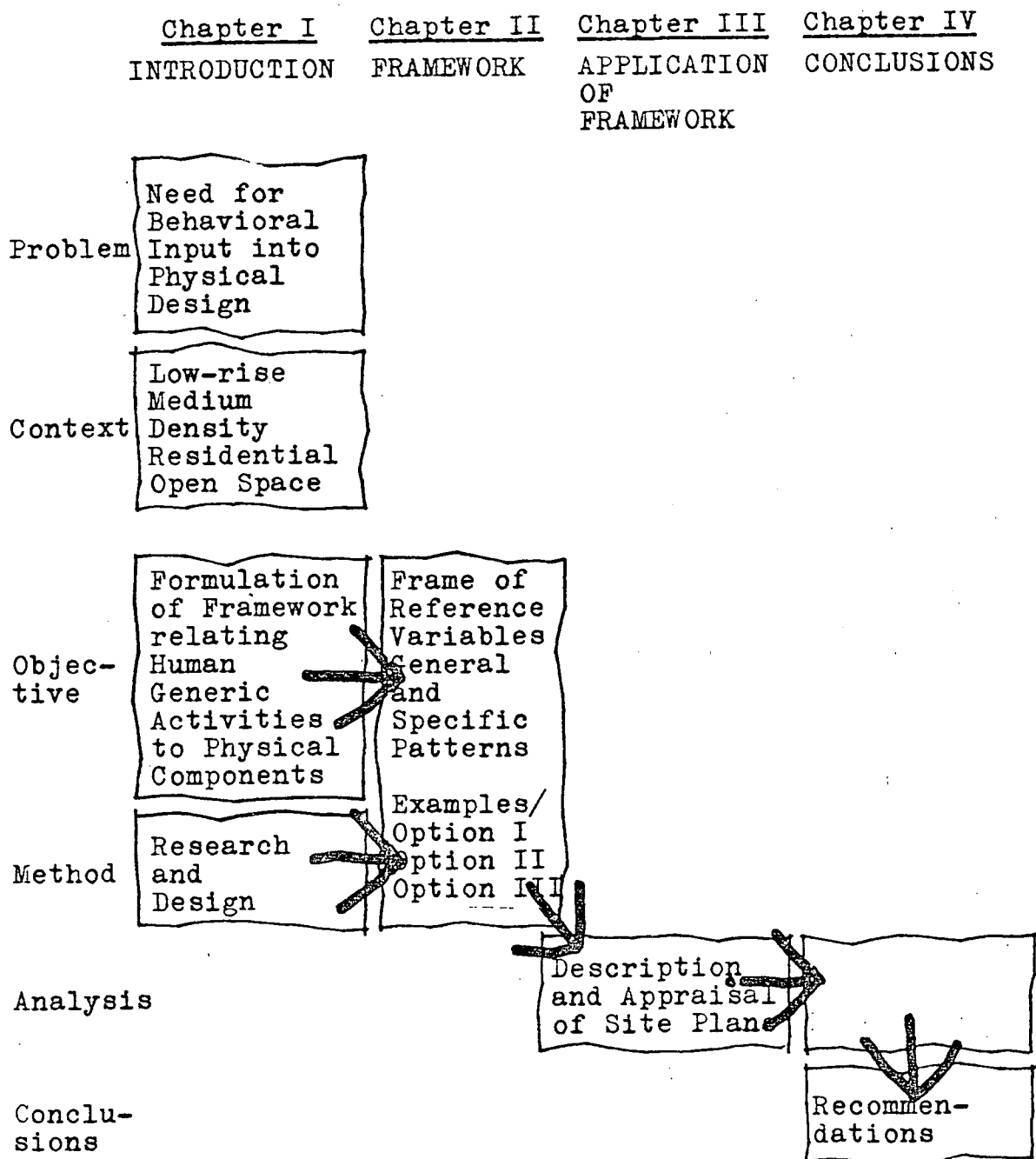
Part one of chapter II describes the concept and part two illustrates how it operates.

Chapter III presents three existing residential projects catering to two different income groups. The housing schemes are subjected to scrutiny through Patterns, developed in this study. The summarized findings discuss the design and location of basic Components in terms of identifiable Patterns. An alternative to the second pro-

ject is proposed, through the Framework, by incorporating several additional Patterns.

Chapter IV concludes the study, confirming the necessity for a principle which brings behavioral research within easier reach of all practitioners and suggesting how agencies, developers, and residents, may benefit from using such a concept.

D. Organization of Study



FOOTNOTES

¹Lang, J., "Architecture for Human Behavior: The Nature of the Problem", Architecture for Human Behavior, collected papers from a mini-conference, Philadelphia Chapter/the American Institute of Architects, Philadelphia, 1971, p. 6.

²Michelson, W., "Most People don't want what Architects want", Transaction, Volume 5, No. 8, July-August, 1968, pp. 37-43.

³See also Prawley, M., "Breakdown of a Theory", Architecture versus Housing, Praeger, New York, 1971, pp. 81-97.

⁴"Special \$200 million Low-Cost Housing Program", Interim Report, C.M.H.C., Ottawa, 1971, p. 8.

⁵"Where the \$200 million went", a Commentary on the 1970 C.M.H.C. \$200 million "Innovations" Program by the Canadian Council on Social Development Housing Committee, Ottawa, 1971, pp. 9, 13.

⁶Ibid., p. 18

⁷Ibid., p. 18

⁸See appraisal of scheme III, chapter III.

⁹"Courtyard Houses, Inchview, Prestonpans", Report by the Architecture Research Unit, University of Edinburgh, 1966.

¹⁰"Aspects of Traffic Separated Housing Layouts", Stevenage Development Corporation, Stevenage, 1970.

¹¹"Housing for Old People", J. and C. Byrom, R.I.B.A. Journal, September 1969, pp. 371-8.

¹²Byrom, Connie, "How High?", Town and Country Planning, September 1970, p. 387.

¹³"Low Rise High Density Housing Study", Report by Architecture Research Unit, University of Edinburgh, 1970.

¹⁴Kriedberg, M.B., Field, H.H., "Problems of Pediatric Hospital Design", Final Report, Tufts-New England Medical Center, Boston, Mass., 1965.

¹⁵Montgomery, R., "Pattern Language", Architectural Forum, Jan./Feb., 1970, p. 53.

¹⁶Silverstein, M., "Pattern Language", Paper, A.I.A. Researchers Conference, Center for Environmental Structure, Berkely, California, 1969, p. 7.

¹⁷Ibid., p. 8

¹⁸Ferguson, R.S., "User-Need Studies to improve Building Codes", Paper, Proceedings of the Edra 3/ar 8 Conference, University of California, Mitchel, W.J. ed., 1972, p. 9-4-1.

CHAPTER II

THE FRAMEWORK

The purpose of this chapter is to present the main effort of this study, the operational Framework, to relate human generic activity patterns in the residential open space environment to the physical design of the components of that space. Part one describes the concept and part two illustrates, by examples, how the Framework may be put into operation.

Part One

Rationale

"It is generally accepted, that a considerable determinant of environmental amenity depends on open space and it has also been understood for some time that open space by itself is only a beginning - that its design and how it is detailed, is at least as important as the fact that it exists".¹

¹Halprin, L. and Associates, "New York, New York", City of New York, 1968, p.1.

See also

Chapin, F.S. Jr., "Urban Land Use Planning", University of Illinois Press, Urbana, 1965, p.50.

The Framework which follows, seeks to guide the designer into recognizing some of the consequences which location and design of residential open space components may have on the generic activities of people. It is directed at everyone concerned with creating residential environments and in particular at those in the housing industry, whose primary goal it is, within the constraints of land use controls, to achieve maximum densities at the expense of inadequate and often arbitrary open space planning; inadequate in the sense that basic movement and storage of vehicles and movement of people are usually provided for, while the considerable number of specific, required and discretionary, activities, which people engage in daily and seasonally, are not.

Whereas in isolated cases, progress is being made to develop residential environments, specifically suited to the needs and aspirations of residents through their full participation in, and infrequently in control of, the design process, the majority of rental projects and condominiums in this country continue to reflect the priorities and values as seen by the developer. The Framework, therefore, falls between these two extremes and it seeks, quite simply, to influence these traditional and usually biased priorities and values. It is neither a

device with which to determine a total site plan systematically, nor a means through which to design the environment to suit a particular cultural, ethnic or socio-economic sector of the population. The Framework is a checklist of, and a source of reference for, basic human activities and their relationship to physical components of the residential open space environment. It seeks to draw attention, in the first place, to the multiplicity of uses to which residents put, and aspire to put, the components of the residential open space environment, and secondly suggests avenues for designing and locating these so that they provide the setting for the diversity of basic human activities.

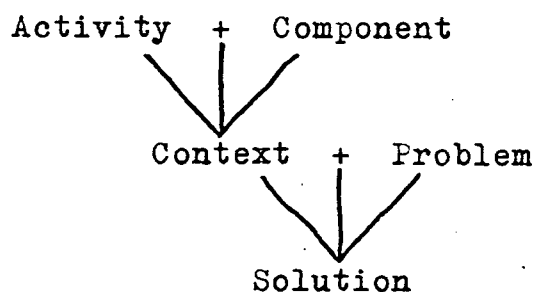
To achieve these goals, the Framework has to satisfy a number of criteria. It must be simple to operate rather than complex; informative rather than prescriptive; allow the user to take shortcuts in arriving at information he seeks, rather than forcing him to follow a lengthy process each time.

The Principle

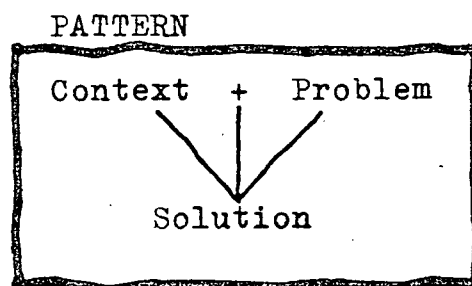
The Framework is in two parts. The first itemizes basic human Activities, e.g. "Sitting", and Components, e.g.

"Playground", the combination of which provides the Context e.g. "Sitting in a Playground".

The second part, having decided on the context which is to be examined, is a discussion of the Problems which are known to arise when people relate, or attempt to relate, to one another and to components of the residential open space environment. Finally, a Solution is proposed for the problem.



Part one of the Framework is referred to as the Frame of Reference, while the context and the problem combine to generate a Pattern with a solution in part two.



To provide the user of the Framework with a choice of approaches in identifying and examining a problem, two further op-

tions (see page 27), in addition to the one described above, have been incorporated. Each of these latter examinations are followed through four steps: (1) the Frame of Reference, (2) the Matrix of Variables, (3) General and (4) Specific Patterns. However, in Options II and III the examination can be terminated at whatever point the user feels he has reached the information he seeks. Figure 1 illustrates the Framework in its entirety, while figures 2, 3, 4, and 5 represent the breakdown into the four steps, to be described in some detail in this chapter.

A. Step 1
Frame of Reference

The Frame of Reference is a collection of human generic activities and physical components in the residential open space environment, which were selected on the basis of their frequency of occurrence. The Frame of Reference is not necessarily complete - but open-ended.

Towards achieving one of the aims of this Framework - to prompt the designer into an awareness of the great diversity of relationships between human activities and physical components - the Frame of Reference (see

Figure **1**
THE
FRAMEWORK

OPTION I

to examine
a specific
activity
relative to
a specific
component

OPTION II

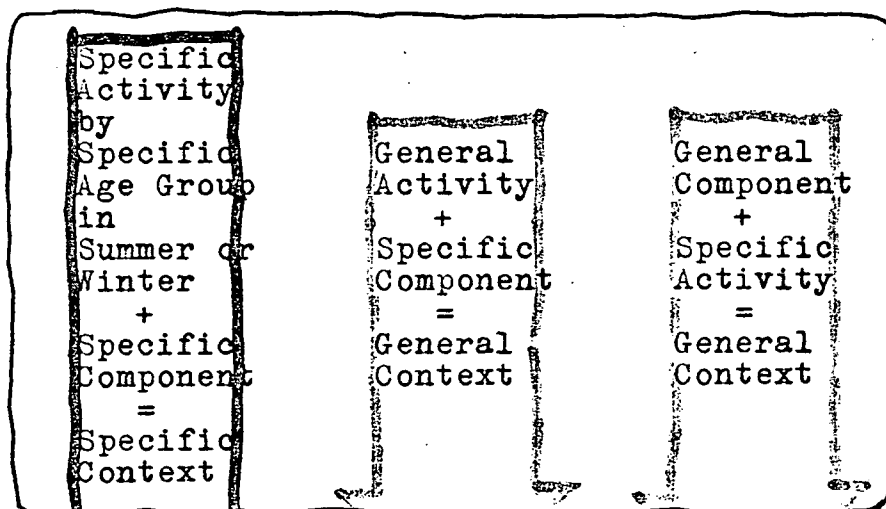
to examine
a specific
component as
to various
activities it
facilitates

OPTION III

to examine
a specific
activity as
it relates
to different
components

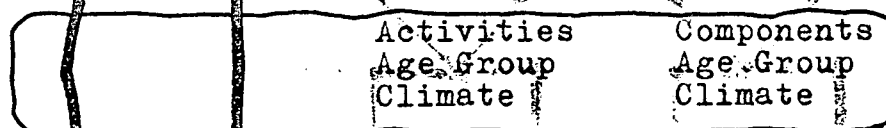
Step 1

FRAME OF
REFERENCE
Tables
I-XIII
inclusive



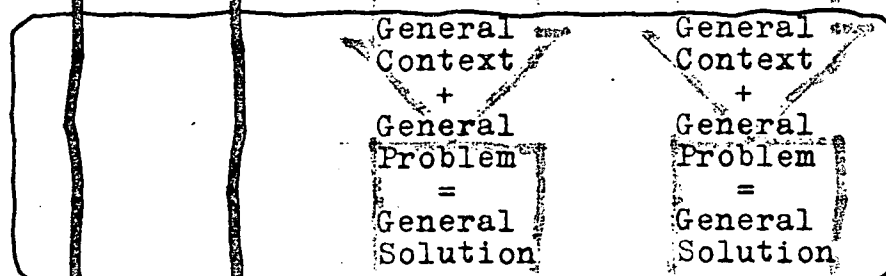
Step 2

VARIABLES



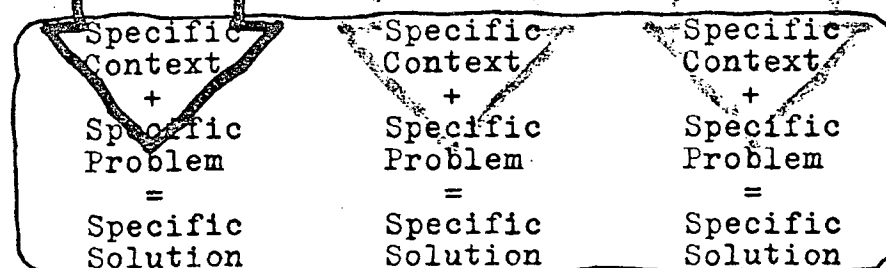
Step 3

GENERAL
PATTERN



Step 4

SPECIFIC
PATTERN



+ means "combine"
= means "suggests"

Appendix 'A' tables I-XIII), is designed to facilitate the identification of these relationships or contexts (see Figure 2). Although each for a different age group, summer or winter, all tables contain the same activities and components for ease of relating one to the next. Cross-referencing activities and components, spaces are left blank where a relationship may occur, and blacked out where this is unlikely.

The user of the Framework is offered three courses of action, dependent on whether his interest lies in a detailed aspect of the open space environment or whether he seeks to know the wider ramifications of his concept. The three lines of approach are briefly described as follows:

Option I: To enable the designer to examine the relationship between a specific activity by a member of a specific age group, in winter or in summer, and a specific component in the residential open space environment - the Frame of Reference provides the Specific Context, viz. the combination of a specific activity with a specific component.

Option II: To enable the designer to examine a specific

Figure **2**
FRAME OF
REFERENCE

OPTION I

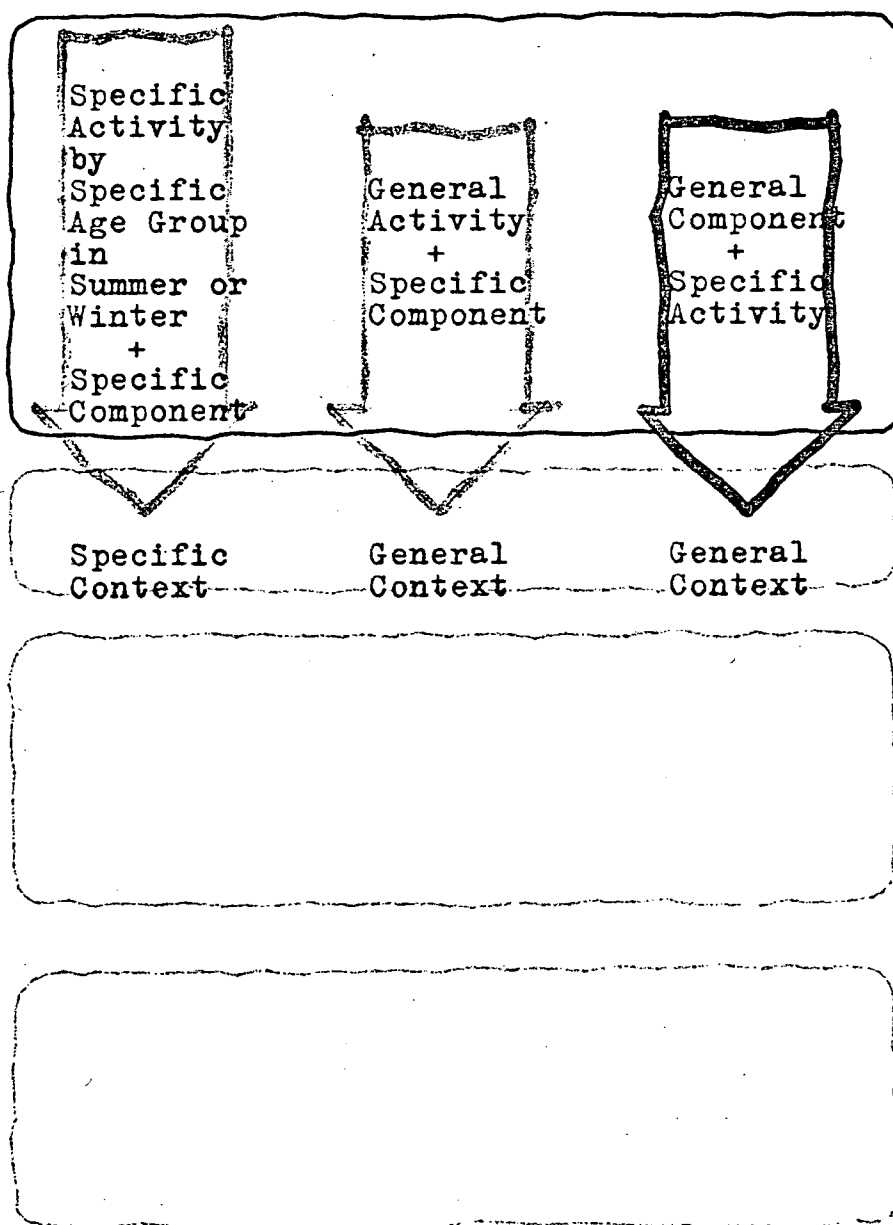
to examine
a specific
activity
relative to
a specific
component,
identify
from
Tables
II-XIII

OPTION II

to examine
a specific
component as
to various
activities it
facilitates,
identify
from
Table I

OPTION III

to examine
a specific
activity as
it relates
to different
components,
identify
from
Table I



component, as to the various activities it may or does facilitate for different age groups, in winter or in summer - the Frame of Reference provides the General Context, viz. the combination of a general activity with a specific component.

Option III: To enable the designer to examine a specific activity as it is carried out by various age groups, in winter or in summer, in relation to different components - the Frame of Reference provides the General Context, viz. the combination of a specific activity with a general component.

Specific contexts (from tables II-XIII inclusive) and general contexts (from table I) are fixed by cross-referencing the activity against the component, and the number of the table from whence the context came, completes the identification which is repeated throughout the process, Step 1 to Step 4.

Table Number	
Component	Activity

Thus, from table II, 1+2 year old children sitting in playground in summer is referred to as

II	
f	20

while a general context from table I, biking in community open space, is identified as

I	
d	15.

B. Step 2
Matrix of Variables

Designers tend to think in terms of generalities when confronted with the question of human activities in the open space environment, i.e. playing in a playground rather than jumping, climbing, sliding, puddling, digging, etc.. Each of these specific activities have obvious, and sometimes not so obvious, implications for the physical design and location of components. Rarely are various age groups considered which use a playground actively or passively in summer and aspire to use it in winter.

In equally broad terms, designers often regard physical components and think in terms of people sitting in public open space, unaware, quite often, that few will in fact patronize a bench by a walkway, but that young and old will gravitate and sit in places where there is action in which to participate or which to observe, and that teenagers will sit in secluded places, etc..

Both are examples of general contexts; the first

being a combination of a general activity with a specific component, and the second a specific activity with a general component.

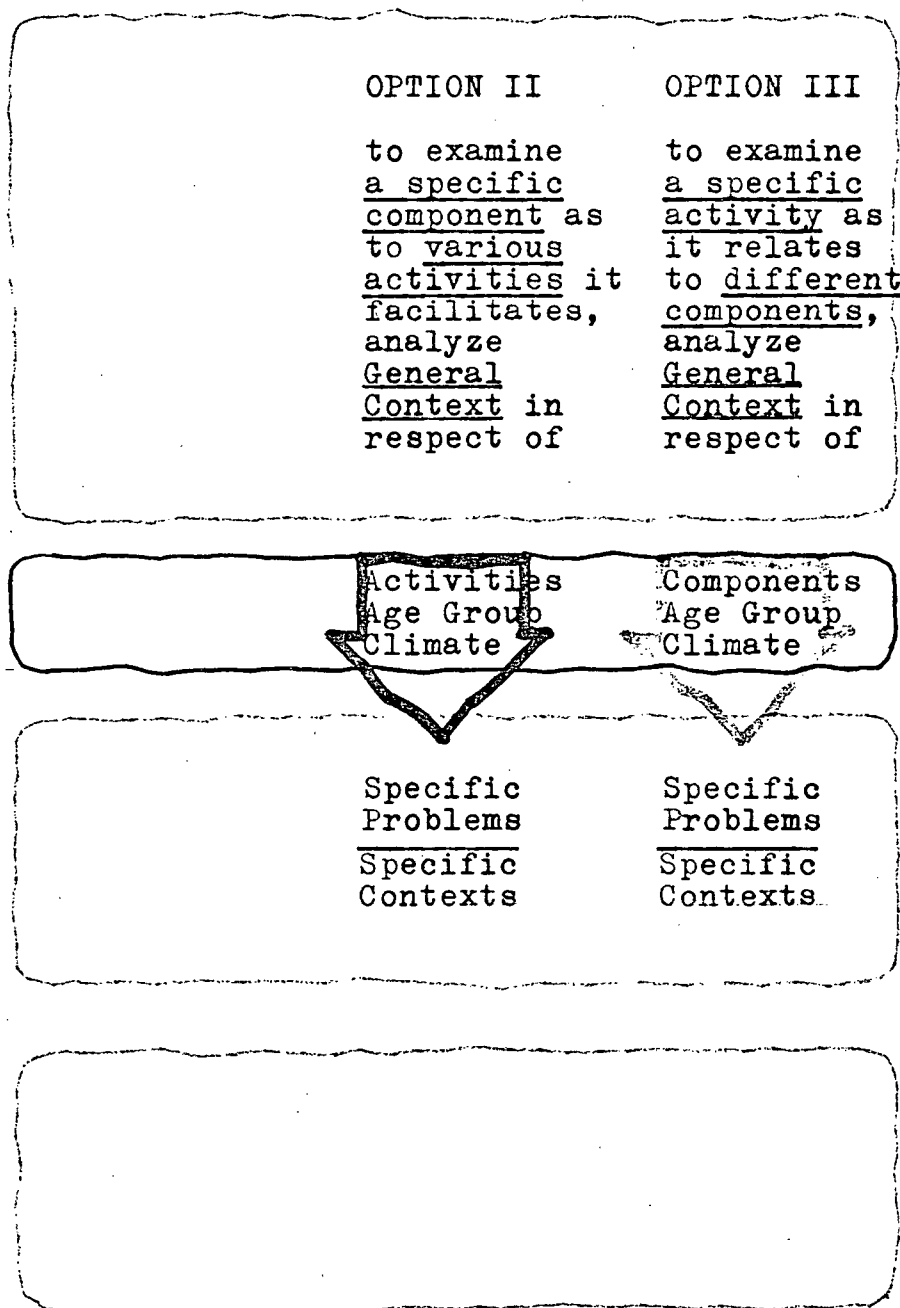
The Matrices of Variables present this level of thinking and permit the analysis and break-down of general contexts into specific ones (see Figure 3).

The user of the Framework, having decided to examine either the relationship of a specific component to various activities (Option II), or a specific activity in relation to different components (Option III), selects the general context from the Frame of Reference (table I) and subjects it to scrutiny in the corresponding Matrix of Variables. Two examples were developed in chapter II, part two of this study to illustrate the Framework, which will be complete, however, only when all Matrices of Variables and General Patterns have been developed. This, in turn, can occur only when Specific Patterns become more readily available.

Climate

This variable is restricted to no particular geographical location in Canada but does obviously not apply

Figure **3**
VARIABLES



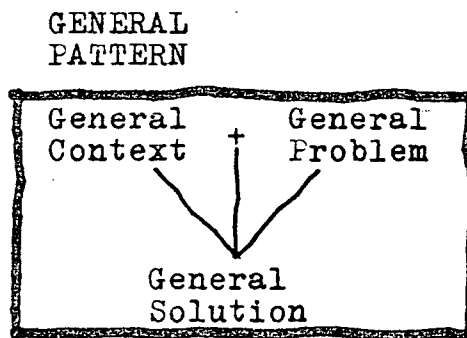
to areas when they are subjected to temperatures below the generally acceptable comfort level of 20° F for adults and 10° F for children, in the sun and protected from wind.

Age Groups

Residents are divided into five categories for reasons of keeping the Framework manageable. The last group, "Handicapped", includes persons less than one year old, those too old or otherwise handicapped to move about freely by themselves or in an unimpeded manner.

C. Step 3 General Pattern

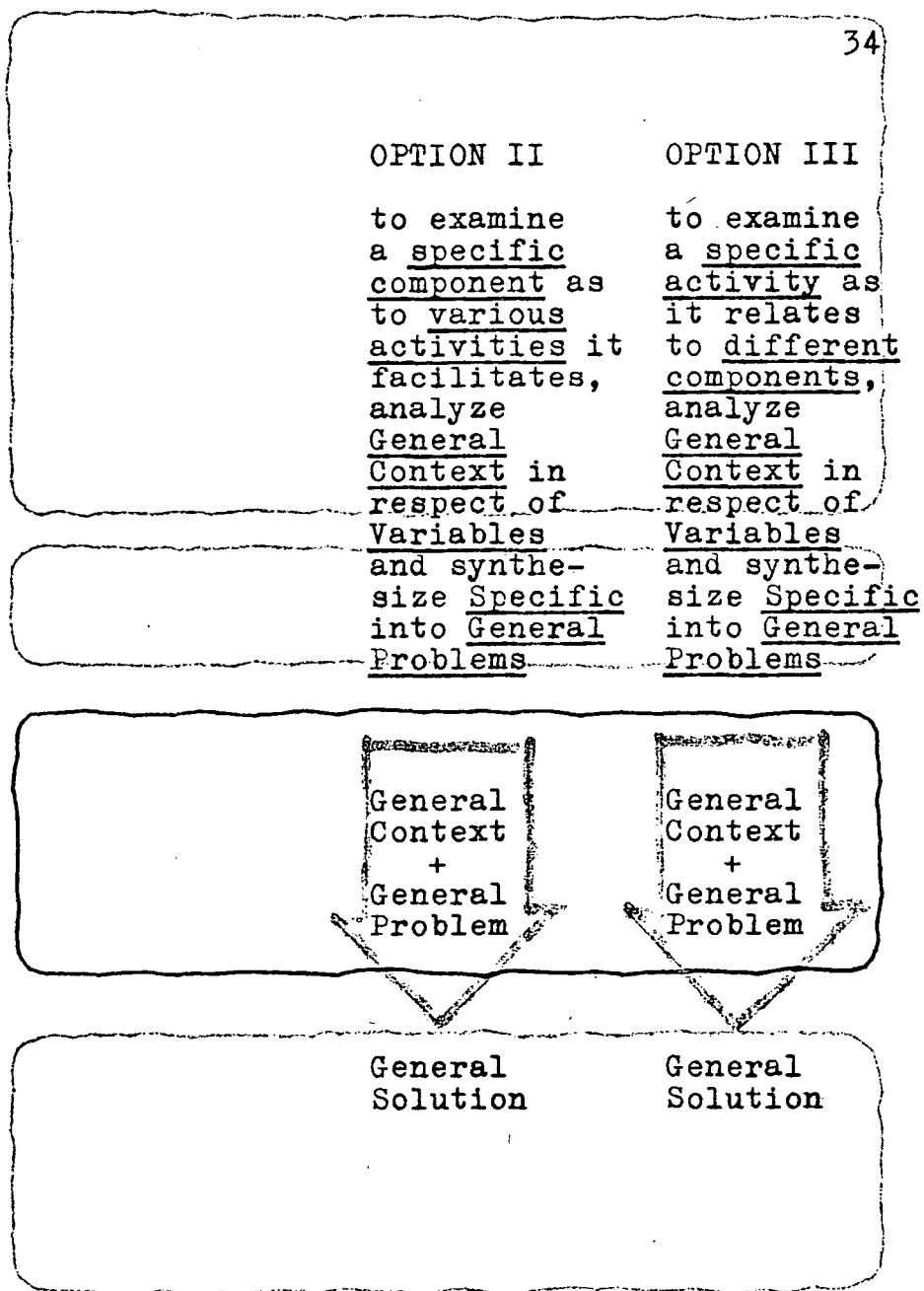
Whereas the Matrices of Variables (see pages 48 and 54) are designed to analyze a general context, the General Pattern is a means of (a) synthesizing this information into a general problem and a general solution



within the general context derived from the Frame of Reference (table I); (b) summarizing the specific findings for each age group examined; and (c) directing the user to the appropriate Specific Pattern for elaboration on the General Pattern.

The principle is illustrated in Figures 1 and 4, while Options II and III describe the procedure, through

Figure **4**
GENERAL
PATTERN



examples, in part two of chapter II.

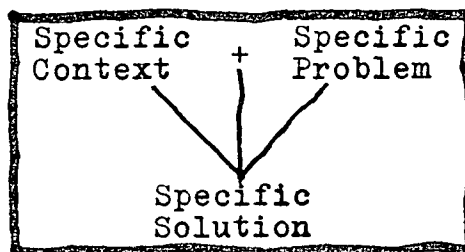
Like Matrices of Variables, General Patterns are dependent on, and closely related to, Specific Patterns. While two examples have been developed in chapter II, part two of this thesis, to illustrate the concept, the Framework is not complete until sufficient Specific Patterns

are available from which to formulate General Patterns.

D. Step 4 Specific Patterns

A Specific Pattern is a hypothesis which states a spatial relation among parts of the environment. Each pattern is based on a human problem which occurs when parts of the environment are

SPECIFIC PATTERN



being shaped and located. Each pattern suggests a context which describes the range of conditions under which the pattern is applicable. Also, each pattern is stated in a format that allows it to be understood by everyone, inviting criticism and refinement from those whom the environment is meant to serve. The format, used in this study, originates from, but is not identical to, the concept pioneered by C. Alexander and developed by the Center for Environmental Structure, Berkely (see chapter I).

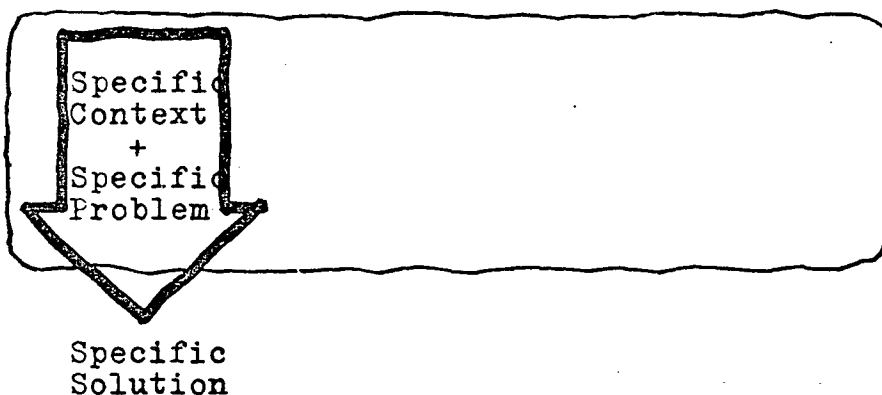
Specific Patterns, the final element of the Framework developed in this study (see Figures 1 and 5), comprise the specific context (derived from the Frame of

Figure **5**

SPECIFIC
PATTERN

OPTION I

to examine
a specific
activity
relative to
a specific
component,
formulate
Specific
Context from
Tables
II-XIII



Reference, tables II-XIII); a specific problem and solution, both of which originate from research and/or observation. A discussion usually follows each pattern.

While the Frame of Reference facilitates the permutation of a large number of contexts, patterns were developed, sufficient in number to illustrate the operation of the Framework (see examples, part two, chapter II and Appendix B) - the emphasis in this thesis being on pre-

paring a Framework into which to plug such design information as it becomes available.²

Summary

The preceding Framework was developed to attempt to bring into focus some of the more significant relationships between man and his physical environment, and to enable professionals and lay designers alike to approach recurring problems in a manner that will lead to solutions or platforms for discussion. The emphasis, therefore, rather than solution-oriented, is on finding a principle through which to begin to ask more relevant questions; relevant to human needs and aspirations.

The Frame of Reference, in addition to its function within the Framework, offers an overview of the degree to which activities are carried out and components are used by various age groups. It suggests, for example, that activities most popular in relation to the majority of components include walking, sitting, talking, listening, watching and eating. Children, ages 1-12 years old,

²Following ten years of work, several hundred Patterns are being compiled presently by the Center for Environmental Structure, Berkely, to be published end of 1972 by Harvard University Press.

are found to be most active in the residential open space environment year round; utilizing all components, whether designed to accommodate the specific activity or not. Among the components, carparks, which form a focus or community open space, are significant activity settings in terms of use. A large number of year-round activities take place there by all age groups, except the handicapped, suggesting that greater efforts are required not to remove cars from dwellings but to exploit the obvious attraction of people to this type of open space.

Matrices of Variables and General Patterns were designed to provide an overview for users of the Framework who are interested in the wider ramifications of activities and components in relation to different age groups.

A vital part of the process and providing most of the back-up information for Steps 2 and 3, Specific Patterns were finally developed in sufficient number only, to illustrate the Framework and its application. They represent, therefore, a modest cross-section of those required for comprehensive planning of a residential project. Increasing productivity in the development of Patterns, notably at the Center for Environmental Structure,

Berkely, will make it feasible and desireable to adapt and incorporate these into a Framework such as this, as they become available.

Part Two

Following the description of the Framework in part one of this chapter, this section illustrates how it may be used. For this purpose the following Frame of Reference tables³, Matrices of Variables, General and Specific Patterns⁴ were formulated. A complete Framework includes a Matrix of Variables and a General Pattern for each General Context, identified in table I, and is possible only as more Specific Patterns become available.

The user of the Framework decides upon the activity and the component he wishes to investigate and examines the context through Steps 2 to 4 (see chapter II, part one).

A. Example/Option I

To examine a specific activity, by a specific age group, relative to a specific component of the open space environment - the user identifies the specific context (specific activity and specific component, by a specific

³See also Appendix 'A' for a more comprehensive selection.

⁴See also Appendix 'B' for a more comprehensive selection.

age group, winter or summer). He then proceeds to the Specific Pattern.

The following example examines the specific context of 1 to 5 year olds "Puddling in a Playground", which is identified in the Frame of Reference, tables II and IV, and discussed in the corresponding Specific Pattern.

II and IV	
f	8

Table



FRAME OF
REFERENCE
Children 1+2
years old in
summer

General Activities	Specific Activities	Specific Components	General Components	Public Open Space											
				Road	Walkway	Community Open Space	Carpark	Playground	Private- Public O.S.	Driveway	Frontyard	Backyard	Private O.S.		
playing															1
	-hockey														2
	-ball														3
	jumping														4
	swinging														5
	climbing														6
	sliding														7
	puddling														8
	digging														9
moving															10
	crawling														11
	walking														12
	jogging														13
	running														14
	biking														15
	driving														16
resting															17
	lying														18
	sleeping														19
	sitting														20
	talking														21
	listening														22
	watching														23
	eating														24
	reading														25
working															26
	cleaning-														27
	repairing-														28
	gardening-														29
	constructing-														30
	storing-														31
	carrying-														32
				a	b	c	d	e	f	g	h	i	j	k	

Table

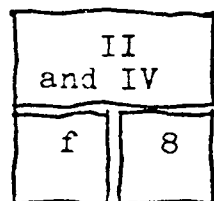
IV

FRAME OF
REFERENCE
Children 2-5
Years old in
Summer

IV																																																															
FRAME OF REFERENCE Children 2-5 years old in summer																																																															
General Activities		Specific Activities		General Components		Specific Components		Public Open Space		Community Open Space		Private-Public O.S.		Private O.S.																																																	
Playing		-hockey -ball		Road		Walkway		Carpark		Playground		Driveway		Frontyard		Backyard																																															
jumping		swinging		climbing		sliding		puddling		digging		crawling		walking		jogging		running		biking		driving		lying		sleeping		sitting		talking		listening		watching		eating		reading		cleaning-		repairing-		gardening-		constructing-		storing-		carrying-													
1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32	

a | b | c | d | e | f | g | h | i | j | k

Specific
Pattern



Specific Context: Children 1-5 years old Puddling in Playgrounds.

Specific Problem: Lack of materials in playgrounds increase wear and tear on Public and Community Open Space.

Specific Solution: PROVIDE WATER AND SAND IN PLAYGROUNDS.

Discussion: Children particularly between the ages of two and five, are fascinated by water, mud and sand. They become particularly active, following thaw or a rainstorm, amusing themselves in puddles, in depressed, undrained landscaped areas and near clogged catchbasins (5). Any puddles in a residential environment should be designed ones and preferably in playgrounds. Richard Dattner, architect, following the construction of the Estée and Joseph Lander playground in New York's Central Park in 1967, observed that for these younger children the most interesting feature seemed to be a water channel. "Here they run, splash, sail sticks and boats, and fetch water to mix with the sand. The infants just sit in the sand and dig, apparently unconcerned by the maelstrom of activity around them." (6)
Another example, illustrating the importance of minute parts of the manipulative environment for imaginative play, is recorded by R.C. Moore (7), following his study of Lennox-

(5) Observations - Student Family Housing, Acadia Park, U.B.C., Vancouver, Sept. 1970 - Feb. 1972.

(6) Hurtwood, Lady Allen of, "Planning for Play", Thames and Hudson, London, 1968, pp. 77, 102.

(7) *ibid.*, p. 77.

Camden Playground, Massachusetts, 1966. "A group of five-year-olds spent a good hour making 'mud pies'..... the sand to make them with, was brought in a paper bag from the sand-pit, the water from the fountain, the 'fruit' (sawdust) from the area where sawing had been done, the 'frosting' was shaken from an old can of cleaning powder."

B. Example/Option II

To examine a specific component as to the various activities it facilitates, by different age groups, the user identifies the general context (specific component and general activity) in the Frame of Reference. He then proceeds to the Matrix of Variables, the General Pattern and, finally, to the Specific Patterns.

The following example, "Moving along Walkways", general activity and specific component, is identified in table I and analyzed in the corresponding Matrix of Variables

I	
c	10

, the data originating from Specific Patterns and observation. The user is then directed to the appropriate General Pattern bearing the same identification and which synthesizes the findings from Step 2. The General Pattern also directs the user to Specific Patterns for elaboration on the General Pattern.

Table

FRAME OF
REFERENCE
General

FRAME OF REFERENCE General		Specific General Components	Public Open Space	Road	Walkway	Community Open Space	Carpark	Playground	Private- Public O.S.	Driveway	Frontyard	Private O.S.	Backyard	
General Activities	Specific Activities													
playing														1
	-hockey													2
	-ball													3
	jumping													4
	swinging													5
	climbing													6
	sliding													7
	puddling													8
	digging													9
moving														10
	crawling													11
	walking													12
	jogging													13
	running													14
	biking													15
	driving													16
resting														17
	lying													18
	sleeping													19
	sitting													20
	talking													21
	listening													22
	watching													23
	eating													24
	reading													25
working														26
	cleaning-													27
	repairing-													28
	gardening-													29
	constructing-													30
	storing-													31
	carrying-													32
				a	b c	d	e f	g	h i	j k				

Matrix of
Variables

I	
c	10

General
Context:

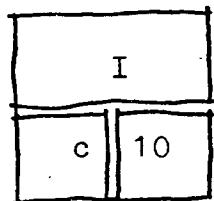
Moving along Walkways

Age Group	Win- ter	Sum- mer	Activities	General Observations
Children 1+2 years old	●	●	walking	exploratory nature
Children 2-5 years old	● ●	● ●	walking biking	as above and general play
Children 5-12 years old	●	●	as above	as above
Teenagers	●	●	as above	tendency to shortcut
Adults	●	● ● ●	walking jogging biking	perambulators
Handicapped	●	●	walking	problems in orientating, and in nego- tiating changes of levels and other irregu- larities, due to blindness, infirmity and confinement to wheelchairs

Go to General Pattern

I	
c	10

General
Pattern



General
Context:

Moving along Walkways.

General
Problem:

Walkways are obsolete the day they are constructed, unless they accommodate most of the tendencies and activities of various users.

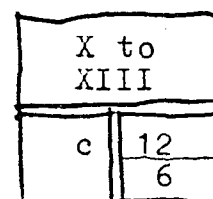
General
Solution:

PUBLIC WALKWAYS, NOT LESS THAN 6 FEET WIDE, SHOULD FOLLOW THE SHORTEST AND LEAST OBSTRUCTED ROUTE BETWEEN GENERATORS.

Discussion:

The human organism seeks to conserve energy by minimizing required motion. Secondary to this need are the aspirations; opportunities to fulfil the social, sensory, kinesthetic and perceptual requirements. While one type of path is associated more with the provision of direct communication and another with leisurely meandering, both facilitate certain common activities. Children use all walkways for activities other than to go from point A to point B. Elderly utilize an entire path system to exercise and to socialize.

For elaboration see Specific Pattern.



Specific
Pattern

X to XIII	
c	12
	6

Specific Context: Adults and Handicapped Walking and Climbing on Walkways

Specific Problem: Restriction of pedestrian movement that total or partial blindness and old age may impose.

Specific Solution: WALKWAYS SHOULD BE ILLUMINATED AT NIGHT AND NOT LESS THAN 6 FEET WIDE TO ALLOW PEDESTRIANS, CYCLISTS, PERAMBULATORS AND WHEELCHAIRS TO PASS ONE ANOTHER. SURFACING MATERIALS SHOULD GENERALLY BE RESILIENT AND CONSOLIDATED EXCEPT IN IMPORTANT CIRCULATION NODES SUCH AS STAIRCASES. THESE SHOULD ALWAYS BE COUPLED WITH RAMPS AND FINISHED WITH RESONANT SURFACES, HANDRAILS ON BOTH SIDES AND FREE OF PROJECTIONS WHERE THEY CAN NOT BE DETECTED BY A CANE.

Discussion: The still widely held view, that the blind and the partially blind, have better opportunities if they are segregated into special environments, does not appear to be shared by many of those thus afflicted. (8) Designers usually ignore the often modest requirements of minority groups, even though they are beneficial to users at large. Occasionally, ingenious systems of clues are provided, which form only a small part of the total communication pattern. Research into the methods, by which the blind use location and direction clues, has shown, that a wide variety of aural, tactile and kinesthetic senses are

(8) Observations - University of British Columbia circulation areas, Vancouver, Sept. 1970 - Feb. 1972.

used when moving about. Sufficient hardness of surfaces is therefore required in important circulation areas to promote echoes. Change of floor finishes approximately 3 feet from head and foot of stairs and ramps, is another desirable feature. (9)

Illuminating walkways at night should be mandatory, since it has the potential to solve a number of problems as well as enhancing the open space environment. It can

1. increase safety from injury and crime;
2. attract people to key areas;
3. identify areas; and
4. emphasize positive and de-emphasize negative aspects of the environment. (10)

(9) Adams, G.R., "Designing for the Handicapped: Blind and Partially Sighted", Official Architectur and Planning, Sept. 1969, p. 1077.

(10) McGowan, T.K., "In the Proper Light", A.I.A. Journal, December 1970, p. 46.

C. Example/Option III

To examine a specific activity as carried out by different age groups in relation to various components - the user identifies the general context (specific activity and general component) in the Frame of Reference. He then proceeds to the Matrix of Variables, the General Pattern and, finally, the Specific Patterns.

The following example, "Sitting in Public and Community Open Space", specific activity and general component, is identified in table I and analyzed in the corresponding Matrix of Variables the data originating from Specific Patterns and observation.

I	
a	20
d	

The user is then directed to the appropriate General Pattern bearing the same identification and which synthesizes the findings from Step 2. The General Pattern also directs the user to Specific Patterns for elaboration on the General Pattern.

Table

FRAME OF
REFERENCE
General

General Activities	Specific Activities	Specific Components	General Components												
				Public Open Space	Road	Walkway	Community Open Space	Carpark	Playground	Private- Public O.S.	Driveway	Frontyard	Private O.S.	Backyard	
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	-hockey														2
	-ball														3
	jumping														4
	swinging														5
	climbing														6
	sliding														7
	puddling														8
	digging														9
moving															10
	crawling														11
	walking														12
	jogging														13
	running														14
	biking														15
	driving														16
resting															17
	lying														18
	sleeping														19
	sitting														20
	talking														21
	listening														22
	watching														23
	eating														24
	reading														25
															26
working															27
	cleaning-														28
	repairing-														29
	gardening-														30
	constructing-														31
	storing-														32
	carrying-														
					a	b c	d	e f	g	h	i	j k			

Matrix of
Variables

I	
a	20
d	

General
Context

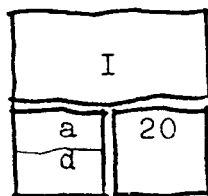
Sitting in Public and Community Open Space

Age Group	Win- ter	Sum- mer	Components	General Observations
Children 1+2 years old	• •	• • • •	Playground Carpark Front and Backyard	
Children 2-5 years old	• •	• • •	Playground Carpark Road	at or near activities
Children 5-12 years old	•	•	as above	as above
Teenagers	-	• •		in seclusion and at neigh- borhood nodes
Adults		• • • •	Playground Carpark Front and Backyard	near children and in seclusion
Handicapped	•	• • • •	Playground Carpark Road Frontyard	at or near activities

Go to General Pattern

I	
a	20
d	

General
Pattern



General
Context:

Sitting in Public and Community Open Space.

General
Problem:

People will not generally patronize designed facilities for sitting, unless they satisfy further needs and aspirations.

General
Solution:

LOCATE SEATING IN OPEN SPACES NOT EXCEEDING 70 FEET IN DIAMETER AT OR NEAR ACTIVITIES OR ATTRACTIONS IN WHICH TO PARTICIPATE OR WHICH TO OBSERVE. PROVIDE SOME DEGREE OF PROTECTION FROM THE ELEMENTS.

Discussion:

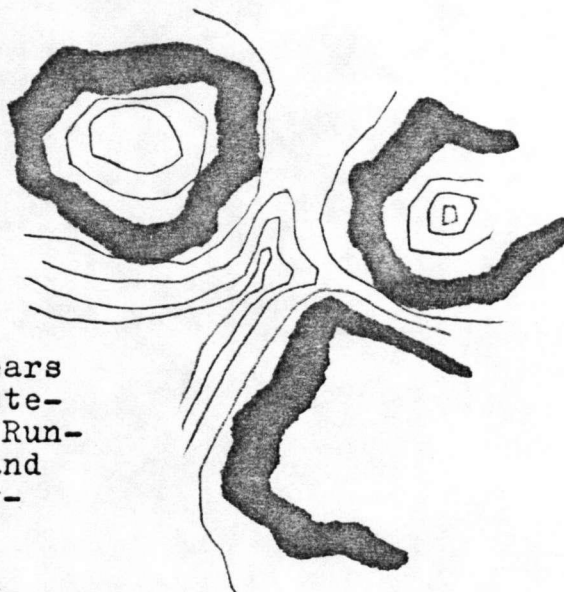
Observations, which have been made for some time, are beginning to be confirmed by social scientists such as Sommer and de Jong, as to where, in the open space environment, people feel most comfortable. People, in open spaces, gravitate to border or wall locations for privacy and the opportunity for visual contact with the beyond, in preference to exposure in central areas, unless there is a strong central focus. Scale and proportion being relative, Alexander and Lynch suggest, nevertheless, that open spaces should generally not exceed 70 to 80 feet in diameter and be scaled down according to the activities they provide the setting for. A hierarchy of open space must surround a building with small, intimate areas immediately adjacent, leading into progressively larger ones beyond. People, the elderly and the young in particular, are not generally content to sit in places which do not offer the opportunity to participate physically or visually in some further activity. Protection from sun and wind is a pre-requisite for outdoor comfort and should be offered as a matter of choice.

For elaboration see Specific Patterns

II to VII incl.			X to XIII incl.				
f	0	1	b	c	20	21	
	14	20			f	23	25
	23	22					

Specific
Pattern

II to VII incl.		
f	14	20
	23	22



Specific
Context:

Children 2-12 years
old Sitting, Listen-
ing, Watching, Run-
ning, Climbing and
Crawling in Play-
grounds.

Specific
Problem:

Traditional play-
grounds fail to pro-
vide the scale and
diversity in which
children are com-
fortable and moti-
vated.

Specific
Solution:

PLAYGROUNDS SHOULD BE UNDULATING IN TOPO-
GRAPHY.

Discussion:

Varied topography provides safety. Flat as-
phalt surfaces, common in playgrounds, do
not curb random movement. Accidents are
caused, therefore, by two children running
at full speed across a flat area and colli-
ding. Through studied configuration, the
areas can be broken down into many sectors,
reducing the amount of uncontrolled movement
while providing a series of intimate spaces
in which children gather comfortably. Topo-
graphic variation provides vantage points
where children can group and engage in pas-
sive play, and watch other children, to learn
from. Their overlook allows them to gather
for social interaction and, importantly, to
rest while still involved in the total envi-
ronment. (11)

(11) Friedberg, M.P., "Playgrounds for Children", Bulletin
27-A, Association for Childhood Education Inter-
national, Washington, D.C., 1969, p. 44.

The topographic anatomy is the foundation for complexity and variety in such a creation as a superstructure, that lends itself to addition and inclusion of slides, tunnels and swings - naturally. Complexity allows for continued interest, discovery, choice, and year-round use rather than seasonal only, because the additional dimension of snow, for example, extends, rather than restricts, opportunities for play. The young child's environment should provide a slow transition from the womb to the hard adult world. (12)

(12) Bayes, K. and Francklin, S., "Designing for the Handicapped", George Godwin Ltd., London, 1971, p. 24.

Specific
Pattern

I to VIII incl.			
b	c	20	21
f		23	25

Specific Context: Adults and Handicapped Sitting, Talking, Watching and Reading in Playgrounds, near Roads and Walkways.

Specific Problem: Designed seating, unless located at or near an attraction and unless sheltered from, as well as exposed to, wind and sun, does not answer the needs and aspirations of users.

Specific Solution: ONE OUT OF EVERY THREE BENCHES, PLACED IN THE RESIDENTIAL OPEN SPACE ENVIRONMENT, SHOULD BE PROTECTED FROM WIND AND SUN AND ALL SHOULD BE LOCATED IN PLAYGROUNDS, AT POINTS WHERE PEOPLE AND VEHICLES MEET AND IN SELECTED PLACES WHICH OFFER EXPERIENCES UNIQUE TO THE AREA (VIEW, TRANQUILITY, ETC.).

Discussion: Shelter from wind and orientation towards the sun are considered two of the most important conditions for comfort out-of-doors. While it may seem contradictory to advocate shelter from sun in areas geographically situated where they are subject to long winters and relatively short summers, it is nevertheless important to provide some protection, particularly for the young and the elderly. Children are, of course, especially sensitive to strong sunlight. Parents and children often disagree on the merits of the sun insofar that the former tend to want suntanned children, but children may prefer to spend a summer day in the shade. (13) Deciduous trees cut off the sun in summer, while allowing it to penetrate in winter. The are, therefore,

(13) Bengtsson, A., "Environmental Planning for Children's Play", Crosby Lockwood and Sons Ltd., London 1970, p. 9.

an ideal form of protection. Adults, elderly in particular, are drawn to places in which to play their games and where to watch others; to be together knowing that this is where their action is. (14)

Alternatively, places, which offer an exceptional view or unique experience, warrant placement of seating. Park benches, unless linked with other facilities, are generally unoccupied. (15) This situation is aggravated by the tendency of designers to place seats in rows rather than in clusters. (16) Recent studies of sitting habits at bus stops, in the United States, indicate that long benches tend to be under-used. People gravitate to both ends, "filling" the bench to the extent of excluding others who will stand or sit on a nearby wall, rather than occupy a center position. The feasibility of benches, longer than 4-6 feet, must therefore be questioned.

(14) Friedberg, M.P. with Berkely, E.P., "Play and Interplay", The Macmillan Company, New York, 1970, p. 142.

(15) *ibid.*, p. 136.

(16) Gehl, J., in "A Social Dimension of Architecture", Proceedings of the Architectural Psychology Conference at the Kingston Polytechnic, 1970, reported on investigations carried out in Tivoli in Denmark. Chairs, he noted, in sidewalk cafes, were re-oriented by users to face pedestrian and vehicular traffic.

Deasy, C.M., in "People-Watching with a Purpose", A.I.A. Journal, December 1970, describes, that during observations leading up to the design of the Lincoln Savings Bank Plaza, he found that benches, formally lined up along walkways, visibly limited conversation groups to two or three people. In the one instance, where benches were movable, they were not lined up. "Like children's jackstraws, they were abandoned in the haphazard patterns that reflect the way people normally position themselves when conversing."

CHAPTER III

APPLICATION OF FRAMEWORK

Whereas the last chapter gave a description of the Framework with illustrations of how it operates, this part demonstrates how the concept may be applied to existing residential projects, to ascertain the degree to which open space facilitates relationships between human generic activities and the physical environment.

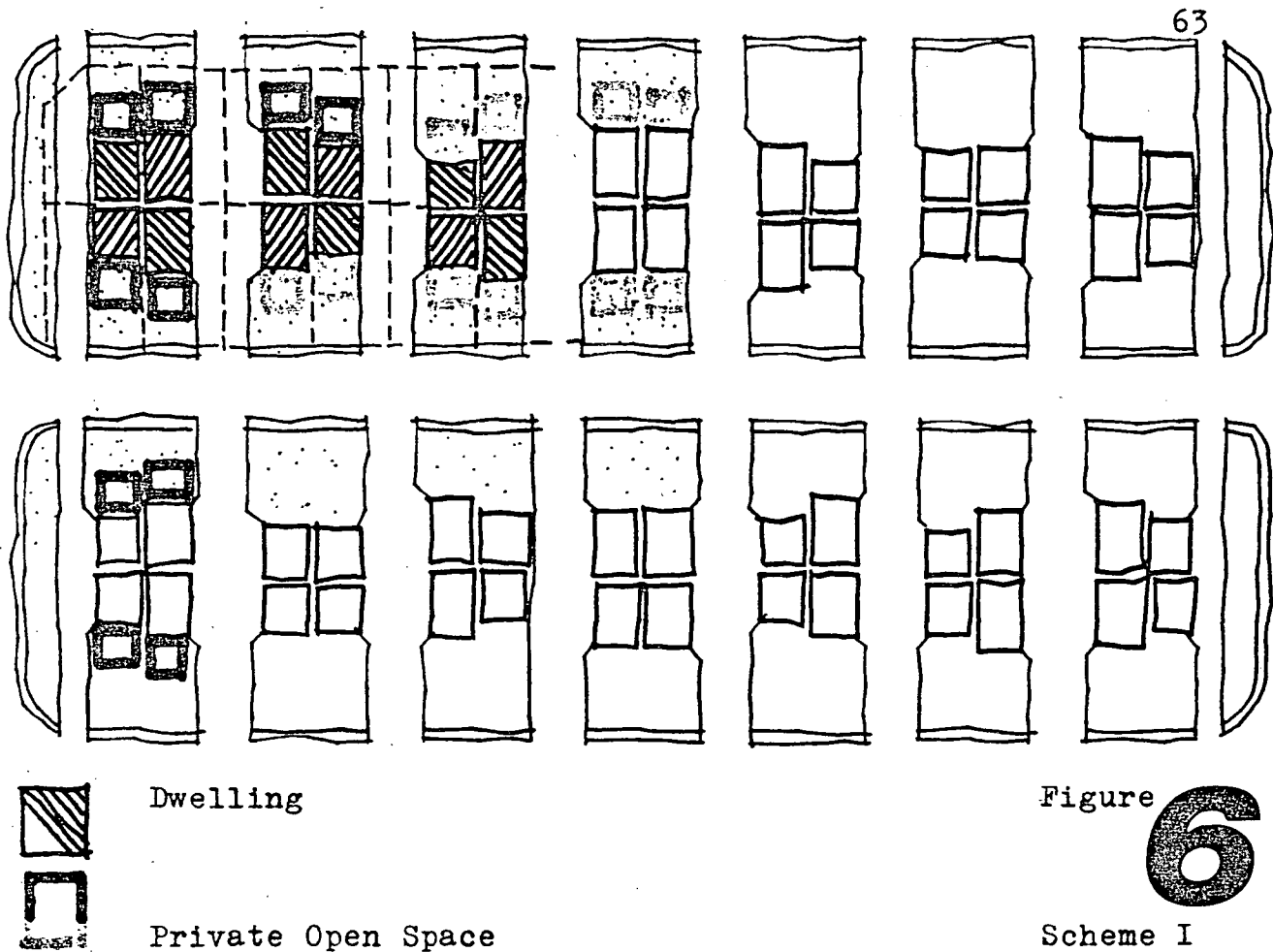
This exercise, which is outside the main objective of this study, can, at best, be described as intuitive and speculative, since the patterns developed, are hypotheses, based on observations and research findings.

The projects, tested, were chosen arbitrarily. Scheme I and II were constructed under the 1970 C.M.H.C. \$200 million "innovative" housing program, and Scheme III is a privately developed housing project, aimed at higher income groups. Factors, common to all three, are that they are suburban, medium density, low-rise developments catering predominantly to families with 2, 3 and 4 dependents. All are condominiums, designed by architects. Further statistics are illustrated in table XVI.

Table **XVI**
APPRAISAL

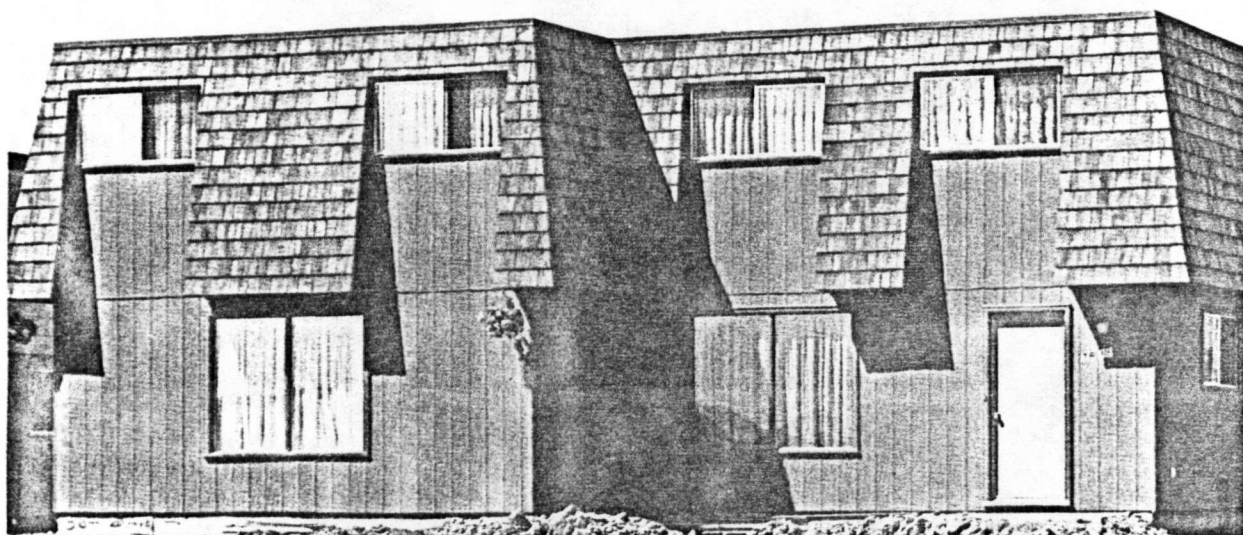
Statistics

	Scheme I	Scheme II	Scheme III
Location	Calgary	Calgary	Richmond
Total number of Units	136	83	110
Number of Bedrooms	2 and 3	2 and 3	1, 2, 3, and 4
Type of Units	Fourplex	Rowhouse	Maisonette
Total Site Area (acres)	7.5	6.4	5.6
Ground Coverage	40%	20%	30%
Density (Units per acre)	17	13	20
Sale Price per Unit	11,725 to 13,475	12,531 to 12,700	18,000 to 23,000
Down Payment	674 to 856	626 to 635	800 to 1,200
Monthly Payment (PIT)	116 to 134	124 to 126	185 to 235



A. Scheme I

This project features fourplexes, four dwellings to each building. All are similar in floor plan and form, and sited, not unlike traditional single family dwellings, at regular intervals and equidistant from the curb, along public residential roads. Dwellings, in each fourplex, are back to back as well as side by side, limiting open space, in effect, to frontyard and one sideyard per unit.

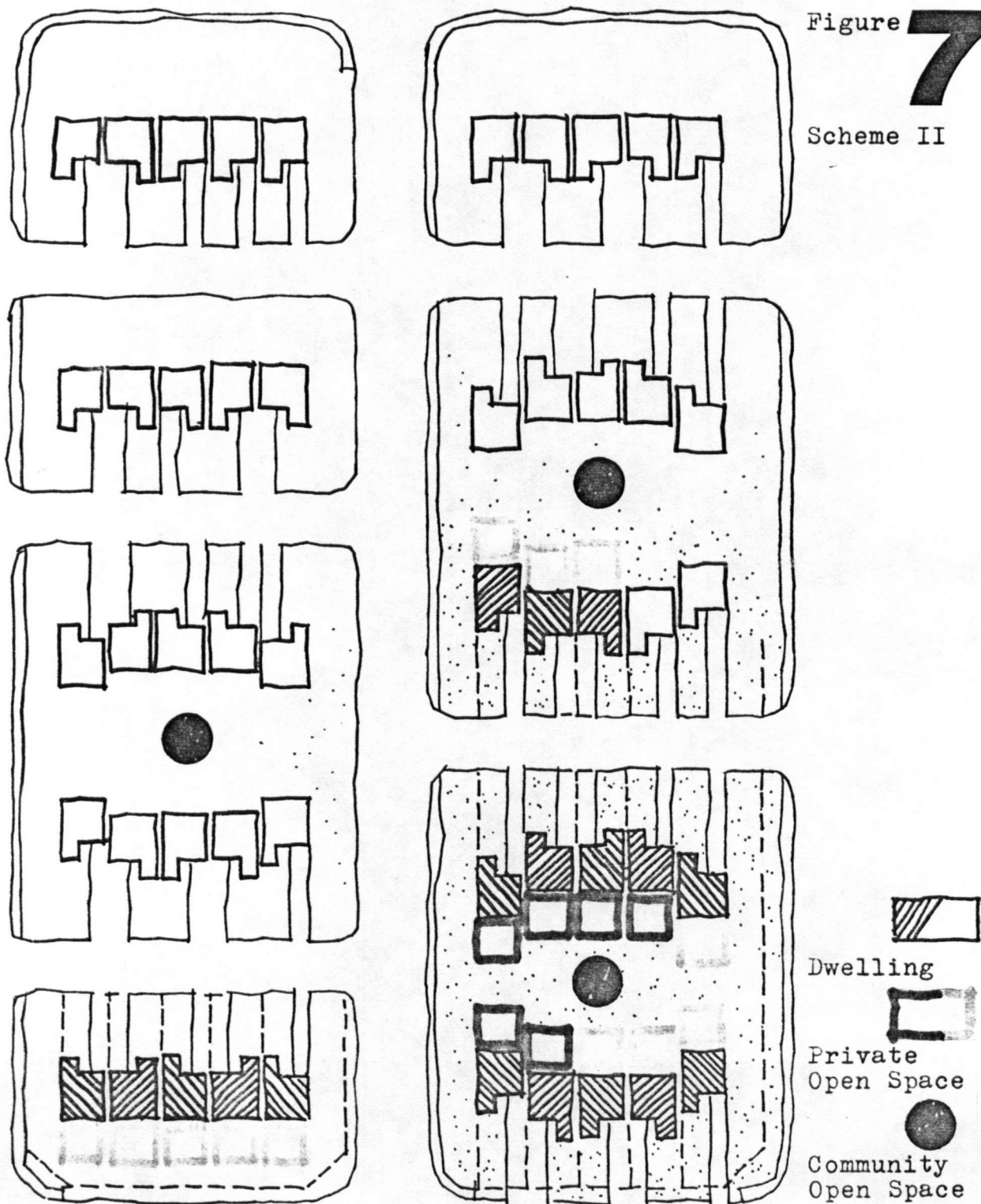


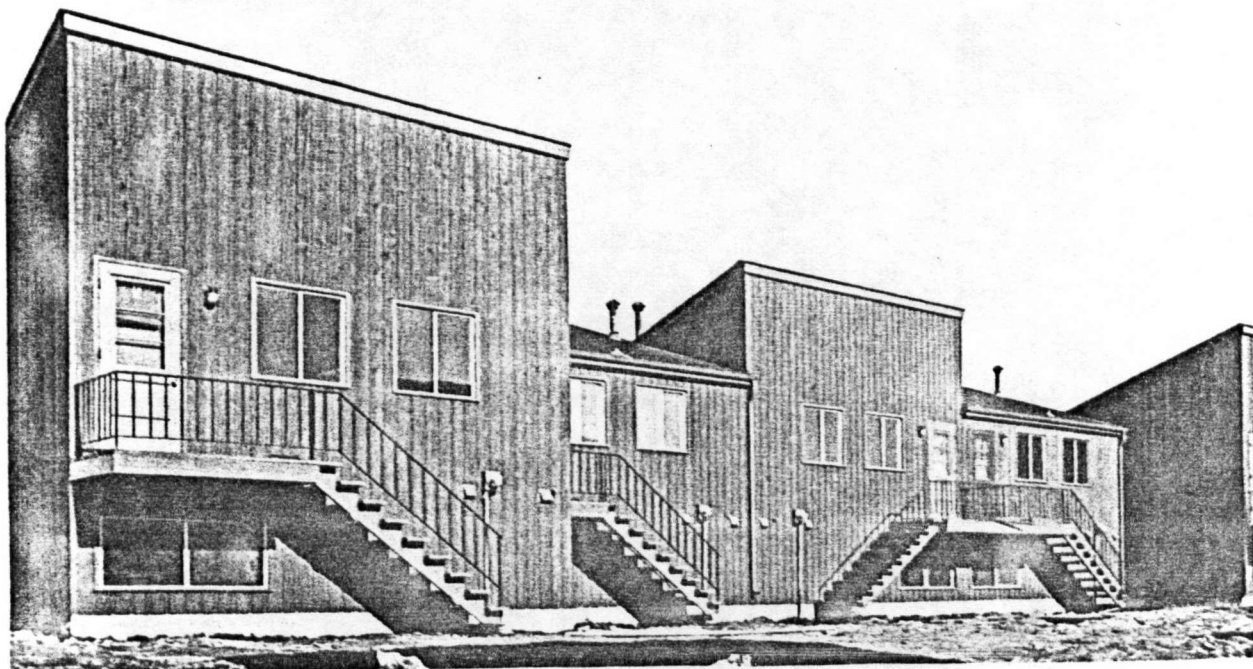
Cars are parked in driveways, next to entrances. Residents rely on neighborhood amenities, since there are no community facilities in the project.

The project is marked by its high density and low complement of landscaping (see Figure 6). Ground coverage is in the order of buildings - 40%, asphalt paving - 33% and landscaped areas - 27%. The latter, which includes fenced patios, are utilized, in addition to the usual

Figure **7**

Scheme II





activities, for drying clothes as most families do not own washing and drying machines. Fronts of dwellings face predominantly east or west.

B. Scheme II

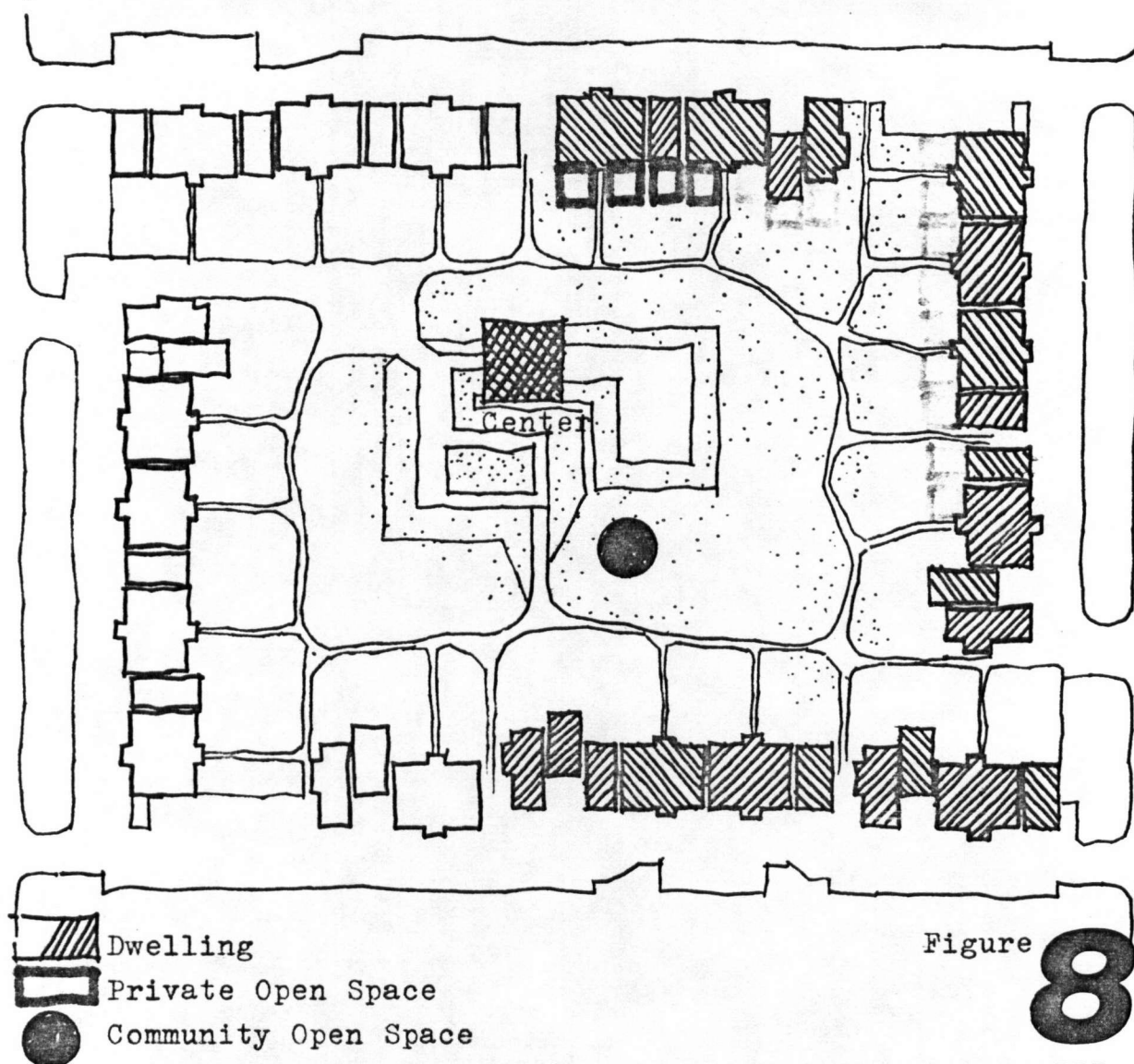
This project consists of rowhouses, ten of which form an open-ended cluster, partially enclosing community open space at the rear of units.

Of comparatively low density and featuring large areas of landscaping, each cluster is separated from the next by a road (see Figure 7).

Units in Scheme II have sold somewhat slower than in Scheme I, partially due to different market conditions at the time each project was completed, and partially due to the controversial appearance of dwellings in Scheme II. Front and back of all dwellings are oriented east-west.

C. Scheme III

Two storey maisonettes are stacked vertically and abut each other, in four rows, at right angles, to form a large square (see Figure 8). Rears of units face the interior of this square, a landscaped area, which features private patios, community lawns, walkways, playground and other facilities. Vehicular traffic and parking is confined to the perimeter of the site, facing the entrances of dwellings. Less than half of all units are oriented east-west.



Figure

8

Scheme III

D. Appraisal

The basis or units of analysis, used to appraise the three schemes, are the components identified and the corresponding Specific Patterns evolved during the course of this study. Each pattern discussed, therefore, is ela-

Table

XVIII

APPRAISAL

Unit of
Analysis: Components

Components	Scheme I	Scheme II	Scheme III
Public Open Space	•	•	
Road	•	•	•
Walkway	•	•	•
Community Open Space		•	•
Carpark			•
Playground			•
Private- Public O.S.	•	•	
Driveway	•	•	
Frontyard	•	•	
Private O.S.	•	•	•
Backyard		•	

borated upon in Appendix 'B'.

Table XVII indicates, at a glance, that Scheme I besides its high density, lacks three most important components, two specific and one general. A project without community open space, playground or carpark, offers no choice of activity settings, but forces children onto sidewalks and roads; teenagers, adults and handicapped outside their community for their recreation. Driveways, because they are paired, will encourage social interaction between neighbors who are compatible, as will the proximity of residents to each other generally. But the possibilities for tension and stress in a community, so deprived of amenities and privacy, are just as likely. Private patios are exposed to noise, street-dust and view, and offer little compensation, while frontyards are monopolized by housewives drying their laundry. This project provides shelter only.

A few patterns were identified in Scheme II, which features a large quantity of public open space, dominated, however, by the car. Through roads will cause conflict between vehicles, pedestrians and cyclists. Playgrounds and communal car parks are components not provided in this project, both of which have been established as primary

attractors of people. Community open space is located at the rear of 60% of all units and has serious limitations in satisfying many aspirations/needs of residents. Children prefer front of dwellings to the rear, and hard surfaces to grass. Housewives may be torn between watching their offspring at the front and socializing at the rear of their homes, since orientation, privacy, and the hierarchy of open spaces, at the center of clusters, is conducive not only to neighboring but also to adults relaxing. Small private patios lead into the larger community area and from there into public open space. The necessary transition between the intimacy of the home and the outside has been provided, although unfortunately only at the rear.

Figure 9 illustrates an alternative solution to Scheme II, incorporating the same number of dwellings and further patterns.

Specifically, the alternative plan eliminates roads and thereby conflict; it clusters dwellings around vehicular access and parking. Community open space becomes an extension of this natural activity setting, where children play and residents interact. Small private open spaces separate the dwelling from cars and community open space, which is enjoyed now by 80% instead of, formerly, 60% of the commu-

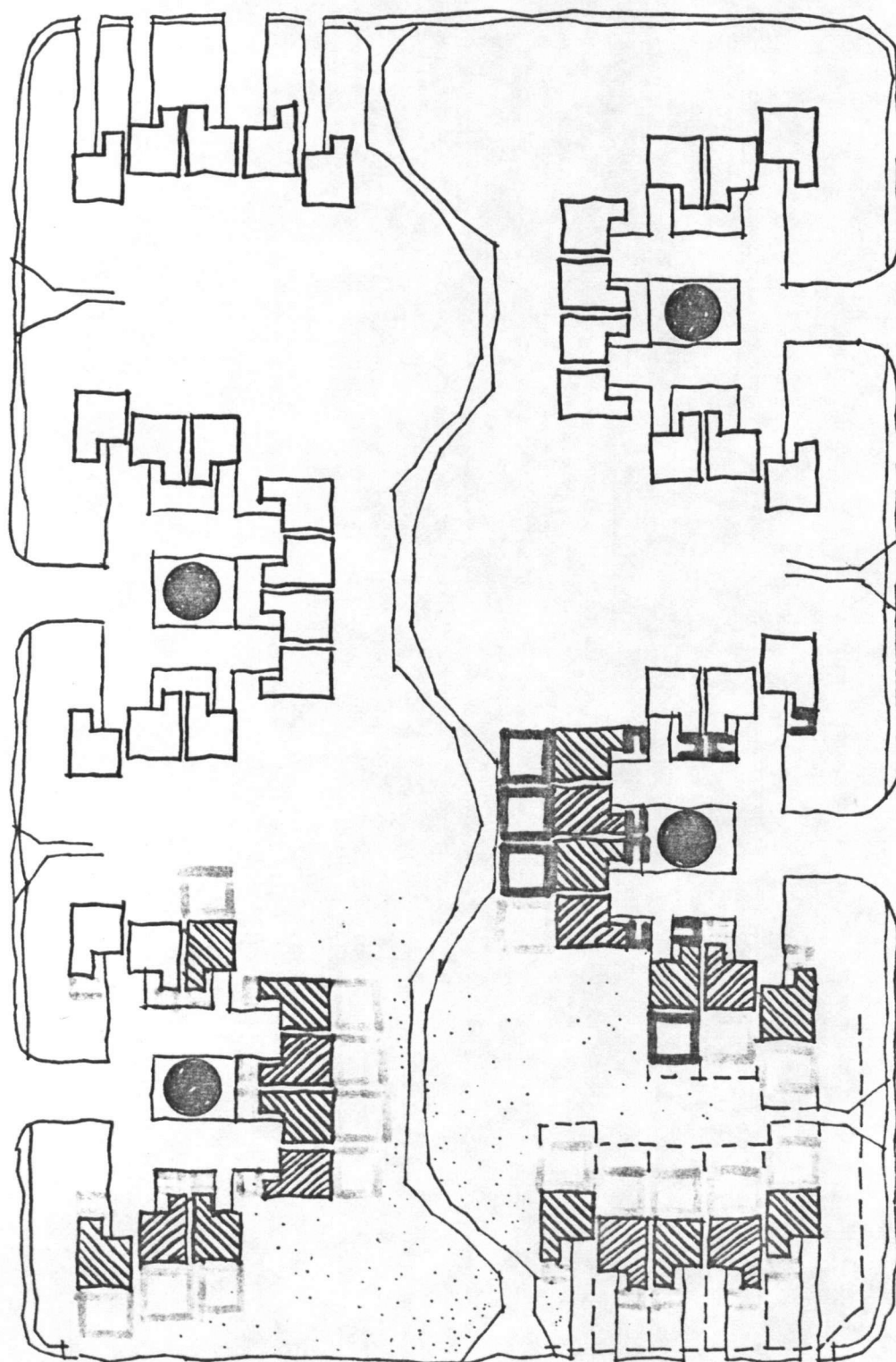


Figure **9**
Alternative
Scheme II



nity. Private patios are retained at rears of homes, some of which now face north-south. Public open space is articulated into smaller areas by the central walkway, which increases opportunities for residents to walk, cycle and play within their block and communicate with those adjoining.

Scheme III, predictably, has more components than either of the other two. The project, essentially inward looking, faces problems similar to those of Scheme II. Lack of sensitive handling of open spaces, is one of the major criticisms. Residents are, visually and physically, immediately upon the extremely large community open space at the rear of their dwellings, and onto carparks and a continuous service road when passing through their front doors. Children are as likely to take to the hard surfaces "outside" the project as they are to playing in the playground, "inside". Mothers will experience problems keeping track of the young, aggravated by the fact that half of all dwellings start two floors above ground level. Adults and handicapped will tend to avoid the central area because they are visually exposed both in the community open space as well as in their patios at ground level.

E. Summary

The Framework, particularly the Frame of Reference and the patterns, were found to be of considerable value in assessing the problems of the three schemes. Given thorough familiarization with the projects, the investigation can and should be carried out in greater detail.

The Playground in Scheme III, for example, was criticized only with respect to its location and distance from dwellings and not, as several Specific Patterns in Appendix 'B' imply, in detail. Unfortunately, landscaping had not been finalized when the project was inspected.

The problem of storing bicycles, perambulators and wheelchairs, was one which was found to be present in all schemes, but no pattern was evolved in this study, because of lack of available data.

On the other hand, components, satisfactory in terms of meeting user needs/aspirations, e. g. physical and visual proximity of parked cars to dwellings, were not acknowledged in this appraisal and perhaps should be.

Perfecting the method of applying the Framework,
to test existing as well as proposed projects thoroughly,
will grow out of further development of the concept.

CHAPTER IV

CONCLUSIONS

The need for a theory, involving the synthesis of all the social, behavioral and natural sciences that deal with the interaction between man and his environment, has been expressed for some time. The importance of making behavioral information available and emerging design principles incorporating such data, operational in the interim, led to this study.

The Framework which was evolved to relate generic human activities to physical open space components, deals with part of the residential environment, one, which in practice, is frequently overlooked and left to chance. Housing serves as an extended function in most people's lives and not, as a considerable section of industry and the professions would have it, solely as shelter. The frequent inadequacy of open space planning in residential areas, in terms of maximizing or facilitating opportunities for basic human activities to occur, is illustrated by the appraisal of three housing projects in chapter III of this study.

The Framework, chapter II and Appendices 'A' and 'B', requires refining, simplifying and constant updating to attract the wide spectrum of those involved with housing, to use the concept voluntarily and with some enthusiasm. To legislate, therefore, that the design and execution of housing projects be based on design principles, is, of course, premature at this point in time. Federal and Provincial agencies, however, engaged in sponsoring the construction of housing, could conceivably operate such a Framework, within their own departments and in liaison with those, interested in building under their programs. A developer might, within reason, be given freedom to carry out open space development, while patterns would form part of his initial design guidelines. He would have the option to interpret, use, change or ignore these at his discretion. The agency, however, would retain sufficient funds to be used, if necessary, for environmental upgrading, say 2 years after completion of a project.

Under these circumstances, the rewards of using the patterns at the outset of a project, would include the likelihood

1. of creating a responsive environment which attracts more responsible and less transient residents; and

2. that the developer, by not having to return to upgrade the site, saves time and money.

Design professions, themselves, could do more in furthering a concept such as this, by giving press notices and design prizes to outstanding projects after they have been used, on the basis of how well they work, rather than on aesthetically striking appearances and selected photographic evidence.

Requisite, in the final analysis, to the success of a Framework such as this is, first, that activities, components and patterns are generic and not associated with cultural and socio-economic factors. People, regardless of their background and social status, require shelter from cold and exposure to the sun; they will gravitate to hard surfaces to ride bicycles and play certain games; they appreciate and use safe and versatile play equipment. People, too, have similar tendencies in varying degrees: they litter the environment and they all will take shortcuts, if possible, to communicate between point A and point B.

Secondly, the Framework must be simple and explicit to enable people to relate to and use it; the developer and designer, the municipality, the resident and the interes-

ted outsider.

Thirdly, the patterns must not be regarded as absolute statements, but perhaps as openers for discussion, debate and new ideas. They may be revised, rejected or adopted. Though their solution may not be acceptable, they will usually reveal problems. Given proper familiarization and guidance with the principle, residents could develop their own patterns.

In the meantime, however, provision must be made by industry for those needs/aspirations not common to all residents. The degree of privacy, desired at the rear of a home, or the urge to change or somehow affect the private-public open space outside one's threshold, can be facilitated by the use of flexible screening systems and removable paviers, respectively. This would give residents a chance to shape their immediate open space environment and add diversity to the appearance of generally monotonous developments.

Given the present general state of open space planning and urban design, an operational Framework, far from providing all the solutions, would enable the designer to begin to identify the problems and ask the relevant questions. Responsible or poor work could be

more easily recognized, and endorsed or discouraged at the concept stage.

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APPENDICES




APPENDIX A

FRAME OF REFERENCE

APPENDIX A

FRAME OF REFERENCE

The function within the Framework, of the Frame of Reference, tables I-XIII, is described and illustrated in chapter II of this study and referred to again in Appendix 'B'.

All tables except I, although each for a different age group, summer or winter, are identical as to the activities and components, which they contain. Cross-referencing activities and components, spaces are left blank  where a relationship may occur, and blacked out  where this is unlikely. Sufficient only, to illustrate the concept, patterns, developed in this study and presented in Appendix 'B', are identified in the Frame of Reference thus 

Table

FRAME OF
REFERENCE
General

General Activities	Specific Activities	Specific Components	General Components												
				Public Open Space	Road	Walkway	Community Open Space	Carpark	Playground	Private- Public O.S.	Driveway	Frontyard	Backyard	Private O.S.	
playing															1
	-hockey														2
	-ball														3
	jumping														4
	swinging														5
	climbing														6
	sliding														7
	puddling														8
	digging														9
moving															10
	crawling														11
	walking														12
	jogging														13
	running														14
	biking														15
resting	driving														16
															17
	lying														18
	sleeping														19
	sitting														20
	talking														21
	listening														22
	watching														23
	eating														24
working	reading														25
															26
	cleaning-														27
	repairing-														28
	gardening-														29
	constructing-														30
	storing-														31
	carrying-														32
				a	b	c	d	e	f	g	h	i	j	k	

Table



FRAME OF
REFERENCE
Children 1+2
years old in
summer

General Activities	Specific Activities	General Components		Specific Components											
		Public Open Space	Community Open Space	Road	Walkway	Carpark	Playground	Private- Public O.S.	Driveway	Frontyard	Backyard	Private O.S.	Backyard		
playing														1	
	-hockey													2	
	-ball													3	
	jumping													4	
	swinging													5	
	climbing													6	
	sliding													7	
	puddling													8	
	digging													9	
moving														10	
	crawling													11	
	walking													12	
	jogging													13	
	running													14	
	biking													15	
	driving													16	
resting														17	
	lying													18	
	sleeping													19	
	sitting													20	
	talking													21	
	listening													22	
	watching													23	
	eating													24	
	reading													25	
working														26	
	cleaning-													27	
	repairing-													28	
	gardening-													29	
	constructing-													30	
	storing-													31	
	carrying-													32	
		a	b	c	d	e	f	g	h	i	j	k			

Table



FRAME OF
REFERENCE
Children 1+2
years old in
winter

General Activities	Specific Activities	Specific Components	General Components												
				Public Open Space	Road	Walkway	Community Open Space	Carpark	Playground	Private- Public O.S.	Driveway	Frontyard	Private O.S.	Backyard	
playing	-hockey														1
	-ball														2
	jumping														3
	swinging														4
	climbing														5
	sliding														6
	puddling														7
	digging														8
															9
moving	crawling														10
	walking														11
	jogging														12
	running														13
	biking														14
	driving														15
															16
resting	lying														17
	sleeping														18
	sitting														19
	talking														20
	listening														21
	watching														22
	eating														23
	reading														24
															25
working	cleaning-														26
	repairing-														27
	gardening-														28
	constructing-														29
	storing-														30
	carrying-														31
															32
		a	b	c	d	e	f	g	h	i	j	k			

Table

V

FRAME OF
REFERENCE
Children 2-5
years old in
winter

Table		V											
FRAME OF REFERENCE													
Children 2-5 years old in winter													
		General Components		Specific Components		Public Open Space		Community Open Space		Private- Public O.S.		Private O.S.	
						Road		Walkway		Carpark		Playground	
						Driveway		Frontyard		Backyard			
General Activities		Specific Activities											
playing		-hockey										1	
		-ball										2	
		jumping										3	
		swinging										4	
		climbing										5	
		sliding										6	
		puddling										7	
		digging										8	
moving												9	
		crawling										10	
		walking										11	
		jogging										12	
		running										13	
		biking										14	
		driving										15	
resting												16	
		lying										17	
		sleeping										18	
		sitting										19	
		talking										20	
		listening										21	
		watching										22	
		eating										23	
		reading										24	
working												25	
		cleaning-										26	
		repairing-										27	
		gardening-										28	
		constructing-										29	
		storing-										30	
		carrying-										31	
												32	

Table

VI

FRAME OF
REFERENCE
Children 5-12
years old in
summer

General Activities	Specific Activities	Specific Components	General Components												
				Public Open Space	Road	Walkway	Community Open Space	Carpark	Playground	Private- Public O.S.	Driveway	Frontyard	Private O.S.	Backyard	
playing															1
	-hockey														2
	-ball														3
	jumping														4
	swinging														5
	climbing														6
	sliding														7
	puddling														8
	digging														9
moving															10
	crawling														11
	walking														12
	jogging														13
	running														14
	biking														15
	driving														16
resting															17
	lying														18
	sleeping														19
	sitting														20
	talking														21
	listening														22
	watching														23
	eating														24
	reading														25
working															26
	cleaning-														27
	repairing-														28
	gardening-														29
	constructing-														30
	storing-														31
	carrying-														32
				a	b	c	d	e	f	g	h	i	j	k	

Table

VIII

FRAME OF
REFERENCE
Children 5-12
years old in
winter

General Activities	Specific Activities	Specific Components	General Components	Public Open Space										
				Road	Walkway	Community Open Space	Carpark	Playground	Private- Public O.S.	Driveway	Frontyard	Backyard		
playing													1	
	-hockey												2	
	-ball												3	
	jumping												4	
	swinging												5	
	climbing												6	
	sliding												7	
	puddling												8	
	digging												9	
moving													10	
	crawling												11	
	walking												12	
	jogging												13	
	running												14	
	biking												15	
resting	driving												16	
													17	
	lying												18	
	sleeping												19	
	sitting												20	
	talking												21	
	listening												22	
	watching												23	
	eating												24	
working	reading												25	
													26	
	cleaning-												27	
	repairing-												28	
	gardening-												29	
	constructing-												30	
	storing-												31	
	carrying-												32	
				a	b	c	d	e	f	g	h	i	j	k

Table

VIII

FRAME OF
REFERENCE
Teenagers
in summer

Table

X

FRAME OF
REFERENCE
Adults in
summer

FRAME OF REFERENCE <u>Adults in summer</u>		General Components		Specific Components												
General Activities	Specific Activities	Public Open Space	Community Open Space	Road	Walkway	Carpark	Playground	Private- Public O.S.	Driveway	Frontyard	Backyard					
<u>playing</u>															1	
	-hockey														2	
	-ball														3	
	jumping														4	
	swinging														5	
	climbing														6	
	sliding														7	
	puddling														8	
	digging														9	
<u>moving</u>															10	
	crawling														11	
	walking														12	
	jogging														13	
	running														14	
	biking														15	
	driving														16	
<u>resting</u>															17	
	lying														18	
	sleeping														19	
	sitting														20	
	talking														21	
	listening														22	
	watching														23	
	eating														24	
	reading														25	
<u>working</u>															26	
	cleaning-														27	
	repairing-														28	
	gardening-														29	
	constructing-														30	
	storing-														31	
	carrying-														32	
		a	b	c	d	e	f	g	h	i	j	k				

Table

XI

FRAME OF
REFERENCE
Adults in
winter

General Activities	Specific Activities	Specific Components	General Components												
				Public Open Space			Community Open Space			Private- Public O.S.			Private O.S.		
				Road	Walkway		Carpark	Playground		Driveway	Frontyard		Backyard		
playing															1
	-hockey														2
	-ball														3
	jumping														4
	swinging														5
	climbing														6
	sliding														7
	puddling														8
	digging														9
moving															10
	crawling														11
	walking														12
	jogging														13
	running														14
	biking														15
	driving														16
resting															17
	lying														18
	sleeping														19
	sitting														20
	talking														21
	listening														22
	watching														23
	eating														24
	reading														25
															26
working	cleaning-														27
	repairing-														28
	gardening-														29
	constructing-														30
	storing-														31
	carrying-														32
				a	b	c	d	e	f	g	h	i	j	k	

Table

XIII

FRAME OF
REFERENCE
Handicapped¹
in winter

Table		XIII	
FRAME OF REFERENCE <u>Handicapped</u> <u>in winter</u>		1	
General Activities	Specific Activities	Specific Components	General Components
playing			Public Open Space
	-hockey		Road
	-ball		Walkway
	jumping		Community Open Space
	swinging		Carpark
	climbing		Playground
	sliding		Private- Public O.S.
	puddling		Driveway
	digging		Frontyard
moving			Backyard
	crawling		
	walking		
	jogging		
	running		
	biking		
	driving		
resting			
	lying		
	sleeping		
	sitting		
	talking		
	listening		
	watching		
	eating		
	reading		
working			
	cleaning-		
	repairing-		
	gardening-		
	constructing-		
	storing-		
	carrying-		
	</		

¹ includes the old

APPENDIX B

SPECIFIC PATTERNS

APPENDIX B

SPECIFIC PATTERNS

A number of Specific Patterns, explained more fully in chapter II, have been developed from observations and empirical findings during the course of this study, primarily to illustrate an essential part of the Framework. These were selected randomly and focus on one specific problem, although one pattern frequently applies to several age groups. The majority of those presented here deal with children's activities in the residential open space environment, while a few apply to teenagers. This reflects the availability of data for one group and the lack of knowledge of another. It also supports the notion that teenagers represent the least privileged group in terms of having components designed to meet their aspirations/needs.

Each Specific Pattern, identified in the Frame of Reference by table and activity numbers and the component letter, is in four parts.

1. The Context is derived from the Frame of Reference, tables II-XIII inclusive (Appendix 'A').

2. The Problem, stated briefly, is based on observation and documented evidence.
3. The Solution to the problem and within the context is based on observation and research.
4. The Discussion, elaborating on the context, the problem and the solution, completes the pattern.

Specific
Pattern

II to XIII incl.		
b	c	24
	f	

Specific Context: All Age Groups Eating in Playgrounds on and near Roads and Walkways.

Specific Problem: Litter in the open space environment encourages more serious types of pollution.

Specific Solution: PROVIDE A GARBAGE RECEPTACLE AT DESIGNED ACTIVITY AND REST AREAS.

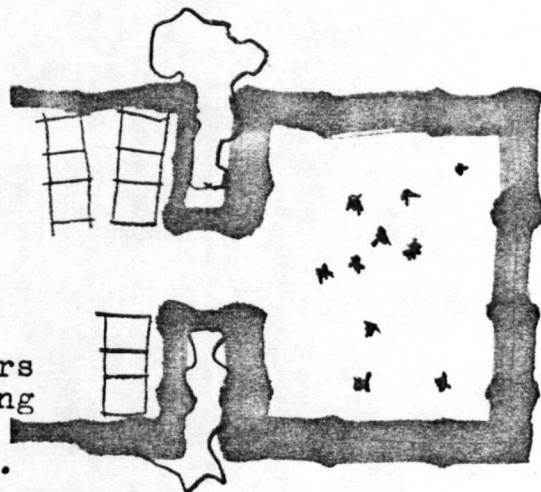
Discussion: For reasons of maintenance problems or oversight, it is common to find planned residential projects completely devoid of public garbage receptacles. All age groups, especially children, will eat and drink outside the immediate vicinity of the home, and wrappings, disposable bottles and cans are not always carried home. (1)
Communities are frequently stigmatized by the amount of garbage, which litters the ground. Besides the obvious benefits to be gained from providing disposal facilities, parents would be encouraged to acquaint their children with the practices of maintaining a clean environment.

(1) Observations - Student Family Housing, Acadia Park, U.B.C. Vancouver, Sept. 1970 - Feb. 1972.

- Low Income Housing, Bowness, Calgary, Sept. 1969 - Sept. 1970.

Specific
Pattern

IV to VII incl.		
e	2	3
	15	



Specific
Context:

Children 2-12 years
old Biking, Playing
Hockey and Ball
Games in Carparks.

Specific
Problem:

Conflict of acti-
vities.

Specific
Solution:

PROVIDE EXTENSIONS
TO CARPARKS, FREE
OF VEHICLES, FOR
PURPOSES OF FACI-
LITATING PLAY.

Discussion:

- Observations (2) indicate that children
1. play wherever they happen to be at a given moment, unaffected by the purpose for which the space is designated;
 2. inevitably gravitate to hard surface areas to ride bicycles and play games;
 3. choose as the focal point of their outdoor activities, in their earlier years, the vicinity of the front entrance to their homes; and
 4. if their house faces a carpark, will therefore play on it.

While the relatively harmless habit of smaller children biking among stationary cars would persist, a vehicle-free extension to a carpark would enable older children and, indeed, adults to pursue more aggressive games with less danger to cars and to themselves.

(2) Observations - Student Family Housing, Acadia Park,
U.B.C., Vancouver, Sept. 1970 - Feb. 1972.

- Low Income Housing, Bowness, Calgary,
Sept. 1969 - Sept. 1970.

Specific
Pattern

IV to IX incl.	
f	7

Specific
Context:

Children 2-12 years
old and Teenagers
Sliding in a Play-
ground.

Specific
Problem:

Traditional slides
are dangerous and
restrictive.

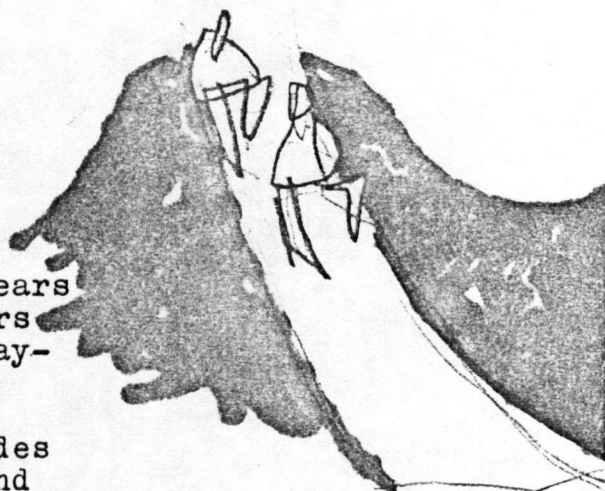
Specific
Solution:

A SLIDE SHOULD BE
PART OF A MULTI-
ACTIVITY FACILITY.

Discussion:

The traditional slide allows one approach to the summit - the climb up the set of stairs. The experience is the slide down. No matter how many times the child does this, it will be difficult for him to gain more than this single activity. The slide is out of context therefore; it stands apart from other objects or activities and a child must conform to the preconceived idea of its use. At the risk of disobeying the standardized safety rules of the playground, he may elaborate by climbing up the wrong way or shinnying up the supporting legs. The steps are standard for all slides, allowing a small child to use any slide and possibly overextend himself. The slide is awkward - shins may be cracked on the steel steps or at the top; balance is threatened in changing from standing to sitting.

An alternative approach, and the one advocated here, is to design the slide in such a way that many things can happen as an ancillary to the activity of sliding. A hill, for example, that has the same elevation as a slide but can be approached from 360 degrees, by a variety of means, can have a

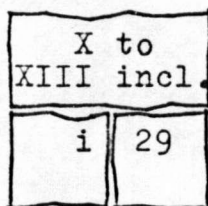


slide incorporated into one side. A maze of tunnels through the hill to a central core open to the sky with a ladder to the top, could give access to the top. The slide, itself, should then be wide enough to allow two or three children to descend at the same time. (3)

Playgrounds should not be closed down during winter months, except for reasons of safety. Children need facilities at this time more than they do in summer because of the general constraints of the season. Play equipment should be designed to extend activities with the addition of ice and snow. The use of "warm" materials such as wood, rather than metal, is an important detailing consideration especially in areas subjected to very cold temperatures.

- (3) Friedberg, M.P., "Playgrounds for Children", Bulletin 27-A, Association for Childhood Education International, Washington, D.C., 1969.

Specific
Pattern



Specific
Context:

Adults and Handi-
capped Gardening
in Frontyards.

Specific
Problem:

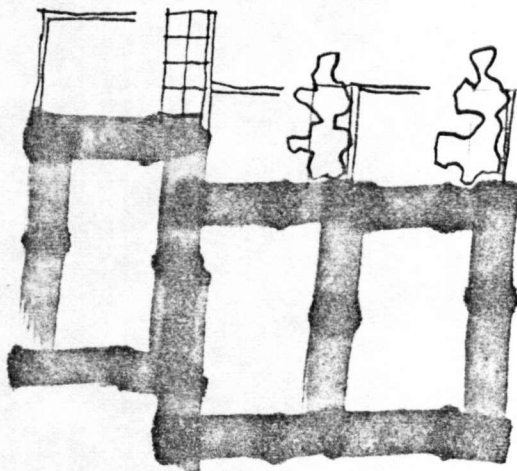
Lack of opportu-
nities for indivi-
dual expression
outside the home
is conducive to
general monotony
of, and personal
indifference to
the open space
environment.

Specific
Solution:

SURFACE THE GROUND, IMMEDIATELY OUTSIDE FRONT
OF DWELLINGS, WITH REMOVABLE RATHER THAN INSITU
FINISHES. (4)

Discussion:

Residents of a rental or condominium scheme should be given the opportunity to influence their immediate outside environment if they so desire. Personal landscaping, for example, helps to distinguish one dwelling from the next, allows residents to actively participate in the development and upkeep of their private-public open space and identify with their home rather than with the project. Residents will maintain "their" plants while they are inclined to neglect those provided for them (17). However, only some people enjoy gardening in any given community. Ra-

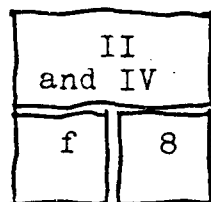


(4) This pattern has been modified from that presented by Alexander, C., "Houses Generated by Patterns", Center for Environmental Structure, Berkely, California, 1969, p. 112.

(17) Observations - Student Family Housing, Acadia Park, U.B.C. Vancouver, Sept. 1970 - Feb. 1972.

ther than provide all houses with planting areas, many of which would be unkept, loosely paving these instead, would induce only those who wish to grow things, to remove the paviers, while providing maintenance-free private-public open space for others.

Specific
Pattern



Specific Context: Children 1-5 years old Puddling in Playgrounds.

Specific Problem: Lack of materials in playgrounds increase wear and tear on Public and Community Open Space.

Specific Solution: PROVIDE WATER AND SAND IN PLAYGROUNDS.

Discussion: Children particularly between the ages of two and five, are fascinated by water, mud and sand. They become particularly active, following thaw or a rainstorm, amusing themselves in puddles, in depressed, undrained landscaped areas and near clogged catchbasins (5). Any puddles in a residential environment should be designed ones and preferably in playgrounds. Richard Dattner, architect, following the construction of the Estée and Joseph Lander playground in New York's Central Park in 1967, observed that for these younger children the most interesting feature seemed to be a water channel. "Here they run, splash, sail sticks and boats, and fetch water to mix with the sand. The infants just sit in the sand and dig, apparently unconcerned by the maelstrom of activity around them." (6)
Another example, illustrating the importance of minute parts of the manipulative environment for imaginative play, is recorded by R.C. Moore (7), following his study of Lennox-

(5) Observations - Student Family Housing, Acadia Park, U.B.C., Vancouver, Sept. 1970 - Feb. 1972.

(6) Hurtwood, Lady Allen of, "Planning for Play", Thames and Hudson, London, 1968, pp. 77, 102.

(7) *ibid.*, p. 77.

Camden Playground, Massachusetts, 1966. "A group of five-year-olds spent a good hour making 'mud pies'..... the sand to make them with, was brought in a paper bag from the sand-pit, the water from the fountain, the 'fruit' (sawdust) from the area where sawing had been done, the 'frosting' was shaken from an old can of cleaning powder."

Specific
Pattern

X to XIII	
c	12 6

Specific
Context:

Adults and Handicapped Walking and Climbing
on Walkways

Specific
Problem:

Restriction of pedestrian movement that
total or partial blindness and old age may
impose.

Specific
Solution:

WALKWAYS SHOULD BE ILLUMINATED AT NIGHT AND
NOT LESS THAN 6 FEET WIDE TO ALLOW PEDEST-
RIANS, CYCLISTS, PERAMBULATORS AND WHEEL-
CHAIRS TO PASS ONE ANOTHER. SURFACING MATE-
RIALS SHOULD GENERALLY BE RESILIENT AND
CONSOLIDATED EXCEPT IN IMPORTANT CIRCULATION
NODES SUCH AS STAIRCASES. THESE SHOULD AL-
WAYS BE COUPLED WITH RAMPS AND FINISHED WITH
RESONANT SURFACES, HANDRAILS ON BOTH SIDES
AND FREE OF PROJECTIONS WHERE THEY CAN NOT
BE DETECTED BY A CANE.

Discussion:

The still widely held view, that the blind
and the partially blind, have better oppor-
tunities if they are segregated into special
environments, does not appear to be shared
by many of those thus afflicted. (8) Desig-
ners usually ignore the often modest require-
ments of minority groups, even though they
are beneficial to users at large. Occasionally,
ingenious systems of clues are provided, which
form only a small part of the total commu-
nication pattern. Research into the methods,
by which the blind use location and direc-
tion clues, has shown, that a wide variety
of aural, tactile and kinesthetic senses are

- (8) Observations - University of British Columbia circu-
lation areas, Vancouver, Sept. 1970 - Feb. 1972.

used when moving about. Sufficient hardness of surfaces is therefore required in important circulation areas to promote echoes. Change of floor finishes approximately 3 feet from head and foot of stairs and ramps, is another desirable feature. (9) Illuminating walkways at night should be mandatory, since it has the potential to solve a number of problems as well as enhancing the open space environment. It can

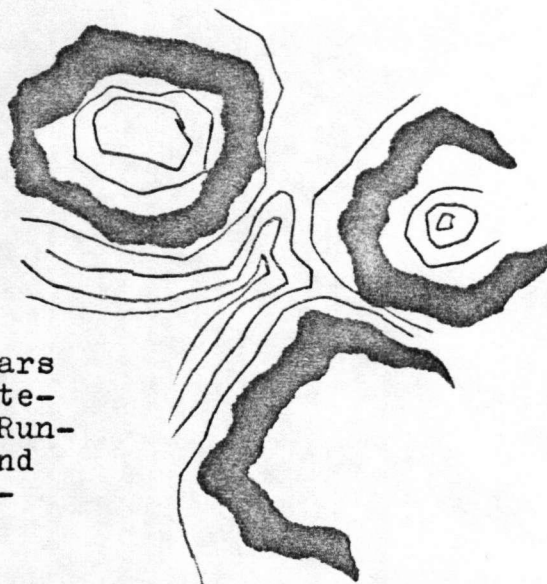
1. increase safety from injury and crime;
2. attract people to key areas;
3. identify areas; and
4. emphasize positive and de-emphasize negative aspects of the environment. (10)

(9) Adams, G.R., "Designing for the Handicapped: Blind and Partially Sighted", Official Architectur and Planning, Sept. 1969, p. 1077.

(10) McGowan, T.K., "In the Proper Light", A.I.A. Journal, December 1970, p. 46.

Specific
Pattern

II to VII incl.	
f	6 4
	14 20
	23 22



Specific
Context:

Children 2-12 years
old Sitting, Listening,
Watching, Running,
Climbing and
Crawling in Play-
grounds.

Specific
Problem:

Traditional play-
grounds fail to pro-
vide the scale and
diversity in which
children are com-
fortable and moti-
vated.

Specific
Solution:

PLAYGROUNDS SHOULD BE UNDULATING IN TOPO-
GRAPHY.

Discussion:

Varied topography provides safety. Flat asphalt surfaces, common in playgrounds, do not curb random movement. Accidents are caused, therefore, by two children running at full speed across a flat area and colliding. Through studied configuration, the areas can be broken down into many sectors, reducing the amount of uncontrolled movement while providing a series of intimate spaces in which children gather comfortably. Topographic variation provides vantage points where children can group and engage in passive play, and watch other children, to learn from. Their overlook allows them to gather for social interaction and, importantly, to rest while still involved in the total environment. (11)

(11) Friedberg, M.P., "Playgrounds for Children", Bulletin 27-A, Association for Childhood Education International, Washington, D.C. 1969, p. 44.

The topographic anatomy is the foundation for complexity and variety in such a creation as a superstructure, that lends itself to addition and inclusion of slides, tunnels and swings - naturally. Complexity allows for continued interest, discovery, choice, and year-round use rather than seasonal only, because the additional dimension of snow, for example, extends, rather than restricts, opportunities for play. The young child's environment should provide a slow transition from the womb to the hard adult world. (12)

(12) Bayes, K. and Francklin, S., "Designing for the Handicapped", George Godwin Ltd., London, 1971, p. 24.

Specific
Pattern

X to XIII incl.			
b	c	20	21
	f	23	25

Specific Context: Adults and Handicapped Sitting, Talking, Watching and Reading in Playgrounds, near Roads and Walkways.

Specific Problem: Designed seating, unless located at or near an attraction and unless sheltered from, as well as exposed to, wind and sun, does not answer the needs and aspirations of users.

Specific Solution: ONE OUT OF EVERY THREE BENCHES, PLACED IN THE RESIDENTIAL OPEN SPACE ENVIRONMENT, SHOULD BE PROTECTED FROM WIND AND SUN AND ALL SHOULD BE LOCATED IN PLAYGROUNDS, AT POINTS WHERE PEOPLE AND VEHICLES MEET AND IN SELECTED PLACES WHICH OFFER EXPERIENCES UNIQUE TO THE AREA (VIEW, TRANQUILITY, ETC.).

Discussion: Shelter from wind and orientation towards the sun are considered two of the most important conditions for comfort out-of-doors. While it may seem contradictory to advocate shelter from sun in areas geographically situated where they are subject to long winters and relatively short summers, it is nevertheless important to provide some protection, particularly for the young and the elderly. Children are, of course, especially sensitive to strong sunlight. Parents and children often disagree on the merits of the sun insofar that the former tend to want suntanned children, but children may prefer to spend a summer day in the shade. (13) Deciduous trees cut off the sun in summer, while allowing it to penetrate in winter. They are, therefore,

(13) Bengtsson, A., "Environmental Planning for Children's Play", Crosby Lockwood and Sons Ltd., London 1970, p. 9.

an ideal form of protection. Adults, elderly in particular, are drawn to places in which to play their games and where to watch others; to be together knowing that this is where their action is. (14)

Alternatively, places, which offer an exceptional view or unique experience, warrant placement of seating. Park benches, unless linked with other facilities, are generally unoccupied. (15) This situation is aggravated by the tendency of designers to place seats in rows rather than in clusters. (16) Recent studies of sitting habits at bus stops, in the United States, indicate that long benches tend to be under-used. People gravitate to both ends, "filling" the bench to the extent of excluding others who will stand or sit on a nearby wall, rather than occupy a center position. The feasibility of benches, longer than 4-6 feet, must therefore be questioned.

(14) Friedberg, M.P. with Berkely, E.P., "Play and Interplay", The Macmillan Company, New York, 1970, p. 142.

(15) *ibid.*, p. 136.

(16) Gehl, J., in "A Social Dimension of Architecture", Proceedings of the Architectural Psychology Conference at the Kingston Polytechnic, 1970, reported on investigations carried out in Tivoli in Denmark. Chairs, he noted, in sidewalk cafes, were re-oriented by users to face pedestrian and vehicular traffic.

Deasy, C.M., in "People-Watching with a Purpose", A.I.A. Journal, December 1970, describes, that during observations leading up to the design of the Lincoln Savings Bank Plaza, he found that benches, formally lined up along walkways, visibly limited conversation groups to two or three people. In the one instance, where benches were movable, they were not lined up. "Like children's jackstraws, they were abandoned in the haphazard patterns that reflect the way people normally position themselves when conversing."

Specific
Pattern

VIII to XIII incl.	
b	16

Specific
Context:

Adults and Teen-
agers Driving
Cars or Motor-
cycles on resi-
dential Roads.

Specific
Problem:

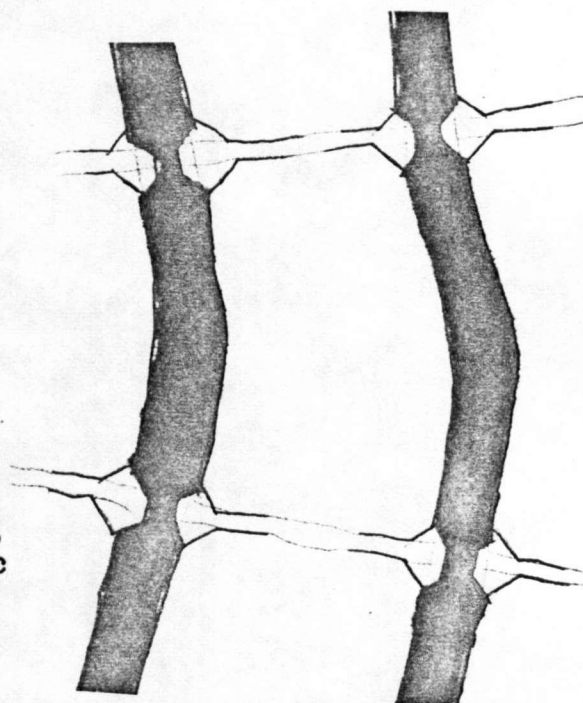
Unless regulated,
vehicular traffic
is frequently
fast, noisy and
dangerous.

Specific
Solution:

RESIDENTIAL ROADS
SHOULD BE LOOPS OR
CUL-DE-SACS, RATHER THAN THOROUGHFARES; SERVE
NO MORE THAN 50 CARS; AND NARROW AT PEDES-
TRIAN CROSSINGS. (18)

Discussion:

Winding roads, in loops rather than thorough-
fares, discourage high volumes of traffic and
are a deterrent to high speed. (19) This, of
course, depends on the total number of houses
served by the road. Alexander's informal ob-
servations indicate, that a road is and feels
safe so long as it serves less than 50 cars,
where, during rush hour, there may be one
car every two minutes and far fewer during
the rest of the day and night (20).



(18) See also Specific Pattern

II to XIII incl.	
b	12 15

Appendix 'B'.

(19) Observation - Row Housing,
Kanata, Ontario, 1967.

(20) This pattern has been modified from those presented
by Alexander, C., "Houses Generated by Patterns",
Center for Environmental Structure, Berkely, Cali-
fornia, 1969, pp. 64, 79, 82 and 84.

Specific
Pattern

II to XIII incl.	
b	12 15

Specific
Context:

All Age Groups
Walking and Bi-
king across Roads.

Specific
Problem:

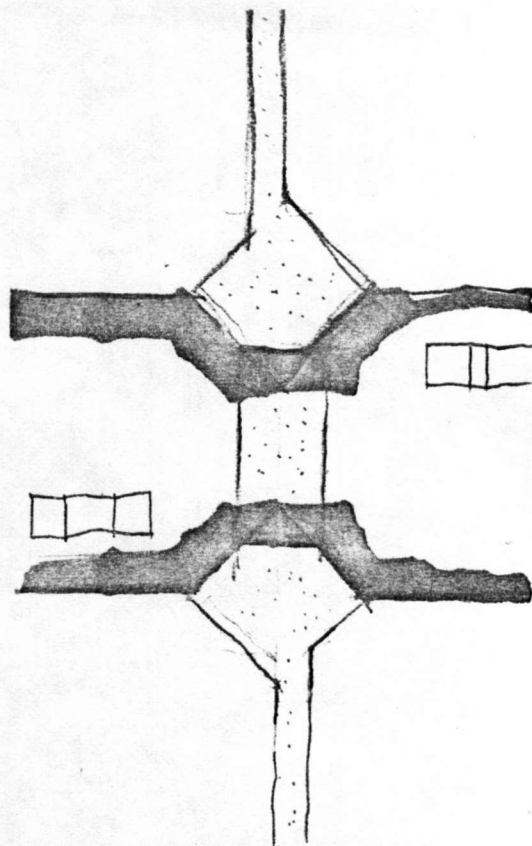
Unless regulated,
vehicular traffic
monopolizes points
where cars and
people meet.

Specific
Solution:

ROADS ACROSS WALK-
WAYS SHOULD BE ONE
TO TWO LANES NAR-
ROWER THAN ELSEWHERE AND CHANGE IN SURFACE
MATERIAL TO RESEMBLE THAT OF THE WALKWAY.
WALKWAYS SHOULD BE PARALLEL, OR AT RIGHT
ANGLES, TO ROADS AND WIDEN WHERE BOTH MEET. (21)

Discussion:

Buchanan has shown that the average waiting time and the percentage of pedestrians who are forced to wait for various levels of traffic flow, is greatly affected by the width of roadways. (22) Roads should therefore be narrowed and walkways widened where they meet. The pedestrian is given equal status with the motorist. While this goal would be further enhanced, physically and psychologically, by making the road surface flush with that of the walkway, two major problems remain: (1) Bicyclists would be

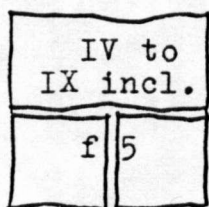


(21) This pattern has been modified from those presented by Alexander, C., "Houses Generated by Patterns", Center for Environmental Structure, Berkely, California, 1969, pp. 64, 79, 82 and 84.

(22) Buchanan, C. et al, "Traffic in Towns", H.M.S.O., London, 1963, pp. 202-213.

discouraged from dismounting before crossing roads, and (2) roads would have no delineation during snowfalls to guide motorists and snow-clearing equipment. Increasing the walkway width, at the point where the two circulation systems meet, has the added advantage of providing opportunities where to gather, sit, talk and watch.

Specific
Pattern



Specific
Context:

Children 2-12 years
old and Teenagers
Swinging in a
Playground.

Specific
Problem:

Traditional swings
are dangerous and
restrictive.

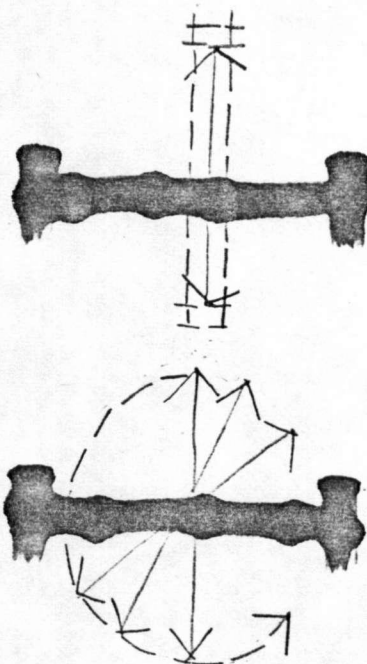
Specific
Solution:

THE SEAT OF A
SWING SHOULD BE
CONSTRUCTED TO
RESEMBLE AN AUTO-
MOBILE TIRE.

Discussion:

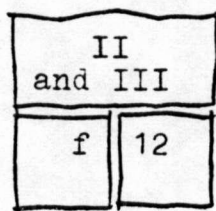
The traditional swing, a timber or steel slab hung onto the end of two chains, provides one-dimensional activity and has, judging from the number of its victims, proven to be the most dangerous object in the playground. Children have been observed to cling, in twos and threes, to one swing, where there is a desire to share the facility or where all swings are occupied.

A simple, old, discarded automobile tire, tied to the branch of a tree, has long provided a most enjoyable and safe activity for children. The fact that two or three children can experience the same activity at one time broadens its use and provides opportunities for social interaction. The child's capabilities are expanded; he flies, floats and rocks in all directions. (23)



(23) Friedberg, M.P. with Berkeley, E.P., "Play and Interplay", The MacMillan Company, New York, 1970, p. 59.

Specific
Pattern



Specific
Context:

Children 2 years
old Walking to
Playgrounds.

Specific
Problem:

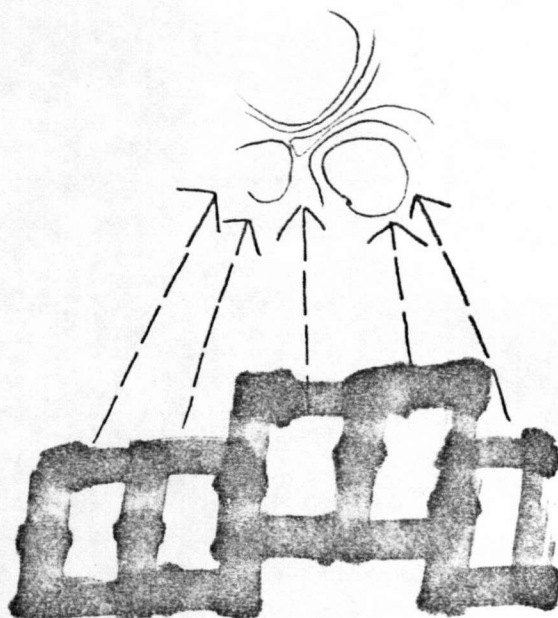
Play areas, too
far removed from
dwellings, are
left unused by
younger children.

Specific
Solution:

TOTLOTS SHOULD BE
ACCESSIBLE TO
CHILDREN AND VISI-
BLE FROM HOME.

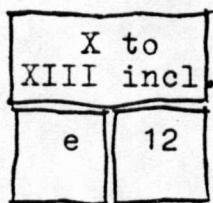
Discussion:

People's radius of action depends on their age. Children's radius of action being short, the playground must be near their homes. Whereas older children do not mind to walk 300 to 400 yards, younger children are restricted generally to a radius of 130 yards (24). Supervision, visual and physical, from houses also is a limitation on distance.



(24) Bengtsson, A., "Environmental Planning for Children's Play", Crosby Lockwood and Son Ltd., London, 1970, p. 97.

Specific
Pattern



Specific
Context:

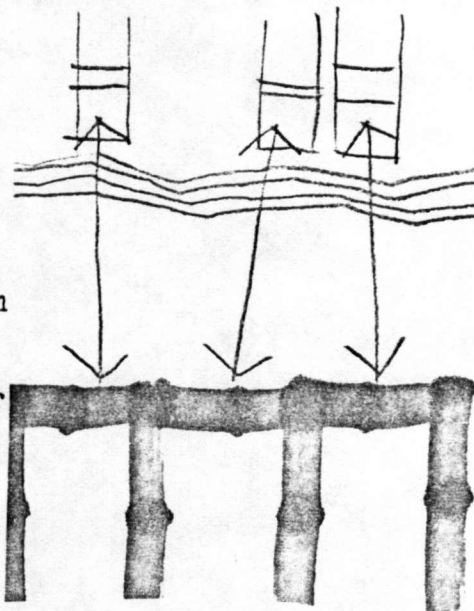
Adults and Elderly
Walking to and from
Carparks.

Specific
Problem:

Cars parked too far
from dwellings
cause unnecessary
hardship.

Specific
Solution:

THE DISTANCE BET-
WEEN A PARKED CAR
AND THE CORRESPON-
DING DWELLING SHOULD
NOT EXCEED 150 FEET
AND BE PREFERABLY
VISUALLY UNOBS-
TRUC-
TED.



Discussion:

To most people living in multiple housing projects, the car is a prized possession. Often it may be the most valuable thing its owner has. Carparks, unless completely enclosed, removed from the house and hidden from view, are therefore not desirable. An owner wants to be able to watch his car, that no one steals or tampers with it and often he wants it to be associated with his house because he is proud of it. People carry heavy parcels, and 150'-0" is a widely accepted upper limit for this distance (25).

Specific
Pattern

X and XII	
e	21

Specific
Context:

Adults and Elderly Talking in Carparks.

Specific
Problem:

People are not motivated to communicate with one another unless they are given the opportunity to pursue, display and express similar activities, interests and needs, respectively.

Specific
Solution:

RESIDENTIAL CARPARKS, UNLESS UNDER COVER, SHOULD BE DESIGNED AS COMMUNITY FOCAL POINTS.

Discussion:

For aesthetic reasons primarily, designers tend to disperse residential carparking whenever economically feasible, although it has been shown that a great deal of everyday social life happens where cars and pedestrians meet. In many low income areas, the car is used as an extension of the home. Men often sit in parked cars, drinking beer and talking. (26)
Observations indicate that conversation and social interaction grow naturally too out of carparks in higher income projects, where men and women meet while taking care of their children or cars and, indeed, during and following semi-annual carpark clean-ups. (27)

- (26) Cooper, C., "Some Social Implications of House and Site Plan Design at Easter Hill Village: A Case Study", Institute of Urban and Regional Development, Center for Planning and Development Research, University of California, Berkely, 1966, p. 36.
- (27) Observations - Student Family Housing, Acadia Park, U.B.C., Vancouver, Sept. 1970 - Feb. 1972;
- Multiple Rental Housing Project, Parkwood Hills, Ottawa, June 1965 - May 1967.