THE HIDDEN STRUCTURE OF CHILDREN'S PLAY IN AN URBAN ENVIRONMENT*

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ABSTRACT

Although play has been investigated from a variety of perspectives, the way in which the child in an urban setting interacts with the environment is relatively unexplored. The primary objective of the project was to determine the location and extent of use of provided play areas (parks, open spaces, playgrounds, etc.) utilized by a sample of urban elementary school children, and to compare these findings with the actual or observed locations of use. The results yielded a spatial image of children's play in the city and strongly suggest that a "hidden" structure does exist. That is, children do not place as much importance on structures provided by conventional agencies as they do on elements they create themselves. Further analysis in cognitive mapping indicated a spatial or sequential adaptation to the city, evidencing a maturity and a grasp of the intricacies offered by the urban environment.

1. INTRODUCTION

Play is one of the most powerful and fascinating themes within the province of human development. Whether seen as an end in itself, or as the release of surplus energy, play has recently become a focal point of investigation for social and behavioral scientists, although even the Greek philosophers engaged in speculation on the topic.

Plato felt that play must be voluntary and that regimentation of any form was counter to its nature. Aristotle, on the other hand, stressed that play must be moderated and tempered to fit the needs of the individual. Jean Piaget (1962), the noted Swiss developmental psychologist, assumes that play, as the main basis of civilization, is unique in that it is a pure activity and remarkably alike for all people. Huizinga (1967) also comments extensively on the importance of play as a distinct and integral factor in the cultural life of society. He observes that civilization arises and develops as play progresses. His theoretical orientation is reminiscent of G. Stanley Hall's (1916) notion that an organism "recapitulates" the history of its development as part of a species.

These classical notions of play are congruent with the beliefs postulated by contemporary developmental psychologists who stress the importance of personal experience and adaptive processes in human growth.

1.1. Review of the Literature

Ellis (1973) presents the most comprehensive summary of approaches to date, dividing theories of play into three sets: classical, modern, and recent. The classical theories focus on surplus energy, instinctual needs, preparation for later life, recapitulation, and relaxation to allow for participation. Modern theories seems to focus more on the importance of experience than on any inherited or pre-existing tendencies in the individual. These theories have become popular since the turn of the century. The last set discussed by Ellis consists of recent theories of play, formulated during the last ten years, where theory and methods in other fields have contributed substantially to a better understanding of the topic.

In seeking a broad spectrum of experiences to satisfy developmental needs, such as autonomy and independence, children strive to maximize their interaction with the world outside of their own immediate life space (Erickson, 1972). Almost twenty years ago, R.W. White (1959) offered the thesis that the motivational concept of competance can be introduced to further the process of effective interaction with the environment. Millar (1968) has advanced the hypothesis of the importance of play as a catalyst which forces the child to interact with various environmental components. While the direct purpose of play may not be identifiable in these views, there is nonetheless an insistence of the belief in some intrinsic need to deal with the environment.

Ellis and others generally believe that play is motivated by a need to raise the level of arousal towards the optimal. The basic theme of this definition provides a foundation upon which the hypothesis of the present study is based. Specifically, that children seek out experiences and environments that maximize their total growth.

1.2. The Problem

The substance or content of play itself has been extensively researched, including the context within which it takes place. A major weakness of many of these studies, however, is the use of methods where the researcher investigates "individual constancies" (under the designated conditions) but disregards "individual variants" (under different conditions). A behavior as complex and significant as play must be studied under a variety of conditions and seen as dependent upon the context within which it occurs. A few descriptive studies do exist for both suburban and inner city contexts (Aiello et al., 1974; Coates and Bussard, 1974; Coates and Sanoff, 1973; Cooper, 1974; Rothenberg et al., 1974), and they provide a useful comparative foundation for the present study.

Although the importance of play as a component of healthy psychological development is undisputed, few studies have addressed the broad issue of how effectively children use and are served by the play environments available to them. This question is necessary if one is concerned with the applicability of research in the area of children's play.

Most social institutions (including cities) attempt to satisfy children's needs by providing a structured pattern of recreational and open spaces such as playgrounds, parks, and school-yards. This traditional pattern, incorporated into many city charters, is based on the early 20th century idea of the "urban neighborhood" (Keller, 1968). It is becoming increasingly clear, however, that this pattern of play and learning spaces for children in urban settings is inadequate and a major factor in the rapid growth of supposedly child-oriented suburbs (Jacobs, 1960).

Recent findings suggest that despite convenient access, good maintenance, and organized recreational "programs," neighborhood parks are grossly underused (Gold, 1972). The problem of the non-use of existing facilities appears to be a symptom of the fact that only recently have children's needs been understood to be an important factor in environmental design (Moore, 1970). The recent growth of research activity in the behavioral sciences related to early childhood development has created a demand for alternative and innovative approaches to the design of play environments (Gramza, 1971).

Although some alternatives to the traditional pattern of play environments have been proposed (Dattner, 1969; Cooper, 1970; Carr and Lynch, 1968; Friedberg and Berkeley, 1970), it is still quite clear, however, that little systematic knowledge has been accumulated regarding the way urban environments actually function in relation to children's play behavior (Derman, 1974). Not only must the content of play be described, but the context as well, including the children's own representational schemes of "their" environment. Similarly, the child's desires and conceptions of play spaces must be more clearly understood before application of research can be achieved. The present study, for example, suggests that some of the critical assumptions about the utility of the traditional pattern of play spaces need re-evaluation when examined in terms of childhood play behaviors.

1.3. Objectives

The primary objective of this study was to determine the locations, extent of use, and activity patterns of "provided" play areas (municipal properties, playgrounds, parks, open spaces, etc.) utilized by urban elementary school children, and compare these findings to the observed or actual locations used by the children. The four sub-objectives included (a) to determine the normative type play behaviors surrounding a selected urban elementary school; (b) to compare the location of play activities to the location of provided facilities in the target neighborhood; (c) to examine the relationship between the structure of play and the structure of the environment in which the play activities take place; and (c) to describe spatially the hidden structure of play from both the child's frame of reference as well as that of the planner or designer.

1.4. Description of the Site

The area selected for study was a residential neighborhood adjacent to the central business district of Kansas City, Missouri. The inner city population of this neighborhood of about 7,500 persons is predominantly low-income and racially mixed (white, black, and Mexican-American). The neighborhood itself is well-defined by railroad tracks and freeways and conforms nicely to Keller's (1968) model of "urban neighborhood."

The housing is a mixture of single-family bungalow, multi-family walkup, and public project-type units. The overall density is relatively low, with an abundance of small parks and vacant lots, typical of midwestern cities. Recreational facilities for the approximately 1,000 elementary school age children consist of a school playground, four public parks, a landscaped park area along the principal through street, two tot-lots, and a vest-pocket park. The elementary and junior high school are central.

1.5. Survey Sample

The sample population consisted of 45 elementary school children between 9 and 11 years old. This range was chosen because of research findings which indicate that the greatest amount of out-of-house play of any group of children is characteristic of this age group (Smart and Smart, 1972). The racial mix was representative of the neighborhood as a whole (33% black, 36% white, and 31% Mexican-American).

2. INSTRUMENT DEVELOPMENT AND ADMINISTRATION

A series of interviews, inventories, and diaries were employed to determine the locations, extent of use, and activity patterns of play areas utilized by the children. In addition, "cognitive maps" were drawn by each child.

2.1. Pre-mapping Interviews

Each child was taken from the classroom to a small interview room provided by the school. The child was introduced to the research team and asked questions about neighborhood play (e.g. favorite games, favorite places, etc.) These interviews were taped and transcribed for later analysis.

2.2. Cognitive Mapping

Following the interview, each child was asked to draw maps of their neighborhood environment. (Earlier exercises in mapping were conducted with the cooperation of the art teacher.) The utility of user-drawn maps in eliciting information about the environment was first demonstrated by Lynch

(1960) in his study of urban imagery in three American cities. In the past decade, "cognitive mapping" has emerged as a powerful research tool in environmental design (Honikman, 1974; Lee, 1975) and has been useful in descriptive studies of children's environments (Blaut and McCleary, 1970).

The essence of the Lynch model is that people form images of their environment in terms of five basic elements: nodes, or high concentrations of activity; districts, or large areas identified by some thematic concentration, such as ·land-use; paths, or connections between high-use places; edges, or boundaries between elements; and landmarks, or points of orientation and identity in the overall pattern. Lynch found that people in diverse urban environments tend to structure their images of these environments in terms of these basic elements and that they learn to do this in childhood (Lynch and Lukashok, 1956).

Analysis of maps in this study revealed that children in this age group (9-11 years) cognitively structure their environment in terms of nodes, landmarks, and paths and that districts and edges receive marginal (if any) articulation. Their maps

correspond to what in human geography is called the "home range" (Anderson and Tindall, 1972; Andrews, 1973). In the case of children, the home range is the series of territorial linkages and settings voluntarily traversed by the child, alone or in groups. Collectively, the home range of a representative sample of children in a community is a reliable indication of the structure of their environment. In addition to the home itself, it is the world in which they spend most of their time.

During the mapping sessions each child was asked to show how he or she went from school to home and then from home to play, identifying distinctive elements, favorite places, etc. Each session was taped and the transcribed summaries were used together with the maps and verbal interviews for detailed analysis.

A composite map was drawn from the calculation of path lengths, path frequencies, the collective list of principal elements (with a 10% cutoff), and an intuitive impression of the child's world which comes from studying their maps, field observation, and familiarity with the Lynch model (see FIGURE 1). This map represents a collective image of the child's environment with particular

KEY

● Child's Home
■ Node
□ Open Space
○ Landmark
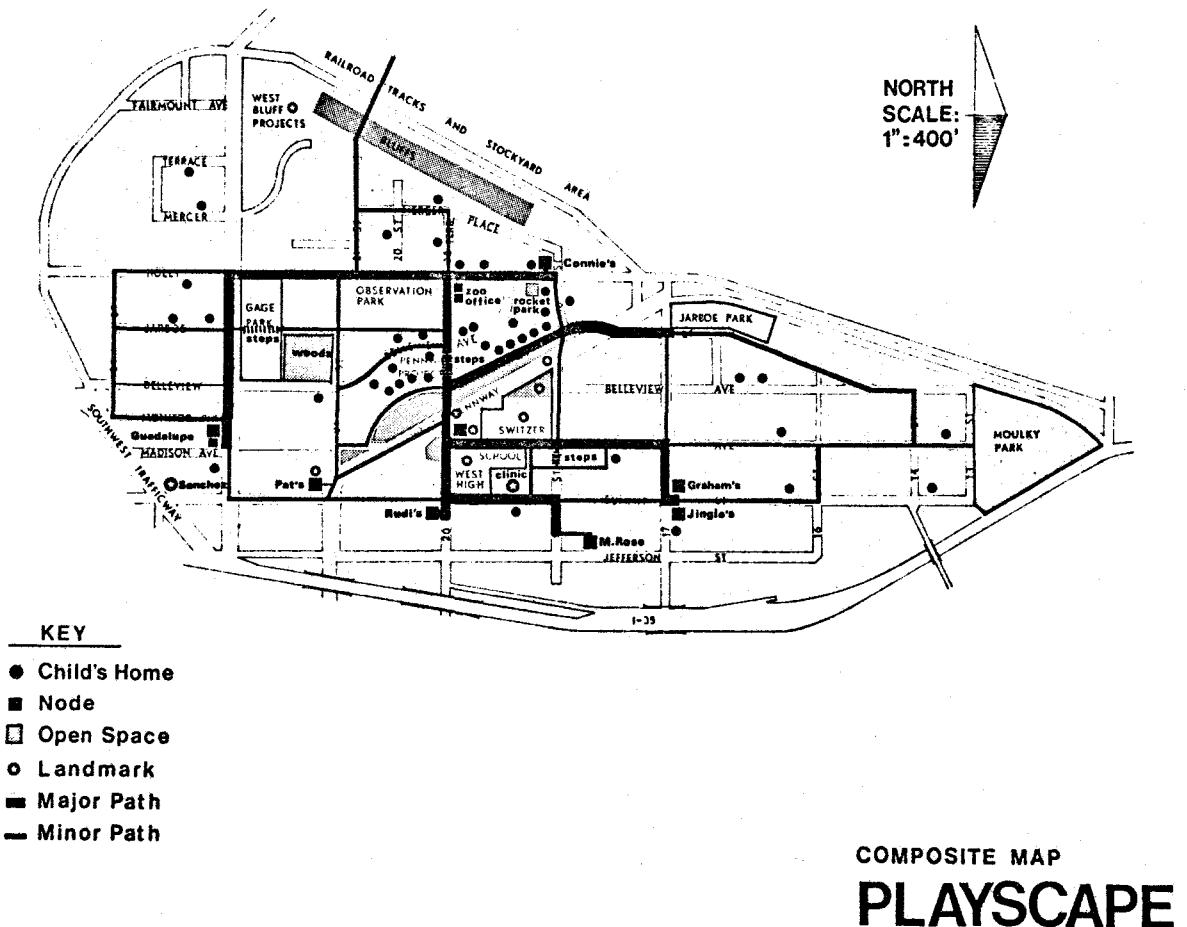▬ Major Path
▬ Minor Path

COMPOSITE MAP
PLAYSCAPE

FIGURE 1

emphasis on play spaces for 9-11 year olds. It gives a fairly accurate picture of the important features of the environment from the child's point of view and indicates the hidden structure of play within a detailed part of the city. These principal elements were later analyzed as "play settings" in terms of activity and environment "type" from the transcriptions of the diaries and from detailed field observations.

The individual maps were analyzed by structural type according to Appleyard's (1970) classification scheme. He found that respondent's maps fell into two broad structural categories: sequentially dominant (emphasizing paths and landmarks) or spatially dominant (emphasizing districts and nodes). Each category of map type in Appleyard's study consisted of four subtypes representing a gradation of increasing complexity and sophistication. (Examples of both categories of maps are illustrated in FIGURES 2 and 3, which are reductions of actual maps drawn by children.
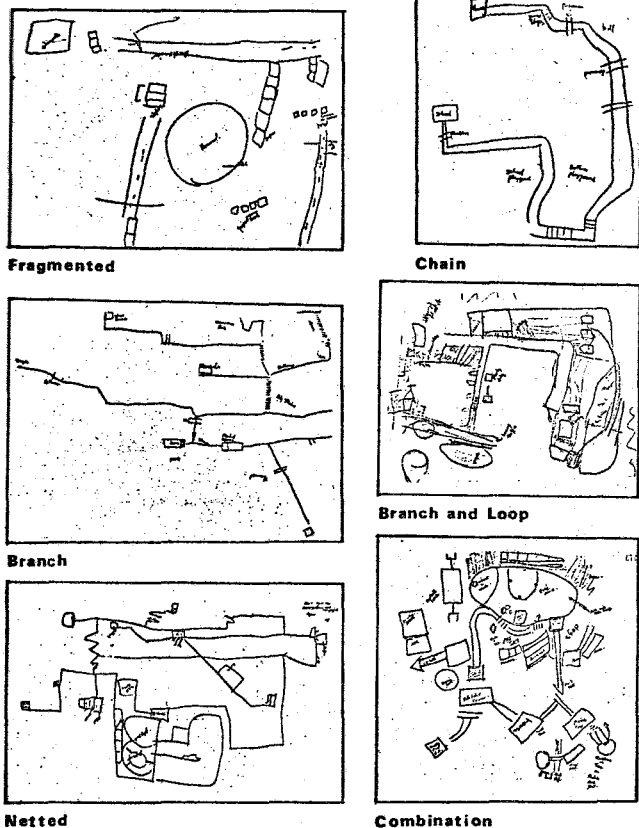
SEQUENTIAL MAP TYPES

Fragmented

Chain

Branch

Branch and Loop

Netted

Combination

FIGURE 2

2.3. Inventories

A set of inventories was developed and each child was asked to complete a "Where Do I Play?" and a "When Do I Play?" itemized description of his or

SPATIAL MAP TYPES

Scattered

Mosaic I

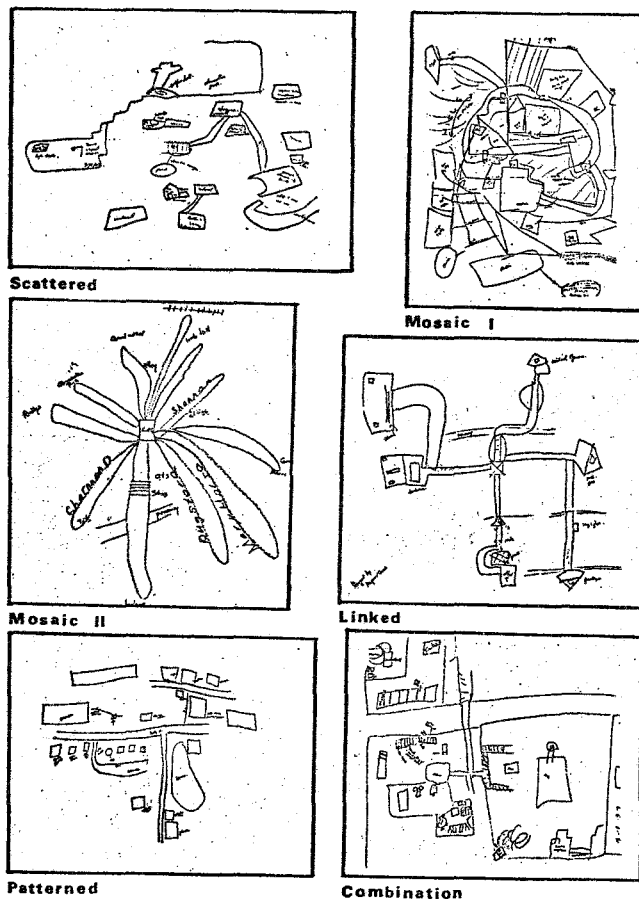Mosaic II

Linked

Patterned

Combination

FIGURE 3

her activities. A total of 118 "games" or activities were elicited from neighborhood children during off-school hours. Later, each child was given the "Where Do I Play?" and the "When Do I Play?" inventory to complete during free time at school or at home, with the help of older siblings or parents. The categories for "When?" and "Where?" were generated by the research staff based on the interviews and subsequent field observations.

2.4. Diaries

One group of 25 children was asked to keep diaries (called "daily journals") of their activities on the way to school, after school, and after dinner. For each of these time periods they kept track of the following information: What did I do? Where did I go? and How long did I do it? The diaries were used to supplement the inventories described above and were the primary source of information (in addition to field observation) used to develop the classification scheme described below.

3. ACTIVITY/ENVIRONMENT INTERACTIONS

A classification scheme was developed to integrate the nature of the activity with the environment in

which these behaviors occurred:

ACTIVITY

	structured	unstructured
structured	I	II
unstructured	III	IV

ENVIRONMENT

3.1. Structured Activity/Structured Environment (SA/SE)

The type of activity/environment interactions that are classified in Cell I are scheduled events which take place at some fixed or constant time of the day (on a daily or weekly basis), and occur in an easily identifiable setting. Examples of such activities might be church-going (on Sunday at Guadalupe Church, for example) or watching a specific television program. The activities are both time and space bound, and included any activity sponsored and supervised by outside agencies such as Boys Clubs, etc.

3.2. Unstructured Activity/Structured Environment (UA/SE)

The type of activity/environment interactions that are classified in Cell II are spontaneous behaviors (non-regulated by time and space) taking place in a setting which does not dictate what activity should take place, but is essential for the activity to occur. Such activities are not commonly observable events, since (1) they are "hidden" due to their unpredictable spontaneity, and (2) they are "hidden" since such behaviors are more frequently than not unrecognizable as play to the outsider. Examples of such activities might be fence climbing, bicycle "cruisin" and garage roof jumping. These environments make these activities produce an "intent" or direction of use, but not a use of the environment solely for the intended purpose that the environment was created.

3.3. Structured Activity/Unstructured Environment (SA/UE)

The type of activity/environment interactions that are classified in Cell III are "preplanned"

or structured (rule governed) activities that take place in an environment not necessarily designed for the intended use for which it is being utilized. Such an unstructured environment is not a "static" entity, but one that is as flexible as the demands placed on it. Examples of such activities might be playing football in the street, basketball using a hoop nailed to a utility pole, or a variety of "ball games" such as "Russia," or stickball requiring a minimally structured play space. To an outside observer, such activities are easily recognizable, but the environment might be less influential in determining the behavior of the child than entries in Cell I. An unstructured environment, then, is one that does not dictate what activity is to take place within that environment.

3.4. Unstructured Activity/Unstructured Environment (UA/UE)

The type of activity/environment interactions that are classified in Cell IV are behaviors which have a designated format (such as running) but yet are spontaneous in nature, and are not location-bound. Examples of such activities might be aggressive behaviors (such as fighting), chasing dogs, snowball fights, etc. Like those activities classified in Cell III, it is difficult to observe spontaneous behaviors through any systematic procedure.

An important component to the understanding of any activity and its interrelationship with the environment is the joint effects of structuredness and unstructuredness. That is, an activity classified as "structured" taking place in an unstructured setting is viewed differently than if it were taking place in a structured setting. All activities, then, just as all environments, cannot be evaluated independently of their counterpart dimension. Those structured activities taking place in a structured environment are most akin to those activities referred to as "supervised play." On the other extreme, those activities that are relatively unstructured in format, content, and setting, are most recognizable as "pure play" as it might traditionally be known. This type of play is one that seeks an end in itself.

4. RESULTS AND DISCUSSION

The percentage of children who mentioned the listed activities as either a node, landmark, or path was computed. It is interesting to observe that for both landmarks and nodes a large number of frequently mentioned elements are commercial in supposed (or designed) function (e.g. Jingle's Market, Connie's Store, Rudi's and Graham's Drugstore). Other elements occupying the upper ranks are parks (Observation Park, Gage Park, Jarboe Park) and the housing "projects." These findings support the notion that these children see as important those elements which vary along a variety of dimensions such as function and location.

Interestingly, the average percentage across all elements mentioned as landmarks or nodes is higher for non-provided than for provided facilities. For example, provided elements were mentioned as landmarks, on the average, by 14% of the children while landmarks that are not provided facilities were mentioned, on the average, by 21% of the children, a significant increase of almost 50 percent.

A summary of classification of maps (according to Appleyard) broken down by sex, race, and zone of residence for maps drawn describing school-to-home activities is presented in Table 1(a). The larger percentage of maps drawn (58%) were spatial in format, while the remaining 42% were sequential. Interestingly, when the total frequency for home-to-play maps classified by map type is examined, 43% of the children's maps were classified as the more sophisticated of the spatial type, the opposite of the results reported in Table 1. According to these results, it appears that while school-to-home maps are primarily sequential, home-to-play maps are primarily spatial. Furthermore, for both school-to-home, and home-to-play maps, sequential and spatial maps respectively appear to be distributed in a non-random fashion (indicating more sophisticated spatial maps being drawn for home-to-play and less sophisticated sequential maps being drawn for school-to-home).

of the growing autonomy and self-development discussed earlier.

Each of the four types of activity/environment interaction are illustrated by map type in Table 2. One of the primary uses of the diaries and interviews was to determine the character of the activity/environment interaction. As might be expected, the largest number of entries were S/S across both categories of maps, and the smallest were U/S. It appears then that the determining factor in most instances is whether or not the activity was structured or unstructured, not the environment. The high incidence of activities in the S/S cell across both sequential and spatial map types is due to a disproportionate number of activities like television watching and other indoor play.

Total Frequency of Diary Entries by Map Type and Activity/Environment Interaction

| | MAP TYPE | | |
	Sequential	Spatial	Total
S/S	181	135	316
U/S	19	3	22
S/U	54	36	90
U/U	41	25	65
Total	295	199	494

TABLE 2

CLASSIFICATION OF MAPS BY SEX, RACE, AND ZONE OF RESIDENCE

(a) School-to-Home (b) Home-to-Play

| | SEQUENTIAL | | | | | | | | SPATIAL | | | | | | | | | |
	Fragmented (a) (b)		Chained (a) (b)		Branched (a) (b)		Netted (a) (b)		Scattered (a) (b)		Mosaic (a) (b)		Linked (a) (b)		Patterned (a) (b)		Total (a) (b)	
Male	3	2	7	2	2	3	1	2	1	2	1	1	4	6	1	2	20	20
Female	8	3	4	2	1	3	2	2	3	2	3	3	3	7	1	3	25	25
Mexican	0	2	4	1	1	1	2	2	3	1	1	1	5	7	0	1	16	16
Black	6	1	3	2	1	1	0	1	1	1	1	2	0	2	2	4	14	14
White	5	2	4	1	1	4	1	1	0	2	2	1	2	4	0	0	15	15
Zone 1	0	1	2	1	1	1	1	1	1	0	0	0	2	4	0	0	7	8
Zone 2	7	3	8	2	1	4	1	1	2	3	2	2	5	8	2	5	28	28
Zone 3	4	1	1	1	1	1	1	2	1	1	2	2	0	1	0	0	10	9
Total	11	5	11	4	3	6	3	4	4	4	4	4	7	13	2	5	45	45

TABLE 1

If one examines the characteristics of a spatial or sequential type map this result is not surprising and does support a theoretical orientation regarding child/environment interaction. Quite simply, the school-to-home map reflects a path taken by the child to reach a direct goal, while the home-to-play map reflects an increasingly large set of choices for the child and in many ways is an indication of his successful adaptation to the environment. It is not coincidental that those maps best describing play behavior were spatial in format, more sophisticated, and consequently characteristic

5. SUMMARY AND CONCLUSIONS

At the same time that the fabric of cities is continuously built and rebuilt in a kind of "disjointed incrementalism" through urban planning and design, our knowledge of its underlying structure and form has changed significantly. The earliest conceptual models of the city were devised from reading the plans of historical settlements. Since then, demography, social structure, activity patterns, communication flows, and cognition have succeeded in articulating a finer and finer grain while making the totality

more elusive than ever. The attempt to describe urban spatial structure in terms of human behavior and development is an excellent example of this duality.

Nonetheless, a single theme persists--a progressive internalization of the concept of the environment--a persistence which appears to result in a new attitude toward cities and toward their planning and design.

This internalization may be characterized by an increasing tendency to conceptualize the environment experientially and by a decreasing tendency to conceptualize it objectively, as external phenomena, in Cartesian terms. By seeing the environment as an extension of self, and collectively, as an extension of society, we inevitably form new and different criteria for its care and maintenance.

This study has examined the city as a supportive environment (and in particular, supportive of the satisfaction of developmental needs in elementary school children). We have asked how well the city performs this role by looking at how children interact with their everyday urban environment and assessing the extent to which the environment encourages adaptive behavior.

The four sub-objectives presented earlier in the introduction of this report outlined a systematic attempt to determine how the child who lives in an urban environment conceptualizes and uses the elements in that environment.

It is naive to conclude that, based on the findings reported herein, children who reside in urban settings do not use the facilities provided for them in their daily activity/ environment interaction. It is also naive, however, to conclude that these same children do not create their own "hidden structure" of play (both as individuals as well as in groups) in an effort to master their environment. The results reported have shown that children do not place as much importance on structures provided by conventional agencies as they place on elements they create themselves. Cognitive maps indicating a spatial and sequential adaption to the city (depending upon the content of the map) also evidence a maturity and a surprising grasp of the intricacies that an urban setting offers. In fact, the maps drawn by the children are not unlike those drawn by adults and reported in the literature.

Although a "hidden structure" does exist, some interesting and profound questions remain unanswered. For example, what implications do these findings have for the planner/architect in terms of creating an interesting and facilitative environment for the young child? Can this hidden structure be artificially created by setting the stage--by making old tenements and alleys "safe," by expanding the area around corner drugstores and candy stores, or by

purposefully creating such structures to enhance interaction with the environment? How do children outside of urban centers conceptualize their surroundings, and what elements (paths, landmarks, etc.) do they use to create a potentially masterful setting?

Much of the research in the behavioral sciences, particularly developmental psychology, has elaborated the concept that children maximize their growth when presented stimuli somewhat discrepant from already existing schema. The lack of familiarity that the inner-city child has with the suburban environment is clearly expressed by the child's withdrawal and effort to find something to establish a tie to "old things" in that alien setting. The child who is placed or places him or herself in a similar, yet different setting (discrepant but not novel) adapts, thrives, and grows if the setting demands it.

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