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AN EXPERIMENT IN PLAYGROUND DESIGN

by

Robin C. Moore

Dipl. Arch. University College, London

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Submitted in Partial Fulfillment

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Submitted to the Department of City and Regional Planning on October 28, 1966 in partial fulfillment of the requirement for the degree of Master of City Planning.

The subject is an experimental playground built and studied during a seven month period (April - October 1966) in Lower Roxbury, Boston.

The overall objective of the study was to produce a transferable design framework of use to playground designers in the future.

The approach taken towards play was a serious one - it was assumed to have important potential influence on individual development.

The experiment per se and the creation of a viable playground was part of the same dynamic process ("Participant Design"). the "Initial Design" was continually modified and 'checked' by feedback - from comments of the children and from field observations of their behavior.

The experiment focussed initially on Activity. It was classified under the following categories: Active; Creative; Imaginative; Cognitive and Social. The general parametric influences on activity were identified - age; sex; group-processes; physical environment; season. Important variations in frequency and attention-span were noted.

Informal observation indicated three issues to be analysed in greater detail involving more rigorous measurement:

- Participation in Creative and Imaginative play.
- The Patterns of Activity in Time and Space (PATS).
- Perceptions of the playground.

(The last named involved a very simple questionnaire; some children also made drawings of their playground.)

Finally, the environmental qualities stimulating, hindering, or providing for different activities (the facilitating environment) were examined for each activity type. A synthesis of required qualities was attempted; here an indication is given as to which activities are hardest to provide for. And from the other side of the picture - the qualities stimulating the most activities are also identified (the multi-functional view point). From this analysis an "idealized" playground form was developed.

In conclusion, a number of recommendations and guidelines relevant to design policy are made:

- Playground environments should be in part complex, and highly sensuous, often continuous, manipulable and open-ended, providing for many choices simultaneously.
- A wide range of physical challenge should be provided.
- Play environments must be extremely robust.
- Provisions for Creative and Imaginative play are as important as those for other activities.
- Areas for creative play and areas for the youngest children should be physically separate from the remaining environment.
- Facilities in any given playground should cater to all age groups and to more formal activity.
- Good maintenance is absolutely essential for viable play environments.
- Supervision, though not so critical, can extend the range and depth of potential activity a great deal.
- An argument is made for the provision of fine-grain, highly accessible play-spaces.
- The study indicates that "standards" for playgrounds should be proposed in terms of quality and grain as well as gross space requirements.
- Finally, it is made clear that good quality, adequately maintained and supervised play areas will require far greater capital and annual appropriations than are made at present in Boston.

Thesis Supervisor: Kevin Lynch
Title: Professor of City and Regional Planning

Dedicated to my wife, Therese, whose patient support and understanding made all the difference. And to the children of Lenox and Camden Streets whose love of play was the major inspiration.

ACKNOWLEDGEMENTS

About three hundred individual people laboured on the playground at one time or another. They came from many organizations -- suburban and central city, religious and secular, paid and unpaid. To these groups, too numerous to mention, grateful thanks are due from myself and on behalf of the community.

The following firms donated materials to the playground: Grossman Surplus Co., Braintree, J. Sullivan, Sons, Inc., Cambridge; M. Susi and Sons, Inc., Dorchester; A. A. Will Corp., Milton; John Berardi Co., Allston; Maher and Fall Wrecking Co., Dorchester.

Gordon Gottsche, Director, Housing and Improvements at South End, BRA, was responsible for organizing most of the volunteer labour, which he did very effectively. The back-up support maintained by him and by John, Dick and William McHugh of the BRA throughout the project was a major reason for its completion.

Thanks are also due to Bob Tracy, Special Assistant at ABCD for channelling funds to the project in an hour of need.

Particular mention must be made of the interest, support and cooperation shown by members of The South End Neighborhood Action Program (SNAP), especially Charles Turner and George Wright.

An essential contribution to the project was the obvious interest and support of many mothers in the Lenox-Camden community. They were not afraid to say what they thought, be it approving or otherwise. Their enthusiasm was often the only prop to morale.

Thanks are also due to Bob Gelardin, Bill Porter, Mayer Spivak, Eric Svenson and Joyce Haney, students and recent graduates

of M.I.T., and to Allan Leitman of Educational Services, Inc. Their valuable criticisms were gratefully received.

Kathy Baird very kindly ploughed through the draft script and came up with many valuable editorial comments.

My final thanks are due to the City Planning Faculty at M.I.T. To the patient understanding and support afforded by Professor Howard, without which the project could not have been carried through. To Donald Appleyard, under whose guidance many of the specific ideas behind the playground were born. To Steve Carr whose fresh approach to design problems has clearly influenced my own experimental, participant approach.

Above all, Kevin Lynch, whose teachings and ideas have been a constant source of guidance and inspiration. His influence must be apparent to anyone who is conversant with his work. His ideas pervade the thesis in a way impossible to credit individually. Criticisms levelled during the development of the study were always valuable, constructive and to the point.

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INTRODUCTION

Area of Interest, Justifications, Objectives and Assumptions

There can be little disagreement that, as measured by almost any criteria, the quality of playgrounds in most urban areas of America is poor. They provide for a very narrow range of activity and they are unattractive, dangerous and uninteresting. Indeed, the children for whom they are supposedly built often find the city streets a more exciting place to be, where other dangers are also in store.

In many cities, playgrounds are a low ranking item for resource allocation, and when built, are designed to meet only two objectives - easy installation at a low cost and negligible maintenance.

One problem in trying to change this state of affairs politically is that the general public has little idea of what alternatives there might be. One purpose of this project was to build a functioning alternative, to produce a demonstration model for all to see and experience in reality.

A critical underlying assumption justifying this study is that play activity takes a critical role in the individual development of the child. Not only physical development, but also many other aspects of personality, and perceptual and cognitive capabilities. It is suggested that through the provision of stimulating play environments that these developmental functions can be greatly facilitated. Playgrounds would then become an important part of a child's life, exerting a considerable influence on his character as an individual and as a productive member of society.

The serious concern for play does not go wholly unjustified. Although it was beyond the scope of this study to survey the literature on child development, a recently published paper (1) puts the case very succinctly. It does not cover all aspects of play by any means. However, it does deal with the role of creative and imaginative (fantasy) play - the two activities given particular weight in this study.

In his paper Dr. Schrut describes a number of case studies of children and adults with different psychiatric and emotional disorders. The common bond between the patients was some kind of deficiency in their play experience. Schrut is able to trace the often disastrous effects of these deprivations on his patients' mental health. The paper includes a very clear statement about some important functions of play.

Schrut points out that play is a means of experiencing not only the pleasure of mastery over the environment in free playful experimentation, but also mastery over internal conflicts. The creative aspects of play receive particular emphasis and are asserted as "being the necessary forerunner of successful living."

> "Play has a potentially limitless range of possible experiences from which the child may unconsciously 'choose' his environmental needs by helping to formulate the required environment through the process of imaginative, creative play." (P. 14)

The major concern is with the communication function of fantasy (imaginative) play and social processes in general.

> "In fantasy play the unconscious of the young child meets the unconscious of other young children in a meaningful way, for which there is no substitute,

> to reflect, and to weigh and measure reality, conflict, pleasure, and unpleasure in varying degrees of intensity. . . . Thus fantasy play permits the testing /my emphasis/ of life and many of its aspects with subsequent experiential background for reality choice in the adult." (Pp. 3 and 4)

In experimental terms a major concern was with the internal workings of the playground. The aim was to create a 'free,' varied, choiceful play environment, where a number of specific issues relating to the design of playgrounds in general could be examined. Fairly early in the experiment these were identified as the following:

1. The Relative Participation in Different Kinds of Activity: Comparative participation in creative and imaginative activity was seen as the major issue because of its general implications for design policy. Creative and imaginative play are assumed to be the most valuable activities that children engage in yet they are the activities least provided for in existing playgrounds. In relation to this issue, a specific hypothesis was tested.

2. The Most Important Environmental Qualities Necessary to Stimulate Different Types of Activity (the Facilitating Environment): Here the study had to be more exploratory. Although a number of qualities were seen as critical at the outset, it was only ex post facto that a more integrated picture of environmental requirements could be formed.

3. The Pattern of Activity in Time and Space (PATS):

This was by far the most difficult issue to grapple with.

The patterns were extremely complex and hard to observe. However, a number of common patterns were observed -- suggesting some tentative requirements the form of playgrounds should meet.

From the answers to these three issues it was hoped to build up a transferable design framework usable in the future by others in the playground business. Many questions remained very tentatively answered - or unanswered, suggesting areas where study might be extended, where the framework might be added to.

A number of side issues were also raised, such as "identity," the non-play functions of the playground, practical questions of maintenance, supervision, etc. These will be identified and discussed as we proceed.

Methodology and Design Process

Constant, direct observation was the major source of information. Conversations with the kids were also an important source of insight and guidance. A detailed log-book of observations and comments was kept throughout the experiment.

The process of creating the finished playground was a distinctive procedure - termed Participant Design* (See Appendix C.). Starting with only a few ideas and an extremely flexible design, many on-site experiments and observations were made. The resulting feed-back information was then used to advance construction. This

*The process whereby the designer works in extremely close contact with his "clients" in an experimental situation, continually modifying his ideas and designs to conform to the behavior and attitudes of the "clients."

was an extremely time-consuming and laborious operation. But as a way of creating and learning about an effective playground, the method is unsurpassed.

At one point some of the children were asked to draw 'maps' of the playground. They turned out to be instructive (see Chapter III - Perceptions). At the same time three questions were asked: - What part of the playground do you like most?

- Where do you like to play most of all?
- Where do you spend more time than anywhere else?

A basic assumption of this observational approach was that what children actually did on the playground was an expression of their true needs.

This brings up a particular value stand taken by the author - the question of "freedom." The personal attitude taken was that a playground should be a place for free expression, where activities that were illegitimate elsewhere could be indulged in. Playing with fire and mucking in water were good examples. This attitude was made quite clear to the kids. Only a few very specific things were strongly frowned upon: throwing rocks (very dangerous), breaking bottles (also dangerous), dropping litter (doesn't achieve anything and in the end someone has to pick it up). Destructive attacks on the fixed environment were also not tolerated.*

This may have been over-liberal. It has been argued that many poverty children are neglected, and what is worse receive

*And no one was allowed to remove moveable items from the playground. Other destructive activities, minor squabbles, activities involving personal danger, etc. were overlooked completely.

completely unpredictable responses from their parents. As a result the children are extremely insecure, and lack any feeling for what is legitimate and what is not. Therefore, what they need is very careful guidance and control - a very consistent idea of where 'the line' has to be drawn.

This issue is clearly relevant to the role of supervision on playgrounds. Should supervision be primarily a means of extending opportunities for free-expression (often clearly beneficial to artist or child). Or should freedom be more carefully controlled, the supervisor taking on responsibilities that might otherwise be handled by parent or teacher?

Precedent and Literature

To the author's knowledge this is the first time such an experiment has been carried through to conclusion. Although direct observation of the influence of physical surroundings on behavior, per se, is not new.

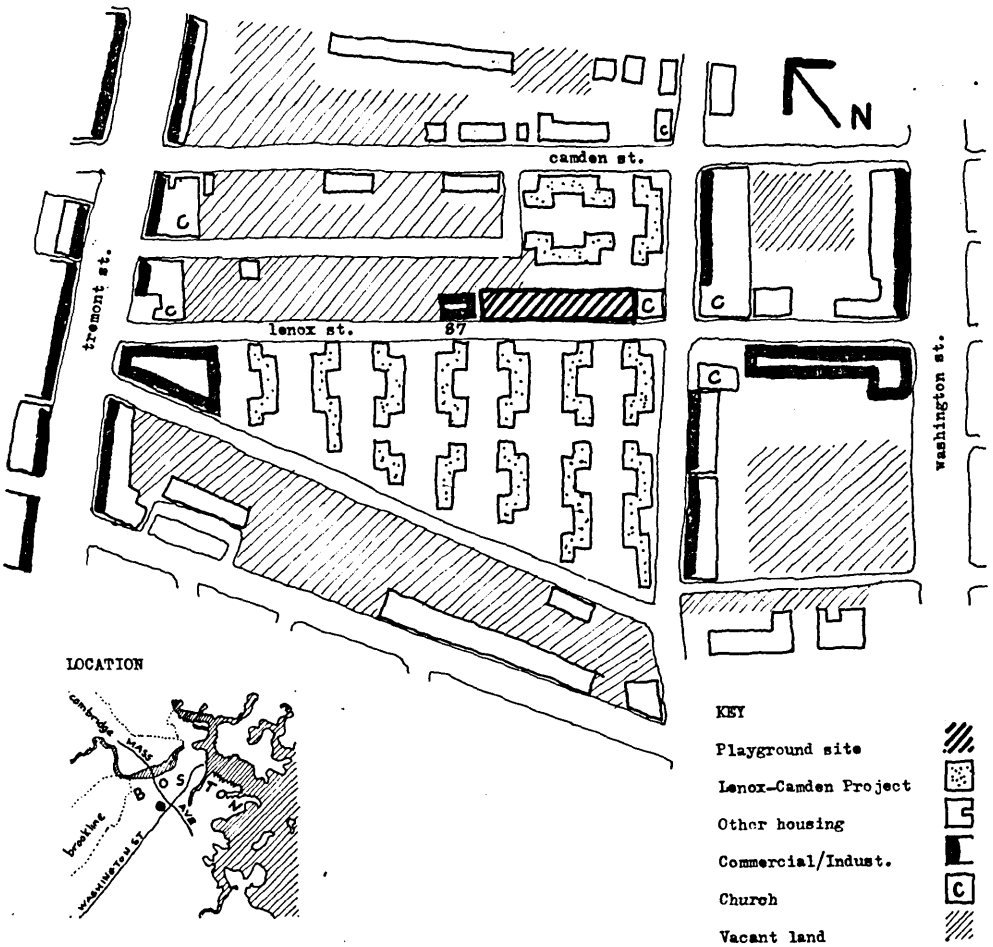
There are examples of more imaginative playgrounds, most of them in Europe - the "Junk Playgrounds" of Copenhagan, the "Adventure Playgrounds" in London. Carl Linn's work in Philadelphia.

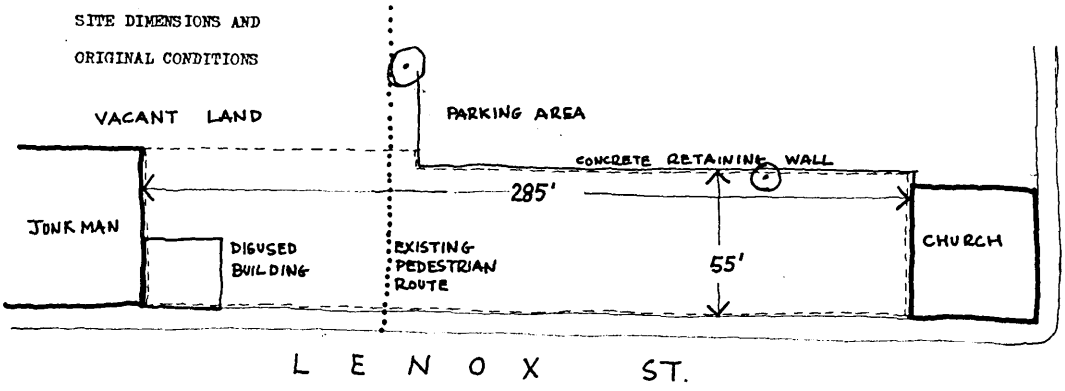
Descriptions of these and others have been published (2 - 8). The literature is generally stimulating, and includes many examples of imaginative things that can be done inexpensively. However, most good examples are only parts of playgrounds - single elements that were clearly successful and relevant. But one gains little idea of how successful many of the playgrounds were as complete units.*

*There is little attempt to develop design objectives and criteria.

Figure 1

The Site: Location, Surroundings, and Original Conditions





The main drawback of the literature is its lack of general conceptual framework, against which different designs could be compared and evaluated; or which would guide the development of new designs. It is stimulating, but in the end does not do much for the advancement of knowledge.

Literature on child development may prove to be helpful in providing a clearer idea of children's needs and their relative importance.

The idea of the experiment and many of its aspects grew out of a design workshop held in the City Planning Department, M.I.T. in the Fall of 1962 (9).

Social and Physical Setting (Figure 1) of the Experiment

The Lenox-Camden playground is situated at 89 Lenox Street, Lower Roxbury, Boston, Massachusetts. The site (285' x 55') is flanked on each side by public housing, accommodating 300 families. The area is a part of Boston that has been neglected and in decline for a long time, although large scale changes through Urban Renewal are on the horizon. Much land surrounding the playground is vacant -- the sites of demolished houses.

The housing project, with which the playground was identified, was entirely Negro, and had a very varied social character. The population of the 'projects' was relatively stable in contrast with the high mobility in the general area. The projects housed a fairly large proportion of elderly people and families of all types. At one extreme were the large, so-called "problem"

families in which the father might be absent, and where the children were likely to be neglected. At the other extreme were "healthy" families (in the broadest sense) who, by contrast, appeared out of place, but for whom the cliche "middle class orientated" was an inadequate description. Parents in these families tended to have a liberal outlook, were very aware of what was going on around them, and were passionately interested in their children's education and in bringing them up "wisely." Hence they were concerned about the effect of the generally unhealthy environment on their children. However, they were clearly not interested in "moving out to the suburbs." Their preference seemed to be for a much higher quality living environment (housing, urban services and general surroundings) whilst remaining in the inner city.

Project Organization, Constraints

The project was initiated by the South End Neighborhood Action Program (SNAP), the local poverty agency. In response to community pressure, they leased the site from the City of Boston in March 1966. In SNAP's eyes the playground was to be a community action project with heavy emphases on local participation. In terms of labour, for a number of reasons this did not work out. However, general support (mainly by mothers) for the project was excellent and remained constant. A group of mothers prepared a mid-day meal for the work-crew each Saturday.

The Boston Redevelopment Authority's (BRA) South End Renewal Office (Housing and Improvement Program) was responsible for organizing much of the volunteer labour (mostly from suburban

church organizations) and soliciting private funds. For a number of weeks in the summer a full-time crew was provided from the BRA South End Summer Work Program (Just-A-Start).

A large number of people helped in the project, in addition to those mentioned, including Peace Corps Trainees, Neighborhood Youth Corps, interested high school students, et al. Unfortunately a stable 'construction crew' never came about, even though at least three hundred different individuals helped in construction at one time or another.

Towards the end of the project some federal funds were provided through Action for Boston Community Development (ABCD), the central poverty agency in Boston.

Lighting, and a drinking fountain were installed by the City of Boston, D. P. W. and Parks Dept.

An Initial Design was presented and well received at a meeting held at the end of March, attended by about ninety members of the Lenox-Camden Tenants Association (mostly women). Construction started on April 2nd, and the playground was almost finished by mid-October.

A number of constraints which operated for most of the construction period should be emphasized. They influenced the design and construction considerably, reducing the scope of the experiment a good deal from what it might have been under more favourable circumstances.

1. The final product had to be a viable, effective playground. This objective was weighed far heavier than the niceties of

scientific rigor. For instance one could not "waste" half the site space and other resources in order to set up clear cut 'control situations.' As it turned out, a great deal could be accomplished without the risk of compromising the design in this way.

2. For most of the duration of the project money was extremely scarce. This meant the design alternatives were very much conditioned by the availability of donated, local or scrap materials. It also meant that the author had to spend much of his time getting hold of the materials.

3. The quality of the voluntary labour and the lack of continuity severely constrained the constructional tasks required by the design, and forced us to make the tasks very simple.

4. Since the site was so near part of the housing area, loud, noise-producing activities had to be kept to a minimum. Such things as giant musical instruments could not be provided.

Costs

Actual cash outlay was approximately as follows:

BRA (Just-A-Start)	$1300	(1 crew for 4 weeks)
ABCD (Materials)	$ 900	
Other, voluntary funds	$ 600	(including basketball court - $200)
Total	$2800	

An estimate of cost for the same design let on a regular contract was put at $15,000. The estimate was given by the director of a local firm specializing in playground construction. He also estimated that a very mundane "standard playground on the same site would run about $7,500, on a contract basis.

CHAPTER I

THE EXPERIMENT

A. Structure and Methodology

B. Stage I

The Initial Design: Objectives and Concepts

C. Stage 2

1. Classification of Activity
2. Activity and Its Parameters

Age, Sex, and Personality

Groups and Social Processes

Frequency and Time-Span

Patterns of Activities in Space and Time (PATS)

Gross Population Patterns

Activity and Environment

Complexity, Multi-function, and Capacity

Manipulability

Scale

3. The Nature of Feed-Back and Physical Development

Test and Modifications to the Initial Design

4. External Identity and the Stimulus Effect:

Internal Identity

5. Reactions Inside and Outside the Community

D. Conclusions

CHAPTER I

THE EXPERIMENT

A. Structure and Methodology

As an experiment and as a problem in design, the creation of the playground can be broken down into three stages:

Stage 1 (March 1966) covered the period of "Initial Design." Undergone before construction work commenced and before contact had been made with the children.

Stage 2 (April - September 1966) saw the completion of nearly all the "play" elements in the design.* This was the period of participant design, experiment, informal general observation, and a test of the Initial Design.

Stage 3, which ran parallel to part of Stage 2, consisted of three different periods of intensive observation - two in August and one in September. There the aim was to examine three specific issues rather carefully:

a) The aggregate, comparative participation in creative and imaginative play.

b) The pattern of activity in space and time.

c) Perceptions of the playground.

The observations in Stages 2 and 3 taken together enabled a number of specific, and other more speculative conclusions to be made, concerning the facilitating environment.

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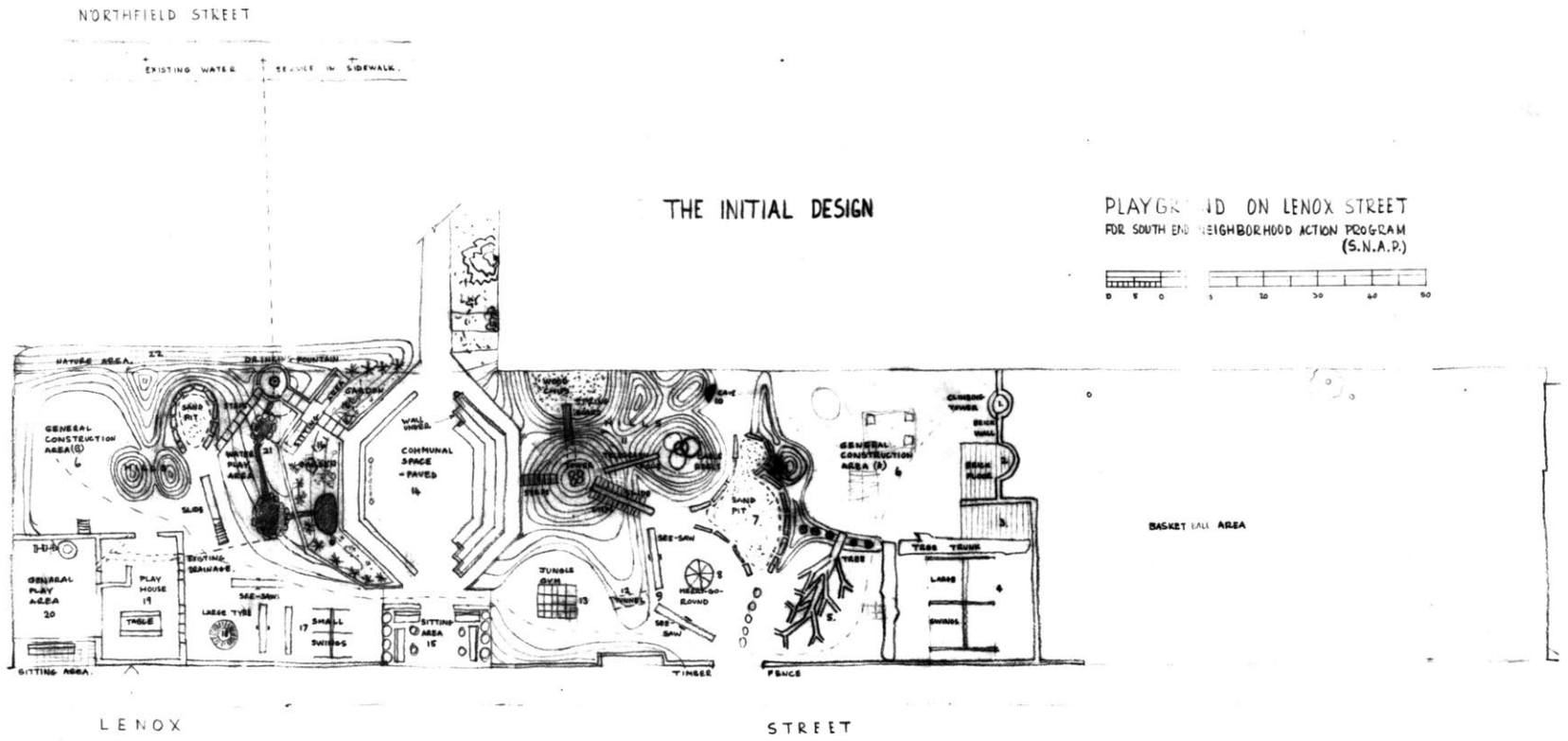
*The project was designed as something more than a 'playground;' some elements were oriented to other age groups and the community in general.

Figure 2


NORTHFIELD STREET
EXISTING WATER
SERVICE IN SIDEWALK
THE INITIAL DESIGN
PLAYGROUND ON LENOX STREET
FOR SOUTH END NEIGHBORHOOD ACTION PROGRAM
(S.N.A.P.)
NATURE AREA
DRINKING FOUNDATION
GENERAL CONSTRUCTION AREA (B)
SAND PIT
WATER PLAY AREA
GARDEN
WALL BENCH
COMMUNAL SPACE - PAVED
SLIDE
EXISTING SEAWALL
GENERAL PLAY AREA
PLAY HOUSE
TABLE
SEE-SAW
LARGE TYRE
SMALL SWINGS
SITTING AREA
SITTING AREA
TIMBER
JUNGLE GYM
TUNNEL
SEE-SAW
MERRY-GO-ROUND
SAND PIT
GENERAL CONSTRUCTION AREA (A)
CLIMBING TIMBER
BENCH WALL
BASKET BALL AREA
TREE TRUNK
TREE
LARGE SWING
FENCE
LENOX
STREET

B. Stage 1: The Initial Design (Figure 2); Objectives and Concepts

Parts of the original design were inspired by examples in the European literature. The ideas developed in the workshop were also influential. Other main sources of advice were people in educational research, and two architects who had worked with Karl Linn in Philadelphia.

Construction work began just before the end of Stage 1, offering a brief, but very necessary opportunity for observing and talking with the kids before making some irrevocable design decisions. Much guidance was gained from the kids, many of whom, at all ages, had quite strong and imaginative ideas of things that should go on in the playground. For example, the suggestion was made by an eleven-year-old that the partly demolished building that was once a launderette, should be turned into a museum to show old washing machines! Many of the 10-12 year old kids were also able to read a plan of the playground. Although they had trouble with scale, some of the older kids were clearly able to imply that the playground was not exciting enough.

The Role-Playing Approach

The main source of guidance was my own role-playing. Many hours were spent trying to re-live my own childhood play, trying to recall the important activities and where they were carried out - paying particular attention to the character of the setting. I remember the urge to construct, change and destroy the environment. I had vivid recollections of 'basic' activities - playing with fire and water, digging holes. Especially, I began to realize the extremely small scale in which children operate and perceive their

own world. This has surely been brought home to anyone who has re-visited a place where they played as a child, to find the huge "jungle" to be a half-acre wood, or the "favorite spot" a few square feet of dirt. But look a little closer and a myriad of important details are recalled.... How the tree was just right for climbing, building, and hiding in. How a dip in the ground was somehow interesting and attractive, protective and comfortable, a place to stick around in. Every minute detail can be recalled, not only physical detail, but vivid sensuous qualities, sounds, smells, dark and light, dampness, tactility.

The main outcome of these role-playing exercises was some feeling for scale, physical detail and the importance of sensory qualities.

Formal Design Objectives

These related to the general goal of aiding individual development; they were treated very generally as follows:

a) To provide an environment that would stimulate, creative and imaginative play, motor action and manual skills, cognitive development and the acquisition of knowledge, sensory stimulation and powers of perception, the social aspects of play - self-knowledge, personality development and social adeptness.

b) Provide a clear identifiable place, a locus for more general community activities.

A set of more specific ideas and concepts was also developed which were mostly concerned with making the design not only a playground but a testable experiment:

1- Communal area.

2- Small-scale area, oriented to the under-fives.
3- Larger-scale area oriented to 5-12 yr.olds.
4- Shared, Water and Natural area.

5- Basket-ball area,- 12yr.olds and over.

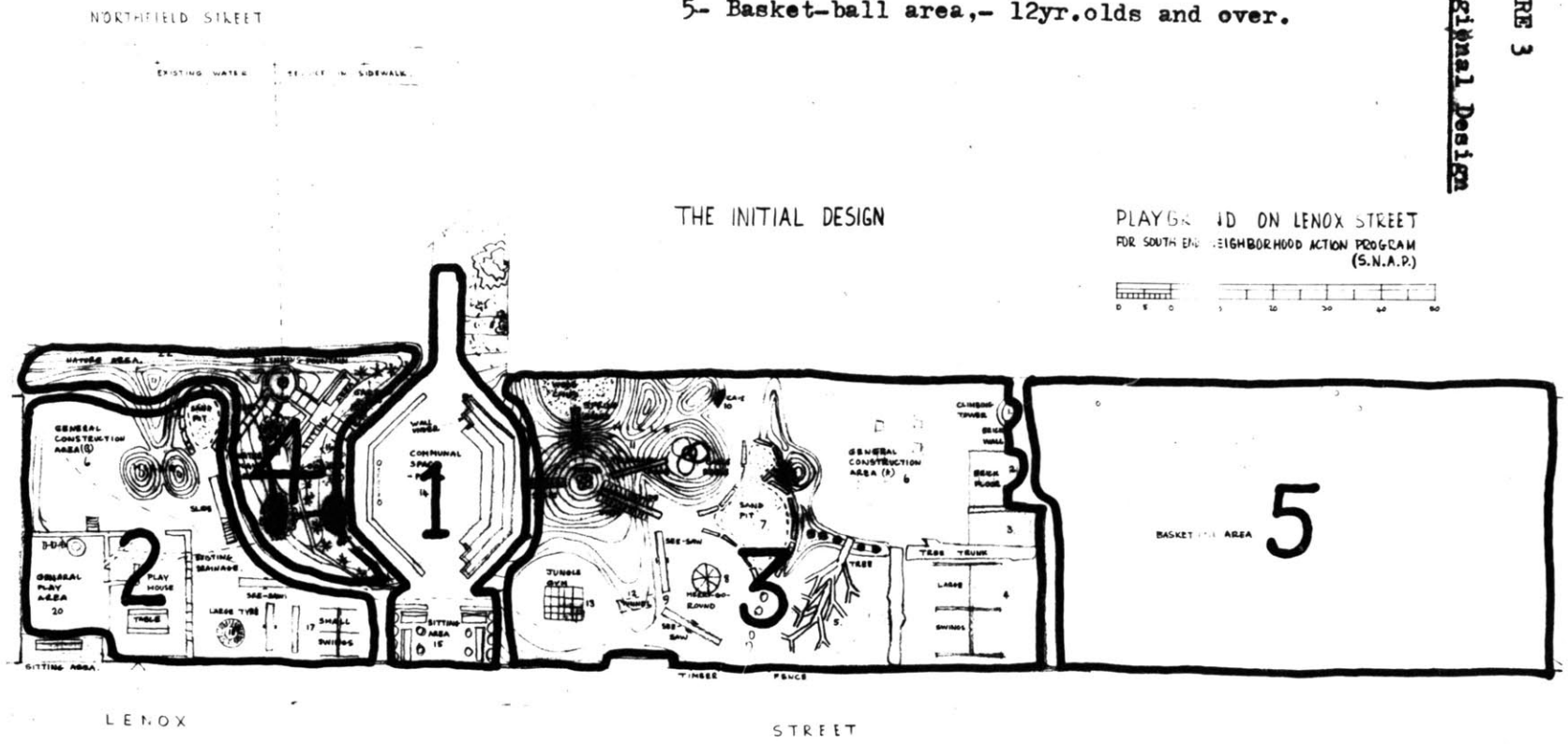


FIGURE 3

Areas in the Original Design

a) Choice was an important provision, especially in terms of environmental variety - complexity, spatial types, physical challenge, moveable materials. The provision of ranges of different qualities solved to some extent the lack of 'control' in the experiment.

Only a fairly rudimentary prediction was possible of the location and relative popularity of different activities. One set of activities was certain - those stimulated by "standard equipment." Therefore one aim of the design was to relate the elements spatially so that at any point "standard" and non-standard environments were equally accessible. This provided the best chance of evaluating sequential patterns of behavior in space and time.

b) Scale was seen as an important quality, initially (and somewhat erroneously) thought to be directly related to age. Three differently scaled areas were provided: 1) the most intimate (for the youngest children) in and around the play-house; 2) a larger scale area between the arena and the basketball court; 3) the court area itself.

The larger scale arena was placed to divide the first two areas.

In all, five general areas were proposed in the Initial Design, including those of different scale (Figure 3).

c) Flexibility: The importance of this quality was paramount. Much of the site was left semi- or un-designated -- defined only by general type of activity and/or quality of environment, thereby allowing for the influence of feed-back, and also

reflecting the uncertain nature of money, labour and materials.

d) Visually inaccessible spaces were originally proposed because of the compact nature of the site. It was thought that if all choices were apparent at once, the child would be presented with a frustrating and confusing situation, likely to reduce attention-spans. Whereas, one aim of the design was to get the children deeply absorbed in what they were doing. In general, Stage 2 indicated this issue was irrelevant, except as a way of reducing disruption to creative activity.

e) Community functions: Comments from the community and intuition indicated the playground should also relate to the community as a whole.

A number of general sitting areas were proposed. The formal space, through which cross-traffic passed, was designed to give some formal identity. It was also hoped to function as a general hanging out spot and as a place to hold formal community functions.

f) Formality: The communal space had a formal character, and this clearly influenced perceptions and behavior. Other elements were also related formally - The Arena, Tower and Sand-pit were on one axis, and the Jumping-Pit, Tower and Giant See-Saws on another. The main idea here was to add to identity by providing a physically structured pattern.

A number of the above objectives and concepts were able to be tested in some way during Stages 2 and 3. However, the relevance of some of the ideas had to remain unanswered.

C. Stage 2

1. Classification of Activity
2. Activity and Its Parameters
3. The Nature of Feed-back and Physical Development, Test and Modification to the Initial Design
4. Identity and the Stimulus Effect
5. Reactions Inside and Outside the Community

The playground gradually took shape, modified in some areas by feed-back, and considerably modified by the constraints listed in the Introduction.

The central theme of this stage was a continuous, close observation of play activity. The overall design goal relates to activity. The practical objective of this study was to define the optimum facilitating environment* for play-activity - or at least to make progress towards that end.

In order to do this, an understanding of the nature of play activity itself is first required. We need to identify which types relate to which areas of individual development, how they are influenced by characteristics of the actors, at what frequency they occur, for how long and in what order, and the influence of time of day, day of week and season. Finally, we have to know what part the physical environment plays in conjunction with these variables. Stages 2 and 3 were aimed at these issues.

*That is, the mix of environmental qualities that would meet all objectives equally well.

1. Classification of Activities

Appendix A gives a (necessarily incomplete) list of activities that occurred on the playground. It clearly indicates the enormous range and diversity we have to contend with, and hence the need for some classification scheme, without which meaningful generalizations would be impossible.

Since the interest in playground design is predicated on the relationship between play activity and individual development, most sensibly, play activity should be sorted into categories related to individual development.

In reality this proved to be a difficult task because many activities related to more than one aspect of objective a) (p. 27). Playing in the sand-pit was at least manipulative and sensory; it also exhibited an important social aspect. Rolling down-hill inside a barrel was both active and sensory, and again quite social (competitive). A constructive activity like 'camp-building' included all aspects - good exercise, manipulative, highly social, involving sensory judgement, and certainly had to solve a few 'problems' on the way.

Sensory stimulation and perceptual experience were clearly present in all these experiences but could not be evaluated easily through external observation. It was also clear that all activity included important social aspects, although they varied in character for different activities. Cognitive aspects also appeared pervasive. However, there were a few activities where this aspect was paramount.

In spite of these difficulties a system was finally developed and found to be "workable."* Five categories were proposed: Active; Creative; Imaginative: Cognitive; and Social.

A. Active refers to activities that develop motor skills, physical fitness, mental/physical coordination and psychophysical courage testing. The overriding outward character of this category is manipulation of the body.

B. Creative refers to activities involving some permanent or semi-permanent localized physical manipulation, usually including aspects of all other categories.

Experiment on the playground indicated the aim of nearly all physical manipulation to be the production of some kind of symbolic representation of reality. In this case, why should creation be thought of as high-flown "Art" production only? It is this, too, but why not include other kinds of "productions," where the child appears to go through a similar experience -- utilizing cognitive, manipulative and perceptual skills?

Included, therefore, in this category are activities such as sand-play, water-play, and constructional activities such as "camp-building," etc.

C. Imaginative refers to activities involving mental transformation of the environment, often accompanied by minimal and non-localized physical changes.

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*In the sense that the categories still related to a large part of objective a), and significant and meaningful variations were observed between different categories and the various parametric influences - group size, attention-spans, environmental qualities, etc.

Imaginative play was sometimes so prevalent that for long periods outward reality bore little relation to the children's image. Although imaginative play was always an essential component of creative play it could also equally well take place without any major* physical changes occurring.

D. Cognitive refers to activities where aspects of problem-solving or knowledge acquisition are paramount.

Although pervasive it was clearly the major emphasis of a few activities, such as 'collecting bugs,' and 'balancing games' with the see-saws. The category is not only included to handle these specific activities, but also because it is so important and in other experiments it could receive much greater emphasis.

E. Social refers to activities that are passive, relaxed and/or of a general social nature; for example, sitting around talking, observing, or day-dreaming. Also for the sake of simplicity, activities such as singing or reading are included even though in other contexts they might be described as creative or cognitive.

This category does not include particular social characteristics such as, cooperation, competition and privacy. These are left as an independent group which can be cross-classified with any or all of the above five, as necessary.

2. Activity and Its Parameters

a) Age, Sex and Personality

In terms of age and general patterns of behavior there was

*Imaginative play often utilized physical "props," as in a theater, e.g. - a piece of stick for a "gun," or an umbrella for a "parachute."

a distinct division between the under fives and the fives-and-over. The general behavior of the second group was usually quite explicit and very active - their sphere of action was the whole playground. On the other hand, the behavior of the under-fives was often quite abstract, difficult to classify; movement was comparatively slow, exploratory, and often localized. The area in and around the playhouse was the favorite "roaming space" for this group.

It is difficult to know how well the playground provided for the youngest kids, although it is fairly clear that ideally there should have been a special area of extremely intimate scale provided for them. Although five years was the average demarcation age, there was a good deal of overlap, with, for example, four and six-year-olds playing in the same group. But four and seven-year-olds was much less common. Younger kids would come to play with the older, but not vice versa.

Early in the experiment it was decided that the under-fives were a very special group, requiring particular study, which the playground was not set up to do. The older kids are therefore concentrated on, although particular characteristics of the youngest group are noted where possible. Normally it should be assumed the older group is being discussed unless otherwise indicated.

The most important observation made in terms of age was that it bore little relation to physical ability and to courage in particular - as well as to skills. For example, a six-year-old girl would get up the tower without a second thought while an eleven-year-old boy would be scared and unable to take the same route. The

implications of this finding are clearly very important, and will be discussed further in Chapter III.

Girl-boy differences in behavior were not too great. Girls tended to stick together somewhat, to be a little less active, and to abhor really "mucky" activities like playing with water. Certain kinds of imaginary play were most attractive to girls, particularly "homes and families" games. The impressive observation was the similarity between girls and boys.

The effect of personality differences on behavior can only be mentioned in passing, since the opportunity of studying the question in detail was not available. It was quite clear that there were distinct personality and intelligence differences between the kids at all ages and that these differences affected their behavior in the playground quite markedly. This supports the general case for providing extremely choiceful play environments.

b) Groups and Social Processes

A large proportion of activity took place in groups of one sort or another. Particularly for the less common activities, the group would be led at the outset by one individual who usually had originally suggested the activity. During the occurrence of the activity the group would gradually collect (and lose) members, grow and diminish, leadership and initiative passing from one to another for the duration of the activity. The most subtle and extended group activity was exemplified in creative and imaginative play where we have what might be termed "group imagination" in operation. When this chain of events applied to a whole set of activities, the result was a continuously changing, fluid social structure, representing an extremely complex and subtle process of interaction of

different types between children of different ages and both sexes, sometimes strongly competitive, often mildly competitive, and usually cooperative.

A large proportion of groups were between 6 and 10 persons in size. Hardly any groups turned out to be greater than 10, except, say, 'combat' which could be up to 20. For the under fives, groups tended to be smaller, averaging about 4.

Individual activity on the playground was relatively uncommon, particularly for the over fives. But this may have been partly due to the compact nature of the playground and the consequent lack of privacy.

The age composition of groups could be almost anything within the 5-13 years range, and sometimes included under fives. Conflict within and amongst groups seemed to be far outweighed by cooperation. Most conflict centered around the use of certain items of popular equipment, particularly swings; here the younger kids were pushed off by older, but even then they were not completely excluded. Group structure in general seemed to be very fluid, and no hint of stable, opposing "gangs" was observed. In fact, serious fighting between individuals was very uncommon.

c) Frequency and Time-Span

Appendix A lists all observed activities with the best informed judgments of frequency and time-span. Time-span was easy to gauge, and was partly checked in Stage 3. Frequency was much harder to represent fairly because of the problem of "carry-over"*

*"Carry-over" refers to the way in which some activities were resumed even after departures from the playground. This was particularly true of creative activity which was sometimes carried over from day to day. This is discussed in Chapter II.

and generalization. An activity would appear fairly frequent but, in fact, always be enacted by the same small proportion of children. It therefore could not be labelled as a frequent activity for the children at large. Individual differences in time-span also occurred.

In Appendix A this problem is ignored. What do the results suggest as a general pattern?

1) A large group of activities that go on all the time - mostly motor activities with quite short time-spans, in the range 1 - 15 minutes.

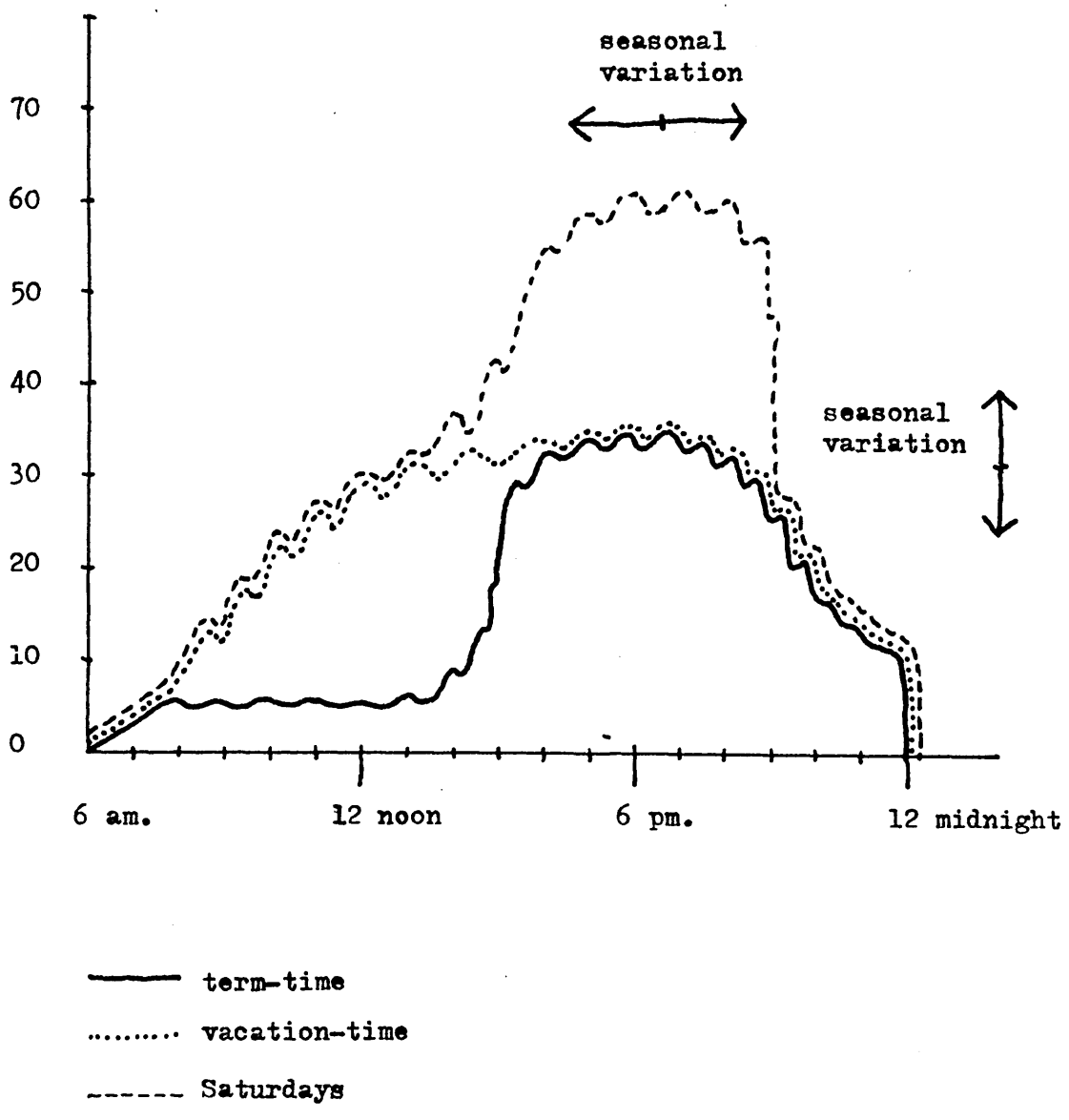
2) A group of activities taking place at regular intervals - i.e. a number of times each day, or an average at least one group always engaged in them. Creative and imaginative play is included. Most attention spans are much longer and extend over a greater range - anywhere from 10 minutes to 6 or 8 hours, and sometimes from day to day. This group of activities is comparatively small, although in Chapter II we shall show that aggregate time spent in imaginative and creative play was on average about a quarter of total time spent on the playground.

3) Activities included in this group were clearly seasonal, e.g. lighting fires, exploring the natural micro-world. When in season these activities followed a similar pattern to those in the preceeding group. This issue could not be handled too well since the effective study period was during the summer months.

4) The last group is a mixed bag, including all activities that occur less frequently. Bringing personal toys to the playground, beating oil drums, swinging, action games with oil drums are good examples. Time-spans were various. In a way this is the most

FIGURE 4

Population Patterns



interesting set of activities, unpredictable and accidental but clearly aided by a rich environment.

d) Patterns of Activity in Space and Time (PATS)

It was not possible to handle this issue satisfactorily through informal observation. Although it was clear that many different patterns were present and invited exploration. The dynamic behavior pattern was clearly very complex; its study was postponed to Stage 3 (see Chapter II).

e) Gross Population Patterns: Daily, Weekly and Seasonal Term-Time

The influences of all four variables were clearly apparent, although it was not possible to monitor the effects rigorously. Figure 4 gives a general picture of population variations during the study period, based on data collected. An indication is also given of the seasonal and term-time influences.

During term-time, in the early morning there were usually a few pre-schoolers and kids on their way to school. Then there were only pre-schoolers until about 2:30 when a sudden influx would occur as the children came home from school. Through the afternoon the population would fluctuate, but with an overall rise to a maximum in the evening. The time of maximum population slowly advanced from around 6:00 p.m. during the spring, to around 8:00 p.m. during high-summer. At the end of the summer it began to recede again.

When the weather was really hot there were few kids on the playground, because of the lack of shade. The areas around the project were more attractive - if nothing else they were cool and shady. Colder weather was also influential, and clearly in mid-winter

average populations will diminish.

When the children were on vacation the initial build-up in the mornings was rapid.* There were large fluctuations during the day, a gradual average increase in the afternoons and a high again in the evening. On Saturdays the average population was higher still, but again it followed the same pattern. On Sunday, activity was a little subdued. Most kids wore their Sunday-best. But in the afternoon and evening many kids still came to play.

Often in the evening a group of young teenagers would gather (13-20 years) - hanging on the fence, around the ball court, or sitting on the log - general 'hanging out' activity, a lot of talk, sometimes a singing session.

The existence of night-lighting clearly made an enormous difference to evening use for all age groups. It was not uncommon, on a warm evening, to find 20 kids on the playground at 10:00 p.m. Basketball was played usually until the lights went off at midnight.**

In the afternoons, once the thing was visibly a playground, mothers began to bring their very youngest kids (3-5 years) out to play around the playhouse and sand pit. A few of the older members of the community would also come out to take the sun and gossip. Clearly most kids came from the projects and immediately adjacent housing. However there were about 15 kids who came from between one and three blocks away - though less frequently.

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*During the summer a number of kids went to day-camp (not the one held at the playground). Some of the "best" kids also went off to "camp" for several weeks, and this made quite a difference to the tone of activity - it seemed to be less imaginative. The boys who went tended to be the "group leaders" on the playground.

**To begin with the lights were left on all night, but too many people complained about the noise of basketball being played in the early hours.

f) Activity and Environment: Complexity, Multi-function and Capacity; Manipulability; Scale.

Stage 2 was a time for sorting out the whole issue of the effect of environment on activity. Here we shall try to convey the descriptive flavor of environmental influences, and identify the most pertinent qualities. In Chapter III the explicit relation between environmental qualities and different types of activities will be analyzed.

An important realization was the complex nature and subtle variation of the experience stimulated by different parts of the environment. Climbing the high, challenging tower from which a command of the whole playground could be gained, was different from climbing inside the jungle gym and different again from clambering up, down and over the walls of the playhouse. Clearly differences in physical action were involved -- in terms of physical development each represented a different kind of 'exercise' involving different types of muscular coordination and skill. In addition each environmental difference placed the child in a different psychological and sensory relationship to his situation. Tower climbing represented a rather direct, challenging, courage-testing situation with a clear-cut ultimate goal. Climbing in the jungle gym represented a distinctive spatial experience of a rather continuous nature that had no particular end goal although it was still mildly challenging. Moreover the child had a special kind of social and spatial relationship with other children using the apparatus. Clambering over the playhouse represented a different kind of spatial and and social

experience again - looking down on and moving between three 'rooms', each different in shape and character and each probably containing an activity different from clambering.

This kind of situation was further complicated by various kinds of imaginative play being carried on at the same time. The problem of classifying the resulting complex activity has already been noted.

A set of activities noted very carefully were those which were totally unplanned for and unpredicted -- the kids saw potentialities in situations, materials, environment that were unseen to the designer; e.g., jumping from the spool tower into the sand-pit became a really popular pastime. What is more, it was a graded challenge, a few kids jumped from the "yellow spool" (top), most from the middle "red spool," and the smallest from the lowest, "blue spool." Again, it was never realized how common an activity 'collecting bugs' is, and really highly organized by the kids. It is easy enough to provide for -- just by leaving a few large, but moveable rocks around. (one twelve-year-old wanted to organize a "bug exhibition.")

These kinds of observations began to highlight the importance of <u>environmental complexity</u>,* and of how <u>multi-functional</u> parts of the

*We can define the parameters of complexity specifically. The resulting variable is so complicated that we shall not be able to use it as a measuring device except in a general way.

Complexity is defined as a function of <u>physical and sensuous variety</u> (of spaces, surfaces, shapes, surface elevations, materials, colors, textures, light, sound, etc.), the <u>areal distribution</u> of the variations (from random /most complex/ to patterned) and <u>compactness</u> (from dense /most complex/ to dispersed).

Complexity is directly related to <u>multi-function</u>; i.e., as

environment could become, and how their population capacity could become increased. It was quite clear on Lenox Street that the most complex and multifunctional elements stimulated the widest range of activity and attracted the most kids. The Tower and surroundings were in first place, the Playhouse and surroundings in second place.

Another quality of particular interest was manipulability - which complicated the complexity issue even further.

Much data collected in Stage 2 resulted from bringing onto the playground many different materials that were likely to be finally incorporated into the "finished" product - old floor joists and other timbers, cable spools, bricks, piles of dirt, sand, sundry pieces of junk, rope, oil drums, etc. Many times the kids found far more to do with some of these things than was ever imagined. This was especially true of materials that could be manipulated - moved around at will to suit the child's changing purposes. For example, a fifteen foot ladder was a ladder for climbing up, for bridging, etc.; it also suggested to one group "playing fire engines." The outcome was that what had been a railroad tie "fortress" became a fire engine (static). The ladder was a moveable item, so the kids could decide that there was a fire somewhere on the playground, "drive" the fire engine to it, and then run with the ladder to the actual spot.

Wire reels were another item full os possibilities (see

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an environment becomes more complex it stimulates a wider range of activity. The two terms can be used almost interchangeably; however, multi-functional is merely a "blanket," outward description of the environment. The number of functions can also be influenced by other variables, such as supervision.

Appendix A photos). Materials that would normally appear to be 'junk' in other people's eyes were very relevant to much creative and imaginative play. In general "useful" junk consisted of objects that could be used for 'building construction' both in the physical and psychological sense, or objects that previously had a specific function and could still be used as such, e.g., the steering wheel of a car became the steering wheel of the "fire engine."

Moveable materials did raise a number of practical problems. The less robust items tended to get smashed after a while, and lost their usefulness. They had to be cleaned-up and disposed of. Secondly, after a while they became dispersed over the playground, tending to reduce their play-potential. Although the kids would reassemble them from time to time in order to carry out particular "plans," the stimulus was increased if they were reassembled more frequently by an adult. Some of the most attractive items were carried right off the playground - a touchy problem that did diminish, however, when the fence was put up. The manipulable quality clearly implies maintenance - for 'reassembly," replenishment and disposal.

Quite clearly the manipulable quality also had a great deal to do with provision for imaginative play. Mental transformation could happen to such an extent that the outward expression of the activity bore little relation to what was actually going on. Very often it appeared as if the 'given environment' was almost continuously manipulated by the child to his own ends. A group of five year old girls walk around collecting small stones in an old tin which they take in the playhouse and place in a corner. What they are

actually doing is 'collecting money' and 'taking it to a big strong safe to lock it up.'

The child, through his imagination, creates his own world. The mental manipulation is very often expressed by some physical transformation. A picnic table was imagined as a PT boat by a twelve-year-old and consequently loaded with empty barrels, pieces of wood, brick, etc. until it represented the child's desired image.

Participation in creative and imaginative play and the influence of environment will be discussed further in Chapter II.

The whole question of scale in relation to different age groups was of central interest. For instance questions such as the scale of physical challenge in relation to age (and sex) or the general 'roaming space' of different groups were paramount (see Chapter III).

3. The Nature of Feed-Back and Physical Development; Test and Modifications to the Initial Design

The continuous stream of information resulting from the informal observations during the construction period served three functions.

a) It afforded an opportunity to "test" the original design, resulting in some cases in modification.

b) It allowed a comprehensive picture to be drawn of the important social and physical influences on play activity, i.e. the list of issues discussed in this chapter. A judgment could also be made about which questions should be pursued further (Chapters II and III).

The kinds of things that were going on during this stage presented an ideal situation for making such observations. It was a period of constant physical change - something new every day, and a situation where the effects of change on individual behavior were almost instantaneously observable.

Feed-back in the context of participant design enabled me to fit the elements of the playground together in a way that would be impossible to specify on a drawing or even a model. Certain anthropometric problems in particular had to be worked out on the spot, for example the exact position of the "Bat-pole," the arrangement of the "Tarzan-swing." Elements such as the merry-go-round, the see-saws, the Tower and the Arena could be placed and related to adjacent elements to maintain the quality of "physical continuity"* and also to conserve as much site area as possible.

Besides these specific problems, on the spot participation in the construction enabled me to make many very subtle, more personal judgments about the forming of the environment which are difficult to articulate. I was able to experience, understand and manipulate the extremely intimate scale of parts of the environment, and to really sense the quality of the spaces I was creating. This was particularly true of the area around the Tower, the earth forms and placement of elements could be manipulated as a giant sculpture. Here considerations of anthrometrics, scale and more sensuous feelings could be moulded together in the final result.

The experience of manipulating the environment first hand is impossible to substitute for, even in the best model. It was quite

*That is: action elements related very closely so that the child's actions could maintain a continuous character.

distressing to discover the difference between the actual environment and my own image of it, developed while making the designs. The critical difficulty here is trying to image the very small scale environment that children operate in. For younger children this is completely different from an adult scale - the interior space of the "fort" which was only 7'0" x 7'0" x 5'0" clearly could represent a 'whole world' to many children.

Participation in the creation of this playground became so complete that in retrospect it was very difficult to distinguish my own abstract ideas about the playground from the multitude of influences gained from working with the children and their environment. By the time I had to end my own involvement in the project I felt that I could have gone on forever adding to the environment, changing it and experimenting with it.

Feed-back: Testing the "Original Design"

Long before the end of the construction period, observation indicated as far as one could tell that at least some of the objectives, implied hypotheses and predictions of the original design were holding water:

1. The playground stimulated much motor orientated Action, a significant proportion of Creative and Imaginative play (and therefore automatically cognitive and social activity) and some more directly cognitive and social activity, for all age groups.

2. The range of environmental scale appeared to satisfy the differential abilities and needs of different groups. More

younger children were attracted to the intimate scale of the play house and surroundings, more older kids to the larger scale Tower and surroundings; however, there were large overlaps. The most complex areas attracted the greatest participation and stimulated the widest range of activity.

3. There was some "fit" between designated areas and actual activity. "Creative areas" were the focus of creative activity, particularly behind the playhouse (contrived to some extent). Identity, and visual and physical inaccessibility appeared to be the major reasons. The Tower was the center of activity (numerically).

4. The playground became a focus of more formal activity, the arena helped to stimulate and provide for it - people were set thinking. The arena also stimulated informal social activity.

5. Visual inaccessibility seemed to be irrelevant except in the case of creative activity, where interference from outside was disruptive.

A number of the above judgments had to be "loose," particularly those dealing with activity, since they were not made against a control situation (a "standard playground"). The problem of developing rigorous criteria is a tough one; it cannot be explored here. More experiments should be carried out where the stimulation of different activities is "pushed" to some upper limit. The lower limits of a "standard playground" would enable us to develop a scale against which different designs could be compared. Until that time we will have to rely on environmental qualities as indirect criteria, as indicated at the end of Chapter III.

Other aspects and objectives of the Initial Design could only be speculated upon, such as the influence of formality, physical identity, the relevance of path systems, etc. These and other issues will be discussed in Chapters II and III.

Finally, some objectives could not be tested - the effect of sensory stimulii in particular, and the influence of play-activity on individual development in general.

One question must be cleared up to avoid possible disagreements - that is between short-term and long-term effects of physical change on behavior. The issue is important because a possible criticism of the study is that the observations were carried out during a period of continuous change, over a short time period. For general assessments of behavior, like aggregate population, the criticism may be valid. In relation to specific interactions with the environment, the observations are far less doubtful. It was true that any major change would initially represent a major source of interest, many kids would immediately involve themselves. Usually this reaction would quickly drop off in terms of numbers and frequency of action. But the mode of interaction in any particular child-environment situation would remain unaltered or, if anything, the range of actions would tend to grow in richness and depth until some stable set of permutations and combinations was reached.*

One special point in the above context concerns learning,

*The use of the "Tarzan rope" was an excellent example of this. It took about three weeks for a stable set of actions to develop. The final discovery was to swing off the horizontal spar supporting the rope! (See end of Appendix A.)

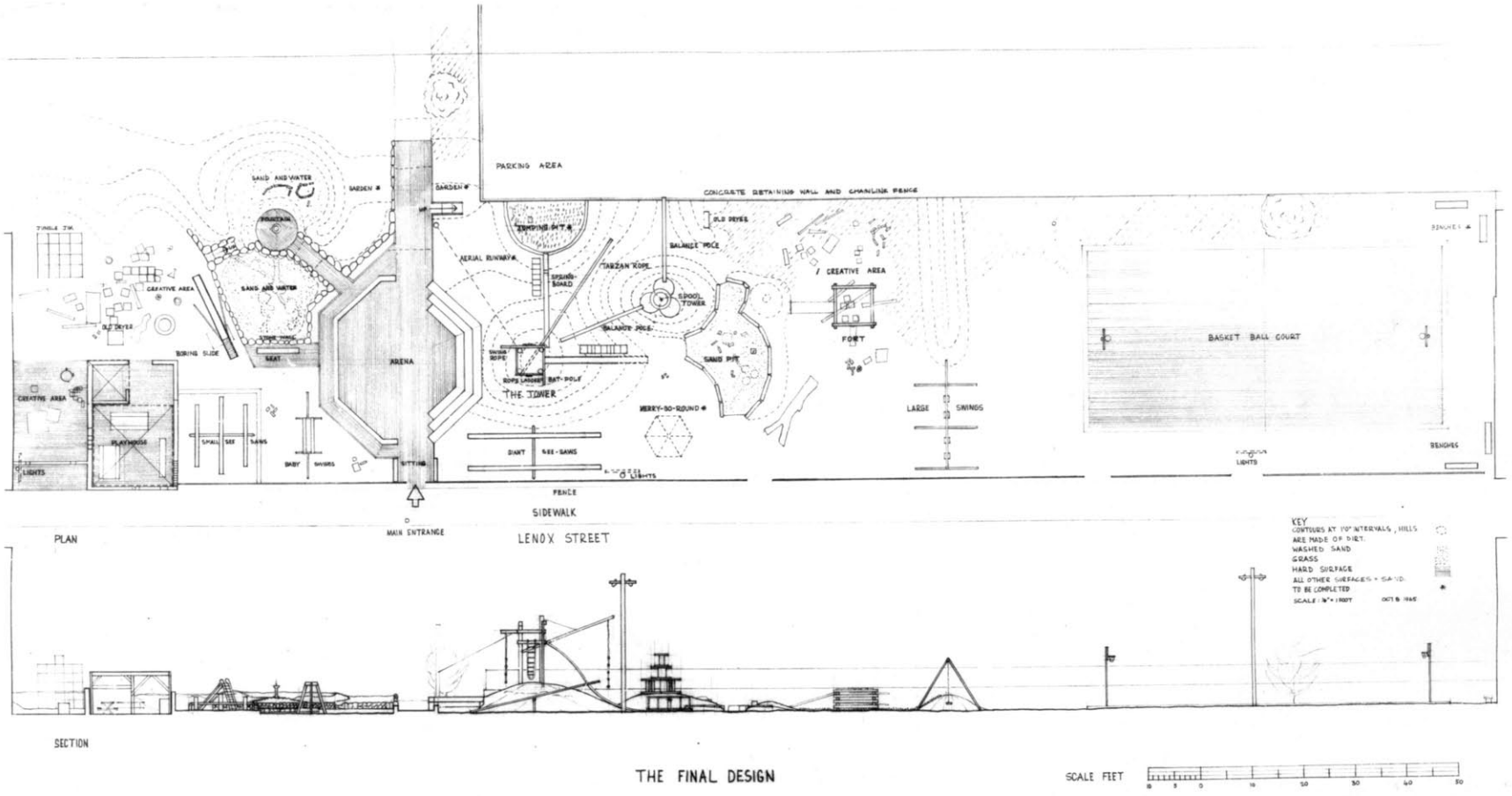

PARKING AREA
CONCRETE RETAINING WALL AND CHAINLINK FENCE
SAND AND WATER
GARDEN
FOUNTAIN
CREATIVE AREA
SAND AND WATER
SLIDE
SEAT
ARENA
SWINGS
AERIAL RUNWAY
SPRING BOARD
TARZAN ROPE
BALANCE POLE
SPOOL TOWER
OLD DRYER
CREATIVE AREA
FORT
BASKET BALL COURT
BENCHES
SWING ROPE
ROPE LADDER
BAT-POLE
THE TOWER
SAND PIT
MERRY-GO-ROUND
LARGE SWINGS
PLAYHOUSE
SMALL SEE SAWS
BABY SWINGS
SITTING
GIANT SEE-SAWS
LIGHTS
FENCE
SIDEWALK
MAIN ENTRANCE
LENOX STREET
PLAN
KEY
CONTOURS AT 10' INTERVALS, HILLS ARE MADE OF DIRT.
WASHED SAND
GRASS
HARD SURFACE
ALL OTHER SURFACES = SAND
TO BE COMPLETED
SCALE: 1/8" = 1 FOOT
OCT 8 1935
SECTION
THE FINAL DESIGN
SCALE FEET
0 5 0 10 20 30 40 50

FIGURE 5

The Initial and Final Designs

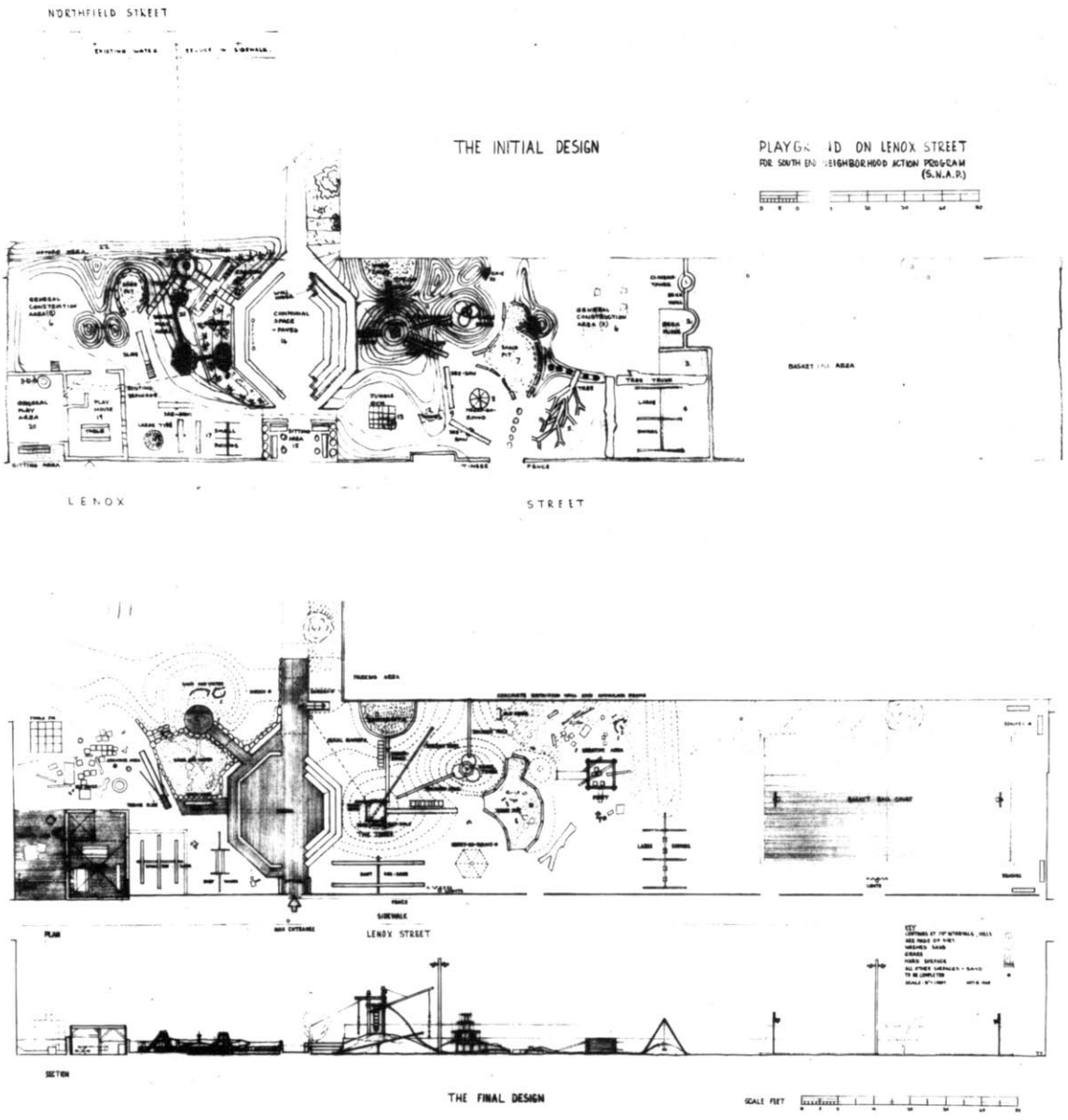
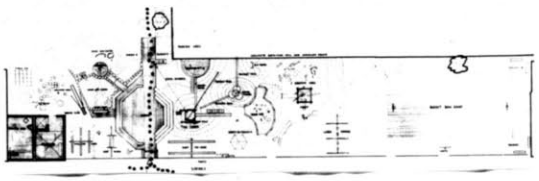
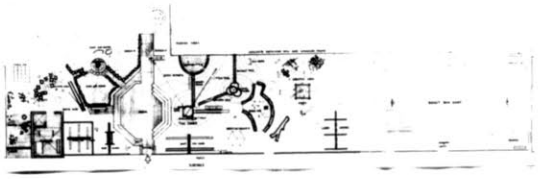


FIGURE 6

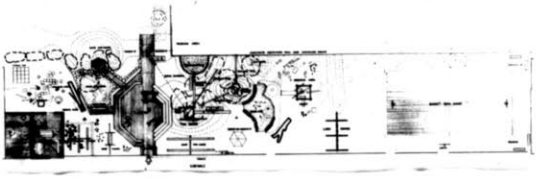
Growth and Change During Study Period



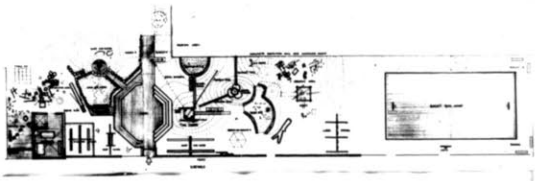
ORIGINAL CONDITION
- building in position of 'playhouse'.
- pedestrian route across site.
- two trees
- site covered with sand



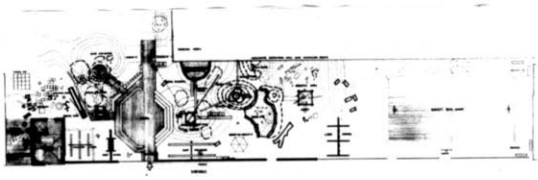
JULY
- supports for see-saws.
- stone wall around water area.
- drinking fountain.
- large see-saw.



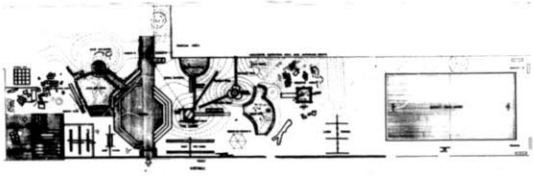
APRIL
- building partly demolished.
- large swings
- manipulable building materials.
- loads of "fill" in approximate position of 'hills'.
- large log.
- slide
- one wall of playhouse.
- 'fortress'- built by children.
- sand-pit started.
- jumping-pit started.



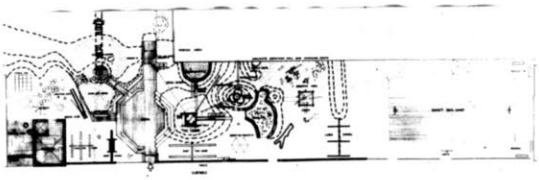
AUGUST
- basket-ball court.
- lights.
- arena.
- sitting bench.
- small see-saws.
- steps in hill.



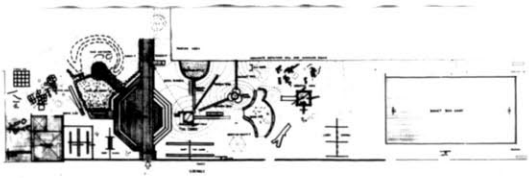
MAY
- barrels.
- 'hill' for 'spool tower'.
- post for 'spring board'.
- 'balance-pole' across jumping-pit.
- small swings.
- fence started.
- picnic table.



SEPTEMBER
- frame for playhouse roof.
- jungle-jim.
- fence continued
- 'tarzan-swing'.
- 'bat-pole'.
- benches by main entrance.



JUNE
- Tower started.
- sand in sand-pit.
- trench for water service, (and 'consructions' in it)
- other front wall of playhouse.
- remainder of fill for earth forms.
- slide on tower.



OCTOBER
- roof on playhouse finished.
- brick paving in arena.
- paving around fountain.
- sand in water-play area.
- brightly colored paint.

particularly in relation to physical challenge and skill. When the "giant see-saw" was put up, the kids went wild: they had never seen anything like it before. Initially there were many minor accidents and one more serious one - a touchy situation. But just as the author began to decide the experiment was a failure the accident rate fell off sharply. The kids had "learnt" how to use the facility, they had discovered its dangers. Also, the nature of the see-saw "blackmailed" them into cooperating with each other - "he who jumps off, making the other guy bang his back-side, is likely to get paid back in kind." The same kind of process was observed with other semi-dangerous elements.

Modifications Made to the Initial Design as a Result of Feed-Back

Figure 5 enables a direct comparison between the Initial and Final Designs to be made. It must be remembered that differences arise both from feed-back and as a result of other constraints (money, labour, skill, etc.).

Figure 6 indicates the context of physical change and development in which the following list of more important modifications took place:

A. A lesson quickly learned was that the "fixed" environment had to be made extremely robust if it was to stand up to heavy, boisterous use. One quickly realized that most so called "vandalism" is a mis-accusation resulting from inadequately designed equipment simply falling to pieces under the kinds of stresses it should be designed to meet. Swings are a classic example in this context. Manufacturers turn out junk, which is unfortunately bought many times

by organizations who should know better. After a few days it falls to pieces because of quote "overuse" and the cry goes up - "vandals," etc. Complicated arrangements are made to take swings' seats down in the evening, when (if Lenox Street can be generalized) the need is actually the greatest!

B. Possibly the most important change was to make some of the elements in the design far more exciting, challenging and larger in scale than originally proposed. The 'tower' and its various attachments was the major outcome. To put it slightly more realistically: "the tower" or something like it had always been a possible alternative and had primarily been played down because of the concern shown for safety by other professionals involved in the situation. It is probably fair to say these were typically middle-class, overly protective attitudes, and quite out of place in relation to a large proportion of the Lenox-Camden kids. It quickly became clear that the initial design would not hold the attention of some eight year olds for too long, let alone twelve year olds.

C. The design of see-saws was a particular case in point. Very early in the construction period the kids set up their own see-saws with old floor joists pivoted, for example, on a wall of the play-house. These see-saws were larger scale and far more exciting than ones of standard size. Therefore a set of larger scale more permanent see-saws was provided. This element proved challenging and exciting to all age groups from 5 to 25!

D. The rear wall was removed from the far room of the playhouse to increase visual and physical access and to make the room a part of the general "construction" space behind the playhouse. This

was done since the room was used for general construction purposes, but by being almost totally enclosed it tended to get filled with construction materials to such an extent that activity came to a standstill.

E. Once the water-fountain was installed it was quite clear that more space would have to be provided around it for general water play. Hence the sitting-garden area was omitted, leaving only some small flower beds. After a great deal of experimentation it was decided to make just a large deep sand-pit adjacent to the fountain, instead of a complicated system of pools. "Let the kids make their own." Incidentally, they found it quite easy to transfer water from the fountain to the sand with an old piece of pipe (= problem-solving situation).

F. Manipulative activity was one of the central focii of the experiment. Many different materials and situations were tried out, primarily in order to discover those which appeared to suit the children's needs best and, secondly, out of these, which were really practical for incorporation. The areas set aside in the design for general construction very decidedly took on that function, especially behind the playhouse. Behavior was channelled in that direction to some extent by always replacing moveable materials in that area and by making it generally known that kids could do whatever they pleased there. 'General construction' became such a popular activity that the 'hills' and 'sand-pit' shown on the original design were omitted to give 'general construction' more elbow room.

The other part of the whole question of moveable materials

was to discover the most meaningful and practical ones to provide. These turned out to be: milk-crates, large timber cubes one foot on a side, 2" thick timber, up to 10" wide and 5'0" long, sheets of masonite and ship-board, 50 gallon barrels, and all kinds of robust junk having some kind of psycho-physical potential. The milk-crates and sheet materials tended not to be quite tough enough. Bricks in particular did not seem a good idea in such a confined site; although the kids used them avidly for building, they got broken, and scattered all over the playground. The kids threw them at each other which was extremely dangerous. Great interest was found in more fragile materials: long, thin slithers of wood, cardboard boxes, old domestic items, clocks, TV sets, etc. The maintenance problem given by these items has been noted elsewhere.

The particularly interesting and exciting action-oriented cable-spools had to be left out simply because of the compactness of the design - there was not room to roll them around. And rolling them down the steep hills was very dangerous.

G. The 'tree' near the large swings was omitted because far more baling-out space was needed in front of the swings than was originally envisaged.

H. In both sets of see-saws the boards were finally placed adjacent to each other to maximize the social function.

4. External Identity and the Stimulus Effect; Internal Identity

From the beginning of April it was quite clear that the kids began to view the playground as a place for play even though it

was many weeks before much of the design was created. This was very intriguing. The reason, perhaps, was that the playground had a clear identity, even at that early stage, in constrast to its formless and somewhat suspicious surroundings. Also, the playground was clearly a legitimate place to play. In the general surroundings to their homes the children were never quite sure where they could legitimately go and where they could not; they were clearly often afraid of the bums and alcoholics they could encounter (many of them are truly frightening sights). The kids were only too happy with an area of the environment which they could clearly call their own, and which appeared to give a certain amount of protection from "bogy men."

Right through the construction period there was a hard core group of kids, of all ages, who seemed to be always on the site, playing and offering their 'assistance' on the construction who identified with the playground as a "project" as well as "their own place."

Once the playground was in a fairly operational condition and was an identifiable* place, it stimulated a surprising number of other, more formal activities (the "stimulus effect"). Two arts and crafts programs were run by SNAP, one in the daytime through July and August, one in the evening in September. A sports evening was held for teenagers. A movie show was held (by SNAP again) on Saturday nights through the summer; the Arena served this function very well.

*Conversations with members of the community and outsiders who had seen or been involved with the playground suggested that the three elements which physically identified the area as a distinct place were the Tower, the Arena and the Play-house. The Basketball Court was also a commonly referred to element, although in itself it was no different looking than other basketball courts.

A political candidate held a "community tea" on the playground.

Many other possibilities were discussed which might well take place next year - dances, mannequin shows, concerts, drama, etc. Someone had the bright idea of holding an art show, using all the elements on the playground as hanging space! Unfortunately it fell through at the last moment. Parts of the playground could be used in the same way for drama.

The final issue was internal identity, by which we mean the children's perception of their playground, their conception of it, its most important parts, the elements that apparently had the strongest identity for them, and why - The Playhouse, the Tower, the Spaces for Creative play, the Basketball Court, etc. This question is discussed in Chapter II.

5. Reactions Inside and Outside the Community

A systematic survey was not carried out in the community to discover the true distribution of attitudes to the playground. The only data available are the comments and reactions expressed from time to time. A discussion of them may be useful to those involved in similar projects. The general tone of the reactions was certainly unexpected.

It was assumed that there would be substantial critical reaction by the community on three counts - "dirt," "danger," and the general "second-hand quality" of much of the material and equipment. On the question of dirt there was little criticism. The kids live in a fairly dirty out-door environment and generally get dirty, but

they wear very old clothes. The playground did not affect this situation much; it was neither cleaner nor dirtier than anyplace else. In addition, the mothers certainly tolerated the dirt more if they knew their children had been on the playground and not getting "up to mischief" elsewhere.

Strangely enough, most of the comments about danger came from older teen-agers and young adults, nearly all of whom had no children. Why this should be is a complicated question. One thing was quite clear: many teen-agers were out to "knock" the playground, especially before the basketball court was built. The apparently dangerous nature of some of the elements was an obvious thing to criticize.

This same teens, early twenties group also made the most complaints about the second-hand nature of the playground; again, an obvious characteristic open to criticism - "what do we want all this junk for." Such reactions from this age group are highly predictable. They wish it to be known quite clearly that they are not children any more and they don't "dig that kid's stuff." The critical and ridiculing roles were the only attitudes which conformed to peer-group standards.

The reaction shown by the author to these kinds of criticism was always a serious ear. The situation was then used as an excuse for explaining the ideas behind the playground, and its experimental nature - "if something does not work it can always be changed." The argument that part of the playground had to be exciting, challenging and even dangerous in order to attract many

of the over-tens proved to be persuasive. In a tough living environment, like lower Roxbury, "kicks" offered by the playground had to compete against other, more dubious kicks available elsewhere.

During the long stage when the major elements were being put up, the site was changing continuously, and had no clear, stable identity. Under these conditions it was often difficult to get some people to accept, or understand, what the playground was all about. As the form of the playground began to be manifest, as a more stable pattern of activity began to develop, people really did seem to understand the idea more fully.* Every day they could observe a demonstration in front of their eyes, they could see what the kids did, what they really enjoyed; they could see quite clearly that milk-crates were at least as important as swings. Even many in the teen-ager group changed their attitude (the basketball court helped, of course); they could see the author was not a 'nut' after all. Actually some of the elements (particularly the big see-saws and Tower) were so exciting that the teen-agers could not resist 'playing' with them. Their critical attitude was bound to wane under these conditions.**

Through the participant design process (see Appendix C) one was able to lead people*** into the spirit of the concepts behind the

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*Even to the extent of making useful suggestions.

**It was very encouraging to have one teenager go out of his way to say that he agreed that the playground should be challenging and exciting. This occurred after he had seen a news item on television about the playground, where some of the ideas behind it were expressed.

***We are referring here almost exclusively to mothers and younger adults in the community - contact with the fathers was very sparse.

playground, to allay their criticisms and fears during construction, and finally to demonstrate by means of the finished result at least some of the concepts mirrored in reality. One may ask why it was important to achieve this mental involvement and understanding by the community. The major reason is that this would tend to build up a pressure for keeping the playground maintained in such a way that the general spirit of the activities remained catered for. At the time of writing this remains to be seen. There is a greater chance of it still happening if a sizeable group in the community understand the workings of the playground.

Other effects of this understanding are matters for speculation only. Maybe the children's developmental needs will be thought of more seriously. Perhaps people will be set thinking about 'design' in other areas - housing, schools, parks, etc. Particularly in the case of the younger adults, they may have experienced things that will beneficially influence the way they will bring up their own children.

A final obvious influence on local attitudes was my own publically demonstrated commitment to creating a really meaningful playground. By spending many weeks, with and without help, labouring on the construction, I won a great deal of personal respect from the community, which eventually helped to develop a respect for the playground and a sympathy with the aims behind it. There were more than just a handful of mothers who personally expressed their whole-hearted support for these aims.

In spite of the general tone of community support, I had

an uneasy feeling that some hidden criticism did exist, and that some mothers did not allow their children on the playground. This impression comes from odd comments overheard, but never personally expressed (except some older members who complained about noise). In questioning those who supported the project they admitted "there were some who didn't like the playground, but they were small in number and unwise parents to have such attitudes."

Reactions and Attitudes Outside the Community

Again, it must be said the reactions expressed by most groups and individuals who visited the playground (of which there were a great number) were extremely favourable. A few of the most interesting 'visits' are worthy of note. A man from Somerville* who saw a report in a Boston newspaper and was so interested he brought his two kids down to play, gave a small donation and offered the use of his station wagon. A Catholic nun from a local school running all over the playground with the kids saying it was "great." Visits by other local school teachers, ministers, welfare workers, neighborhood house workers, local and non-local autonomous individuals, etc.**

The one person most violently against the project was a Boston building inspector - fortunately he was prevented from having the place razed to the ground.

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*An "inner suburb" some miles from the playground.

**Toward the end of construction, the author was acting as consultant designer to ABCD's (Action for Boston Community Development) playground project. Contact with groups in the neighboring communities of Roxbury, Dorchester and Jamaica Plain indicated that news of Lenox Street had begun to spread. A surprising number of people knew of its existence, and on the whole were very much in sympathy.

Most other outside criticisms centered around the issue of danger, but in conversation would usually concede to the other side of the question - the need for challenge. They were encouraged to know there had only been one serious accident, which would have happened just as easily on a 'regular playground' (a boy jumped off a swing and broke his arm).

The conclusion to be drawn is every indication that massive innovations in the design of play environments in Boston would receive strong support from the general public. The A.B.C.D. program mentioned above may have a substantial effect.

Summary Conclusions

1. Classification of Activity: 5 relevant categories
   - Active
   - Creative
   - Imaginative
   - Cognitive
   - Social
2. Age Groups: 3 operational groups
   - Under 5s
   - 5-12
   - 13 and above

   Physical ability found not to be a function of age, except in a gross sense.
3. Sex: Girls appear to have few requirements different from boys, except provision for passive social activity for over 10-year-olds.

4. Group Activity, almost universal. Social processes were very complex. Groups more cooperative and larger in creative and imaginative activity; more competitive and smaller for motor activity.

5. Frequency and Time-Span: 3 groupings

   a) Very frequent, short duration - action.

   b) Less frequent, longest duration - creative and imaginative.

   c) Infrequent, and seasonal, all durations.

6. P.A.T.S.: not discernible by informal observation. Will have to be studied in Stage 3.

7. Population; Highest in the evening, especially on Saturdays. Pronounced effect of night-lights.

8. Environmental Quality stimulating the widest range of activity and attracting the most children - complexity. Scale also critical.

9. Imaginative and Creative play: very prevalent, stimulated by manipulability, worthy of quantification in Stage 3.

10. Feed-back indicated that a number of the objectives and predictions of the Initial Design were partly met. It was also a means through which important specific modifications were made, as well as many more subtle ones.

11. Identity: Apparent External Identification by the kids from the beginning. Later appeared to be one factor stimulating other important, formal functions (Stimulus Effect). Appeared to be important differentiations made by kids between the identities of different elements in the playground - Internal Identity.

12. Climate for Innovation: Reactions from the community and nominal

reactions from surrounding communities suggest a good deal of potential support for more creative playgrounds.

CHAPTER II

THE STAGE THREE STUDIES

A. Comparative Participation in Creative and Imaginative Play

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Action - Localized

Creative and Imaginary - Localized

Creative and Imaginary - Mobile (Thematic)

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A. Comparative Participation in Creative and Imaginative Play

The examination of this issue was a most important function of the Lenox-Camden experiment. It is the area where a fundamental influence must be brought to bear on public and design policy in relation to playgrounds. It needs to be shown conclusively that playgrounds should consist of far more than swings, slides and merry-go-rounds set in asphalt.

For this reason this part of the experiment was treated as rigorously as possible. The specific objective was to test the following hypothesis:

> In an environment which provides stimulii for many different kinds of activity children will spend a significant proportion of their play-time in creative and imaginative play.

Of course, one immediate difficulty is deciding what constitutes a "significant proportion." The main criteria is the assessment of how much value to give creative and imaginative play relative to other activities.

The author's assumption, justified to a large extent by Schrut's observations (pp. 10-11) is that creative and imaginative play are a good deal more important other activities,- mainly because together they include so many important, even critical, aspects of child development. The social aspect of play is greatly accentuated in these activities. It is a means of learning how to handle social relationships. It aids the development of emotional maturity and the discovery of self-identity. This is done through a process of experimentation and role taking, and by continually soliciting responses from playmates.

Creation is generally looked upon as the highest form of human activity. In the case of children it should be thought of in the same light - even more so. For them creative play includes many things, apart from stimulating and being a part of much imaginative play. Creative play is an opportunity for the child to manipulate his own environment, to sense the fact that the world around can be changed, and not to be taken as given. The opportunity to handle different kinds of materials is presented - to examine and distinguish their sensuous and physical qualities. Manipulative skills are involved. As different kinds of problems are presented for solution, mental skills may be developed. The attention-spans of these activities are far longer and the child becomes deeply involved. The creative situation is continually open for experimentation, modification, development (and destruction).

It is fairly clear that even if only 10% of aggregate time was spent in these two types of activity, we would have a reasonable case - actually most rates turned out much higher.

The Measurement of Participation

During three different periods of construction detailed observations of participation were taken by activity type, group size, age, sex and duration for a number of hours each day. During the second two periods data was collected for creative and imaginative play. In all three periods aggregate population counts were taken every 30 minutes. Three different periods were chosen to lend weight to the case. This was necessary because the playground was still under construction during all three periods. The idea was to check the possible

TABLE 1

RELATIVE PARTICIPATION IN CREATIVE AND IMAGINATIVE ACTIVITY

Date	Day	Observation Time Hours	Average Population	% Participation in Creative and Imaginative Activity	% Participation in Other Activity
			SET 1		
Aug. 1	Mon.	4	26	30	70
Aug. 2	Tues.	2½	16	28	72
Aug. 3	Wed.	3½	20	13	87
Aug. 4	Thurs.	4	13	17	83
Aug. 6	Sat.	4	47	10	90
				—	—
			Average	20	80
			SET 2		
Aug. 10	Wed.	2½	18	40	60
Aug. 11	Thurs.	8	30	29	71
Aug. 13	Sat.	6	47	28	72
Aug. 14	Sun.	2	15	6	94
Aug. 17	Wed.	6	24	5	95
Aug. 20	Sat.	6	46	25	75
Aug. 24	Wed.	2	18	39	61
Aug. 25	Thurs.	8	26	37	63
Aug. 27	Sat.	6	44	3 low	97
Aug. 28	Sun.	6	19	9	91
				—	—
			Average	22	78
			SET 3		
Sept. 20	Tues.	3½	20	42.5	57.5
Sept. 21	Wed.	2	33	28	72
Sept. 22	Thurs.	2	25	42	58
Sept. 23	Fri.	2	29	66.5 high	33.5
Sept. 24	Sat.	5	41	24	76
				—	—
			Average	39	61

influences of environmental change as much as possible.

A single index of participation was devised combining group size, frequency and time-span. Each "observation" (i.e. one group's activity from start to finish) was expressed in terms of total child-minutes. Each of these totals was then expressed in terms of the same time-base (i.e. the observation period) by simple averaging. The results, now expressed as average numbers of children participating during the observation period for each activity observed, were simply added to give the total picture. This final result could then be expressed as a percentage of the average population on the playground during the observation period. That is: on average, during the observation period, X% of the children participated in imaginative and creative play, and Y% participated in "other" activities.

Of course the final picture is an aggregate one; it does not say each individual child divides his time in this way. In fact we know that some children participated more (particularly in creative play) than others. So we can assume that for some children participation was much greater than the results indicate. For others it was less.

The main object of the test is to simply show that provision for imaginative and creative play is important per se.*

Details of the arithmetic procedure and the observations are included in Appendix B.

Some general remarks about the observations need to be made before drawing conclusions.

a) The method used was quite difficult to carry out single-handedly. It was difficult to keep track of all the activity going on

*The results are summarized in Table 1.

in both categories continuously. Particularly when carried out by the youngest children, it was less extroverted, hidden away in odd corners. Also it was sometimes difficult to know whether to classify the activity as creative or to consider it as more general "exploration" - the choice was somewhat arbitrary. For the youngest kids then, some activity may have been overlooked, producing an underestimate in participation. But some activities may have been mistakenly included. In any case the proportion of children under 5 on the playground at any given time was small, so the effect either way is likely to be small. During Set 3 a concerted effort was made to observe this age group. A glance at Appendix B still shows few entries for groups of under-fives, so probably the issue can be ignored.

b) All the observations with times of four hours and under were carried out in the early evening, usually starting between 5:00 and 6:00 p.m. For Sets 1 and 2 during the day-time, the Arts and Crafts Program was running, and other children were at day camps elsewhere. The evening was therefore the best time to study "free-participation." In Set 3, the children were at school during the daytime.

c) The generally higher values in Set 3 are most likely due to increased opportunity. By that time the 'fort' was up adjacent to the sand-pit; this stimulated a good deal of imaginative play. By focussing activity in that area, it stimulated more continuous play in the sand-pit.

The roof on the play-house was up; this quite decidedly added to the general interest of the play-house.

By this time the more imaginative "group leaders" had returned from summer camp.

d) On days when the observation time was greater than four hours, the author was usually also directing a work crew. This made observation more difficult, and maybe a little inaccurate.

e) Examination of Appendix B. shows few activity entries for each observation time in Set 2. This is an example of a very intriguing phenomena that sometimes occurred on the playground, particularly with regard to creative activity: namely, the same character or "theme" was often maintained over long periods of time - even weeks - see page , "Thematic Patterns." There were two areas of interest. The water-play area adjacent to the fountain, and the area behind the play-house, where continuous constructional activity was carried on.

Assessment of Results

The results appear impressive: During the observation periods, on average, between 3% and 66.5% of the children were engaged in creative or imaginative play. The average for all observation periods being 27%, with a median at 28%. Now it could be argued that these values are artificially high since two-thirds of the observations were taken in the evening, when conditions were most stimulating. Let us therefore average out the values for the longer observation times (5 hours and above). Here the answer is 20% average, with a median at 25% - not so good. But even so we can say: during the times at which most children are able to visit the playground, on the average, about a fifth of them will be engaged in imaginative and/or creative play. And in the evening this proportion will rise to around a quarter.

Conclusion

To return to our concern about "significance." We are able to say now: "even if creative and imaginative play are considered to be only twice as important as other types of play, then provision for them is just as important as for other types of play."

It is submitted that the hypothesis we set out with is proven.*

B. The Patterns of Activity in Time and Space (PATS)

The original interest in this issue was concerned with sequential behavior only: i.e. the order of activity. This turned out to be a naive viewpoint; the complex nature and diversity of the actual patterns observed was a genuine surprise.

In the Initial Design elements stimulating different types of activity were spatially distributed so as to provide many possible alternative choices. The children were provided with an 'open situation'; "choice" per se was the only provision.**

This arrangement certainly enabled an important conclusion to be quickly made, vix.: different types of activity are usually not

*Clearly more weight could be given to this conclusion by carrying out the same test on a "standard playground" in a similar social area. Very informal observations made on O'Day playground in the South End (in a reasonably similar social area) indicated a nearly complete lack of creative play - the only manipulable material was the sand in a sand-pit. Imaginative play was also obviously less.

**Alternatively, sequences could have been designed from the developmental viewpoint - to provide sensory contrasts, graded challenges and learning experiences, etc. In a free environment, such things could be provided for, but there is nothing to say that the children would use it in that way. Choices could, however, be physically constrained; a maze is certainly one way of providing a structural sequence.

included in the same sequence. An individual set of actions tended to be all action-oriented and mobile, or creative and localized. The time-spans of creative activity were so long that the activity would extend through the whole of a visit to the playground.

Imaginative play was sometimes more integrated with general action, but again, often it was not.

Once the patterns of behavior were examined more closely, it became clear that the importance of the time dimension had been underestimated. It was also clear that different patterns were very much related to activity type. In consequence the aims behind the study of this issue became diverted and expanded. The resulting exploratory analysis produced a surprising number of implications related to the design of play environments. The major conclusions were as follows: Firstly, local play spaces in urban areas should be provided at a rather fine grain and hence be highly accessible to the children's houses. Secondly, if a potential design objective was to "direct" movement (e.g. to aid identity or to provide a "structured sequence"), then paths should be straight and of simple form, and physical barriers should be large in scale. Thirdly, playgrounds appear to be good settings for formal activity such as Arts and Crafts programs. Fourthly, four conclusions concerning the physical environment were reached: creative areas and action areas should be physically "separate;" areas for active and imaginative play should be complex and continuous; a choice of creative areas should be provided; manipulable materials should be dispersed throughout the environment.

The following analysis attempts to justify these conclusions.

It also tries to present a structured general description of space-time behavior. I suppose that other designers will find this valuable and that it will stimulate new thoughts about alternative forms and qualities for play environments. After all, one of the major concerns in many design problems is the provision for predicted patterns of activity in space and time, and usually many alternatives are possible - they certainly will not be exhausted in the present discussion.

Analysis of P.A.T.S.

Method

The complexity of dynamic behavior noted in Stage 2 held true. The inter-play of age, sex, time span, and order of different actions, and group structure made an enormous number of outcomes possible. To make a comprehensive inventory of them and their relative frequency would clearly have required many weeks of continuous observation by more than one person. Even so a week's observations identified a number of distinct patterns, making some generalizations possible.

By moving between various prominant positions in the playground, I was able to keep track of different groups and their actions. Observations were noted down in a log-book.* Keeping track was very difficult because groups left the playground for brief periods continuously (see a) below). Examples of patterns recorded are included in Appendix B.

*Notation on a plan of the playground was also tried, but proved to be far too constraining - it became over-loaded very quickly.

Three General Observations

a) The Playground and Other Local Outdoor Activity

The length of time spent on the playground per trip was often relatively short. Trips were frequent, but it often appeared as if activity on the playground was just one link in a chain of play activity occurring in and around the child's home. The playground was just one among a number of other play areas -- the street, the large sand "desert" adjacent to the housing project, grass and black-top areas within the project, the project's spray-pool, etc. For example, a child would come back from school, play a while, go home to change, maybe have a snack, return to the playground, go sit and talk on the front steps of a project building facing the playground, go to the "Slush-Truck," borrow a bike and go for a ride, return to the playground, go fetch something from home such as a doll, candy, a gun, the latest Batman gimmick to show a friend, return ... etc.

As far as one could tell the most frequent trips were made to and from home. In this way the playground functioned almost as a large open-air play-room, and an adjunct to the other living spaces in the child's home.

The location of the playground, so near to most of the homes, clearly explains this pattern of use. It is suggested that this pattern was healthy; visits did not have to be in the least bit formalized, as they would be to a facility further away. The playground was always the first place to check-out when looking for friends and/or action.

b) Physical Barriers and Movement Paths

Moderate physical barriers did little to deter 'movement in a straight line' or rapid movement from one end of the playground to the other (if the kid had a strong desire to do so). Of course, this observation is not true of the 'under-fives.'

The "Initial Design" did suggest a path system, but it was clearly too complex for the kids to follow (or desire to follow).

Conclusions that follow are threefold:

a) If it was wished* to direct movement by means of a designated path-system, its form would have to be very simple and its paths "straight."

b) If it was wished* to structure the behavior of over fives by means of physical barriers, they would have to be large in scale.

c) In terms of the observations it can be assumed that possible sequential choices were not affected significantly by the complex physical nature of the environment. Though visual inaccessibility may still have been affective.

c) Formal and Informal Activity - The Arts and Crafts Programs

The existence of the two Arts and Crafts programs made possible a comparison of the two settings and movement between the two. Population and ages in both programs were counted on three consecutive days (see Appendix A). Thus a crude estimate of relative participation or "popularity" was possible. The result was 30/70% for the day, and

*Objectives in this context could be aimed at increasing identity, or providing a structured sequence - for example.

40/60% for evening, in class/out class respectively.

There was a clear tendency for children to move freely between program and playground, particularly in the day program where a much broader range of activity was provided (painting, board games, paper, etc.). Kids came and went as they chose. The time spans in the program were fairly short - 20-30 minutes on average, although the median was higher. In the evening a different activity was provided for each session (usually more exciting, like finger painting, clay, etc.). Here the behavior pattern was rather different - a great initial interest and then a gradual tailing-off; when the kids departed they did so for good, or came back to disrupt others - there were no alternative activities provided. Average attention spans were possibly a little higher than for the day-time program. This being due to the greater excitement of the evening activities; they attracted a wide age range. The day-time activities were very "tame" on the whole and did not attract the 8-12 year old group.

Was the playground the best place for the programs? The answer is a qualified "yes." The major disadvantage, of course, was the possible distraction of the rest of the playground. Attention spans in the programs were not high and distraction probably did not help. How much of a distraction the playground was is not clear at all - maybe negligible. However, visual inaccessibility would appear to be a wise provision.

The advantages of locating on the playground are obvious. Here was the major concentration of "customers." In addition, they were free to join in or not as they wished. They could "check out"

what was going on at regular intervals without having to make a special trip.

As for the "control" in the program, the issue is ambivalent. The playground was there as a safety valve, kids could go and let off steam if they got bored; on the other hand, the playground kept many potential "disruptors" close at hand.

One conclusion is rather clear: to be most attractive to the widest age-range the programs would have to provide a wider and more diverse set of activities.

Patterns Related to Activity Types

1. Action - Mobile, Chain

Patterns of general motor activity were common. Activities such as swinging, playing on see-saws, running around, playing tag, climbing up and down the Tower, crossing the balance pole, climbing over the playhouse and in the jungle gym were included. The attention spans of the same action in different patterns varied widely (e.g. swinging could last anywhere from 30 seconds to 30 minutes). Whole sequences could be accomplished very rapidly, e.g. large swings, large see-saws, small swings, running around, climb hills, play around Tower - four minutes. The actions could take any order. For a continuous action like "follow-the-leader," the 'chain' character did not apply. When another type of activity (water-play for example) was included in a primarily action sequence, it was often of short duration - an attempt to disrupt another group rather than become deeply involved with them.

2. Action - Localized

Here the patterns of action were within one element, such as the Tower. They had the quick, successive temporal form of the 'chains,' but were often accompanied by imaginative play, making the tempo more varied.

Creative and Imaginary - Localized (Group Imagination)

Patterns involving creative play tended to be much longer than strictly action sequences - anywhere from thirty minutes to many hours. These were the most interesting patterns and it was fascinating to observe what might be called group imagination in operation at close quarters. This was the important social aspect of play operating at the highest level. Typically, a creative sequence would start in a leisurely way with a small group; as time went on more would join in, children of diverse ages. Different members would make suggestions, try something out and meet, or not meet with the approval of the group. One idea or action would suggest another, with different members taking the initiative and leadership.

Two weeks after the first set of observations were taken, another set was taken focussing on creative activity. During that time a good illustration of the above process occurred, a sequence that in effect lasted three days.* It centered around using the

*This Carry-over effect (the same activity carried on by the same group in the same place over several hours or even days) was a fairly common occurrence. Two other examples were noted during this observation period alone. A group of girls who used the playhouse for

large wooden 'building-blocks,' milk-crates and pieces of lumber situated behind the playhouse for a whole series of "constructions."

The first day a small group of eight to twelve-year-old boys spent an hour building two clubhouses and another couple of hours playing around them, adding to them, and just sitting in them talking - dreaming up various kinds of imaginary situations, like being in the middle of the jungle. Finally, they smashed what they had built, with energetic pleasure. The second day, I arrived to find a "pepsi cart" already constructed in the same vicinity, on a large loading platform about 8'0" by 3'0" laying on the ground; this had obviously partly suggested the vehicle. A 'milk-truck' was under construction, suggested by the crates. The constructions were done in beautiful detail, complete with all kinds of "levers," "head lamps," "wheels," "seats," "steering wheels," etc. The "group imagination" was in operation all the time, with the group growing in size, mostly boys, the younger members following behind, taking 'orders' from the older members. Then for a long, long time the kids 'drove' the vehicles, delivering milk and pepsi, chatting to the "store-keepers" and "housewives," negotiating hazards on the highway - "lights," "cops," "steep hills." The kids acted-out a whole chunk of every day adult experience.

The third day saw the addition of two "motor-bikes," a "car," and a "clubhouse." Again involving a large group, a great

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"playing house" for three consecutive evenings. And a group of boys who played with milk crates in, and around the playhouse on three evenings. This phenomenon seemed to be related to Identity (see Part C, this Chapter).

deal of imaginative play suggested by, and a part of the 'constructions.' During the whole of the three-day period one twelve-year-old boy maintained leadership of the group (which continuously changed members) for much of the time, directing action and contributing many ideas. Funnily enough, he was a boy whose outward behavior verged on the abnormal - very aggressive, physically and verbally oriented, odd mannerisms when speaking, apparently not the 'leading' or creative type.

The constructive activity died down during the next four days, then started out again, the same boy leading. This time it started out with the construction of two "battleships" (two hours). Then followed a long period (about three hours) of imaginative play centered around the battleships, with two "crews," two "captains" and a "commander." The groups acted out their conception of life on board ship - "sailing orders" from the "bridge," "sea-battles," "eating," "going to sleep," etc. About an hour was spent with the captain 'drilling the crew,' giving orders, getting them lined up, being saluted. Much of this activity did not take place on the actual ships, but just in the general area behind the playhouse. This made no difference to the kids - they still imagined they were "on board" although they were, in reality, standing several yards from their "ships." Later on one of the ships was smashed in battle; it became replaced with a hide-out. The imaginative play turned to "soldiering" and finally ended with a game of "combat" taking in the whole playground.

The complete sequence of events lasted about eight hours.

Although membership of the group changed a good deal during that time a small group of 'leading' kids stayed for the whole period. And the group size varied from five to twenty of all ages - mostly boys - but not entirely. It is very difficult to put into words - the rich imagination and very open expressiveness exhibited by the children engaged in this type of activity; it is truly a wonderful thing to witness.

Creative and Imaginary, Mobile (Thematic)

The foregoing examples primarily occurred in one spatial location on the playground. A creative sequence could also be spatially mobile, though less frequently so. For example, a sequence involving a group of six seven-to-twelve-year-old boys centered around playing with milk-crates. First, 'towers' were built (behind and in the playhouse), getting higher and higher and being successively pushed over. When maximum height had been reached (a tall tower on top of a wall of the playhouse) someone suggested building a tower on top of The Tower. The boxes were carried over and pulled up by rope. Towers were erected and came crashing down. Then someone suggested building a clubhouse on top of the Tower and for a while it became the center of interest. Finally, the clubhouse was destroyed as a result of playing a very exciting game called "throwing milk-crates as far as you can from the top of the Tower." The whole sequence lasted about four hours. This sequence was also thematic in the way it centered around one kind of manipulable object in the environment. Other examples would be playing

with water; play with long strips of timber; playing with fire, etc.

The 'Under Fives,' Localized (Focussing)

For the youngest children the playhouse was a great focus of activity. Much behavior was patterned with imaginative play and interspersed with more active pursuits (like climbing over the playhouse). For the five-year-olds and under, creative play often appeared far more abstract than for older children - the first explorations of the sensuous and other qualities of their very immediate surroundings. Children at this age would just play around the house, in the sand, and/or at moving a few small pieces of timber around.

This attachment to the house by the youngest boys and girls is illustrated by an example that took place during the observation period: A group of five-year-olds (girls and boys) spent a good hour making 'mud pies' in the playhouse, but the sand to make them was brought in a paper bag from the sand-pit, the water from the fountain, the 'fruit' (sawdust) from the 'arena' where sawing had been done, the 'frosting,' was shaken from an old can of cleaning powder. In passing, it should be noted that this example is an excellent illustration of how important minute parts of the manipulable environment can be, and their stimulating function.

Summary: The Spatial Patterns of Different Activities

- Focussing and Chain
- Localized and Mobile

The spatial form of the "mud-pie" example above may be termed focussing. This involved excursions from a localized area to

carry out tasks connected with the main activity or 'plan' being carried out. This same form often occurred when camps and clubhouses were under construction. They were built in many locations, not just behind the playhouse. Often the materials had to be collected from all over the playground.

"Combat' also often branched out and focussed on a particular 'fortress' which itself had been created as part of a focussing pattern. (See photos 34-40 in Appendix A.) In this case we have a pulsing, focussing - dispersing form. Games like "fire-engines" described in Stage 2 would also fall into this category.

Chain patterns were related particularly to motor action sequences involving items of fixed equipment. Here the child went from one spatial location to another in relatively quick succession.

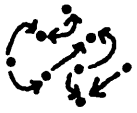
Often non-specific behavior was of the same form, but with a more relaxed tempo - children just roaming around, not doing much in particular except talking. Or, for example, one evening a girl (twelve years old) was sitting on a large swing reading a book, just rocking back and forth; she then sat on a barrel near the small swings, then on top of the small tower (still reading), and finally finished in the playhouse talking with her friends, during a span of 90 minutes.

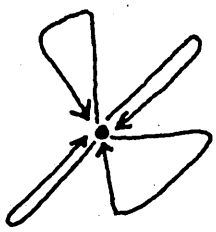
The spatial patterns could also be generally labelled as mobile or localized.

Construction projects; play by the under fives around the playhouse; activity on and around the Tower; play around the water fountain and in the sand-pit were good examples of the localized pattern.

TABLE 2

Patterns of Activity in Time and Space, (PATS)

Spatial Pattern	Temporal Pattern	Activity Type
1. MOBILE, Chain (Any order possible.)	Short to very short spans in quick succession. Small groups.	ACTION
	More leisurely.	SOCIAL ACTIVITY
2. LOCALIZED, The same form but very compact.	Far more continuous action, much wider range of tempo. Larger groups, e.g., The Tower.	ACTION AND IMAGINATIVE PLAY
		
3. LOCALIZED, More than one focus. Similar to chain but more compact.	Wide range of spans, very small groups.	UNDER-FIVE'S ACTIVITY
		
4. MOBILE, Unfocused. (Can be thematic.)	Continuous, medium spans. Larger groups.	IMAGINATIVE PLAY AND ACTION GAMES (Follow my leader)
		

5. MOBILE, Focusing (Can be thematic.) 	Less continuity, similar spans. Similar groups.	IMAGINATIVE (AND CREATIVE) PLAY
6. LOCALIZED, With One Focus. 	Continuous, wide range of spans, may "carry-over" from day to day. Groups fluctuate in size.	CREATIVE (AND IMAGINATIVE) PLAY
7. LOCALIZED, Focusing. Spatially expanded. 	Less continuous, fairly wide range of spans. Groups fluctuate. Tends to be initial stage of 5. above.	CREATIVE (AND IMAGINATIVE) Play
8. LOCALIZED, Single Location. 	Wide variations of time-span, fluctuating groups.	GENERAL SOCIAL ACTIVITY

Action oriented chain patterns were mobile. An example of a non-chain, but mobile pattern would be a game of "combat" ranging all over the playground. This game did not necessarily relate to specific items of equipment. The creative example with the milk-crates was another example, but here there was also some focussing. The same would be true of 'combat' if related to a "fort" or "jailhouse." This type of pattern could be termed Mobile (focussed). Patterns could also be Mobile (unfocussed).

Inventory of PATS

Table 2 attempts to relate loosely the different temporal and spatial patterns identified in the discussion with different activity types. It is not intended to be a rigorous classification but merely a summary of a complex issue.

Comments, Implications for Form

1. The analysis strongly implies the spatial separation of the environment stimulating action, from that stimulating creative play. Patterns of action and patterns of creation have entirely different spatial and temporal characteristics. They are engaged in independently of one another, action even tending to disrupt creation. In an environment that presented the opportunity, creation and action were not combined in the same sequence; for example, from swings to sand-pit, to the Tower to water play, etc., was not a common sequence.

2. The tendency for the most significant creative activities to be localized and not part of other sequences again indicates the need for physically separated spaces for creative activity. If a number of spaces were provided, the mobile (focussing) pattern would be stimulated.

The added interest of the localized (focussing) form argues for the scatteration of some manipulable items, which usually happens 'naturally.'

3. The tendency for sequences of action to be continuous (in spite of other available choices) argues for physical continuity of the action - stimulating environment. This lends weight to our developing argument for a complex, multi-functional, continuous environment for active and imaginative play.

4. It is suggested (but difficult to substantiate) that the mobile pattern is stimulated by continuity and complexity, and that distinct variations in either of these variables will tend to produce focussing.

Summary Conclusions

1. General Accessibility - small neighborhood playgrounds should be provided at a fine-grain and be highly accessible from the surrounding homes.

2. Path-systems to direct movement should be straight, and of simple form.

3. Physical Barriers to modify behavior should be substantial in scale.

4. Formal Activities, such as arts and crafts classes, benefit from locating on a playground, but the rest of the playground should be visually inaccessible; however, 'outsiders' should be able to see what is going on in the program.

5. Implications of Sequences for General Form

   a. Spatial separation of creative areas and action areas.

   b. Choice of creative areas.

   c. Continuity and complexity of action-imaginary play areas.

   d. Scatteration of small manipulable materials.

C. Perceptions of the Playground*

This study was exploratory in nature. A complete study would have required far more time than was available.

Methods and Objectives

The study was carried out during the first two weeks of September. A number of children were asked to make drawings of the playground. When they were finished they were asked three questions:

a) What part of the playground do you like best?

b) Where do you like to play best?

c) Where do you play most - where do you spend the most amount of time?

An additional eight children who did not make drawings were

*Terminology, approaches and guidance in this section owe much to Kevin Lynch's Image of the City (10).

also asked the questions (making a total of nineteen). Of the maps attempted, eleven could be used for study purposes. The interviews were held in the playhouse, the subjects facing away from the rest of the playground. The "questions only" interviews were not held anywhere in particular. All the children interviewed were aged between five and twelve years, ten boys and six girls. It was not possible to elicit adequate responses from the under-fives.

The three slightly different questions were asked because during a test run it was quite clear that responses would vary according to the question. Question a) was intentionally very open, hoping to elicit some general idea of value or identity. The difference in emphasis between b) and c) is obvious.

The study had three aims in view, as follows: 1) To see which elements seemed the most important as places for play, and to see how closely the result matched with their actual behavior. 2) To tackle the issue of physical identity* as a separate issue. The idea was to see if the children noticed certain qualities in their environment, such as geometric forms and relationships. It was also hoped to test the following proposition in some way - "All other things being equal, it is the play element with the clearest identity which attracts the most attention." This proved to be impossible due to the lack of control situations. However, a vague answer was implied by comparing verbal with visual responses, and by comparing responses to the three different questions.

*I.E. the individuality of an element, the extent to which it stands out from its surroundings, and in this context, the influence of identity on behavior.

TABLE 3A

NUMBER OF RESPONSES TO THREE SIMILAR QUESTIONS, RANKED IN AGGREGATE AND INDIVIDUALLY

(Number of Interviews = 19)

	Aggregate		"Like Best"		"Play Best"		"Play Most"	
	Total	Rank	Total	Rank	Total	Rank	Total	Rank
Playhouse	12	1	1	5	6	1	5	2
Tower	10	2	1	5	1	4	8	1
Swings	9	3	5	2	3	2	1	4
BBC	8	4	8	1	0	5	0	5
Sand pit	6	5	2	4	2	3	2	3
Small swings	3	6	3	3	0	5	0	5
Back of Playhouse	3	6	0	6	1	4	2	3
Small see-saws	2	7	0	6	0	5	2	3
Big see-saws	2	7	1	5	1	4	0	5
Jungle gym	1	8	0	6	1	4	0	5
Small tower	1	8	1	5	0	5	0	5

TABLE 3B

NUMBER OF TIMES DIFFERENT ELEMENTS WERE NOTED ON DRAWINGS

Rank		
1	Tower Basketball court Large swings	11
2	Arena Small tower	9
3	Fountain Large see-saws	8
4	Playhouse Sand pit	7
5	Small swings	6
6	Boring slide	5
7	Behind playhouse	4
8	Small see-saws	3
9	Jumping pit Lights	2

Total number of drawings = 11

3) To see what spatial conception the children had of the playground, in what way did they relate the elements to each other - as a "plan," chaotically, or somewhere in between?

The results of the study are annotated in Tables 3a and 3b. In (a) responses to the questions are ranked individually and in aggregate. In (b) the number of times different elements were noted on the drawings are listed in rank order. Examples of some of the drawings are included in Appendix B.

The Most Important Play Areas

It is assumed that for any child there would be three reasons acting together for including an element in a drawing: because he liked to play there often or it was considered important in some more general way, or because it had a simple memorable form and was easy to draw.

A glance at Table (b) seems to indicate examples of all these influences. The Tower, Basketball Court and Large Swings share first place, yet it is safe to say that the Basketball Court was not an important play area for most of the under twelves. If we look at Table (a) we find the Basketball Court top of the "Like Best" category, yet not mentioned once in the other two categories.

The Tower and Swings were clearly important and this corresponded with behavior. But the weight given to the Basketball Court is intriguing. The court had a clear identity - its size and form (flat, hard, black, geometric, surface) placed it in strong contrast to the rest of the playground. For this reason we would

expect the Court to be an important part of the image of the playground. But how much weight was contributed by physical identity and how much by a donated value? The response to the "Like Best" question suggests it was high. For the young child the Basketball Court represented something to aspire to; it was the place where brothers and others he may have looked up to hung-out. Again, the Court was perhaps seen as an essential part of any playground, like swings, and therefore given a high value. This possibility is borne out by the fact that a significant number of the younger girls put down the Court on their drawings. One might add that the court was given a high value by everyone who came in contact with the playground - mainly because it was very visibly used by many teen-agers for "good healthy exercise, off the streets."

The playhouse is at, or near, top in both "play" questions which places it in top aggregate position. However, in Table (b) it is only in fourth place. Two extraneous reasons may be behind this. Firstly, the children clearly had difficulty representing it, often latching onto the stepped wall as a symbol (of itself, it did not have a memorable form until the roof was put on in October.). Secondly, the fact that they drew the maps while in the playhouse may have made them overlook it (although the reverse could have been true).

The differential ranking of third place in Table (a) gives the Small Swings under "Like Best," and the Sand-Pit as both "Play Best" and "Play most." The position of the Sand-Pit corresponds well with its fourth position in Table (b) and with observed behavior.

The Small Swings correspond a little less - fifth place. They also do not appear in either "play" category in Table (a); this was predictable since they were used more by the youngest children. Their high position in the "Like Best" group is again probably a value response "swings are a must on any playground."

Conclusion: The children saw their most important play areas at the Tower, the Large Swings, the Sand-Pit and the Playhouse.* The Basketball Court and the Small Swings were considered valuable assets of the playground, but not important play areas by the five to twelve age group.**

Physical Identity

The high position in Table (b) of the Arena, Small Tower, Fountain and Large See-Saws does not agree with the responses in Table (a). The Arena in particular was an area of low observed activity, and the other elements were the locus of only moderate activity. The one quality common to all four of these elements was their clear physical identity. The Arena had a geometric shape,

*The playhouse, therefore, turned out to be a completely multi-age area for both sexes. Although a center of activity for the youngest, it was also a very important area for the older children. A check through the observations by sex in both (a) and (b) indicated that it was mentioned by equal proportions of both girls and boys, although informal observation indicated it was still more a center of activity for girls.

**Also implied here is the danger of relying on "Like Best" questionnaire responses from children (and others?) as an indication of their true needs.

the Small Tower stood out from its background, it was brightly painted and geometric, the Fountain stood out and the Large See-Saw had a clear, simple form. The reasonable conclusion implied here is that the elements with the clearest identity were the most memorable (visually). The apparent strong identity of the Basketball Court has also been noted. What of the other clearly identifiable elements? The large swings and particularly the Tower also fall in this category. Here we get into difficulties because these two elements were also highly meaningful as play elements.* We have no way of separating this aspect from the identity issue in order to see which characteristic was mainly responsible for their high position on Table (b). The Jumping-Pit also had a clear shape. But when the observations were made it was virtually unused since it was not 'filled' - so unused that the kids probably hardly noticed it, thus accounting for its bottom position on (b). Our doubts about the data on the playhouse do not allow us to comment on its relatively low position on Table (b).

Why is identity an important issue in the first place? As expressed in the hypotheses at the beginning, it is assumed to be an important means of stimulating and maintaining interest in important parts of the play environment. Our observations so far have not suggested a clear conclusion, since we cannot separate meaning from identity.

*It is suggested that the strong, clear physical identity of "the Tower" was a major reason for its popularity. On the one hand the kids were able to relate to it quite directly - "The Tower," a strongly identifiable object; on the other hand, the kids knew that it contained many possibilities - a real 'Pandora's box.'

The second question is concerned with the memorable quality of the environment. It is assumed to be important that a child goes away with a memorable picture of his play-environment (as expressed in drawings) as well as a sharp memory of things done (verbal responses). A clear image of the playground should help to maintain general interest. Here we are interested in discovering how a sharp image is instilled. The high rank of only moderately utilized elements suggest identity to be the important variable. The low rank of other moderate activity areas of low identity (behind playhouse, the water play area, and the sand-pit*) support this claim.

Conclusion: The hypothesis was not testable (in this study). But the general "imageability" of the environment appeared to be accentuated by the provision of elements of clear identity.

Spatial Conceptions

Although the children were encouraged to do so, they were not able to represent the playground as a plan view from above. There was one masterfully drawn exception (See Appendix B, Number 1). Representations tended to consist of collections of discrete elements in elevation. Sometimes these did not conform to a pattern mirrored in reality at all. Most of the time some of them were related, such as the Tower and the elements around it.

Close observation of the way in which the children drew the maps, the order in which they drew the elements and indeed

*Most kids were not able to represent the subtle shape of the Sand-Pit at all; usually it was drawn in a roughly circular shape.

one or two beautiful examples of the finished drawings indicated that the kids thought in terms of "journeys" on the playground. An attempt to lay out formal lines at the beginning of the drawing was never made.

Conclusion: The children thought of their environment as a fairly continuous linear experience linking together identifiable elements. They were not able to develop this into an integrated"plan" of the environment. Presumably this conclusion bears some relation to their actual experience during play.

Note:

One area much neglected in the drawings and completely in the question responses was the area behind the playhouse, the water area and creative activity. One reason could be that the questionnaire did not ask the right question, i.e. "what do you like to do?" Of course the questions were intentionally related to the environment rather than activity. The specific areas for creative play certainly did not have a clear physical identity. But it might also be hypothesized that the kids did not think of carrying out creative activities (particularly construction) in a particular location.

The implication is that we had not succeeded in giving a strong identity or meaning to the creative areas.

Implications for Design

1. The importance given by the children to the Tower and the Playhouse lends additional support to the argument for complex,

multi-functional elements as the major provisions on playgrounds. In terms of more standard equipment, swings are clearly the most important element.

2. Although the relationship between identity and participation could not be tested, it is fairly clear that elements having a clear identity help the child develop a sharp, lasting, visual impression of his play environment. If this is considered important then the identity of elements can most easily be aided by making them contrast with their surroundings, through the use of color, geometry, etc.

3. The attitudes of the children indicate that it is important to provide for basketball or other teen-age oriented activities to which the under twelves can aspire.*

4. The way the children drew the playground (and their behavior) supports the case for continuity - "a net of semi-linear paths that actually pass through the elements rather than simply connecting them."

*A comment by one of the mothers (of a four-year-old son) is noteworthy here, to justify the proposal; she said "What I like about the playground is that there is something for all ages. I shall always know where "T" is, or where he can go, even when he is 18."

CHAPTER III

PLAY ACTIVITY AND THE FACILITATING ENVIRONMENT

Qualities Facilitating Creative Play

- Physical Manipulability
- Open-ended Qualities
- Spatial Qualities

Conclusions

Qualities Facilitating Imaginative Play

- Moveable and "junk" Materials
- Environmental Complexity

Conclusions

Qualities Facilitating Motor Actions

- Maintenance of Interest and Complexity
  - Functional Complexity
  - Physical Continuity
  - Localized Graded Challenge
- Movement

Conclusions

Environmental Qualities and General Social Activity

- Influence of Other Activities and Their Settings
- Influence of the Manipulable Environment
- The Social Function of the Fence

Play Activity and The Facilitating Environment

Whatever he might do on the way, finally the designer must propose a physical environment to suit his clients needs and objectives. In this chapter I hope to draw some conclusions to aid the future would-be designers of playgrounds. I shall try to identify the environmental qualities of the Lenox Street project that contributed most effectively to meeting its objectives. I shall attempt to generalize the findings; suggesting a rank order of qualities necessary for an optimum solution, and an order applicable to a constrained (by space and/or finances) solution - i.e. qualities with the most pay-off.

The objectives of the Lenox design, to recap, were as follows:

1. To provide an environment that would stimulate*
   - Creative and Imaginative Play
   - Physical Development
   - Cognitive development and the acquisition of knowledge
   - Social interaction and relaxation
   - Sensory perception and discrimination
2. Provide a clearly identifiable place, a locus for more general community activities.

For some of these objectives, the influence of the environment was clear and testable; for others the influence was still fairly clear

*It is assumed that the critical social functions of play and manipulative skills are automatically included, by definition, in these objectives; especially in Creative and Imaginative play.

but not testable in any disciplined manner. Finally, the influence on the remaining objectives was unclear and only open to the most general speculation.

The accent in this chapter is on variables relating to the content of the environment rather than the form, although some formal implications do arise.

Qualities Facilitating Creative Play

Physical Manipulability

By definition this is a necessary quality for any creative activity or symbolic changing of one's surroundings. And, not unreasonably, this turned out to be the most important variable. From the very beginning, the moveable materials lying around the playground continuously stimulated creative activity.

For the over-five-year-olds much of the creative activity was 'constructive' one way or another, and it is important to realize the different parts played by different kinds of materials in this realm. Most constructive activity was initially stimulated by 'basic building materials'- sizeable pieces of lumber, wood blocks, bricks, 9" x 9" x 2" fire clay tiles, oil drums and milk-crates (the most successful elements because they are light, they have a modular quality and fit into each other in a beautiful, builderly way). Once the 'basic construction' had been completed - "clubhouse," "battleship," whatever, then the existence of more junk-like materials enabled the kids to append many intricately worked-out details to their constructions. The ingenuity, inventive-

ness and humour expressed in some of these details was truly wonderful to behold. The materials that could be included here are endless, but a few examples may express the range and quality - "popsical sticks" wedged in a "levers" on all kinds of vehicles, including "rocket ships;" an auto-radio antenna as a TV aerial on a clubhouse; a piece of carpet as a "carpet" in a camp; small rubber wheels as "wheels" on "autos;" a small gear-wheel as a steering-wheel, etc. Many times these appendages did not appear to have any symbolic function, although sometimes questioning the children would reveal reasons not outwardly obvious. At other times, however, the appendages appeared to be purely abstract additions to the original plan. For all age groups sound producing elements always stimulated use, for drumming, jumping on, etc.

For the under-fives, creative play carried out on their own initiative (they also had a peripheral involvement in the creative play of older children) was often outwardly more abstract, and much smaller in scale. Constructions of small pieces of lumber or 'junk' just a foot high were often made, maybe with sand poured over them. Creative actions by this age group appeared to be far more exploratory, concerned with the qualitative nature of different materials, and how they could be fitted together - i.e. a good deal of self-exploration was probably also involved, the development of manual skills and powers of concentration. Maybe 'creative' is a misnomer when applied to this age group - who knows what is going on inside a three-year-old when he is sitting down in sand patiently filling an empty beer can with it for twenty minutes or more.

Mis-named or not, we can safely assume that these kinds of activities are important to young children and that they are stimulated by the existence of very small manipulable pieces of material and objects in the micro-environment.

The opportunity is taken here of stressing the importance of providing "good quality junk" - interesting and robust.

Open-ended Qualities

Creative activities were clearly also stimulated by elements on the playground that somehow by their physical expression invited physical extension. The clearest example of this occurred when a deep trench was dug to accommodate a water pipe. It clearly invited to be covered over: a whole series of clubs and camps were built in the trench during the four weeks it was open (see Appendix A, photos 49-55). Many camps were built in the West-hand room of the playhouse, again the invitation to add onto an element that had an unfinished quality about it. The hard concrete floor also appeared stimulating. Of course in this case there was an added stimulus - the imaginative play that occurred in the playhouse.

A number of camps were also built as extensions of both the old drying machines. They enclosed a dark, inviting, but extendable space. Houses were built on top of the Tower; again the invitation to add, to roof over and enclose. A couple of times even, the Spool Tower was added onto, for similar reasons. One quality of many of these open-ended situations should be underlined, namely, the small dimensions of the stimulating spaces - inside a

dryer, top of the tower, a narrow trench.

Again when dealing with the under-fives we find creative activity stimulated by open-ended qualities, but at a greatly reduced scale. Constructive activity could be prompted by the 12" gap between two pieces of stone. At this scale every nook and cranny of the "fixed environment" could become a stimulus, and at one time or another they did.

Spatial Qualities

The greatest amount of creative activity in terms of both frequency and span took place behind and in the playhouse. It is suggested that one of the reasons for this was the sense of enclosure there, spaces of adequate size for constructive activities, cut off psychologically from the surroundings, where a child could, and felt that he could, work unhampered, even though other activities were going on immediately adjacent to the area. It is true that the playhouse was a focus of imaginative activities, in part stimulating 'constructions,' but even so, the spatial influence behind the playhouse can still be substantiated for a number of reasons.

During Stage 2 the area behind the playhouse was almost completely neglected, when spatially, it just bled-off uneasily into the vacant ground adjacent to the playground. Once the area was enclosed by an earth mound, creative activity began to move out of the playhouse (where it had continuously taken place) into the area behind. Here was a rather good 'controlled test.' Creative activity had taken place in the playhouse because of its open-ended

quality, because it was the locus of imaginative play and probably because of its protective enclosed spaces. Once the space behind the playhouse was defined, enclosed and had a sense of security, creative play moved in.

Secondly, in the design there were two areas set aside for creative play, the second one (supposedly oriented to older kids) located at the other end of the playground. Despite attempts to do so, creative play could not be stimulated in this area on any lasting basis. For one thing, moveable materials tended to dissipate from the area due to the lack of physical enclosure.

At the end of Stage 2 the "railroad-tie fortress" was moved to the second area; this stimulated much imaginative play and together with the old dryer provided a good deal of open-endedness. Even so, very little substantial creative play occurred there. This fairly well 'controlled' situation seems to indicate the influence and importance of enclosure. However, the differential effect of different aspects of enclosure cannot be assessed - i.e. the relative influence of actual physical enclosure which inhibits the dispersion of materials, the sense of enclosure which promotes a sense of security and concentrates attention, and visual enclosure which cuts out external distractions. All these aspects may or may not be influenced by the same physical element. I would not hesitate to predict that if a physical division were made between the sand-pit and swings and the second area, that creative activity would increase.

Lastly, when the large wood-blocks were first cut up they were piled up near the fountain. Within the hour the kids had built

a fort on the open stretch of ground behind the fountain. However, within two and one-half hours the blocks were being used behind the playhouse and never again left that spot.

The influence of physical enclosure on creative activity is fairly clear. However, it was difficult to separate out sense of enclosure or spatial definition as independent variables in order to assess their importance. One situation on the playground does afford us some help - the sand-pit. Sand-play did occur in this area far more frequently, despite the fact that there were many other areas of sand. The greater participation in the sand-pit was undoubtedly partly because the sand was deeper and 'nicer.' Also, however, the pit was a clearly defined space, expressing a fairly strong sense of enclosure to the child kneeling down playing in it.

The relevance of visual closure to creative areas is difficult to assess. On the whole it appeared to be more a question of reducing visual access from outside - in rather than from inside - out. The participants in creative activity were inward looking, absorbed in what they were doing and not easily distracted by visible activities in adjacent areas. On the other hand, they would often not take kindly to the intrusion of another group who would not understand the 'project' being undertaken - often disrupting or even destroying it. This was one fault in the design of the sand-box - there were no physical or visual barriers dividing it from its surroundings. This is also possibly why the well defined, deep, jumping-pit space was hardly used for constructive play (before the jumping material was put in). The tower overlooked the pit; everything going on there was quite 'public.'

Shade

The critical importance of this quality is again emphasized. The lack of it on Lenox Street was a major brake on creative and other activity.

Conclusions

In a 'free' play environment physical manipulability is a necessary and sufficient quality to stimulate creative activity. Also, however, stimulation and the range of activity will be increased and maintained at a higher level if the qualities of shade, open-endedness, spatial enclosure and definition, physical enclosure, and visual inaccessibility are also provided. The formal implication being that areas for creative play should be physically separate and relatively inaccessible from other elements. This proposal is also supported by the conclusion reached when analyzing the pattern of creative activity in Chapter II.

Environmental Qualities Facilitating Imaginative Play

Since imaginative play is very often interlinked with creative play, the conclusions noted above apply equally well to imaginative play. In this section, we shall discuss conditions stimulating other forms of imaginative play.

Moveable and Junk Materials

Here we are referring to the same class of materials described in the previous section functioning as appendages to

various constructions. These materials were often used individually as 'props' to the imagination and many times functioned as the initial stimulus - setting the child thinking along a particular line. Typical examples would be: an old glove suggesting a telephone which led to a long game about "mother" and visits from different "delivery men;" small pieces of wood suggesting short-wave radio which led to an 'army game;' a washing machine rotator suggesting a megaphone which led to "drilling the troops;" a piece of old pipe suggesting a telescope which led to "sea combat" - the list is endless with many examples being far more abstruse than those noted. It would appear that given an opportunity children are able, through their imaginative powers, to manipulate reality in any way they wish, to suit their own ends.

Environmental Complexity

A cursory attempt will be made to define the dimensions of (physical) environmental complexity, paying particular attention to those variables apparently relevant to imaginative play.

For the purposes of this discussion we shall define environmental complexity as dependent on, physical variety (of spaces, surfaces, surface elevations, materials, colours, textures, light, sound, etc.), the areal distribution and compactness of these variations and the range of relationships that any given actor can have with his visible surroundings. In other contexts the form of the path system might also be included, but for our purposes it is not seen as relevant. The local patterning or ordering of the environment clearly also influences complexity; a random distribution

of any given variable would contribute the most.

Environmental complexity, then = function of: physical variety, distribution of variety, density of variety. For example: a given environmental area consists of a set of different spaces - it has a certain complexity which rises as the range and number of spaces rise. Complexity will be increased if all spaces are made of two different materials and would be a maximum if the two materials were randomly distributed; an increase would be gained by using two different colours and again if they were distributed randomly for each material - and so on. Also, the more different levels an observer could view the environment from, the more complex it would become.

The relation between complexity and multi-function was noted in Chapter I. To a large extent they are inter-dependent variables (p.43).

It is not clear, without a good deal of experimentation, how the concept of complexity, as we have defined it, could be used as an evaluative tool in any rigorous manner. If used, for instance, in a comparative exercise, the different variables on the right hand side of the equation would have to be given different values. Further research into play behavior might enable us to make a good assessment of the different variables and their influence on imaginative and other types of play. It seems fairly certain that all the variables listed would turn out to be relevant. However, there may be others.

Some informal observations in a "standard play-ground" in the vicinity, indicated that imaginative play on Lenox-Camden was far higher. And, other things being equal, this seemed in part due to the relatively complex quality of the Lenox-Camden environment, both the overall complexity and particular, local complexities.

The overall complexity appeared to be the stimulus for many 'combat type' games that utilized the whole area of the playground. In this respect the two most relevant qualities appeared to be:

a) The wide variety of spaces: from open areas where mock battles could be staged to 'secret' hide-away spaces, to protected spaces where 'defense positions' could be established. A set of visually disconnected spaces that could always contain an element of 'surprise.'

b) Differences in elevation provided by the playhouse roof, hills, towers and other elements could stimulate a sense of power; commanding views were possible, and different groups could 'fight' for possession of them. The large tower was the most common element to fight for, since it had the greatest command and was the most defendable position.

These two qualities taken together seemed to provide the possibility of continuously changing physical (and in imaginative play, psychological) relationships between individuals and groups - "I am higher than you," "We can swoop down on you," "you come up and

get me," "I am safe up here," "I can see you, but you can't see me." In other words, the range of inter-personal relationships that could be acted out was greatly increased.

At a more localized level, the two areas where imaginative play was greatest were the Tower, the area around it, and the playhouse. These two areas were also the most complex in the playground in terms of functional variety, range of actor-object relationships, and range of densely packed spaces. Of course the playhouse had a strong identity as a "Playhouse," but it is unlikely that it would have done had it not possessed some natural stimulii; the same is true of the Tower.

It would appear that imaginative play is stimulated by complex environments - a rather obvious conclusion; the imagination is stimulated by very diverse environmental conditions. The difficult question is: which qualities are the most productive? Some have already been suggested, and are rather clearly important - spatial and elevational complexity, functional complexity. After this the order of importance becomes obscure, although in a general sense it is proposed that the whole bundle of sensuous qualities are the next in line.

Although we have suggested that imaginative play is some function of environmental complexity, there must be a cutting point somewhere along the line. It is reasonable to suppose that a state of over-stimulation could be reached, where the environment becomes too chaotic, oppressive, and over-terrifying. The position of this point is very hard to guess. The only way to find out would be to run some carefully monitored experiments where environmental

complexity was increased in its different dimensions to extreme values.

The feeling at Lenox Street was that 'saturation point' was quite a way off. As the complexity of the Tower was increased, the area attracted a larger proportion of child-hours. The range of imaginative and motor activity also increased. It is just not clear how many more additions could have been made, assuming them to be physically and technically feasible. In fact, the "finished" tower itself was becoming physically crowded, on plan it was only 4'0" square. If it had been designed differently, made larger with a greater elevational and spatial complexity, then more possibilities would have opened up; in particular the open-ended quality could have been greater; the kids would have had more opportunity to create their own complexity, as in the 'fort,' where boards were pushed between the railroad ties through the internal space until an extremely complex, intimate environment resulted.

In general terms many possibilities were foregone at Lenox Street which could have added to the complexity with beneficial results. The range of natural and synthetic materials could have been greatly increased (and still can be). Because the site was small no large-scale spaces could be provided: hence large-scale, rapid physical movement was always constrained. However, the playground environment was complemented by large-scale hard-surfaced areas in the housing project, used for bicycling, roller skating, etc. A large vacant lot where piles of sand had been dumped, on the far side of the project, was referred to as "the desert" and used for all manner of 'combat' games. The overgrown open area immediately

adjacent to the playground was used for more exploratory activity, bug and flower collecting, etc. (that is, until the "Roxbury Clean-Up," when it was bulldozed flat and covered with sand; after that it was used as a large running-around space, infrequently - it had lost all its "interest"). *

Summary

Imaginative play appears to be stimulated by small scale manipulable materials and "junk;" environmental complexity in general and spatial complexity in particular. It is also aided by the provision of many different levels in the vertical plane.

Qualities Facilitating Motor Actions

Here the general answer is simply stated. Any situation that provides the potential will stimulate action. It makes little difference to kids whether the setting has other functions and identities or not - they were just as eager to clamber over the walls and roof of the playhouse as to play in the jungle gym.

However, detailed observations of motor activity on the playground enables us to carry the discussion of specific influences a good deal further, and ex post facto, to identify some special characteristics of action oriented activity and ways in which its function can be extended.

Maintenance of Interest and Complex Quality of Setting

If a free-play environment is seriously going to aid

*For those interested in the implications of this particular comment and also in the whole issue of environmental complexity, at "neighborhood-scale," attention is drawn to a study recently completed by Marcia McMahon (11).

physical development, then the setting for physical action must not only give opportunities for many different kinds of motor actions, but also must provide an added sense of excitement, thrill, or challenge so that a child will repeat the action many times without loosing interest. A playground cannot be thought of as a kind of out-door gymnasium (as it often is), just a collection of unconnected, mono-functional pieces of equipment. Settings need to be far more exciting, subtle and complex, reflecting the important subtleties of physical action itself. This contention was clearly supported by the popularity of the most exciting and complex areas at Lenox Street. Interest will be maintained if a given part of the environment has built into it many different choices that can be combined and permuted one with the other - functional complexity.* If this quality is then combined with physical continuity,** the possible permutations, and therefore the interest, will be increased even more. Continuous sequences demanding alternating types of muscular coordination also allow the child to contrast different actions, to distinguish them, and learn how to gear his body to change from one to the other. Continuity will also stimulate 'follow-the-leader' and other obstacle course games.

Because functional complexity attracts localized action for

*I.e. possibilities for many actions at one spot - e.g. the Tower.

**I.e. elements physically connected in a meaningful way, e.g. the "Bridge," between the Tower and Spool Tower, and the quality of the Tower itself - kids could clamber all over it and undergo many different actions (in this case vertical continuity).

longer periods than mono-functional scattered equipment, it will also stimulate greater social activity as an adjunct to action. A stable group has more time to build up, not only of actors, but of spectators, too. These two groups will have a chance to interact amongst themselves and with each other.

The wider range of possibilities laid before the 'action-group' appeared to stimulate a wide range of social-interrelations within the group. This was a very subtle kind of influence. It seemed as if more discussion was stimulated; each kid could see a different possibility akin to his own temperament and capabilities, would push for it, search out a competitor, experiment with his own body, receive suggestions, criticisms. This kind of process could almost be termed '<u>creative action</u>,' (often, of course, there was also a good deal of imaginative play mixed in).

A particular aspect of high localized multi-function is the provision of <u>localized, graded challenge</u>. There are a number of reasons why this was an important quality:

a) It stimulated competition and courage testing (assumed to be important to encourage). A given local challenge became more than a "make it - or not make it" situation, the kids were able to rank each other, the opportunity to "make top" was always there, to be achieved in stages. Because the challenge was localized the social process described above had time to build up, this time influenced by a strong competitive tinge.

b) We are reminded of the observation concerning the mis-match of age with physical ability and courage. A

tough six-year-old would be found doing things a mild ten-year-old would be too scared to do, or a seven-year-old girl balancing gracefully and a twelve-year-old awkwardly over-balancing; or a five-year-old girl achieving the top of the Tower easily without using a ladder and a twelve-year-old boy being unable to!

Now, since the natural composition of activity groups could include almost any age-mix, it is clear that to allow social processes the greatest freedom, the local environment would have to be graded to suit a wide range of ability.

Movement

The sensuous pleasure derived from movement was clearly the one quality above all others that contributed the most excitement and interest to the action orientated environment. Often movement could be considered as a sensuous experience in its own right, not necessarily involving a motor skill. Frequently, however, it could stimulate motor-action, or indeed, be the central stimulus to a number of possible actions. For example, in order to experience the thrill of the fast slide a child first had to get to the top of the Tower. This could be done by pulling himself or herself up the slide with a rope, climbing the rope ladder (a challenge for many) or climbing a rope. The Tarzan rope could be used mainly for pleasure, but also more competitively. Kids would dare each other to swing off the different levels of the Spool Tower (graded challenge) or swing in the other direction and land on the Spool

Tower (very tricky), or swing over one of the "telephone pole bridges" - leaving go at the right moment to land on the other side. "Baling out" of the swings was a common challenge.

Another form of movement is the body's own locomotion through the environment. As for imaginative play, it is suggested that a wide range of horizontal and vertical movement adds to general interest and the range of action-responses.

Conclusion

Environments orientated to the development of physical skills, the stimulation of courage testing, a competitive spirit and more general social relations should include the following:

a) Densely packed, multi-functional, graded, continuous environments, providing for a wide range of motor-actions.

b) Exciting, interesting settings, with challenges ranging from easy to very hard.

c) Provisions for movement of different kinds as an integral part of the environment.

When circumstances permit, these environmental qualities may be beneficially combined with those stimulating imaginative play - many of them are similar. A combination of these two types of activity is likely to extend the range of both.

It is not hard to see that an environment designed to meet these criteria would present an extremely difficult design problem. Many of the dimensions (particularly where movement is involved) would be governed by strict anthropometric considerations. To be most effective, the finished product would consist of a very

carefully put together physical entity. Much experimentation and study will be required before this can be done on a mass-production basis.*

Environmental Qualities and General Social Activities

To reiterate: many important social processes are an integral part of play activity. Where possible and relevant to do so we have already suggested ways in which this characteristic can be facilitated. However, some further speculations covering more general social activity are warranted. Mostly children and teen-agers eleven years old and above (particularly girls) used the playground for more passive activity, such as talking, hanging-out, reading, etc.

The Influence of Other Activities and Their Settings

The presence of action often produced spectators. At the beginning of Stage 2 the large swings were the only stable locus of action; it was a favorite hanging-out spot with the 'log' and fence functioning as seats. Later on, as areas of action grew up elsewhere, so spectator groups moved around. Sitting on the Springboard or the Spool Tower watching the Tarzan rope was popular, or leaning on the fence by the large see-saws.

Activity was the initial attraction and excuse for coming to the playground; if the setting for action allowed people to sit around watching, they did so - talking, singing, joking, flirting, etc.

Sometimes the audience would be more distant from the

*This issue is discussed further in Chapter IV - Conclusions.

background activity. The arena bleachers were a favorite spot, providing a comfortable space and seats overlooking the main path through the playground. The activity of the playhouse provided the background interest.

The Influence of the Manipulable Environment

The influence here was quite evident; while people were sitting in conversation they could also do very small things which functioned as "props" to the social situation. Things which appeared to relax the mind and carry over lulls in the conversation. Men in Greece and other Mediterranean countries are well known for the beads they continually fondle. At Lenox Street scratching in the sand with a stick, playing with a piece of wood or a small stone, etc. appeared to serve this relaxing function. Rocking to and fro on barrels was a particularly good example - providing the pleasure characteristic of a rocking chair.

Another observation concerned moveable items such as large block of wood, milk crates and barrels. These served as moveable seats, allowing groups to set up where they pleased quite informally, depending on circumstances at any given moment. Around the basketball court this happened frequently, although the reasons behind the mobility were not very clear. The need for shade or shelter from the wind were two possible influences. The ability to move group locations provided a freedom which many unconsciously utilized. In addition it indicated where permanent seats should be provided.

The Social Function of the Fence

From the time it was put up the fence had some significant

influences over social behavior that were unpredicted. It was the locus of a good deal of hanging-out, particularly by adults and older teen-agers.

Why was this? Firstly the fence was in a key location, at the boundary between "the street" and "the playground" - and a physical barrier between the two. Although people of all ages found the playground an interesting place to observe, for many, particularly the 'sharper' teenagers, it was an uncomfortable place to be. It was a grubby place to sit around in with good clothes on, and the sand would dust and get into one's shoes. However, from the line of the fence one could still see what was going on.

The fence functioned as a kind of physical prop to hanging around. One could lean on it, or up against it. By accident rather than design it was quite comfortable to sit on; one could sit on the top rail and support one's heels on a lower one. Conversations could be carried on with people on the other side of the fence without a feeling of awkwardness. One could lean on the fence and relax; the interest of activity on the playground could fill in lulls in the conversation, much as the activity of a busy street does for 'street corner' groups.

Once the hanging-out activity on the fence was established, it was continuously reinforced by being adjacent to a main pedestrian route (the sidewalk). Whenever a pedestrian's interest was taken by the playground he or she could relax, lean on the fence and take a look without feeling uncomfortable and, after a while, perhaps join other groups "on the fence" (after having had a breathing space to see if this was desirable or not). The fence was a common bond and

gave a chance for people to size each other up before interacting.

Privacy and Daydreaming

It is difficult to know how much weight to give this apparent need. There was little real opportunity in the design for privacy. Even so it was interesting to see that the fairly complex spatial environment did give a number of opportunities. It was indicated that two kinds of privacy should be provided for - group privacy, and individual sense of privacy.

The need for individual privacy was by no means obvious. Children are, by nature, very sociable. Individual activity did occur, especially for the younger children, but this was usually because no one else was around to join in.

For groups, especially those engaged in creative or imaginative activity, the need for a secure, semi-private, local environment was more apparent: a place where they could concentrate on what they were doing, undisturbed. The variables influencing this kind of privacy appeared to be visual inaccessibility and non-proximity to areas of high activity. Areas in and behind the playhouse had these qualities, and they were used for much semi-private, creative activity. Kids the world over enjoy the feeling of secrecy and of sharing it with a few initiates. Through imaginative play they were quite able to turn a far corner of the playhouse into a "secret place" even though every kid on the playground knew the playhouse had a 'far corner.' In this example we are implying the need for a sense of privacy rather than physical isolation.

For older kids and young teenagers (particularly girls)

sitting in small groups talking, sitting by oneself daydreaming, or sitting reading a book were fairly common. 'Secret places' were not searched out for these pursuits so much as places slightly separate from the surrounding activity - e.g. inside the playhouse if it was empty. Elevated positions were very popular(where one could feel separate yet still observe), the tops of both towers or the top of the 'boring slide' (this was a favorite spot for one thirteen-year-old girl to daydream).

Conclusion

Provision for passive social interaction and daydreaming is an important objective and can be met in the following ways:

a) Provision for an 'audience' in the setting of localized action-oriented activities.

b) A choiceful environment containing attractive, comfortable, or visually inaccessible corners, and separated from areas of dense activity.

c) Elevated positions, not likely to attract attention.

d) Provision of a 'socially-designed' fence at boundaries with external population movement.

Environmental Qualities and Sensory Experience

Here we are concerned with ways in which the sensuous qualities of the play environment can most effectively influence a child's perceptual development. In the Lenox Street experiment it was impossible to make an adequate assessment of this question.

Sensuous experience is not an observable phenomena. The best one could do was to get a feeling for a few of the sensuous qualities the children found most attractive - bright colors, unusual materials, dark, mysterious holes, sound, and especially the qualities of earth, fire and water.

We have already suggested that qualities providing a wide range of sensory experience are an essential provision in environments stimulating action-oriented, imaginative and creative activities. In an effective design sensuous stimulii would be "built-in" and accentuated, or used to some particular end. In creative and imaginative play, heightened sensuous experience is an integral part of the activity and in the case of creative play can be extended by the provision of an enormous range of materials.

Testing the effects of a richly sensuous environment is clearly a long-term task - but maybe it is unnecessary. It is fairly clear that the research literature on child development is the place to look for the justification of a highly sensuous environment. Something is certainly known of the stunting effects of acute sensory deprivation.

Conclusion

The very preliminary and general conclusion is that wide-ranging and varied sensuous qualities should be a "built-in" quality of play environments.

Environmental Qualities and Cognitive Experience

The designer's problem is to provide an environment that will stimulate either separately or in conjunction "problem-solving" and acquisition of knowledge.

This is a very wide issue for exploration, experimentation and development. At Lenox Street there was not the opportunity for adequate treatment in terms of design. All we have are a few observations relevant to future designs.

One obvious area that can be incorporated into playground design is the knowledge and experience of different materials. This can be done by providing a wide variety of them, as part of the creative environment. Free play with water and sand was a frequent creative activity. It is reasonable to suggest that in observing water run through an intricate system of different-sized pools and channels the child learns something about the relation between slope and velocity, volume and the principle of conservation (i.e. one cu. ft. of water = a 24" pool 4" deep or a 33" pool 2" deep). Floating different materials may express something about density and displacement.

The whole realm of constructive activity clearly provided many lessons in structural principles and the structural properties of materials. An understanding of "leverage" was gained in moving heavy weights around.

If materials are provided in different varieties, shapes and sizes, then it is suggested that knowledge of their properties will be extended. For example, not only different shaped blocks of wood were provided but also long, thin strips; the kids were

immediately attracted by them and experimented avidly. They discovered how flexible they were, how springy; how they could not take compressive stress, or bending-stress if "simply supported," but how, if the ends were held, self-supporting arches could be made, and how much weight the arches could take. The kids also discovered how easily the strips could be broken! (This kind of provision requires a good deal of maintenance.)

Had there been more time an enormous range of materials could have been tried out, woods, metals and plastics in strips, sheets, blocks, boards, meshes, rods, tubes, foams and grains, etc. with different geometric shapes and sizes. Enough intriguing things were done with the materials that did arrive on the playground to predict that this would be an extremely valuable (and inexpensive) provision. Things such as large blocks of foam plastic or a huge block of sponge pastic could clearly cause a minor riot.

If a range of manipulable materials were provided, then experience on Lenox Street indicates that aspects of the fixed environment are relevant to extending the cognitive character. Three examples were instructive. Materials were often slid down both slides (an exciting pastime). If different materials in more carefully graded sizes were provided, it is reasonable to assume that the kids would get at least some inkling of the relation between mass, density and friction. A number of times the large see-saw was used as the basis of a balancing game (also very exciting). Larger and larger pieces of timber, rock, etc. were placed on each end, while trying to maintain the balance. Here

again was an opportunity for sensing mass, density, and balance.

The final example is exquisite. During construction I had spent a long time trying to figure out a way of making water available for play in the area adjacent to the fountain. One day the kids wanted water and quickly solved the problem. They found an old pair of handle-bars, stuck one end over the fountain and directed water to wherever they wanted it as it gushed out the other end! At other times pieces of pipe or hose were used.

Exploration of the natural micro-world clearly has a cognitive aspect. It was a popular pastime and is easy to provide for on a simple basis. Areas of grass, weeds, bushes and trees, of different species if possible, are the only requirement. Fairly large rocks also make good homes for 'bugs.' On a larger scale playground or under good supervision these facilities, their function and interest could be greatly expanded.

Conclusions

1. The environmental qualities recommended for creative play are also important for the stimulation of cognitive experience. A wide range of manipulative materials in different shapes and sizes would be the most important provision.

2. The opportunity to use moveable materials in conjunction with the fixed environment will extend the range of experience.

3. Contact with the natural world is important and requires the provision of a natural environment. Large rocks and "weeds" are a first requirement.

The general feeling is that somehow provisions for

cognitive development have to be built into the general play environment. Clearly they are automatically part of the sensuous and creative environment. This implies a total environment much like that of a Montessori school. Here the mental, perceptual and motor aspects of learning are thought of together as an integrated process, in the belief that this is the best suited way to introduce the child to the world and to stimulate his development most effectively.

The three conclusions above should be considered "naive." It is obvious that the cognitive aspects of the environment could be taken much further through research and development. However, the development of complex, problematic play environments clearly represents a giant task.

The Synthesis of Qualities; Multi-Purpose Environments

Running through the detailed examination was the idea that many of the environmental qualities were necessary stimulii for more than one kind of activity. If this is so, then multi-purpose environments can be designed with implied economy.

Parts of Lenox Street were very multi-purpose. As far as one could tell this did not worry the kids at all. In fact, many added functions were their own doing or suggested by them. The playhouse was used for an arts and crafts program during much of the day. This made no difference to the fact that at other times it was used just as much for imaginative, creative, active and social play. Children seem quite at home in an environment continuously

TABLE 4

MATRIX OF ENVIRONMENTAL QUALITIES AND ACTIVITY TYPES

X = critical variable

0 = less critical variable

= relatively insignificant

Cr = Creative

Im = Imaginative

Mot = Motor

Soc = Social

Environmental Qualities	Activity Types							
Form Qualities	Cr	Im	Cog	Mot	Soc	(A) Tot	Rank	Overall Rank
Spatial Complexity	x	x		x		3/0	1	1
Functional Complexity		x		x		2/0	2	2
Sensuous Complexity	x	x		0		2/1	2	2
Continuity		x		x		2/0	2	2
Separation from high activity	x				0	1/1	3	3
Totals	3/0	4/0	0/0	3/1	0/1	10/2		
Rank	1	1	-	1	2			
Content Qualities								
Spatial variety	x	x		x	0	3/1	1	1
Functional variety		x	x	x	0	3/1	1	1
Sensuous variety	x	x	x	0	0	3/2	1	1
Elevational variety	0	0		x	x	2/2	3	2
Variety of materials	x	0	x			2/1	2	2
Manipulability	x	x	x		0	3/2	1	1
Open-endedness	x	0	0			2/1	3	3
Physical enclosure	x					1/0	3	3
Movement		0	0	x	0	1/3	3	2
Graded physical challenge		0		x		1/1	3	3
Soft floor surface		0		x		1/1	3	3
Hard floor surface	0	0		x		1/2	3	3
Natural environment			x			1/0	3	3
Climatic comfort	x	x	x	x	x	5/0	1	1
Totals	7/2	5/8	6/2	8/1	2/5	28/18		
Rank	1	2	1	1	3			
Gross Totals	10/2	9/8	6/2	11/2	2/5			
Rank	1	1	2	1	3			

changing in function and identity; they do not appear to have the "functional fixity" of adults. Our judgment here can only be based on external observations and verbal attitudes. Perhaps again a cutting point would operate, where adding another function would produce as much confusion as stimulate new activities. Perhaps general identity would be the important quality to maintain in order to give a necessary feeling of security. The element at Lenox Street with the largest number of functions also held the strongest general identify - The Tower.

The Qualities - Activities Matrix

In Table 4 an attempt is made to identify more specifically those qualities which support the most activities. The chart also reveals those activities which require the greatest number of qualities. It is a crude attempt at relating activities and qualities in a more comprehensive manner. The entries in the table were made from my own personal judgments of the Lenox Street experience.

Qualities are divided into two groups: those which influence the content (the character of a localized area or a "blanket" quality) and those influencing the form (the overall spatial structure or a quality subject to spatial variation) of the environment.

Three values are assigned to the quality variables; those which appear to be the most critical, those which appear somewhat less critical, and those of relative insignificance.

Definitions

The distinction between variety and complexity must be made quite clear:

Variety (a content variable) is a function of the number of qualities provided and the range within each quality.

Complexity (a form variable) also includes the density and "pattern" (random to ordered) of variety.

When complexity is included in the matrix it indicates concentrations of a wide range of variety. Variety, per se, is always included as a content variable.

Functional variety refers specifically to a wide range of possible motor actions - manipulations of the body with the environment.

Implications of the Matrix

Relative Importance of Form and Content

The matrix indicates the question of content to be much broader an issue than that of form.

The proportion of significant form variables to content variables is about a third (5:13). The relative incidence of critical formal requirements to critical content requirements is 10:28 respectively. The relative incidence of less critical variables is 2:18. The Matrix indicates there to be less area for maneuver in formal requirements than for content requirements. Formal requirements are few, but critical. There are more critical requirements relating to content, and more variables to manipulate, but the requirements of half of them are less critical.

Requirements for Different Activities

The matrix indicates creative, imaginative and motor activity each have three or four critical formal requirements. Creative and motor activity each have to meet twice as many again

critical content variables (7 and 8 respectively). Imaginative play has to meet only 5 extra critical requirements but 8 "less critical," and is, therefore, in a similar position. Cognitive activity has between a half and two-thirds the requirements of Creative, Imaginative or Motor activity and they are all content variables. Social activity has few requirements.

In summary: Creative, imaginative and motor activity have about the same number, but not similar requirements. Cognitive activity is next in line, and social activity is last.

"Ideal" Requirements and "Reasonable" Requirements

It must be remembered that the matrix describes "ideal conditions." Because creative, imaginative and motor play come out in the top rank, this does not indicate that they are the most difficult to design for, or require the most resources in any given situation.

Indeed we know that creative play (and hence to a large extent imaginative play) are the easiest and cheapest (in terms of capital, cost and labor) to make reasonable provision for. All that is required are a few loads of scrap and junk materials on a vacant lot.

The matrix says: if we wish to maximize the stimulus for and function of creative imaginative and motor play, then this will demand more than the maximization of other activities.

In a highly constrained situation (such as Lenox Street) the stimulation of reasonable participation in motor activity would be the most demanding. For this activity there is no half-way house. If the simple requirements for creative play are met, then

imaginative and social activity will automatically follow.

Differential Importance of Quality Provisions

Assume that we wish to build our ideal playground: which qualities are the most important? Or another view of the same question: which qualities stimulate the most activities (the multi-functional viewpoint), which qualities give the most pay-off?

Column A of the matrix gives some indications. The qualities are divided into three ranked groups as follows:

TABLE 4A

Group 1			
C	Shade	3/2	
C	Sensuous variety	3/2	
C	Manipulability	3/2	
C	Spatial variety	3/1	
C	Functional variety	3/1	
F	Spatial complexity	3/0	
Group 2			
C	Elevational variety	2/2	
C	Variety of materials	2/1	
F	Functional complexity	2/0	
F	Sensuous complexity	2/1	
F	Continuity	2/0	
C	Movement	1/3	
Group 3			
C	Open-endedness	1/2	
C	Hard floor	1/2	
C	Soft floor	1/1	- (for practical reasons in Group 1)
C	Graded physical challenge	1/1	
F	Separation from high activity	1/1	
C	Physical enclosure	1/0	
C	Nature	1/0	

Comments

Group 1 demands a spatially complex, varied, manipulable, climatically comfortable environment which, as a general statement, describes the quality of an ideal play environment pretty well.

Group 2 picks out in rank order the more important content provisions - Elevational variety, variety of materials, Continuity (Form) and Movement.

In Group 3 we find the apparently less important variables. But the group is a little misleading. Open-endedness, separation from high activity, and physical enclosure are all critical to creative play; taken together they would make a great difference to performance.

Graded challenge and hard surface are relatively less important qualities.

Soft surface is far more important than indicated because general physical activity like "running" would take place all over any playground. Falls have to be guarded against in almost any area. For practical reasons soft-surface should be in Group 1.

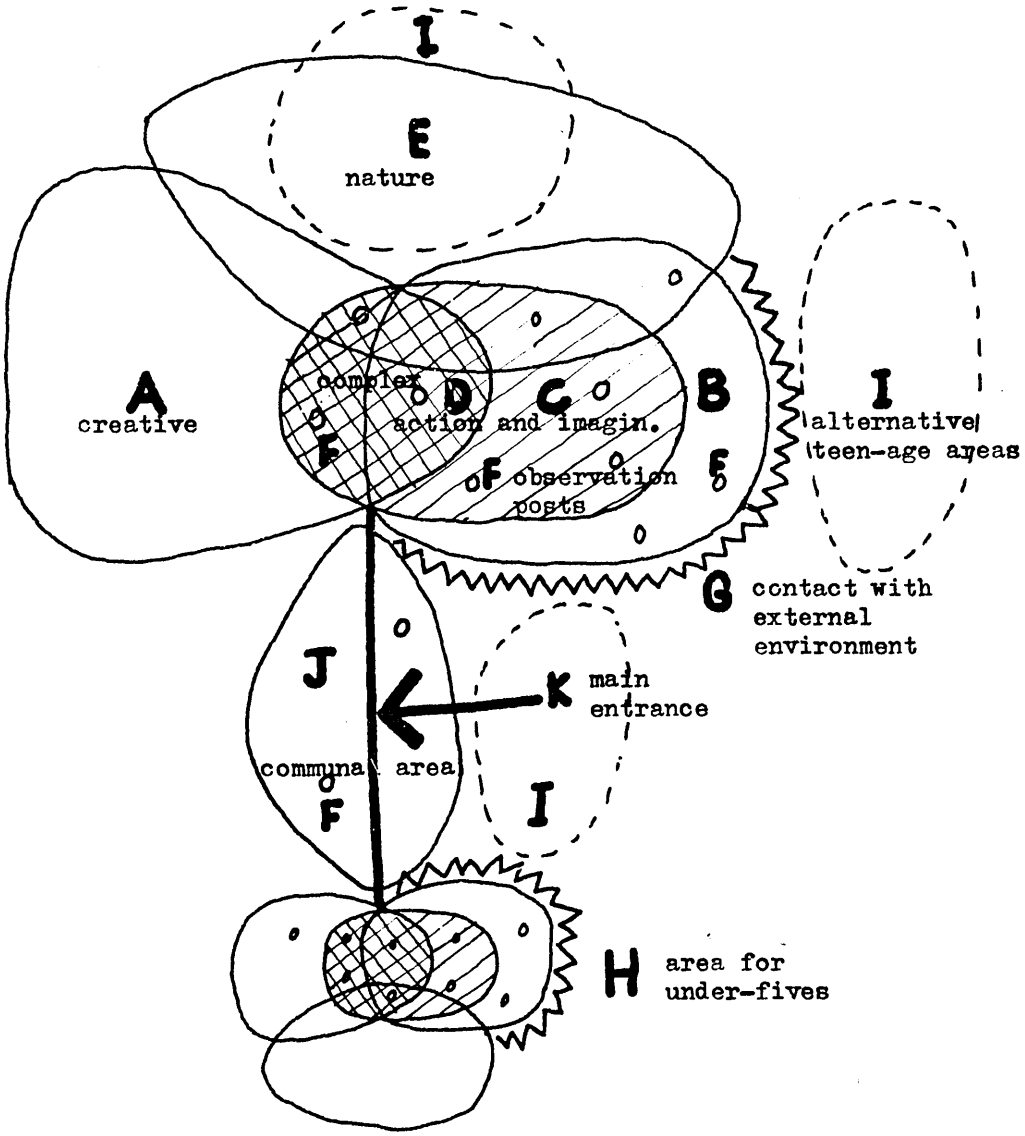
Three General Conclusions

1. Quantity and Quality of Play-Spaces

The need for multi-purpose environments should be emphasized. Multi-purpose, complex, varied and continuous environments stimulate more varied activity, hold attention for longer periods (on both a short and long-term basis), provide for a wide age group, and can provide for far more playing children per square

FIGURE 7

A Generalized Playground Form



foot than a "standard environment."

This last named advantage clearly implies that the 'space standards' for urban playgrounds should be reconsidered. Any straight-forward children per square foot recommendation clearly has little meaning as a standard unless the qualities of proposed playgrounds are also specified. It is suggested that some designs would absorb many times more children than others. I am not suggesting that aggregate space requirements should be lowered (quite the contrary). Through "quality standards" space would be utilized in a far more effective way. Space would then be left over for increasing general environmental choice - areas of "wilderness" for example.

It is clear that a play environment could be produced that would operate effectively on a vacant urban lot of a few hundred square feet (i.e. "vest-pocket playgrounds" are a very feasible proposition).

2. A Generalized Playground Form

Figure 7 attempts in an extremely general way to represent diagrammatically the implications for design, of this chapter.

A is the creative environment, physically enclosed and visually inaccessible; it includes a wide range of manipulable materials, open-ended qualities and a variety of spaces.

B is an area orientated to motor activity; it overlaps the creative area to a greater or lesser extent depending on the conditions of supervision and maintenance, and size of site.

C signifies an area of relatively high environmental complexity, proportionally more (particularly functional complexity)

in B (motor activity) than A (creative activity).

D is the area of greatest complexity (particularly spatial and sensuous); this would be the area stimulating the greatest participation in imaginative and cognitive play, relating to the creative environment on the one hand and the action environment on the other. Population here would be highest. This area naturally falls in the center, between action and creation, combining all aspects of the environment. The central location is probably also best for reasons of general external identity.

E is the natural environment, overlapping as much as would be feasible with all other areas. The positioning of this area would depend a good deal on site conditions and size. On a large site with areas of lower activity the natural environment could intermingle with the rest of the play environment. Indeed it would supplement many of the "required" qualities. Other natural areas would still be completely separate: areas for retreat and exploration.

On a small, densely populated site the odds are that a fully integrated natural environment would not stand up to wear and tear (except for mature trees). More likely, the natural area would have to be sharply divided off from the rest of the playground.

F represents "observation posts" at different levels, some integral with points of high activity, some more separate. They are concentrated in the action-orientated areas.

G indicates site boundaries that should ideally relate to external population movement - i.e. the "public" is presented with action, the creative and natural areas remain "secret."

H is a duplicate form at a much reduced scale orientated towards the under-fives. The two "age-areas" do not overlap but are closely connected.

I indicates alternative positions for teen-age areas, at the periphery of the rest of the playground, - ideally related to the communal area. J is the communal area, in perhaps its ideal location - between the large scale and small scale areas. The points of highest excitement and activity are visible from it. The "main entrance" into the playground (K) passes through it.

This is an extremely crude picture, but it does lay out some of the most important interrelationships. In a real situation it would be open to all manner of subtle modifications, depending on locale, site and other conditions. It could be made to fit many site shapes - "square," "linear" (as Lenox), or "L" shaped, etc., and many site sizes. Because of this potential flexibility, it is likely that a number of urban 'waste-lands' could be developed - railroad and highway rights-of-way are prime examples, as well as fringe industrial land. The only problem here would be the provision of informal access.

In a less ideal approach the different areas in Figure 7 could be provided as separate entities on separate sites.

Two obvious alternatives would be:

E. A. (C + D + B). (I). (F). (G).

E. (A + C + D + B). (I). (F). (G).

... etc., - I, F, and G would be included where feasible.

3. The Hypothetical Re-Design of the Lenox-Camden Playground

Most would-be modifications in the exercise follow from the implications of this chapter.

There are two general issues open for examination: a) modifications to the content - different play elements or activity areas in the design, and b) modifications to the form - the spatial arrangement of elements in relation to each other.

Content Changes

a. Under-fives Area

It was clear that the under-fives had not been provided for adequately. Their area should have been a very small-scale replica of the rest of the playground. Miniature swings and see-saws, opportunities for climbing, sliding, jumping, and running would have been provided. Three additional, high-priority elements would have been a very small-scale maze-like exploring area (almost a walk-in doll's house, but not abstract), a soft but firm flat area for playing with personal toys, and the sand-pit (complete with a plentiful supply of receptacles).

b. Nature Area

General interest in the micro-natural world has been noted elsewhere. There were also more than a few comments (particularly by ten-to-thirteen-year-old girls about having a "garden area," and a "place for flowers." In view of this, the provision of a more formalized 'nature area' in a redesigned playground would be important.* But such an area would have to be well protected

*This would require more money than was available in the actual development.

physically in order to inhibit the children from over-running it. A garden was not tried at Lenox Street because of the space constraint. It might possibly be workable in a re-shuffle of the design.

c. "The Tower"

Had the tower been definitely decided on originally, it would have been made more complex, challenging and interesting and would have become even more of a center-piece.

The objective in re-designing the tower would be to increase its range. In particular it would be made more suitable to a wider age and ability range. Many of the challenges incorporated into the tower could be graded - e.g., there could be more than one platform, each at a different height. The different methods of ascent and descent would be increased and so would the opportunities for exploration: open-ended qualities could have been extended in a larger scale facility. The resulting 'element' could almost become a playground in itself.

The Tower certainly demonstrated the attractiveness of providing for a wide range of different experiences within a very closely packed physical setting. It was probably the most important innovation in the whole playground, and could be developed a good deal more.

d. The Sand-Pit

This element would be redesigned. The physical enclosure would be increased for two reasons: a) To stop "outsiders" from disrupting activity by running through the sand-pit; b) To increase the sense of enclosure and security, thereby attracting more kids and increasing participation in one of the most important activities

(especially from the social point of view); and c) To keep the sand in the pit. The granite 'ledge' was used so much as a "table" for building "castles," "pies," etc. that the sand slowly found its way out of the pit. A redesigned pit would have a wall around its periphery, providing an actual and a sense of enclosure. The "ledge" would remain, - functioning as seat and table.

A redesigned pit would have given more opportunity for different groups to operate at the same time without conflicting with each other. The pit would be more complex spatially.

e. Climatic Comfort

Clearly this will not be adequate in the winter. An enclosed, heated building would be required for an ideal solution - this would over-step the assumed financial constraints considerably. A compromise solution would be to provide temporary walls to the playhouse and a fire-place inside. This would be risky because the roof of the playhouse is constructed of timber.

Summer shade could also be extended, especially over the sitting area at the main entrance, and over the sand-pit.

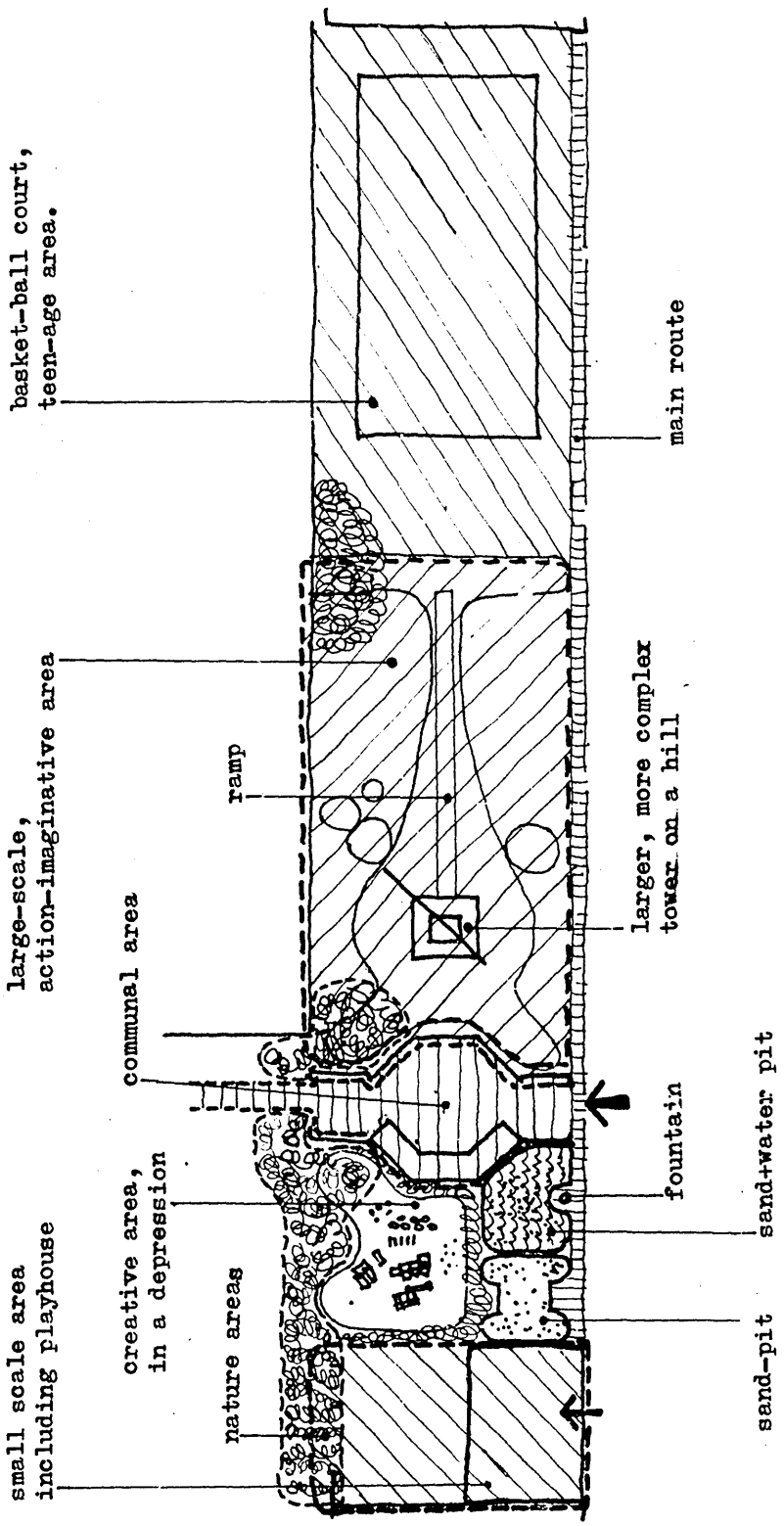
f. The "Hills"

When the "hills" consisted of piles of fill dumped on the playground, they were referred to variously as "the mountains," "the hills," etc. They seemed to hold a strong identity and to form the setting for activities such as "combat" and other imaginative games, rolling things, sliding, etc. A redesigned set of hills was therefore made part of the original plan.

A practical problem with the hills was that they were very

FIGURE 8

Re-design based on the Experiment



dusty* when the wind was blowing. This did not worry the kids in the least, but adults in the community and others involved in the project were concerned. The dust was uncomfortable for adults walking through or sitting in the playground. It is also reasonable to assume that the dust permeated adjacent apartments.

Under different circumstances other types of "hill" could have been made.** Although earth is ideally suited as a "space-maker," some functions of the hills could have been substituted for - as a method of varying levels "platforms" would be equally satisfactory. A large platform at the level of the hill-top under the tower would have maintained the sense of height and still kept the "falling height" to reasonable proportions.

One serious defect of the hills was the lack of variation in slope - they were all steep. In fact, a number of activities such as barrel rolling and other rolling games require only a slight (but smooth) slope. A long, asphalted ramp would have served the purpose well.

Changes in Form

Proposed changes are shown diagrammatically in Figure 8. The main reasons behind the changes are:

- The need to define a 'creative area' more clearly and separate it physically

*It is hoped that by next year enough grass will have grown on them to overcome this problem.

**E.g. those in Jacob Riis playground in New York, which are coated with granite setts, making a durable, climbable, but very hard surface.

- The need for a nature area
- Provision for a separated under-fives area - very small-scale, physically separated, and with its own semi-private entrance. If this small area had been provided, perhaps more very young kids would have been brought to the playground.
- The sand-pit is taken out of the "action" area, and placed by the under five's area since it was used by this group more than others. It would still be the most accessible part of the under fives area - for use by older girls particularly.
- A choice of water plus sand or sand only, made adjacent to each other
- The formal communal area remains roughly in the same location, but the bleachers face in the opposite direction, overlooking the "action area."
- A nature area is provided away from the centers of action, but accessible to all age groups. A formal garden could possibly be included. But this would be known only by experiment.
- The action area itself includes a larger scale tower - "the center of complexity." A long ramp of varying gradient is also included.
- A "through route" connecting all areas runs parallel to the sidewalk. This is necessary because often when kids wished to get rapidly from one end of the playground to the other they used the sidewalk and in their haste dashed into Lenox St. with its attendant traffic dangers.

Note: For a number of reasons this design would be a more ambitious task (particularly the earth-moving aspect) than the one built. It is a little more "ideal." Nevertheless many elements had to be omitted for lack of space, e.g. larger-scale nature areas, large, expensive spaces, "objects" such as tanks, fire-engines, aeroplanes, etc. The major spatial constraint still remains the limitation of the free, creative environment. Discussion of non-local facilities such as swimming-pools, ball diamonds, etc. will not be pursued here.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Design Policy

Public Policy

Costs: Production, Maintenance and Supervision,

Local and National Strategies

Future Research

Summary and Conclusions

Summary

Chapter I

1. An Activity Classification System having the following five categories was found to be workable in terms of the experiment:

   Active (Motor) - (often integral with Imaginative play and containing many competitive aspects)

   Creative - including many Imaginative, Cognitive, Social and manipulative aspects

   Imaginative (including many social aspects)

   Cognitive

   Social (and other passive activity)

2. Age Groupings: Only three major groupings were found to be relevant in terms of behavioral characteristics - under fives, five to twelve-year-olds, and thirteen and over. Physical ability in particular was found to vary widely for children of any given age. Interpersonal conflict was low and did not hamper activity seriously. Cooperation was far more characteristic.

3. Sex differences: Only a few differences were observed. The imaginative play of girls often accentuated their sex-roles. They also did not take part in "mucky" activities such as water-play. The older girls participated more in passive social activity than boys.

4. Groups. Nearly all activity was group-oriented. Groups were larger and had a wider age range for creative and imaginative activity. In these activities the complex social processes accompanying play were most apparent.

5. Activity - general patterns. Three groupings were identified:

a) Action oriented activity occurred continuously - individual actions had short time-spans and occurred in quick succession.

b) Creative and Imaginative play occurred less frequently, but quite regularly. Groups were larger and time-spans longer (anywhere up to a number of hours, and even "carrying-over" from one day to another.

c) A mixed group of activities occurring far less frequently and irregularly. Often conditioned by season and other unusual circumstances.

6. General Population Pattern. Between April and October the maximum population occurred between 6:00 p.m. and 8:00 p.m. The provision of artificial lights increased the evening population considerably.

7. External Identity: The fact that the playground had a clear identity appeared to stimulate more formal activities. Many of them were orientated towards the surrounding community.

8. Environmental Qualities: Complexity, Continuity, Climatic comfort and Multi-function were seen to be influential. Provision for psychological and physical manipulation of the environment were clearly paramount. On a practical level, good maintenance was seen as a necessary prerequisite for an effective playground. The fixed equipment must be extremely robust if it is to stand up to heavy, boisterous use.

9. On the whole the objectives and implicit hypotheses of the

initial design were borne out by behavior on the playground.

Chapter II

A. Participation in Creative and Imaginative Play

During reasonable operating hours, on the average, between a fifth and a quarter of the children's time was spent in these activities. If creative play and imaginative play are considered to be twice as important (from the developmental point of view) as other activities, then provision for both groups is equally important. And the following hypothesis appears to be valid:

> "In an environment which provides stimulii for many different kinds of activity, children will spend a significant proportion of their play-time in Creative and Imaginative play."

B. The Patterns of Activity in Time and Space

Relationship to Other Out-of-Door Activity

Because of its proximity to the children's homes, the playground appeared to function in conjunction with other 'out-of-door' activity in an informal manner.

Physical Barriers only deterred movement if they were large. No 'path system' was apparent on the playground.

Formal Activity - Because the Arts and Crafts programs were held on the playground it was concluded that both the programs and the playground benefited.

A large group of different space-time patterns were observed; they were mostly a function of activity type (see Table 2,

Implications were as follows:

a) Paths should be direct and physical barriers, large if they are to influence behavior.

b) The difference in behavior pattern between Creative and Action oriented activity indicated that the areas providing for them should be physically separate.

c) A choice of creative areas should be provided and a scatteration of manipulable materials maintained, to stimulate Mobile (focussing) and Localized (focussing) sequences.

d) The pattern of general Action indicated the importance of Complexity, Continuity and (physical) Multi-function.

C. Perceptions of the Playground

1. Responses indicated that the children found the more complex, multifunctional elements to be more interesting and meaningful. The swings were clearly the most important "standard" item.

2. Clear physical identity appeared to aid the child in developing a clear mental image of the playground. The influence of identity on participation could not be tested.

3. Attitudes indicated that the children preferred a playground catering for all ages.

4. The way the playground was represented supported the case for continuity.

Chapter III - The Facilitating Environment

Qualities found to be relevant stimulii for each activity type were as follows:

Creative

- Physical manipulability, a wide variety of building materials and "good quality" junk
- Open-endedness
- Climatic comfort
- Spatial enclosure and definition
- Spatial separation
- Physical enclosure and visual inaccessibility

Imaginative

- Wide variety of spaces and elevations (i.e. three-dimensional variety)
- Complexity including sensuous qualities
- Manipulability - small "imagination stimulators"
- Functional complexity

Action

- Functional complexity
- Continuity
- Wide range of challenge, locally graded (aids social aspects)
- General stimulation of excitement and interest
- Local movement

Provisions for Activity and Imaginative play can be combined beneficially. Design of the Action environment is very complicated anthropometrically.

TABLE 4A

Group 1			
C	Shade	3/2	
C	Sensuous variety	3/2	
C	Manipulability	3/2	
C	Spatial variety	3/1	
C	Functional variety	3/1	
F	Spatial complexity	3/0	
Group 2			
C	Elevational variety	2/2	
C	Variety of materials	2/1	
F	Functional complexity	2/0	
F	Sensuous complexity	2/1	
F	Continuity	2/0	
C	Movement	1/3	
Group 3			
C	Open-endedness	1/2	
C	Hard floor	1/2	
C	Soft floor	1/1	- (for practical reasons in Group 1)
C	Graded physical challenge	1/1	
F	Separation from high activity	1/1	
C	Physical enclosure	1/0	
C	Nature	1/0	

Cognitive

- Combination of manipulable and "fixed" environment
- Natural environment

Social

- Provision for audiences overlooking action
- Attractive, "comfortable," corners, some of them visually inaccessible, with possibilities for small-scale manipulation
- Quiet, elevated positions
- Socially designed fence at edges adjacent to population movement

In general a wide range of sensuous qualities.

Synthesis of Qualities (see Matrix, Table 4, p.131)

1. Children seem quite at home in a multi-functional environment.
2. Form-defining qualities are few, but critical for most activities, viz: continuity and spatial, functional and sensuous complexity. Content qualities are more numerous, but a greater proportion are open to manipulation in design.
3. If an "ideal" play environment were required, the most stringent content quality requirements would be necessary for the following activities in rank order: Creative and Motor; Imaginative; Cognitive; and Social.

   If a more "reasonable" product were required, then provision for motor action would be the most demanding.
4. Looked at from the other side of the picture (the multi-functional viewpoint), the qualities giving the greatest pay-off are as follows (in rank order): facing

5. Proposals for an idealized play environment are made in Figure 7, p.137

Conclusions

A. Implications for Design Policy

1. Provisions for Creative and Imaginative play should be weighed (at least) equally with provisions for other types of activity.

2. Provisions should be made for all age-groups (2-21) even on neighborhood facilities.

3. Areas for Creative and Imaginative play and areas for the under-five age group should be physically and visually separated from the rest of the play environment. These parts of the environment would take on the appearance of large scale "open-air play rooms."

4. The environment should be manipulable, and parts of it open-ended, particularly to facilitate creative play. Manipulable materials should be provided in the "fixed" environment (cognitive aspects).

5. Play environments should exhibit continuity and be multi-functional; they should provide a wide range of spaces, elevations, sensuous qualities and materials.

6. Portions of the environment should be highly complex.

7. A wide range of physical challenge, locally graded, should be provided.

8. The provision of a soft-surface, shade, and artificial lighting are all critical.

9. Playground should have a strong identity and should provide for more formal activities, for children and for the community at large.

10. Play environments must be extremely robust, parts of them must conform to the highest standards of product design.

B. Implications for General Public Policy

1. The study of activity in time and space in Chapter II indicated that there were advantages to locating local play facilities in a very accessible relationship to surrounding residential areas. The main advantages being: informal use, and freedom from traffic danger.

The policy implication is for the provision of a fine grain pattern of (multi-age) playgrounds in high density urban areas. That is, in addition to larger scale ball-parks, etc.

2. The feasibility of the above suggestion is further justified by the conclusions concerning environmental qualities. The results of that experiment imply that if the right qualities are provided (complexity, continuity and multi-function), then enduring, meaningful, play activity can be stimulated for many children in a small space (e.g. the size of a vacant lot).

3. Not only does the small-scale fine grain provision of play-spaces seem feasible, but also implied is a complete re-evaluation of the standards of recreation planners. Maybe the picture is not so black as an application of spatial standards alone often seems to indicate. It is clear that an emphasis on quality would make present space far more effective. However, I am not suggest-

ing that the reservation of adequate recreation space is not still critical. More effective use, and perhaps a different pattern of distribution would leave room for expanding the general range of choice. Wilderness areas have been mentioned; the effect could be achieved in quite a small area.

4. Costs: Production, Maintenance and Supervision, Local and National Strategies

There is no doubt at all that the provision of stimulating play environments will be expensive. The contract value of Lenox Street (approximately $15,000) is about twice that of a "standard" development on the same site. To make matters worse the cost of maintenance and supervision must also be added for a realistic picture; although no estimate is available.

Labor costs would represent over half the capital cost of a "hand-made" project such as Lenox Street. The labor union difficulties encountered would be enormous because of the nature of the construction.

Self-help community action programs are one answer to this problem. It is an attractive idea; in addition to being a potential means of creating playgrounds it serves other latent functions to do with the general growth of community organization and leadership: a function central to the philosophy and workings of the poverty program. However, self-help projects of this nature have yet to be shown to be feasible. Lenox Street never developed into a community project in terms of construction; although general support, understanding and desire for the playground was excellent.

Two reasons for this lack of active participation are obvious - some families were fatherless and even when this was not so the parents' time and energy was mostly spent in providing a reasonable existence for the family. There is not much time left over. A common and not unreasonable comment heard is, "Why should we have to build our own playgrounds, in any case it is the responsibility of the city." The building of a playground not only demands much time, it is also a skilled building operation and skilled personnel, amateur or professional, are hard to find.

An alternative approach would be to make playground building the basis of a job-training program. This is clearly an attractive and feasible proposition, and it would have the added advantage of involving the trainees in clearly worthwhile work in their own communities. In conjunction with this idea "central stockpiles" of playground construction materials could be created, particularly in areas undergoing physical change and attendant demolition. In this proposal community volunteers could still take part as much as they were able to.

Suppose the fundamental objective of public policy to be to revolutionize the urban play environment on a national scale; how near will self-help and/or job training construction programs come to meeting this objective? My own attitude is that such programs will help, but much broader strategies would also be required to meet the objective in reasonable time.

The mass production of play environments is probably the most important development. This is the direction that must be taken if the quality of urban playgrounds is to be affected on a national

scale. The production aspect will not be analyzed here. However, in a very general sense the requirement seems to be for the production of an enormous variety of "basic playground elements" that could be put together in very many different ways.

I think in the near future we shall see some radical changes take place in the 'playground industry.' The beginnings are already underway. At the moment, to my knowledge, there is one company in the nation which is doing innovative work in the design of playground facilities. The reception and popularity of their work across the country says much for the public state of mind; it indicates that other manufacturers will have to change (or go out of business). A change, of course, is the hope of all. If the mass-production, private industry approach is to be truly effective, then an enormous range of products by different companies must be put on the market to allow experimentation and to ensure the lack of 'look-alike' playgrounds across the country. This proposal does not preclude job-training or local action by any means. It also implies that local resources can be concentrated on particular aspects and functions - maintenance, supervision, the general setting, etc.

The presence of a wide array of play facilities and elements on the market would almost certainly influence moribund city recreation departments; if not directly, then through public pressure. The good thing about playgrounds is that they are "public" and "free" and the participation rate (for all to see) on any given playground is at least a good crude criteria of quality. Mass production is not the panacea; experience of the natural environment is still critical. The major change that has to take place in many

cities is for a huge increase in public funds to meet capital, maintenance and supervision costs.

Maintenance is more feasible on a local level. Itwould be particularly concerned with removing and replenishing manipulable materials. However, those engaged in this task would have to understand the function and importance of the manipulable environment.* Maintenance, in the sense used here is critical, and if done well would involve considerable expense. Again, public policy should aim at changing the character and financial status of the public institutions, rather than trying to by-pass them.

Supervision is clearly the most feasible, and meaningful potential local function. In my own opinion supervision per se is only important for the under five age group. Children of this age do have to be led through and watched over in certain activites; they are easily frightened and can be harmed by older children. For other age groups so-called supervision would take on a much broader role. From my own point of view it is emphatically not "keeping an eye on the kids." Rather, it is a means of extending their freedom, not of limiting it.

Each London Adventure Playground employs a full-time "warden." These men are rather special individuals who share the activity of the children, make suggestions for extending

*On Lenox Street this was often difficult to get across. There I was faced with what I am tempted to call the "middle-class suburbanite clean-up syndrome." It is a natural first reaction - "Let's clean the place up." Naturally, there was cleaning up to be done - waste paper, broken glass, small rocks, etc. The difficulty was getting people to discriminate between real trash and other junky looking but useful materials lying around - tin cans, pieces of wood, parts of autos, "plain junk" of all descriptions.

activities, help solve "problems," and are able to supply tools, equipment and materials that would not normally be available. The Wardens are able to build up a unique rapport with the kids, quite different from that of parent or teacher. Either previous experience or training are required for this kind of work. The individuals, however, would still beneficially come from the local communities: apart from the more obvious reasons, their most important working hours would be between five p.m. and eight p.m. during the summer months.

Whichever strategy is taken, or a combination of all of them, one conclusion remains clear - supported by both the general experience and specific observations of the Lenox experiment. The provision of an adequate, effective and meaningful urban play environment on a national scale will not come about without a gigantic increase in public funds on three counts: capital cost, maintenance and supervision.

Implications for Future Research (* signifies suggested importance).

* 1. General role of play and playgrounds

A major assumption of this study relates play to individual development - how valid is it? The whole area needs further study in general and in its particulars. For instance, which activities are the most important or should

they have equal weight? Child development research needs to be scrutinized for these answers.

* 2. One very obvious need is to carry out similar studies in other social classes. In a white, middle-class suburban area it is clear that results would be different, but how, in kind or only in degree?

3. An expansion of the study to cover personality and intelligence differences could be significant. Although the general conclusion may turn out as a further argument for the provision of a wide range of opportunities.

4. An answer to the particular question of the influence of physical identity on participation would be useful.

* 5. One major thrust has to be further study and refinement of the important physical qualities identified - "complexity," "continuity," "multi-function," etc. of which complexity is the most important since it is least understood.

One approach would be comparative studies of playgrounds with the same kinds of objectives, but with wide ranges of scale and complexity. We would begin to have a little more of a "control situation."

** 6. Perhaps a better approach would be to use one playground and really try to develop some reproducible play elements through

R and D procedures. What is needed is some product research, quite pragmatically carried out, where the anthropometric questions could be dealt with.

These kinds of projects could be set up on any existing playground.

7. The identification of "cutting-points"for complexity and multi-function are most important. This could form a particular aspect of the R and D approach. Investigation of sensuous qualities is another area where existing knowledge is lacking.

* 8. The study of the cognitive aspects of play would be fascinating. On this question there is a growing literature on "learning theory," parts of which may guide the setting up of experiments.

The development of "a learning maze" may be a good starting point. Thiskind of research would need to be extremely pragmatic.

APPENDICES

APPENDIX A - Stage 2 Data

Table 5: Activities Occurring During Stage 2

Photographic Record of Physical Change and Activities

The Final Design and Photographic Record

TABLE 5

ACTIVITIES OCCURRING DURING STAGE 2

Activity (roughly in order of occurrence)[1]	Age Span	Time Span	Group Size 1	1-10	10+	Frequency[2] 3	2	1
Chalking on sidewalk (8)	5-9	10-20	x	x				x
Digging	5-15	10-45	x	x			x	
Raking*	3-12	10-30	x	x			x	
Sweeping*	3-12	10-30	x	x			x	
Demolishing (with tool improvisation)	7-15	10-24	x	x			x	
Beating oil drum	7-12	10-30	x	x			x	
See-sawing - many variations	3-15	10-14	x			x		
-More than one on each end								
-Standing up at the center of the board, working it with legs								
-Sliding down board								
-Laying down on one end								
-Using a log, etc. to weight one end								
Play with set of iron wheels (20)								
- Turn them	5-12	2-10	x				x	
- Balance on axel	5-15	2-10	x	x			x	
- Hang on axel	5-8	2-10	x	x			x	
- Strength trials	8-15	2-10		x			x	
- Roll them down incline	12	10-20		x			x	
- Put sand on them and turn	5-8	10-20	x				x	
'Bridging' with boards (59)	6-12	10-20		x			x	

[1]Numbers in parenthesis refer to photographic illustration following, page 174

[2]1-less than once a week; 2-more than once a week; 3-every day.
*Activities occurring because of special circumstances, during construction.

TABLE 5 (continued)

ACTIVITIES OCCURRING DURING STAGE 2

Activity (roughly in order of occurrence)	Age Span	Time Span	Group Size 1	1-10	10+	Frequency 3	2	1
Bouncing on board	3-12	1-10	x	x			x	
Spring board (on fortress)(107)	8-12	10-14	x	x			x	
Jumping down	3-12	1-30	x	x		x		
Jumping over	6-12	1-30	x	x		x		
Running up and down hills and rolling down hills	5-12	1-20	x	x		x		
Looking for clay	8-12	10-45	x	x				x
Play in old drying machine (9)	3-8	10-1h	x	x			x	
Making mud pies (63)	5-8	30-1h		x				x
Making fires (15)	5-15	10-2h	x	x			x	
Cooking over fires (76)	5-15	30-2h		x			x	
Climbing on tree on its side	5-12	10-30		x		x		
Climbing over everything	3-15	1-30	x	x		x		
Looking for and collecting bugs (seasonal) (10-14; 43-48)	5-12	30-3h		x			x	
Play with materials, making small constructions (6;22)	3-7	30-2h	x	x			x	
Running with large plastic bag	8	1	x			once		
Building railroad tie fortress	7-13	20-30		x		x		
adding to it, changing it, etc. (19)	5-13	10-3h	x	x				
Playing on swings - many variations:	3+	10-1½h	x	x		x		
-More than one to a seat (up to 4)								
"Twisting up" and unwinding								

TABLE 5 (continued)

ACTIVITIES OCCURRING DURING STAGE 2

Activity (roughly in order of occurrence)	Age Span	Time Span	Group Size 1	1-10	10+	Frequency 3	2	1
Playing on swings - many variations (continued):								
-Twist up and swing - repeat but swinging to and fro at the same time								
-Shorten chain - shorten chain by wrapping around horizontal support								
Sliding (on 'slide') (variations)	3-10	10-20	x	x		x		
-More than one -Head first -Laying on back -On feet -Running up slide -Sliding rocks and sand, etc. down (108)								
"Combat," "Cowboys," "Batman" (69; 70)	6-13	30-1½h		x	x		x	
Dancing	4-15	10-1h		x			x	
Singing	4-15	10-1½h		x	x		x	
Sitting, talking (41)	4	10-1½h			x	x		
Painting, with paint	4-13	10-1h		x	x		x	
"Painting" with water	3-7	10-1h	x	x				
*Playing with cement	3-13	10-1h	x	x				
Picking flowers and grasses (seasonal)	7-10	10-20	x	x			x	
Playing in/on old auto (on Lenox St.)	5-12	10-1h		x			x	
"Follow-the Leader" obstacle course	5-12	10-1h		x	x			x

TABLE 5 (continued)

ACTIVITIES OCCURRING DURING STAGE 2

Activity (roughly in order of occurrence)	Age Span	Time Span	Group Size 1	1-10	10+	Frequency 3	2	1
Play with cable reels (28-37)							X	
-Balance riding	7-13	10-30	x	x				x
-Rolling over, pretend	7-13	10-30	x	x				x
-Rolling - plain	5-13	10-1h	x	x				x
-Racing	5-13	10-1h	x	x				x
-"Driving"	5-13	10-20	x	x				x
-Rolling down hill and crashing	5-13	10-1h	x	x				x
Play with barrels (38-40)							X	
-Balance riding	5-13	10-30	x	x				x
-Being inside and rolling	5-7	10-30		x				x
-Rolling	5-13	10-1h	x	x				x
-Racing	5-13	10-1h		x				x
-Jumping over as they come toward you	8-15	10-30	x	x				x
-Rolling down hill and crashing	5-13	10-1h		x				x
-Rolling with rock inside	5-13	10-20	x					x
-Beating rhythm on	5	10-30	x	x				x
-Building with them -e.g. jail, PT boat, etc. (40)	7-13	10-1h	x	x				x
Playing in saw-dust and wood chips	5-13	10-1h	x	x				
Clubhouse, hide-outs, camp building and other large constructions (23-26; 52-55; 96-101)	5-13	1-4h		x			X	

TABLE 5 (continued)

ACTIVITIES OCCURRING DURING STAGE 2

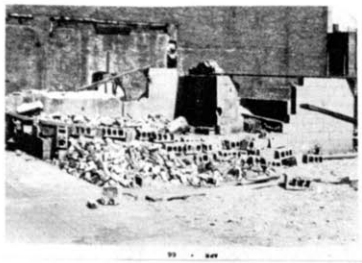
Activity (roughly in order of occurrence)	Age Span	Time Span	Group Size 1	1-10	10+	Frequency 3	2	1
Strength contest on telegraph pole "Little John"	8-13	10-30		x				x
Crawling, balancing on telegraph pole	6-13	10-20	x	x				x
"Parachuting" (with umbrella) (56-57)	8	20		x				x
Tape-recording (88-89)	12	1h		x				x
Listening to transistor radio	5+	10+		x			x	
Riding in hand-cart (86-87)	7-10	5-10		x				x
Running with lighted torch	10	10	x					x
Play in sand pit (61-68)	3-13	10-2h	x	x		x		
Play with sand outside pit (104-106)	3-13	10-30	x			x		
Reading	6-13	20-2h	x	x				x
Playing with hampster (and kitten) (45)	5-13	1h		x				x
Ball game with open barrel	10-13	2h		x				x
Climbing Tower climbing ladder, rope swinging, hand over hand, etc.	5	5-2h	x	x		x		
"Spool Tower"								
-Hiding in, jumping off, climbing	5-13	5-1h	x	x		x		
Flying balsa glider	8-13	10-1h	x	x				x
Flying "Bat-chute"	8-13	10-30	x					x
*Sawing, nailing, drilling,etc.	5-13	30-2h	x	x				

TABLE 5 (continued)

ACTIVITIES OCCURRING DURING STAGE 2

Activity (roughly in order of occurrence)	Age Span	Time Span	Group Size 1	1-10	10+	Frequency 3	2	1
Throwing stones	3+	1m-1h	x	x		x		
Skimming pieces from transformer	5	10-1h	x	x				
Breaking bottles	3+	1-10	x			x		
*Smashing bricks with hammer	5+	1-10	x				x	
Flirting	12	30-2h		x			x	
Smoking cigarettes (real and false)	5+	10	x	x		x		
Water squirting (seasonal)	6	2h	x	x				
"Flipping" over fence	8-12	2-5	x	x				x
Play on see-saw 'bar'	5-13	10-1h	x	x			x	
Setting off firecrackers (seasonal)	5+	10-30	x	x		x	(during season)	
Imagination games, e.g.: Fortress = fire engine Play at fire brigade	3-13	30-2h	x	x		x		
Mothers and fathers (play house)								
"Telephoning"								
Collecting money and banking it								
Piece of pipe = telescope (58)								
Batman - all variations								
Etc.								
Watching movies (Saturday nights-seasonal)	4-18	$2\frac{1}{2}$h		x			x	
Arts and Crafts program (seasonal) (81-83)	4-12	10-$1\frac{1}{2}$h		x			x	

PHOTOGRAPHIC RECORD OF PHYSICAL CHANGE AND ACTIVITIES



1

2

3

4

5

6

7

8

9

10

11

12

"Looking for Bags"

13

14

"Fire" 15

The Prototype 'Giant ~~Saw~~-Saw' 16

17

18

The Prototype 'Fort', they built it. 19

'Problem Solving', – getting the heavy iron wheels up. 20

21

"Construction" 22

23

24

25

26

Playground equipment has to be very tough, this cheap swing lasted 24 hrs. 27

If the site had been larger the spools could have remained 28

↑ He is driving his "Bat-mobile" 29

↑

 like this 30

31

32

33

34

35

36

37

38

39

Building a "Jail-house"

40

The environment stimulates Social Activity 41

---and again 42

The Leader of Bug Collecting 43

44

Hamster 45

They are making a "house" for it

46

47

48

The trench was dug for a water pipe, the children found other uses for it.

49

50

51

Camps in the trench →

52

53

→

54

→

55

56

57

Stimulation of Imaginative Play

!

58

---"got to get this bridge fixed-up" 59

Playing with sand --- 60

Usually in the Sand Pit. 61

62

Shelves are very important --- 63

and so are tin cans 64

-a very social and cooperative activity 65

66

Sometimes disrupted because the Sand pit was not enclosed sufficiently 67

-"Combat" - with audience 68

"Combat" 69

70

71

The Tower takes shape 72

73

74

75

"Marshmallow roast" 76

'Big helper and little helper' 77

"Flirting" 78

79
yes, it has to be tough

80

The Arts and Crafts Program. 81

82

83

84 The Spool Tower was a graded challenge, only the very daring could jump from the top.

85

86 The playground was a place to bring things to ---

87 -- a hand-cart

88 --- or a tape-recorder.

89

90

91

92

Milkcrates and other "junk"

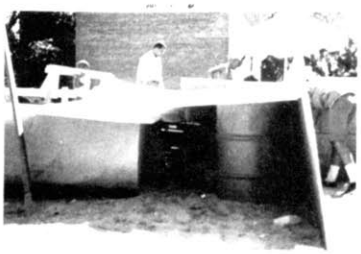
93

94

95 --- a washing machine agitator

96

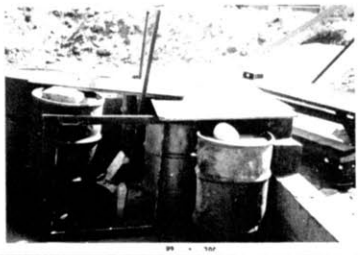
97



96

99

Open-ended corners of the playhouse stimulated construction



100

101

"A Cafe"

102

Bricks and Sand - This "Home" ran continuously for two weeks.

103

104

105

106

he added a spring board to the Fort. 107

slides have many uses. 108

109

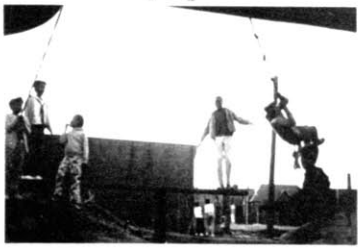
They fixed them over small swing-rope up

The Tower develops --- 110

111

112

113

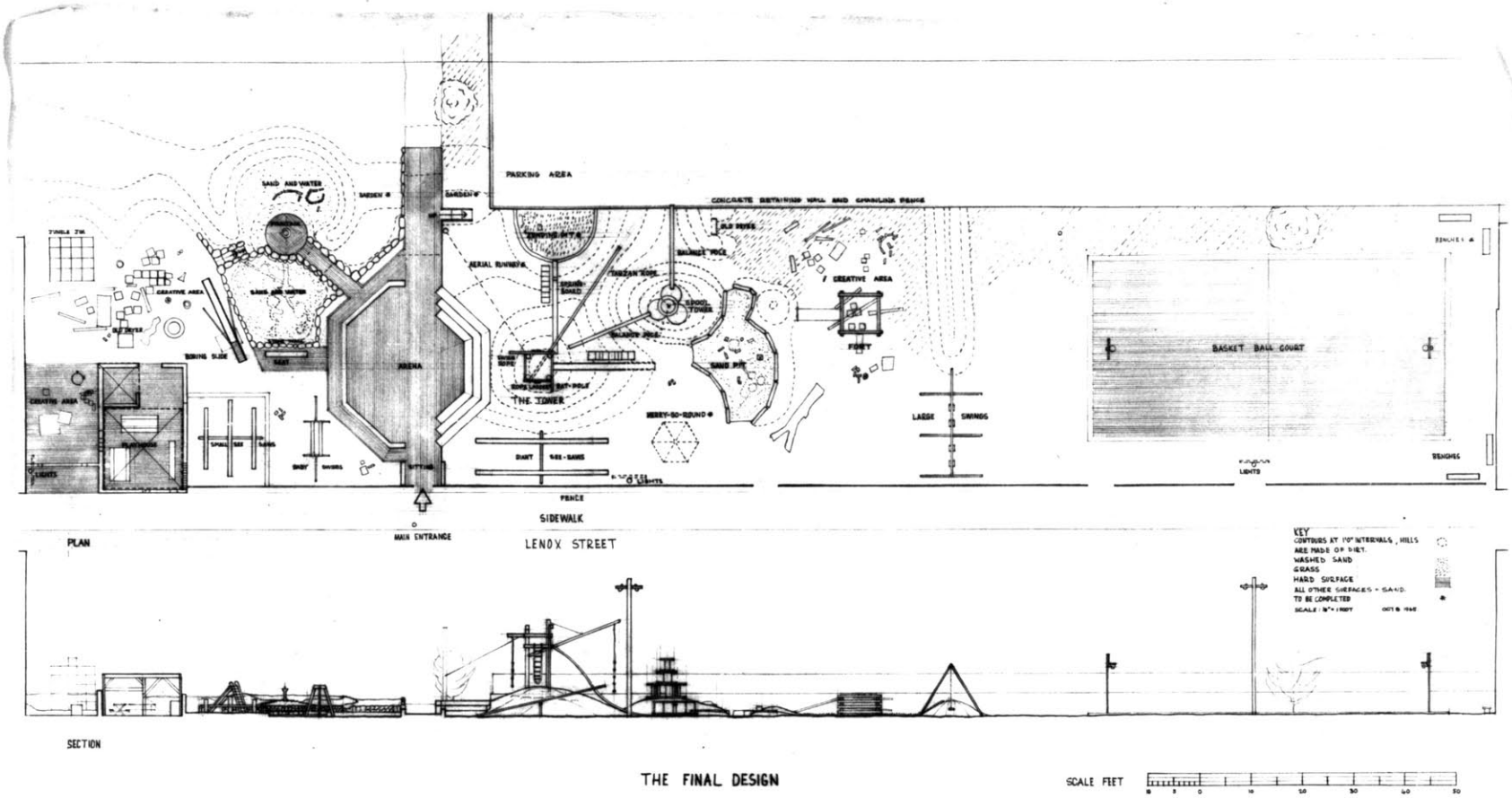


114

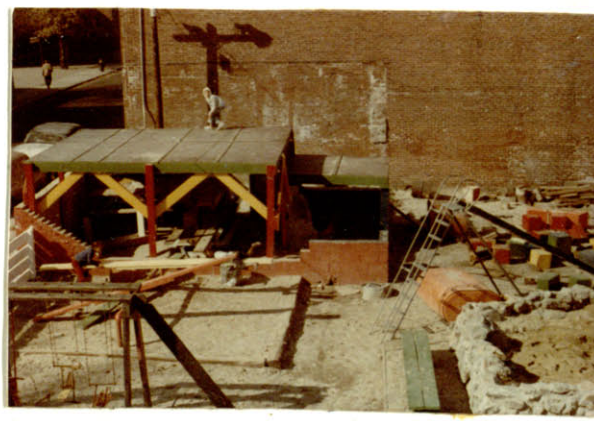
THE FINAL DESIGN AND PHOTOGRAPHIC RECORD

Figure 9

THE FINAL DESIGN



981



APPENDIX B - Stage 3 Data

A. Participation in Creative and Imaginative Play

Arithmetic Method

Observations: Table 6

Participation in Arts and Crafts Programs:

Observations - Table 7

B. Patterns of Activity in Time and Space

Examples of Observations

C. Perceptions of the Playground

Examples of Drawings

APPENDIX B

PARTICIPATION IN CREATIVE AND IMAGINATIVE PLAY

Arithmetic Method

Observation	T
Time-spans for different activities	$t_1, t_2, \ldots t_n$
Average population during observation period	P
Numbers in activity groups	$p_1, p_2 \ldots p_n$
Average number participating in creative and imaginative activity at any time during the observation period	P^1

Then:

$$P^1 = \frac{1}{T} (p_1t_1 + p_2t_2 + \ldots + p_nt_n)$$

And percentage participation, P^p:

$$P^p = (P-P^1)\ 100$$

TABLE 6

SET 1

PARTICIPATION IN CREATIVE AND IMAGINATIVE PLAY

Date	Activity	Age	Sex	No. in Group	Time-Span Mins.	Avg. Pop.	Obs. Time Hours	% Participation Creative and Imaginative Play	% Participation Other Activity
Aug. 1 Monday	Fixing up playhouse for dolls	8-10	F	5	107				
	Sand pit	7	M	5	5				
	Construction behind playhouse	7	M	1	10				
	Play in Spools	5	F	2	10				
	Water-play	6-12	M	8	110	26	4	30	70
	Mud pies in playhouse	4-6		7	20				
	Sand pit	7	F	1	30				
	Sand pit	4-6	F	6	35				
	Sand pit	6	F	2	20 347				
Aug. 2 Tues.	Water	6	M/F	6	20				
	Playhouse - with crates	7,8	F	3	55	16	$2\frac{1}{2}$ (rain)	28	72
	See-saw balancing game	8-12	M/F	6	25		$\frac{1}{2}$		

	"Towers" in playhouse, Then on The Tower	8-12	M	4	60					
					160					
Aug. 3 Wed.	Sand by see-saw	8-10	M	2	50					
	Playhouse - "Families"	8	F	2	60					
	Playhouse - "Clubhouse"	6,3	M/F	4	15					
	"Submarine" in sand pit	7	F	3	2					
	Sand pit	6	F	1	15					
	Sand pit	6	F	1	20	20	$3\frac{1}{2}$	13	87	
	Chalking	10-12	M	5	30					
	Water	8	M	2	10					
	Push barrel with swing	6	M	1	15					
	Water	11	M	2	20					
					237					
Aug. 4 Thurs.	Playhouse	9-12	M	4	30					
	Sand by main entrance	7	M	1	30					
	Toys in sand pit	7-9	M	2	25					
	Toys on string	4	M	1	15	13	4	17	83	
	Spools, "families"	8-12	F	8	20					

TABLE 6 (continued)

SET 1 (continued)

PARTICIPATION IN CREATIVE AND IMAGINATIVE PLAY

Date	Activity	Age	Sex	No. in Group	Time-Span Mins.	Avg. Pop.	Obs. Time Hours	% Participation Creative and Imaginative Play	% Participation Other Activity
Aug. 4 Thurs. (cont'd)	Balance on see-saw	6-8	M	2	10				
	Water	7-8	M	3	13				
	Toy game	9-12	M	6	10				
					153				
Aug. 6 Sat.	"Cars" playhouse	9-12	M	8	145	47	4	10	90
				Av. =	32			Av. = 20	80

SET 2

Aug. 10 Wed.	Digging "hide-out" behind playhouse	8-11	M	6	180	18	$2\frac{1}{2}$	40	60
Aug. 11 Thurs.	Play in water area	7-12	M	10	300	30	8	29	71
	Construction behind playhouse	7-12	M	5	240				
Aug. 13 Sat.	"Club-house" behind playhouse	6-13	M	6-12(9)	240	47	6	28	72
	Water area "sailing"	6-13	M/F	4-10(7)	360				
Aug. 14 Sun.	"Camp" behind play-house	6	M	2	60	15	2	6	94
Aug. 17 Wed.	Construction in play-house	8-12	M	6	60	24	6	5	95
Aug. 20	Constructions, "club" in playhouse	6-12	M/F	6-10(8)	360	46	6	25	75
	Water "system"	6-13	M	6	150				
Aug. 24 Wed.	"Battle-ships"	3-12	M/F	14	60	18	2	39	61
Aug. 25	"Battle-ships," club and "combat"	6-13	M/F	4-15(9.5)	480	26	8	37	63
Aug. 27 Sat.	"Camp" on Tower	11-12	M	2	240	44	6	3	97
Aug. 28 Sun.	"Camp in sand pit and in "jumping pit"	6-12	M/F	8	75	19	6	9	91
					Av. = 215			Av. = 22	78

TABLE 6 (continued)

SET 3

PARTICIPATION IN CREATIVE AND IMAGINATIVE PLAY

Date	Activity	Age	Sex	No. in Group	Time-Span Mins.	Avg. Pop.	Obs. Time Hours	% Participation Creative and Imaginative Play	% Participation Other Activity
Sept. 20 Tues.	"Space-ships" in playhouse	4-10	M/F	8	80				
	"Space-ships" in playhouse	6-7	F	3	20				
	Water-hose	10	M	1	20	20			
	Fort = "house"	4-6	F	4	25		$3\frac{1}{2}$	42.5	57.5
	"School"	6-7	F	3	15				
	Abstract play	4	M	2	105				
	"Fire"	5-12	M/F	12	45				
					310				
Sept. 21 Wed.	Playhouse - game	5-7	F	4	45				
	Fort = "ship," sand pit	6-10	M/F	5	65				
	Constructions around sand pit	3	M	1	30				

	Clubhouse on "dryer"	7-10	M	5	90	33	2	28	72	
	"Bat-chute"	9-10	M	3	20					
	Beer can and sand	4	M	1	17					
	Tower; started shelter	7-9	M	3	120					
					287					
Sept.22 Thurs.	Fort - abstract play	4-5	M/F	3	12					
	"Baling-out" of sub-marine in fort	8-12	M	6	40		2			
	Sand pit "cities"	4-12	M	9	65					
	Water	7-8	M	3	45	25		42	58	
	Playhouse	5	F	3	35					
	Mud-pies	3-12	F	4	13					
	Spools - hide-a-way	4-7	M/F	5	20					
					231					
Sept.23 Friday	Fort,"abstract"	3-6	M/F	4	40					
	Fort, "combat"	7-12	M	6	45					
	Sand pit	3-13	M/F	7	95		2	66.5	33.5	
	"Space ships" in playhouse	5-7	M/F	5	50	29				
	Coloring book in playhouse	5-10	M/F	6	55					

TABLE 6 (continued)

SET 3 (continued)

PARTICIPATION IN CREATIVE AND IMAGINATIVE PLAY

Date	Activity	Age	Sex	No. in Group	Time-Span Mins.	Avg. Pop.	Obs. Time Hours	% Participation Creative and Imaginative Play	% Participation Other Activity
Sept.23 Friday (cont'd)	Sand adjacent to sand pit	5-9	M/F	5	65				
	Water	7	M	2	9				
	Behind playhouse - "motor cycles"	6-8	M/F	4	70				
					429				
Sept.24 Sat.	Sand pit and bricks	4-10	M/F	7	100				
	Play in newspapers	5-12	M	6	20				
	"Spaceships"	5-11	M/F	5	35		5		
	Fortress = "house"	4-6	M/F	4	50				
	Fortress = "house" 2nd group	5-8	M	5	35	41		24	76
	"Combat" - all over	7-13	M/F	16	40				
	On see-saw ("up the mountain")	12	M	2	10				

Playhouse	5-7	F	6	35			
"Motor car" in 2nd room of playhouse	10-12	M	5	55			
- continued	8-12	M	4	25			
"Fire"	7-15	M/F	20	15			
			Av.=	51	Av. =	39	61

TABLE 7

PARTICIPATION IN THE ARTS AND CRAFTS PROGRAMS: OBSERVATIONS

	Wed., Aug. 24			Thurs., Aug. 25			Fri., Aug. 26		
Time	In Program	Age	Out Program	In Program	Age	Out Program	In Program	Age	Out Program
10:00			9				4	4-8	11
10:30	15	4-8					7	4-12	8
11:00	11	4-12	5				7	4-12	12
11:30	4	4-8	8				6	4-8	7
12:00			13						10
2:00	9	4-12	17	5	4-8	12			
2:30	10	4-12	10	no reading					
3:00	11	4-8	7	5	4-8	33			
3:30	5	4-8	14	3	4-8	36			
4:00	7	4-8	8	no reading		—	—		—
Average In-Out	44		56	13		87	33		67

Average = 30/70

6:00	no reading			20	4-12	30	no reading		
6:30	15	4-12	11	30	4-12	22	18	4-12	15
7:00	20	4-12	11	6	4-12	22	9	4-12	31
7:30	no reading			no reading			15	4-12	30
8:00	13	4-12	17	no reading			0	4-12	10
8:30	5	4-12	15	9		13	—	no reading	—
Average In-Out	50		50	43		57	33		66

Average = 42/58

B. PATTERNS OF ACTIVITY IN TIME AND SPACE

Examples of Observations

Abbreviations: 2:11 yr = 2, 11 year olds

f = girls

m = boys

① A. Action (Chain)

2: 11 yo ← 1: 11 yo
f f

↓

large see-saws, 7 mins

↓

large swings 10 mins → B. Creative, Social, Imaginative, Localized
1: 11 yo f playhouse
+ 1: 7 yo f + 1: 10 yo f

↓

large see-saws 4 mins

↓

'fixing-up' for babies 7m

↓

playhouse 1m

↓

go home 15m

↓

home

return with dolls

↓

after 1 hr 10 m
+ 2 m : 10 yo ;
2 : 8 yo f.

↓

after 1 hr 25 min

↓

home.

playhouse, "hamburgers", sand from S-P, frosting - saw-dust, ajax salt,

← (after an hour), 2 return

↘ aft 20m — home.

② Creative, Mobile (Focussing), Thematic.

3m: 10yo playhouse, multi-crate towers. ← 2 mins later + 1m 10yo

"higher and yet higher"

10 mins

same members of same group, same place next night and of previous night.

Throwing bricks at towers

5 mins

↓

crates to top of tower + down slide!

2 mins

"Tower on tower"

throw off into jumping pit. ← 2m 6yo

↓

How 'seats' on tower, 'we will put up table tomorrow".

20m lunch

③ Social, Mobile (Claire)

(3) 3m: 11yo (swings, talking, reading book

10 mins

↓

start swinging

10 mins

↓

spools, reading + talking

15 mins

↓

sat on 2 barrels by sm. swings, rocking + singing

2 mins.

(4) Action - Social - Action (Chain)

5: 6-12 yo on large swings

10 m

1

start singing create songs

10 m

↓

barrels nr. main entrance ← 1 ± 7 yo.

|

competition with barrels 

30 m

↓

fountain

5 m.

↓

barrels, singing and dancing them

35 m

↓

sm. swings

20 m

↓

"log" .....

⑤ Social (Chaos)

3 f : 13-15 yo · small swings
: 20m
↓
2 go to ph., sit talking on table 1hr. 25m
↓
spool town to join 1 f : 15 yo who was reading,
↳ out after 20m.

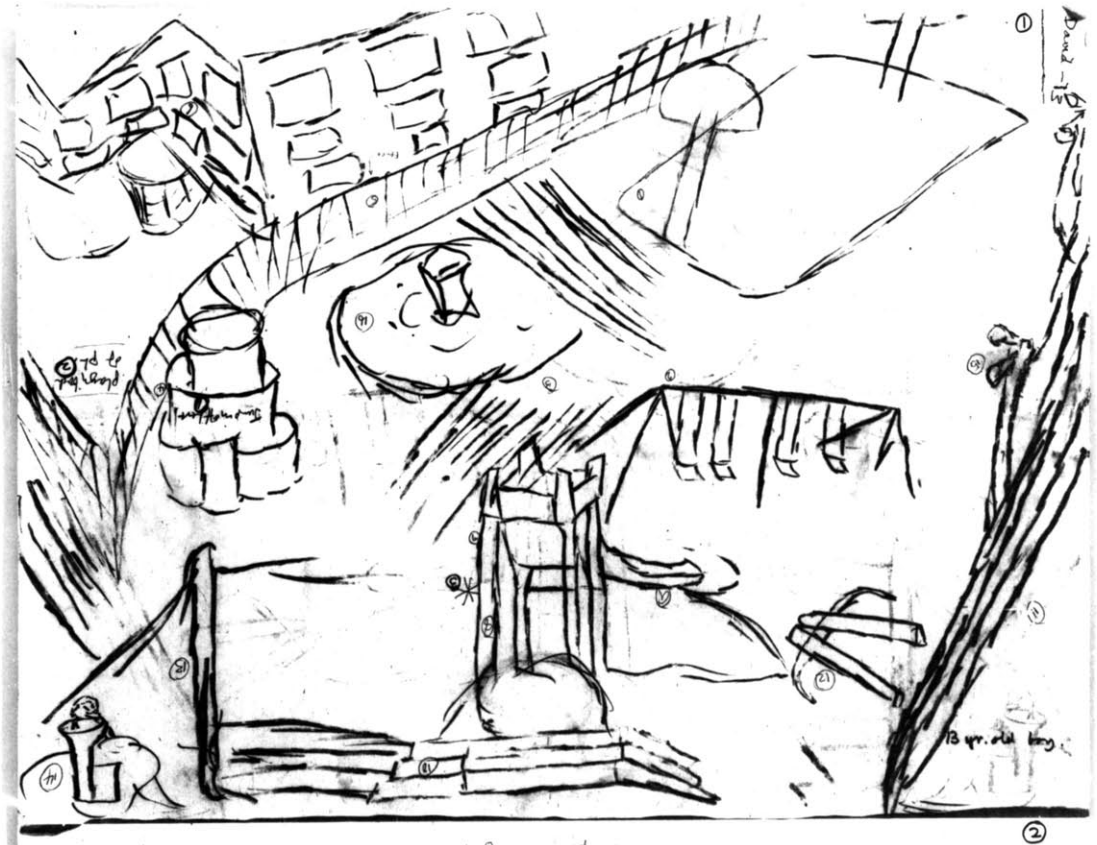
4 f : 10-12 yo hanging around ST., 1hr
1 m : 14 playing families, spool town = house.
55m
↓
town → out.

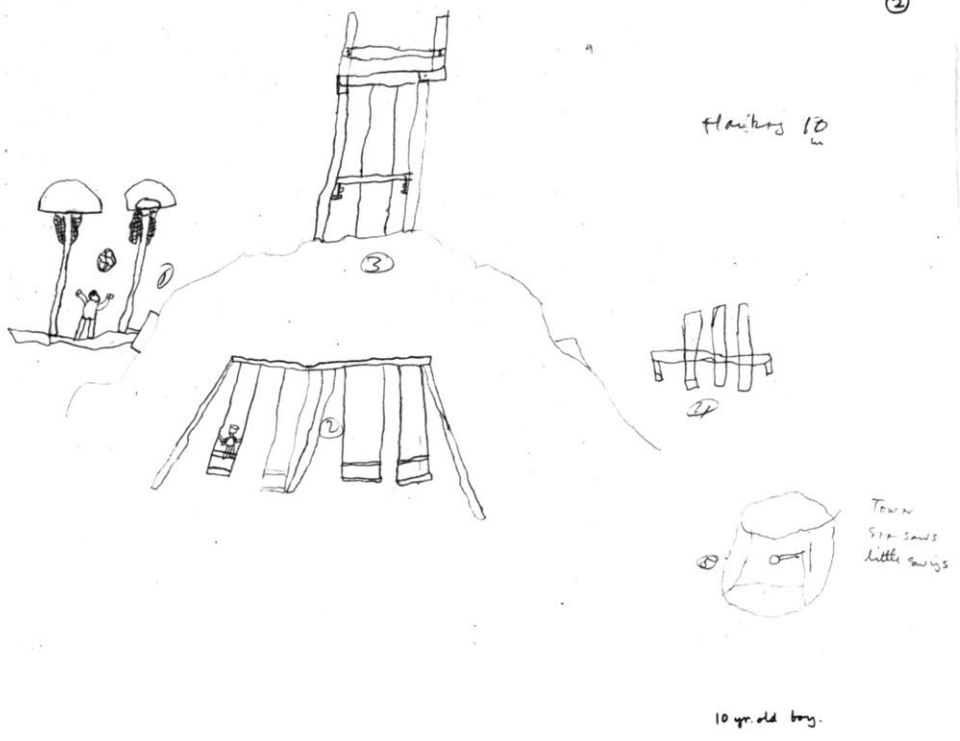
⑥ Creative, mobile (Forgetting)

6 c : 9-12 yo, playing with dog and water, "giving a drink at fountain"
10m
↓
ph. with crate towers"
20m
↓
club-house and camp 2½ hrs → out

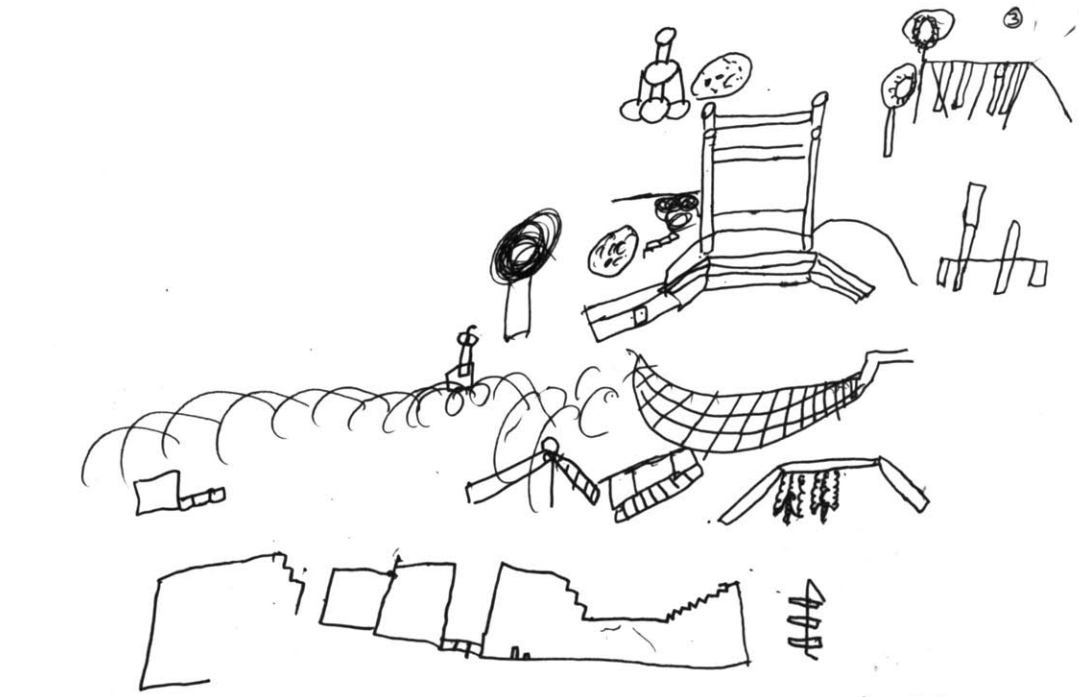
C. PERCEPTIONS OF THE PLAYGROUND

EXAMPLES OF DRAWINGS





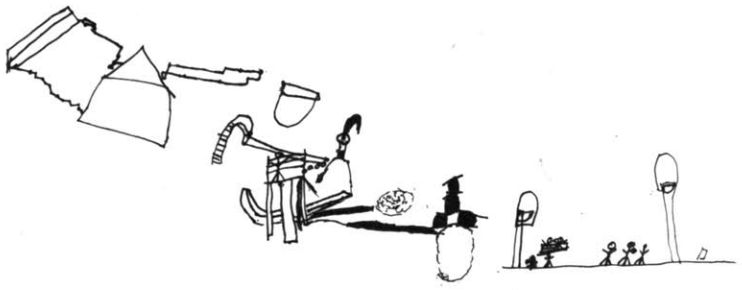
10 yr. old boy.



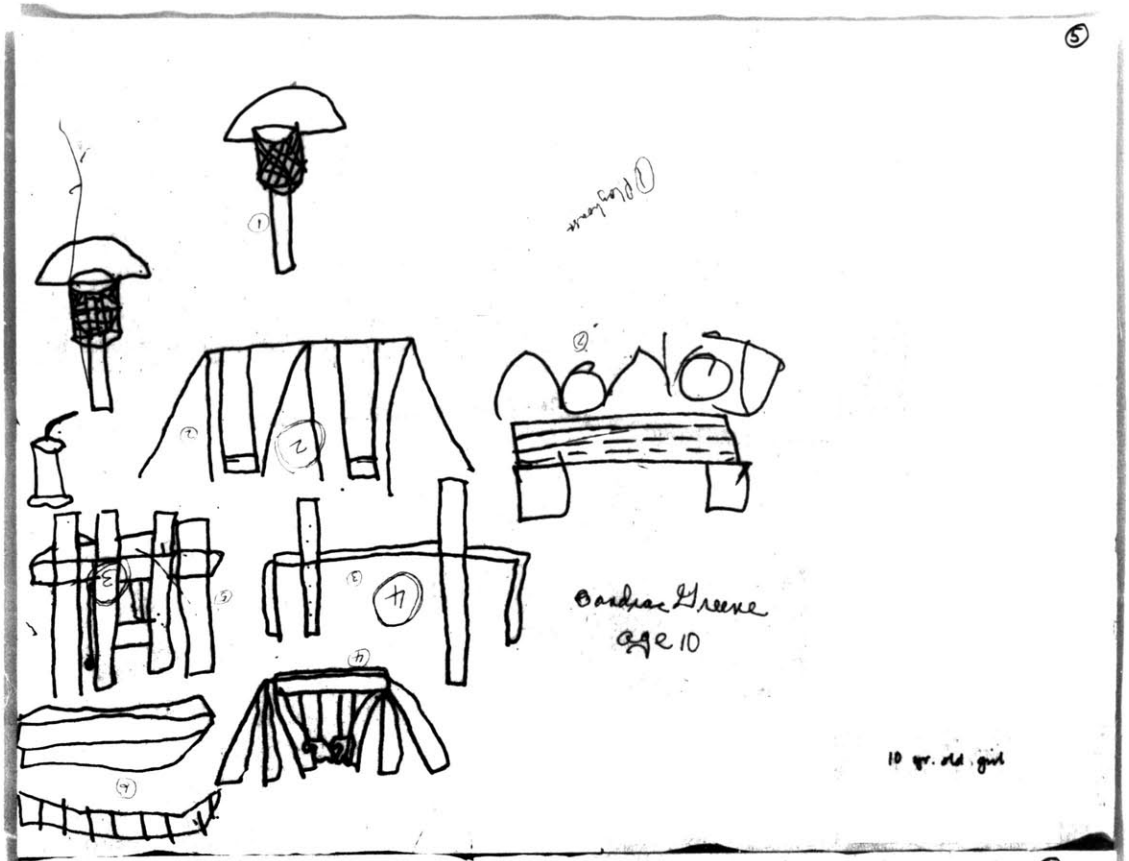
12 yr. old boy

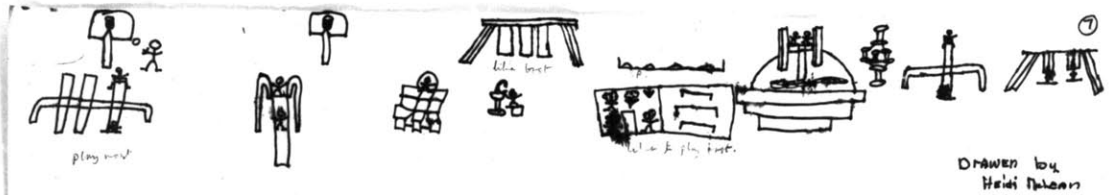
Todo - from above.

④



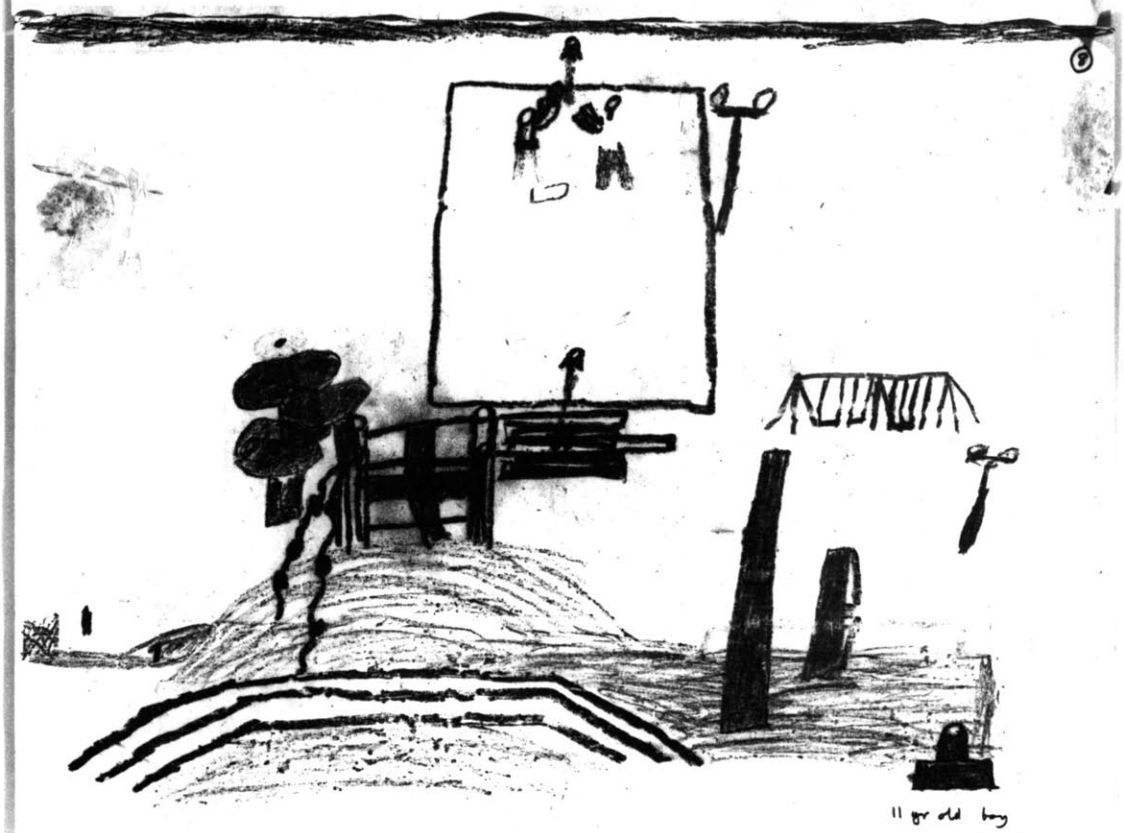
11 yr. old girl


5
Barbara Greene
age 10
10 yr. old girl
6
Playhouse
8 yr. old girl.



DRAWN by
Heidi Nelson

To Robin 12 yr. old girl



11 yr old boy

APPENDIX C

Participant Design

In relation to the Lenox-Camden project

In relation to playground design in general

As a strategy in other areas

APPENDIX C

PARTICIPANT DESIGN

The construction and study of the Lenox-Camden playground was a design process of unusual character. Under 'normal circumstances,' the designer would have produced a 'final design' and left it to a builder. Only under the most favorable circumstances would the 'build design' have been tested in some way. For the Lenox-Camden project the testing process was taken considerably further: the procedure used could be termed participant design;* a brief discussion of this process, in relation to the playground and as a general strategy, follows.

Participant Design in Relation to the Lenox-Camden Project:

One major disadvantage of the participant process was that it took an inordinate amount of professional time, although on the other hand it is quite clear that the playground ended up being more suited to the needs of the children than it would otherwise have been. The list of feed-back modifications on page 48 bear this out. Unfortunately we have no way of balancing the implied cost/benefit sum - of weighing designer's time (that could have been spent on other worthwhile projects) against the increased effectiveness of the playground and the difference it could make to the lives of the

*Where the designer works in direct and continuous contact with his "clients." As the design is constructed and experimental alternatives are tested, feed-back in terms of behavior and attitudes both modifies the specific design and also enables the designer to build up a more general picture of the requirements of the element in question (play grounds in this case).

players in it. My own attitude is that in this particular case the designer's time could be highly discounted since in one sense the project was an important demonstration of quality* in design, in an area where design is at present hardly ever even considered.

Participant Design in Relation to Playground Design in General:

There exists such an enormous range of possible alternatives and untested ideas for playground designs, that clearly through using the participant process the quality of playgrounds would advance more rapidly.

Participant Design as a Design Strategy in Other Areas:

It is clear that in the realm of the play environment participant design is especially apt. The setting for play is by definition 'free;' both the physical setting and the subjects operating in it are open to a wide degree of manipulation. Behavior in the play environment follows few formalized rules; this is an important characteristic because in whatever situation participant design could operate, the element under study would usually have to fulfill certain inalienable functional requirements; or at least the persons administering the particular unit would see it that way. Hence for many urban functions the area of maneuverability for

*Quality here is used in its deepest sense; when applied to a playground design 'high quality' would mean that the designer not only met rather utilitarian, mundane goals, like 'keep the kids off the streets,' but also some more general objectives like aiding individual development. The emphasis on quality in the physical environment should surely be a major thrust of designers in view of the present focus on urban problems and renewal, at both local and federal level. It is now that the thrust has to be made, at the beginning of what is clearly going to be a long process.

introducing design innovations is limited - a school usually has to turn out pupils capable of meeting rather specific and rather mundane performance criteria. This is unlikely to change unless some general values in society change. Until then, mental agility and the ability to store knowledge will rank far more important than level of sensibility, powers of perceptual discrimination, emotional maturity and a general ethical sense. Therefore the designer might well drop the idea of designing a school environment that would facilitate the acquisition of these kinds of characteristics. However, recent developments indicate that at the level of the classroom there is much experimentation to be done to develop an environment that will continually stimulate curiosity and would be flexible enough to cope with very fluid teaching methods.

If a favorable climate for innovation were assumed, then participant design may prove to be a valuable tool as a method of researching into the relation between behavior and the physical environment.

School design (or more feasibly class-room design) was mentioned above as an obvious case in point - again the actors are children. As a design problem the situation bears some relation to the playground problem; for instance, some objectives are shared. There are probably other elements or parts of elements of the urban envrionment which are open to the same design-research procedure. Public and semi-public open-space are the most obvious. Any situation where the physical setting to an activity could be meaningfully manipulated without complete disruption would be suitable.

One possible disadvantage of participant design is the difficulty of maintaining any situation, where the method is used, as a strictly controlled scientific experiment - many extraneous variables will enter the picture which are difficult to control for. On the other hand, making a real-world operating situation the setting for research sheds an air of realism over the whole procedure that would never occur if an attempt were made to study the problems in a 'laboratory.' Problems of scientific methodology there may be, but the results of studying operating situations are far more likely to be directly applicable to the solution of similar design problems. It is my feeling that participant design-research projects such as the playground form an essential intermediate stage through which the findings of basic research in psychology, cognitive processes and social behavior can finally be translated into routinized design procedures and 'standard solutions,' or at least move towards this end.

Educative Functions of Participant Design:

One function os participant design which must be made quite explicit is the role it plays in the education of the designer. Not only is it likely to be a means of producing a better physical product in answer to a given design problem, but it also leads the designer through an experience of lasting value.

The designer goes away finally with various categories of knowledge. Knowledge about the particular problem under examination - about behavior, broadly defined, in a particular physical environment.

Secondly he carries off a broader knowledge of the

reactions and behavior of a whole plethora of groups and individuals involved in a planned change at the 'local' level. For a planner this is of great value and would clearly have a beneficial effect on the strategy and tactics of future 'plans' and policies.*

Lastly, the intimate contact with a community of 'ordinary people' of a particular class increases his general understanding of society - of people, their beliefs, and their hopes and fears. In the case of the Lenox-Camden community the experience went against making any generalizations about the so-called poverty class, how they live now and how they would like to live in the future.

*If the designer happens to be a volunteer student (as in my own case) this area of experience is likely to be even more worthwhile. The individual should find himself in a highly maneuverable, autonomous position, on equal terms with all the groups involved, and on the payroll of none of them.

FOOTNOTES

1. Albert Schrut, The Importance to Children of the Communication Aspects of Play. Unpublished mimeo, 1965.

2. Mary Nicholson, Lollard Adventure Playground, Lollard Adventure Playground Association, London, 1959.

3. John Barron Mays, Adventure in Play, Liverpool Council of Social Service, 1957.

4. Hurtwood, Lady Allen of, Adventure Playgrounds, National Playing Fields Association, London, 1961.

5. _____, Design for Play, The Housing Centre Trust, London, 1962.

6. _____, Play Parks, The Housing Centre Trust, London, 1964.

7. _____, New Playgrounds, The Housing Centre Trust, 1964.

8. Ledermann, Alfred and Alfred Trachsel, Creative Playgrounds and Recreation Centers, Praeger, New York, 1959.

9. Appleyard, et al., "Experiments in Open Space," Connection, Harvard, Spring, 1966.

10. Kevin Lynch, The Image of the City, M.I.T., Cambridge, 1960.

11. Marcia L. McMahon, The Relationship Between Environmental Setting and Curiosity in Children. Masters Thesis (City and Regional Planning), M.I.T., July, 1966.

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