Reprint No. 129

Children's Play Behavior in a Low-rise, Inner-city Housing Development

Clare Cooper Marcus

January 1974

University of California at Berkeley

CHILDREN'S PLAY BEHAVIOR IN A LOW-RISE, INNER-CITY HOUSING DEVELOPMENT

Clare Cooper Marcus
Associate Professor
Departments of Landscape Architecture and Architecture
University of California, Berkeley

Abstract. Children's outdoor activities were systematically observed during one summer week at a 300-unit, low-rise family housing development, St. Francis Square, located in an inner-city redevelopment area of San Francisco. Details of types of play, play-location and preferred surfaces are presented. For example, play took place predominantly in the three interior landscaped courtyards as the designers had hoped it would. The most frequent outdoor activity was walking or running through the 3-block site; the preferred surfaces for play were the concrete pathways. The differences in play among different age groups (0-5, 6-11, 12-17) and between boys and girls are examined. Some comparisons are made with play activities and parental perceptions of the environment at a high-rise site (Geneva Towers) housing similar families. The method is described in some detail.

INTRODUCTION

St. Francis Square is a moderate-density, low-rise apartment development for families with children, located a 15-minute bus ride from downtown San Francisco. It is by all accounts a very successful development, most of all perhaps for the children who live there and for their parents. This paper explores some of the ways in which the physical environment contributes to this success and analyzes in three major sections--where the children play, what they do, what their parents think about the environment.

This study forms part of a much larger investigation of two housing sites, St. Francis Square and Geneva Towers, in which initially the designers, clients and other actors in the design process were interviewed as to their assumptions about the attitudes and behavior of the eventual residents. Data with which to test these assumptions was collected through a number of methods: a large random sample of the adult residents at each site was interviewed; children attending the local grade schools were asked to paint pictures (1st and 2nd graders), write essays (3rd and 4th) and draw maps (5th and 6th) of where they lived; and lastly detailed systematic observation of the use of all outdoor public areas at each site were made during a week (before school vacation started) in June 1969. The data from this latter part of the study are presented here. The focus is on St. Francis Square but at some points comparisons are made with the contrasting environment at Geneva Towers. Working papers are available elsewhere reporting other parts of the project (Cooper and Hackett, 1968; Cooper, 1970; Cooper, 1971; Cooper, 1972).

Reprinted from: Man-Environment Interactions: Evaluations & Applications, edited by Daniel H. Carson, Milwaukee: Environmental Design Research Association, Inc., 1974. Vol. 6, 12: Childhood City, edited by Robin C. Moore, 1974.

THE CONTEXT

The two housing sites were both constructed under Section 221(d)3 of the Housing Act--housing for moderate-income families. St. Francis Square comprises 300 units (1, 2 and 3-bedroom apartments) arranged in 3-story, walk-up buildings around 3 interior landscaped courts. The living rooms and balconies of most units face onto these courts which were expressly designed to provide a green, quiet, attractive, safe environment for children. The client (ILWU) hoped that this development would offer a viable alternative to those families who felt obliged to move to the suburbs to raise their children. The Square is located in a high density, inner-city neighborhood and its density is 37 dwelling units to the acre.

Geneva Towers comprises 600 units (2 and 3-bedroom apartments) in two 19-story towers set at right-angles to each other on one city block. It is located in Visitacion Valley, a suburban single-family housing area of S. San Francisco. Half the units face onto a primarily asphalted play area located between the buildings. The density of this development is 125 dwelling units to the acre.

METHOD

The site plan of St. Francis Square (hereafter referred to as the Square) was divided into 25 sub-areas with a specific point in each from which observations were to be made. The size and boundaries of these sub-areas were determined so that as large an area as possible could be conveniently viewed from the observation point.

Observations were made every 12 minutes or five/hour, from 8:00 A.M. to 8:00 P.M. each day for five days, a total of 300 observations. Each of the 25 sub-areas was observed 12 times. An hour, e.g., 10:00 A.M. to 11:00 A.M., was treated as a sample slot yielding 25 observation periods (five/day for five days). There were 12 such sample slots. A separate random order of the 25 sub-areas was generated for each sample slot and distributed across the 25 observation periods. This procedure insured that each sub-area was observed once during each hour of the day. A simple and efficient notebook procedure enabled the observers to carry out their observations with a minimum of wasted time and motion. The study was conducted on five weekdays one week before school ended during June 1969, avoiding peak periods of use occurring on weekends and vacations.

Four observers equally familiar with the site were used. Three were female, including the author, and all were white. Each observer spent at least four hours of pilot-observation before the study began. Each observer had a plan of the site indicating the boundaries of paths, lawns, planted areas, play areas and other features. Locations of each adult and child within the boundaries of that space were recorded. Details of age, sex, ethnic group, activity, objects being used and size of group were also noted, as were other factors of interest when these seemed significant. All activities recorded in the field were categorized later so observers were not burdened with this task.

The same method was carried out simultaneously at Geneva Towers, the high-rise site, for comparison purposes. Child-observations totalled 679 at the Square and 486 at the Towers.

Data collection methods were designed for comparability with other studies (cf. Hole, 1963; Littlwood and Sale, 1973; and Cooper and Marcus, 1971). Such designs are important if data are to be sufficiently general to derive design recommendations.

PLAY LOCATIONS

Since the design of Radburn and Baldwin Hills in the 1920's there have been many variations on the theme of housing facing interior common space of a superblock with parking clustered on the periphery of the site. The objective of most of these developments has been to provide a safer and more attractive environment than the normal arrangement of houses facing onto streets. It was assumed that the children would naturally gravitate to the interior of the block away from the vehicular traffic. However, in those developments where outdoor behavior has been systematically observed many have displayed a behavior pattern which was the opposite of the designer's expectations--children were much more likely to be seen playing on parking lots, streets, cul-de-sacs and garage courts than on the landscaped interior of the block. (Architecture Research Unit, 1969; Byrom, 1972; Committee on Housing Research and Development, 1972; Cooper and Marcus, 1971; Littlewood and Sale, 1973; Ministry of Housing, 1967.)

St. Francis Square, however, is an exception. Eighty four per cent of all observed play took place in the interior courtyards, 12% on the sidewalks peripheral to the site and only 4% on the parking lots. This latter figure is all the more surprising considering that parking areas comprise 21% of the public outdoor space on the site and are just as accessible from the dwellings as are the landscaped courtyards. Moreover, peripheral sidewalks occupied only 9% of the open space, the 70% remainder being interior courtyards (Figure 1).

The great attraction of the courtyards is probably due to a combination of the following factors:

1) Each courtyard is almost completely enclosed by 3-story buildings which render them sheltered from the cool winds blowing off the Pacific Ocean. The parking lots are more exposed and climatically less attractive.

2) Perhaps more importantly, this sense of enclosure and the orientation of living rooms and private patios and balconies onto each courtyard seem to create a strong territorial or proprietary sense about the space. Adults and children alike refer to "our square" and are often aware when strangers appear. Some years ago a Square informant reports territorial feelings among older boys were so strong that they would rough up children who came to "their square" who did not actually live there. For these reasons the courtyards provide more attractice physical and social environments than do the parking lots and are obviously preferred by the parents of younger children since they furnish a setting for play activity safe from both vehicular and human threats. For older children the concentration of play in the courtyards means that they can easily call up to friends who may be on their balconies, or conversely that children in the units can easily see (and hear) the action outside and go join it if they see their friends are there.

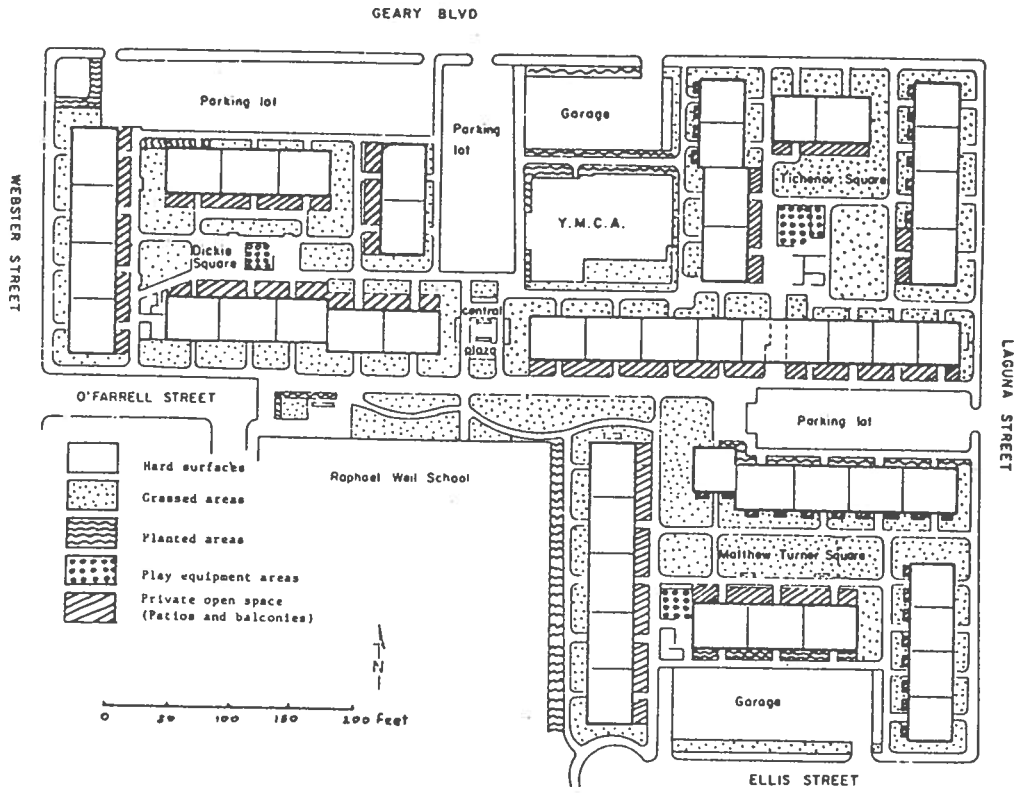

Figure 1. Surfaces at St. Francis Square

3) The presence of a play-area with equipment in each of the 3 squares makes it quite clear to children and adults alike that play is expected to take place there. The actual equipment, especially in the 2 squares where it has been redesigned and built by the parents, is particularly attractive to children of all ages. In the mornings one can observe small, pre-school children carefully scaling steps and level changes, discovering hidden spaces and swinging doors. After school groups of 8-12 year olds may be using the equipment as part of an elaborate tag and chasing game. Long after dark on mild evenings the same area is often used by groups of teenagers for sitting around on. Even when play is not actually taking place on the equipment, the play structure forms are important backdrop or unconscious focus for the play that takes place around it.

4) In addition to the play equipment, the courtyards are very attractively landscaped and well maintained and have in them a variety of vertical elements which tend to generate play behavior--for example, fences, benches, trees, platforms, garbage sheds, steps and slopes.

In 94% of all the observations made at the Square the child was interacting in some way with a person, a pet, an object or a 3-dimensional landscape feature, i.e., fence, bench, bollard, etc. One-fifth of all activities observed involved some form of play using a fixed vertical

element in the landscape. All of these elements were found in the courtyards; in contrast, the parking lots comprised flat asphalt surfaces and were generally barren of interest for children.

In studies of housing where parking areas are frequently used they often turn out to be more accessible from the unit than is the open space and the only suitable places for ball games, green areas frequently being "off limits," or broken up with trees and planting to prevent this kind of use.

5) There are wide concrete pathways in all three courtyards and fairly extensive concrete gathering places with benches and shade trees in two of them. Studies have shown that a great deal of play activity tends to take place on these hard surfaces even when softer surfaces are available, e.g., grass, sand or tanbark. The courtyards at St. Francis Square although predominantly grassed are well provided with hard surfaces and the children do not have to resort to the parking lots to find places to cycle, bounce balls, play hopscotch or roller skate. An important design feature is that paths are wide enough to accommodate children's play and adult activities and therefore children are not discouraged by either parents or management from using these spaces.

Considering the location of play in more detail, the most striking fact about the actual surfaces used is that given the choice of three major ground surfaces, grass, areas of sand within the designated play areas and concrete footpaths, 60% of the observed play was found on the concrete footpaths and other concrete areas. This was equally true for all age groups and for all kinds of groupings from lone play to sizeable groups. The actual proportion which hard surface areas comprise of the total site (excluding buildings) is 50%. There are a number of possible explanations for this preference for hard surface play:

1) A great deal of play, particularly of younger children (under 5 or so) takes place close to the dwelling entrance; both the mother and the child tends to prefer this. Since entrances are hard surfaces and lead out onto other similar surfaces (footpaths, sidewalks) this play inevitably becomes "hard surface" oriented.

2) The largest single category of children's outdoor activity at the square was walking or running around the site; this comprised almost two-fifths of all observations. Some of this takes the form of running games but most take the form of wandering around looking for the action, seeking friends, etc. Inevitably this latter takes place on footpaths, since (on this site at least) these are the most direct routes from place to place. This activity is particularly engaged in by the 5-11 age group and more frequently by girls than boys.

3) Some forms of play require a hard surface in order to take place successfully. These include bicycling, roller skating, maneuvering tricycles, toy cars or skate boards, skipping, hopscotch and games requiring that a ball be bounced, etc. Such activities comprised 16% of all observations at the Square and gravitated to the hard surface areas available.

4) A setting where the grade school, park and supermarkets are all within safe walking distance (as they are here) will inevitably generate a considerable amount of child-pedestrian movement which takes place most easily via footpaths and sidewalks.

More than one third of the hard-surface play at St. Francis Square takes place on footpaths within the site. These run along the fronts of buildings linking entrances, lead from square to square and along the former O'Farrell Street alignment and form major pedestrian routes through the site. These generate a great deal of child-activity, nearly twice as much as the city sidewalks which surround the site and which are--in view of the double-orientation of all units--actually just as accessible from the dwellings. Their relative lack of use is probably due to a combination of the following: parental discouragement, proximity to noisy and busy streets, greater degree of adult use and a feeling that these are not part of the semi-private "home territory" of the Square.

Considering the high proportion which grassed areas make up of the whole site (44%), the amount of play observed on these areas (19%) is less than one might have expected. The sloping topography and number of sizeable trees punctuating the lawn areas tend to discourage large organized games, such as baseball or football,which one might expect to take place on the grass. Softball, for example, more frequently takes place on the flat concrete areas adjacent to the play structures in Dickie and Tichenor Squares, with one or two bases (plus out-fielders) being positioned on the grass. Most "grass play" like this tends to be a spill-over from games or activities located principally on hard surfaces (Table 1).

Table 1. Location of Children's Outdoor Activities at St. Francis Square

Specific Area	% Obs.	% Open Area
Paved areas (footpaths, entrances and hard-surfaced gathering areas)	44	20
Grassed areas	19	44
Play equipment areas	15	5
Sidewalks (perimeter)	12	9
Parking lots	4	21
Other (trees, fences, garbage sheds, meter boxes)	6	1

The topography in Dickie and Tichenor Square is such that the grassed areas are terraced or sloped and look down onto the high-activity "stage" of the play equipment area plus surrounding hard surfaces. This arrangement makes the grass an ideal setting for watching the action, and it is quite frequently used for passive activities such as sitting, talking, watching, laying in the sun, etc. The remainder of play on grass tends to comprise behavior which is active in nature and which expressly needs a soft surface; for example, wrestling and play-fighting, somersaults and digging. However, these forms of play are much less frequent than those requiring a hard surface.

Approximately 15% of all play was observed in the play equipment areas of the three courtyards. In Tichenor Square the play structure comprised an

arrangement of telegraph poles, platforms and steps with a slide and a metal pipe for sliding down from the upper levels. There was also a see-saw within the enclosed play area which was surfaced with sand. In Dickie Square the play area, also centrally located and fenced, comprised a fiberglass helix slide and a see-saw with sand beneath. Play focused around these two play areas even though relatively few children actually used the equipment. This was because they were centrally located, visible from most of the dwellings and surrounded by flat concrete suitable for hard-surface play. The prominent vertical play structures, by far the largest and most noticeable landscape features in each of these squares, seemingly acted as magnets to behavior, much as a fountain or dominant sculpture might do in an urban plaza.

The play area in Matthew Turner Square was not used as frequently as the other two. The equipment, low metal climbing structure in the form of an animal and a see-saw, was not as challenging and its location was such that it did not form a central visible focus of activity in the courtyard.

This phenomenon of little use being made of play equipment in residential playground settings is one that has been demonstrated in a number of comparable studies (Figure 5). It points up the fact that even the most fascinating play area will only keep children's attention for just so long and that designers should be aware that the whole neighborhood will be used for play and not just that portion designated "play area" on the site plan.

A surprisingly small proportion of the play at St. Francis Square made use of the dirt in the planted areas or the sand in the play areas. Occasionally a group of 6 year old girls, for example, might be seen digging in the sand around the play structure in Tichenor Square, molding "cakes" and "cookies" with an empty Coke can; or a 2 year old would be seen picking up handfuls of sand to sprinkle on a nearby bench. But such behavior was not common. In another low-rise San Francisco housing development with an even higher child-density (Banneker Homes), a sloping lawn area has been worn down and not maintained so that it now provides an extensive area for potential dirt play in an otherwise largely hard-surfaced environment. Even so it is quite rare to see it used in any way except for riding bicycles. The kind of dirt play described by Roger Hart in his study of a Vermont village (Hart, 1974), in which children trace out quite elaborate "town plans" or model airports or houses in the dirt, is never seen in these inner city projects, despite the fact the raw material is present. This suggests that there are perhaps rural and urban play traditions, largely stimulated by the predominant surfaces that are available. In urban settings there appears to be a culture of hard-surface play, built up through generations of children playing in asphalt schoolyards, alleys, sidewalks and city playgrounds. This play-culture focuses on activities which take place best on hard surface: roller skating, hopscotch, basketball, bicycling, play with wheeled toys, etc. Children display a much greater imagination and ingenuity in the use of these surfaces than they do in the use of sand or dirt where it is available. For children in the country the opposite may be true: dirt, grass, water, weeds, etc. are much more commonly encountered than are hard surfaces. A tradition of games and activities builds up which utilizes these surfaces. By contrast the use of available hard surfaces (roads, driveways, etc.) may be quite minimal and unimaginative.

CHILDREN'S ACTIVITIES

Children at St. Francis Square were more often seen running and walking around the site than doing anything else; this was also true in two other studies of comparable density, low-rise housing, using similar observation techniques (see Figure 2). Other activities at the Square, in order of importance, were: sitting and standing (often watching more active play close by), ball games, playing on play equipment, bicycling, roller skating and playing with wheeled toys and "other activities" which included everything from flying model airplanes to digging in the dirt.

The observations at the Square were grouped into broad categories enabling comparison to be made with studies in other similar residential settings. In all categories the results were similar except for bicycling, roller skating, etc., where studies in other low-rise settings indicated much higher proportions than at the Square. It is perhaps significant that there was considerably more "other play behavior" at the Square than at the other settings documented. This may say something about the variety of play stimulated by that setting--one that displayed a greater range of kinds of spaces, grade changes, plant materials and site furniture than any of the others.

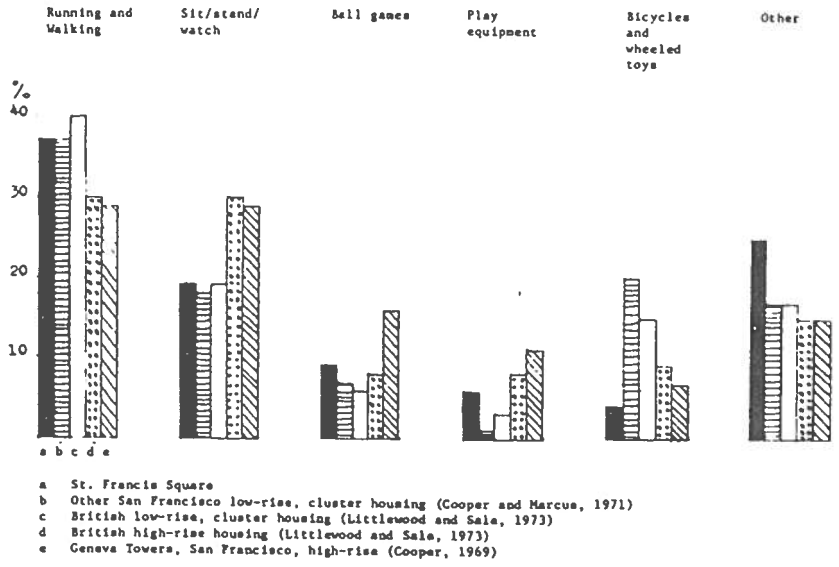

Figure 2. Children's outdoor activities: St. Francis Square compared with other residential settings

Comparisons with the results from two high-rise studies bring out some interesting contrasts. First, the proportion of all children seen running and walking around the site is lower in high-rise settings, perhaps because the site is often less extensive. In the case of Geneva Towers there are just fewer places to walk to. Unlike the low-rise settings visiting friends, disposing of garbage and going to the laundry can take place within the building, therefore are not observed outdoors.

Second, the proportion of children engaged in passive activities (sitting, standing, watching) appears to be consistently higher in the high-rise settings. This may be partially because there is less encouragement from the physical environment to engage in more active pursuits such as walking or running around (see above). In addition at Geneva Towers there was a greater proportion of teenagers observed outdoors than at the Square and this is an age-group which tends to spend a good deal of time sitting and socializing.

The proportion engaged in ball games was higher at Geneva Towers than at any of the other sites because there were several basketball nets which attracted large numbers of teenagers outdoors in the early evening hours. At the low-rise San Francisco sites basketball was consciously not provided since management was concerned about the noise it might cause. There seems to be less concern about noise at high-rise sites, perhaps because a large proportion of the units are off the ground and will be unaffected anyway.

The greater use of play equipment at Geneva Towers as compared with the Square is probably due to the fact that there is little else in the form of active play to do at the high-rise site other than play ball on the asphalt play area or climb the equipment set into the asphalt. By contrast the heavily landscaped setting at the Square offers a much greater variety of play opportunities. Play equipment, which is primarily used for climbing, offers only one of a number of climbing possibilities--others include trees, garbage sheds, fences, etc.

AGE DIFFERENCES

Overall the largest age group seen playing outdoors (58% of all the observed children) were the 6 through 11 year olds--children old enough to play outside alone at the Square, but not yet old enough to wander much further afield in the city. Children in this age group also comprise the largest group resident in the Square, 44% of all the resident children in the sample interviewed. However, 80% of all children seen playing ball games were 6 through 11; 70% of those running and walking about the site; and almost 70% of those playing on play equipment. This is the age of very active play, of testing new motor skills, of engaging in daring feats and competitive games.

The under 5's made 36% of the resident child population at the Square and 29% of those observed outdoors. This is a stage when children spend a lot of time watching others, particularly slightly older children whose skills they wish to emulate. A third of all under 5's were seen standing or sitting and watching; just under a third were running or walking about the site. Compared with these all other activities were relatively infrequent; 8% of all under 5's were playing on bicycles or wheeled vehicles; 7% on play equipment; and 3% were playing ball.

Among 11 to 18 year olds the most frequent activity was circulating around the site with sitting and standing next in importance. Compared to these activities, very few were playing ball (and these were all male) or climbing on the play equipment (these were all female) and none were observed on bicycles or roller skates. This is predominantly the age for socializing, sitting around and talking, showing off, flirting and other primarily

sedentary occupations. This tended to happen in the early evening on and around the play equipment used at other times by younger age groups or on the terraced lawns of the courtyards.

SEX DIFFERENCES

The first difference to be noted is the fact that there are proportionately more boys than girls using the outdoor areas at St. Francis Square. Assuming that there are approximately equal proportion of boys and girls in the resident population we find that in fact 57% of those actually observed outside are boys while only 43% are girls. In an observation study of 12 British high density housing estates a similar preponderance of boys was noted (Hole, 1966). This may tie in with the fact that boys generally are allowed greater freedom in their out-of-home activities than are girls. In their current work in a medium-density housing development in New York, for example, Coates and Bussard note that boys tend to have a greater territorial range than do girls (Coates and Bussard, 1974).

In considering the totality of outdoor child behavior we have made a somewhat arbitrary breakdown between play--in the generally accepted sense (i.e., a layman-observer would classify the behavior as play); circulation (walking about the site); passive activities (sitting, standing, watching, not obviously playing); and miscellaneous other behavior (such as emptying garbage). If we consider how boys and girls differ in these four categories again some interesting contrasts come to light. Most marked are differing proportions actually engaged in play; of all boys observed outdoors, 60% were engaged in obvious play behavior whereas this proportion for girls was only 43%. In contrast 39% of all girl's behavior comprised walking or wandering around the site or moving purposefully from A to B; for boys this behavior comprised only 20% of the total. The proportion engaged in passive and miscellaneous behavior were roughly equal.

Looking at the details of play behavior we again see some interesting contrasts between boys and girls. A significantly higher proportion of boys' play comprises play with an object, e.g., model airplane, stick, water-filled balloon or ball, than is true of girls. These forms of play comprise half of the observed boys' play behavior but only 8% of girls' play. This is a remarkable difference--probably due to the fact that society encourages boys more than girls to excel in competitive ball games and boys more than girls seem interested (and/or are encouraged to be interested) in the manipulation of objects (e.g., how to get a paper airplane or a kite to fly, playing with a squirt gun or model car).

There were other activities in which girls participated proportionately more than boys: these were playing on equipment and structures not specifically designed for play (benches, garbage sheds, etc.). These together comprised 39% of all girls' play and only 19% of all boys' play. Bicycling, roller skating, skipping and hopscotch made up 21% of girls' play but only 5% of boys' (Figure 3). Observations at other comparable sites suggest that elsewhere boys are more likely than girls to be playing with bicycles, wheeled vehicles (Cooper and Marcus, 1971).

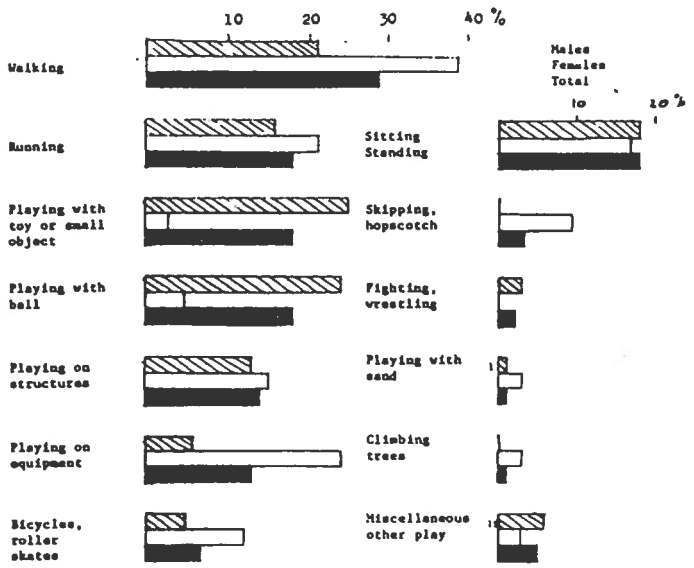

Figure 3. Childrens' outdoor activities by sex: St. Francis Square

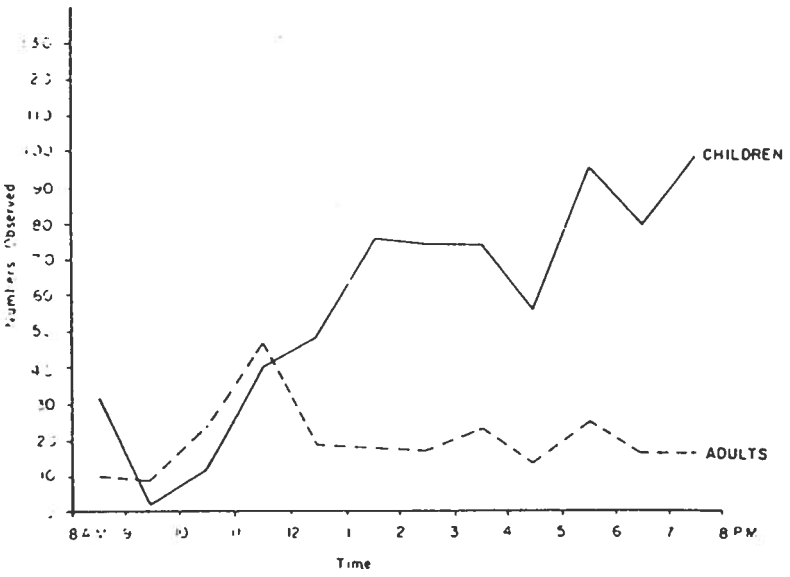

Figure 4. Number of persons in public places on a summer weekday, 8 AM to 8 PM: St. Francis Square

DAILY SCENARIO AT THE SQUARE

Figures and proportions alone tend to give a somewhat disjointed view of activities in space. What follows is an attempt at a more qualitative description of children outdoors at the Square on a typical summer day (Figure 4).

Soon after 8 children carrying lunchboxes and schoolbooks begin to leave their homes and walk through the courtyards in ones and twos, down the former alignment of O'Farrell Street to Raphael Weil School or wait inside the glass entrance doors facing Laguna Street for their school buses which take them to school. It is a quiet time of day in the courtyards and above the low roar of commuter traffic on Geary one can hear birds singing and the sprinkler playing on the grass. No preschoolers are out yet and the older children are walking via city sidewalks to the junior high school some blocks down Geary.

The period between 9 and 10 is even quieter. Almost no children are to be seen. Elderly residents walk their dogs, a groundsman sweeps leaves from the sidewalks, perhaps the manager chats to a resident outside the office.

After 10 a few preschoolers appear, climbing on the play structures, finding hidden spaces too small for older children to penetrate, while their mothers look on or take a load of washing to the laundry. A group of 10 or more from a local day care center may come and use the play area for an hour or so, swarming over the play equipment, checking back frequently with 2 or 3 adults who sit nearby on benches. Sometimes they bring their lunches and sit eating in the sun at the benches and tables near the office. By 2 most of the under 5's have returned home or to the day care center for a nap. Their place in the courts is taken by children returning from grade school. Larger groups this time, 3, 4 or 5 pass through the squares talking and laughing, check in at home for a snack and perhaps a period of watching TV.

In the late afternoon noise and activity in the Square increases. Girls come out on roller skates and bicycles, boys play catch and call up to friends on upper balconies to come down and join them. On warm days screen doors are open wide and rock and roll music may fill the air, older girls jive on a balcony, dogs bark to be let out.

After 6 dinner is eaten and even more children come outdoors. Despite the wind that may have picked up and lengthening shadows there may be 20 or 30 in each courtyard--a group of 10 year old boys and girls playing softball, the bases formed by a bollard in the concrete, a former fence post, a tree on the sloping lawn. In Dickie Square 20 kids may be involved in a noisy ball throwing game--half of them on a grass slope, half on the concrete below--six balls flying back and forth, screams and laughter. For the first time in the day teenagers begin to appear. They remain long after dark, dressed warmly to combat the evening chill, and sit in groups on the play structures or on benches chatting and fooling around. A boy sets off a firecracker, two others wrestle on the lawn. A small group of girls hang around a hot-air vent from the laundry. Not far away some boys straddle a fence and call out to the girls. There are few adults around--maybe one or two walking to an evening meeting at the office or collecting their clothes from the driers before the laundry closes at 8. At 10 a small knot of

teenagers may still be outside talking and listening to a transistor radio. By 11 most of the courts are empty. Police sirens from Geary penetrate the night air.

WHAT PARENTS THOUGHT ABOUT THE ENVIRONMENT

It is perhaps useful in assessing parents' views of St. Francis Square as a place to raise their children to compare the answers given to certain questions by the interviewed sample of adults at the Square with those at Geneva Towers.

Among the families sampled at the Square and the Towers children of 0-5 are proportionately more numerous at the Towers, representing 51% of all the resident children. It is noticeable, however, that there are proportionately more children in the 0-5 category playing outdoors at St. Francis Square than at the high-rise site. This is some indication that the low-rise site is more attractive to small children; but more than that it is evidence that it is perceived as more attractive and safer by parents who let their children out to play alone at a younger age than at Geneva Towers. When asked if they let their children under 6 play outside without them 75% of the Square mothers replies "Yes" but 65% of the high-rise mothers replied "No." When these mothers were asked at what age they would allow their children to go out to play alone at St. Francis Square 75% said they would let them out at 5 or younger (mostly at 3 or 4 years); at Geneva Towers only 40% said they would let them out to play by 5 years, the remainder mentioned ages up to 10 or even older.

One can speculate what this fact must mean for the day-to-day life of families in these two environments. Most children at the Towers cannot go out to play before they start school (or even later) unless accompanied by a parent or older sibling. In effect this means they spend most days inside the apartment, often divorced from playmates of their own age, getting under their mother's feet or pacified by TV. If another study comparing the health of families in houses and in apartments off the ground has any meaning for this situation it is just possible that the actual physical health of children and the mental health of their mothers may be poorer at the Towers than at the Square. In a study of families living in a British military housing project in Germany, D. W. Fanning found that children under 10 living in 4-story apartments were more likely to suffer from respiratory diseases than those living in houses; and that the incidence of psychoneurotic disorders among women aged 20-29 years was three times as frequent in the apartments as in the houses (Fanning, 1967). Fanning's conclusion was that the children in the apartments suffered from a lack of sunlight and fresh air since there was nowhere outside for them to play alone safely. Many preschoolers only went outdoors once a week when their mother shopped at the base. The mothers of these children tended to be lonelier than those in the houses because they had no semi-private space adjacent to the dwelling (such as the gardens or the porches of the houses) where they might casually meet the neighbors. In addition the apartment mothers had their children under foot all day, tended to become impatient with the children, then felt guilty and internalized their feelings. Results were higher than normal rates of psychoneurotic and psychosomatic complaints.

Although the analogy with the Square and Towers situation may not seem strictly comparable since here both environments comprise apartments, it seems likely that the Square has more in common with the houses in the Fanning study; in both there was ground-level open space used by children at an early age. In the Towers, as in Fanning's apartment buildings, women were less likely to know their neighbors, more likely to spend much of their days alone in their apartments with one or more preschool children. Small wonder then that when asked--"Do you think this is a good place to bring up children in?" almost three-fourths of those at the Square said that it was while the majority at the Towers said that it was not (Table 2).

Table 2. Reponses to area as good for child rearing

	St. Francis Square		Geneva Towers	
	No.	%	No.	%
Yes	90	73	39	37
No	15	12	55	51
Do not know; Yes and No	17	14	13	12
	122	100	107	100

CONCLUSION

It seems that it is possible to create an environment in the inner city which is perceived by parents as a good place to raise children. If we are to offer families with children the option of staying in the city we must look to examples like St. Francis Square as models of what this environment might be like. This paper has attempted to analyze some of the ways in which children use that environment. Design recommendations stemming from this and a number of comparable studies appear in another publication (Marcus, 1974).

REFERENCES

Architecture Research Unit. Traffic separated layouts in Stevenage New Town. Edinburgh, 1969.

Byrom, J. B. Shared open space in Scottish private enterprise housing. Edinburgh: Architecture Research Unit, University of Edinburgh, 1972.

Coates, Gary J. and Ellen Bussard. The ecology of children's out-of-house activities in a moderate density housing development. This publication.

Committee on Housing Research and Development. Families in public housing: an evaluation of three residential environments in Rockford, Illinois. Urbana-Champaign, Illinois: University of Illinois, Research Report, 1972.

Cooper, Clare and Phyllis Hackett. Analysis of the design process at two moderate-density housing developments. Berkeley: Center for Planning and Development Research, University of California, June 1968.

Cooper, Clare. Data on observations in outdoor areas at Geneva Towers, San Francisco. Unpublished, 1969.

Cooper, Clare. Resident attitudes towards the environment at St. Francis Square, San Francisco: a summary of the initial findings. Berkeley: Institute of Urban and Regional Development, University of California, Working Paper No. 126, 1970.

Cooper, Clare. St. Francis Square: attitudes of its residents. American Institute of Architects Journal, December 1971.

Cooper, Clare and Stephen Marcus. Observations at three San Francisco redevelopment agency housing developments. San Francisco: San Francisco Redevelopment Agency (mimeo), June 1971.

Cooper, Clare. Noel Day and Beatrice Levine. Resident dissatisfaction in multi-family housing. Working Paper No. 160, Berkeley: Institute of Urban and Regional Development, University of California, Berkeley, 1972; and in William M. Smith (ed.), Behavior, design and policy implications of human habitats. Green Bay, Wisconsin: University of Wisconsin, 1972.

Marcus, Clare. Children in cluster housing: some design recommendations. Landscape architecture, October 1974.

Fanning, D. W. Families in flats. British medical journal, Vol. 4, No. 5576, Nov. 18, 1967.

Hart, Roger. Public lecture, University of California, Berkeley, May 1974.

Hole, Vere. Children's play on housing estates. London: Her Majesty's Stationery Office, 1966.

Littlewood, Judith and Ruth Sale. Children at play. Department of the environment, Design Bulletin #27, London: Her Majesty's Stationery Office, 1973.

Ministry of Housing and Local Government, Sociological Research Section. Housing at Coventry: a user reaction study, Official architecture and planning, December 1967.