Negotiating between children and adult design values in open space projects

Mark Francis

Department of Environmental Design, University of California, Davis, California, USA

Environmental design research and participation can enable groups with different environmental values to negotiate critical design decisions. This article presents findings and techniques from two open space projects—one a neighbourhood playground, the other an elementary schoolyard—found to be useful in clarifying differences in open space values and preferences. Specific differences between child and adult views of these places are reviewed. How participation and research was utilized to help resolve basic open space differences is discussed. The article concludes with a brief review of future issues facing research and design participation.

Keywords: open space projects, child requirements, adult design values, design participation

Environmental design frequently involves making choices between the needs and values of different groups. These choices are especially pronounced in open space design where the needs and values of different age users groups are frequently in direct conflict. The purpose of this paper is to show how designers can use environmental psychology and participatory design methods to help children and adults negotiate critical design decisions[*].

Past research which has identified similarities and differences between adult and child landscape preferences is briefly reviewed. The results of two research and design efforts for a neighbourhood playground and an elementary schoolyard are discussed. The differences between adult and child design ideas are pointed out. How these differences were mediated and negotiated in the design and evaluation phases of the two projects is discussed. Some overall conclusions about key differences between adult and child values in open space projects are presented[†].

CHILDREN'S VIEW AND USE OF THE LANDSCAPE

Considerable research has addressed how children use and experience the landscape[1–4]. These studies, as well as theoretical perspectives on child-landscape interaction[5–8], reveal important factors to consider in

designing or managing landscapes such as parks, play-grounds, neighbourhood and public spaces.

One of the most significant findings of these studies is the importance children place on landscape modification and construction and its impact on child development[9]. This 'theory of loose parts' concepts was first identified by Nicholson[5] and documented in several studies[2,3]. In one of the most extensive studies of child landscape preference and use ever conducted, Roger Hart[3] determined that children's experience of place results, in part, from their ability to modify the landscape. Through a variety of methods, Hart documented the landscape use and values of children in a small New England town. His research reveals that the spatial richness and meaning attached by children to the landscape is related to their access to natural areas and elements.

Parents are important shapers of landscape experience of children. Hart found children's access to the landscape was greatly influenced by the range and freedom of use permitted by parents[10]. Factors such as the child's age and sex were also determined to be important influencers of landscape experience and accessibility.

Similar findings were documented by Robin Moore in a study of several different 'urbanizing' areas in the San Francisco Bay Area[4]. Moore asked children to map their favourite places to document liked and disliked neighbourhood places. Modification and access to natural undesigned areas were again found to be important preferences for children. Natural areas accounted for over a quarter of all favourite places while designed schoolyards and playgrounds accounted for less than 10% of their favourite places. Access to the natural environment was found to be an important landscape preference of children.

In a study of children's use of an urban neighbourhood in Baltimore, Brower[11] used child-led tours of the neighbourhood as well as interviews to document children's environmental values. Brower observed that areas designed for children's play, such as playgrounds, accounted for only a small part of the space they used in the neighbourhood. Child use extended throughout the neighbourhood with found spaces such as stoops being important settings for children's play. Of the designed parks and playgrounds used, Brower found that children identified most strongly with spaces which were closest to the child's home. This finding supports Hart's observation that the range allowed children by their parents is an important factor in their use of the neighbourhood landscape.

Brower also observed that in designed playgrounds, movable equipment that invited cooperative play was the most popular with children. This finding is reinforced in one of the few studies which compared children's use of traditional and child built or 'adventure' playgrounds[1]. Hayward, Rothenberg and Beasley[1] discovered that an adventure playground built and modified by children attracted a greater variety of child activities than more traditional adult designed playgrounds. They also learned that children spent more time at the adventure playground.

The implications of these and other studies reveal several basic preferences of children for open spaces and neighbourhood landscapes such as a need for access to undesigned, natural areas; a desire to modify and change the landscape; an interest in claiming found spaces as their own; and a desire to use a network of spaces in the neighbourhood. These landscape values suggest significant design and management implications for existing and future neighbourhood open spaces. How do these child landscape values relate to adult landscape preferences, and how do these differences and similarities get translated into open space design plans and policies?

ADULTS' VIEW AND USE OF THE LANDSCAPE

A quick tour of most neighbourhoods would reveal that adults use the landscape far differently to children. Several studies have documented these differences[12-14]. Bishop and Foulsham[13] used a mapping method to compare children's images of Harwich, England to those of adults. They found, for example, that adult maps frequently included a lighthouse in Harwich as a significant landmark. In contrast, children did not show the lighthouse but smaller scale elements such as kiosks, telephone booths and vacant lots which were favourite places.

Adult's use of the landscape shapes their views about how the landscape should be designed for children. For example, Hart found safety to be an issue of critical concern to parents in his Vermont study. This fear contributed to many parents limiting the range and kind of activities they allowed their children to engage in. Also critical to parents are the perceived aesthetics of the landscape. Parents frequently value open and uncluttered landscapes which provide for easy visibility and surveillance and address their fears with safety.

Child and adult values are not always so different. As Michelson and Roberts[8] point out, parents' reactions to environmental conditions are not irrelevant to children. Safety and security are also important concerns to children as well. In Moore's study he found children feared places because of physical or traffic danger. This fear or sense of adventure, as Ladd[15] has pointed out, is also valued and desired by children. For example, some of the most dangerous playgrounds and where all opportunities for adventure have been removed forcing children to invent dangerous alternatives.

ASSESSING LANDSCAPE PREFERENCES IN THE DESIGN AND MANAGEMENT OF OPEN SPACE PROJECTS

How do designers identify and choose between landscape preferences of different age groups in neighbourhood design and management? This dilemma is frequently faced by landscape designers and researchers. On one hand, a designer sensitive to children's landscape values

and responsive to findings from environmental psychology research, would want to provide opportunities for child manipulation and construction. Yet adult concerns for safety and orderly aesthetics often veto a design which provides for child building in a playground. What does a designer do?

The most basic approach, as Ward points out[7], is to provide an opportunity for children to present and advocate their own views in the design process. Rarely are children or teenagers provided the opportunity to have a say in the environments they are the primary users of such as schools, playgrounds and parks. As pointed out by Michelson and Roberts[8], more appropriate designs may emerge when children are asked their views about the project. One example discussed by Michelson[8] is a Vancouver nursery school where children developed plans for the facility which were markedly different and more appropriate than those developed by adults.

Designers committed to involving children and adolescents in open space projects are still faced with the question of whose values to incorporate, parent's or children's? One answer is to design for both group's preferences. Listening to only one group can often result in failure. For example, a design which responds to only adult concerns may result in a boring or unused playground. On the other hand, designing only for children can result in open space which adults will respond to negatively and work to remove, as was the case of an adventure playground removed by parents in East Cambridge[16].

ADULT AND CHILD DESIGN: NEGOTIATION AS AN APPROACH TO OPEN SPACE PROJECTS

Two research and design efforts in Davis have been directed at developing an approach to incorporating the needs of both children and parents in open space projects, one for a new neighbourhood playground and the other a redesign of a schoolyard. Both efforts utilized extensive people–environment research methods combined with participatory techniques. The projects were directed at having children and adults directly negotiate with one another to resolve key differences. Discussed here are the methods and differences which were identified in the two design projects. How the negotiation was conducted is also discussed. Since parts of both projects have been constructed, the role of evaluation and redesign is discussed.

In April 1981, the author was asked by parents in the Davis solar community of Village Homes to assist them with the programming and design of a new playground they planned to construct (reported in more detail in Francis[17]). We agreed to undertake the design of the playground on the condition that we would be allowed to conduct an extensive research phase to determine how the existing neighbourhood was being used by children and adults as well as conduct a participatory phase[18]. Methods included behaviour mapping of the Village

Homes neighbourhood, child-led tours of favourite places (Figure 1), interviews with parents, a survey of all residents, and 'ideal playground' (Figure 2) drawings made by neighbourhood children. Several alternative designs were developed which responded to the different preferences identified in the research phase. A consensus plan emerged and construction of the playground began in early summer 1981 (Figure 3). In fall 1981 the first phase of construction was evaluated and the initial master plan adjusted to respond to findings in the post-construction evaluation. The additional phases of the playground design are being implemented and evaluated gradually as funding becomes available.

Based on the success of the Village Homes playground, in spring 1982 the author was asked by teachers and parents in another part of Davis to prepare a redesign of the schoolyard at Pioneer Elementary School using a similar approach (discussed in Sommer[19]). Research and participatory methods were used including a parent and teacher survey, mapping and model making by children, and behaviour mapping of the schoolyard (Figure 4). The research results were presented and discussed in meetings with parents, teachers and children.

Several alternative design plans were developed and a preferred plan selected by the school staff, parents, and children. Construction of a play structure was completed during the summer 1982.

SOME CONCEPTUAL DIFFERENCES BETWEEN CHILD AND ADULT DESIGN IDEAS

The two projects revealed some major differences and similarities of open space preference between children and adults. These differences are summarized in Tables 1–3. For example, children at Pioneer School wanted alternative play equipment (one-third of preferred elements) such as forts (Figure 5), tunnels, and cable rides as their most desired design elements while adults preferred traditional play equipment (more than half of preferred elements) such as slides, swings, climbing structure, etc. In both projects, water was an element commonly mentioned by children as a desired element while parents rated water elements low. There was considerable agreement between adults and children on some elements such as a desire for climbing and sliding elements. Both groups expressed concern over safety but children repeatedly asked for challenging elements while parents were willing to reduce challenge for increased safety.

Both projects revealed some conceptual differences between children and adults in open space design. Some of these differences are summarized in Table 4. Children preferred challenging alternative and fantasy elements which incorporated loose parts and water and changed over time. Adults wanted more traditional play environments which were safe, neat, and fixed. These differences point out the need to consider and integrate the ideas of both groups in open space design.

FAVORITE PLAY AREAS
OF CHILDREN INTERVIEWED MAY 3-10,'81
VILLAGE HOMES PLAYGROUND PROJECT

SCALE: 1"=100'

KEY

1) OPEN LAWN -
   Sports, etc.
2) SAND AREA -
   Digging
3) SITE AREA -
   Climbing Trees
4) POND -
   Water Play
5) WILLOW TREE -
   Informal Play
6) CLOVER PATCH -
   Informal Play
7) PRIVATE PROPERTY -
   Fort Building
8) MEADOW -
   Informal Play
9) CONSTRUCTION SITE -
   Adventure Play
10) POND -
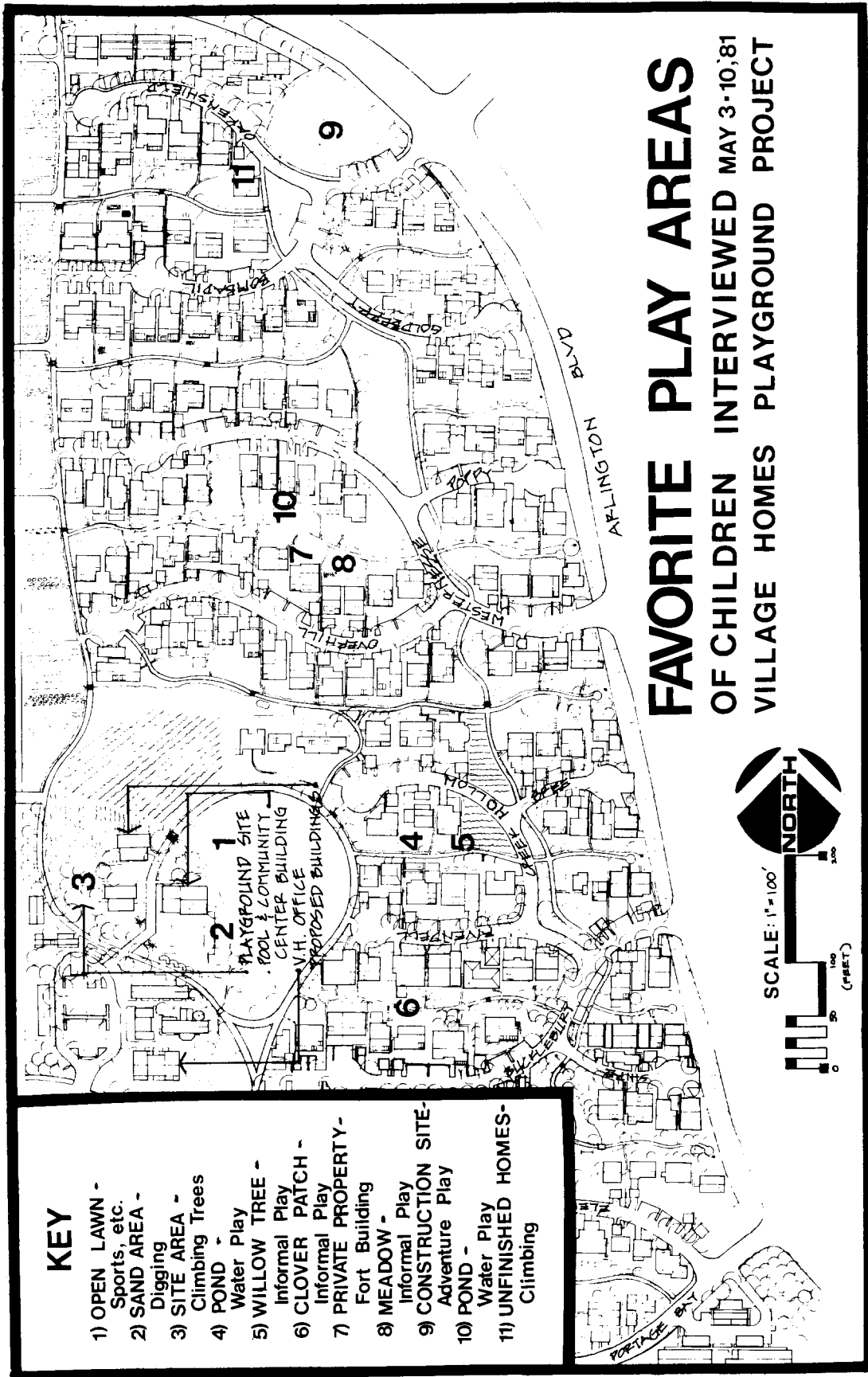   Water Play
11) UNFINISHED HOMES -
    Climbing

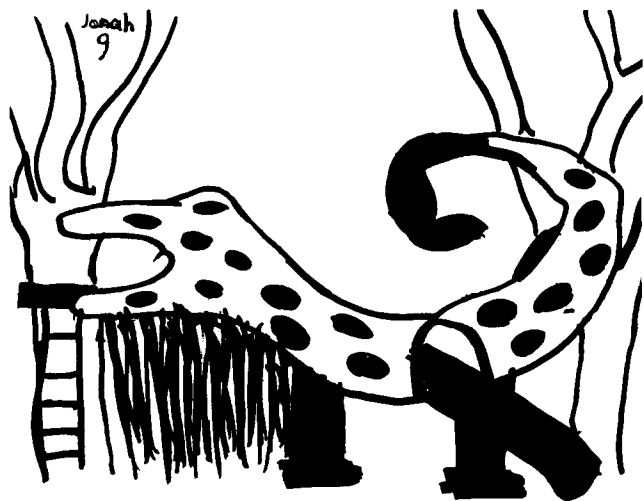*Figure 1. Map of children's favourite places*

Figure 2. *Ideal playground design by Jonah age 6, as part of participatory design process: 'The tail goes around like that and kind of has a little chair right there where you could read or something'*

PEOPLE–ENVIRONMENT RESEARCH METHODS AS NEGOTIATION TECHNIQUES

In both the Village Homes playground and Pioneer Schoolyard projects, design was preceded by an extensive research phase[17,18]. These research techniques proved to be valuable negotiation methods in helping adults and
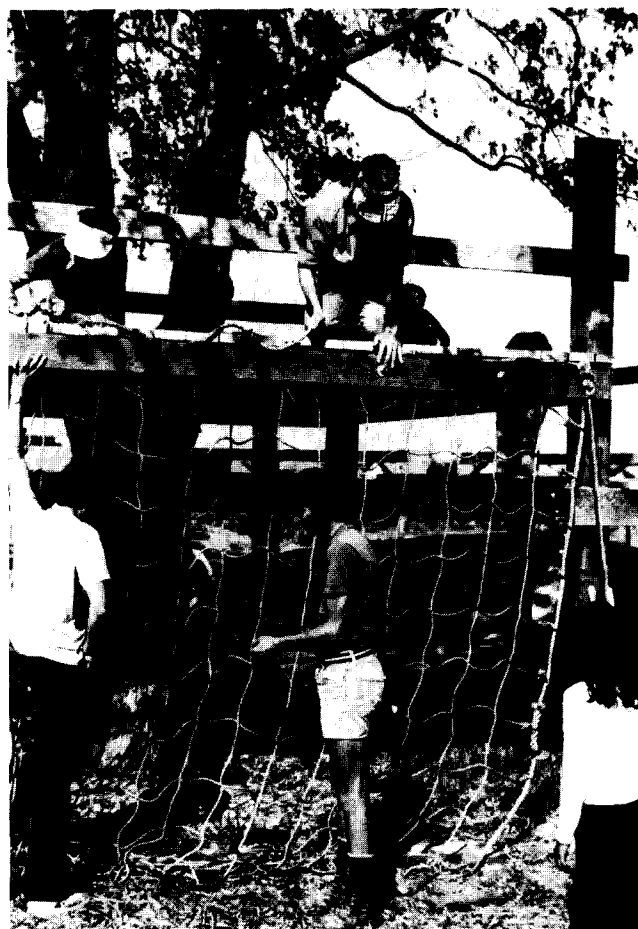

Figure 3. *Community construction party during Summer 1981*

Table 1. Summary of adult vs child preferred design elements at Pioneer School

		Parent responses	Children responses
Traditional	(N)	(68)	(74)
play equipment	%	57%	16%
Sports	(N)	(10)	(98)
activities/facilities	%	9%	21%
Alternative	(N)	(24)	(155)
equipment and activities	%	20%	34%
Fantasy	(N)	(0)	(52)
ideas	%	0%	12%
Nature-related	(N)	(17)	(43)
activities	%	14%	10%
Social activities	(N)	(0)	(33)
and eating	%	0%	7%

parents resolve key design decisions. The techniques which proved especially useful in decision-making at both sites included behaviour mapping of neighbourhood and schoolyard activities, maps and models of ideal outdoor designs, and interviews with parents, neighbourhood residents and teachers. The behaviour mapping recorded how children were already using the landscape and could be used to point out to adults some of the special needs of children such as hiding places, etc. (Figure 4). The map and model making with children was especially useful in getting children to articulate some of their future ideas about design. Especially useful was the favourite place mapping and child-led tours in Village Homes (see Figure 1). This technique helped educate adults to some of the places in the neighbourhood that children used and valued. Several of these places did not show up in the behaviour mapping. The interviews with parents and teachers at Pioneer School and with residents at Village Homes were helpful in identifying adult concerns and design ideas.

A critical point in the process where adult and child

Table 2. Child playground design preferences between different age groups at Village Homes playground (Based on content analysis of child drawings and interviews.)

		Age (years)				
		3–5	6–8	9–11	12–15	Total
Traditional play equipment	(N)	(17)	(31)	(27)	(7)	(82)
(slides, swings, jungle gyms, etc.)	%	17%	47%	33%	47%	40%
Contemporary play	(N)	(5)	(20)	(31)	(14)	(70)
activities (tree forts, tyre swings, maze, swinging bridge, castles, etc.)	%	21%	30%	37%	47%	35%
Adventure and natural play	(N)	(2)	(15)	(25)	(9)	(51)
elements (building forts, playing with live animals, water and sand, caves, gardening, etc.)	%	8%	23%	30%	30%	25%
Total responses		(24)	(66)	(83)	(30)	(203)

Source: *Children in Village Homes* p. 23.

WHERE KIDS PLAY

TOTAL OBSERVATIONS—MAY 3–10, 1981

VILLAGE HOMES PLAYGROUND PROJECT

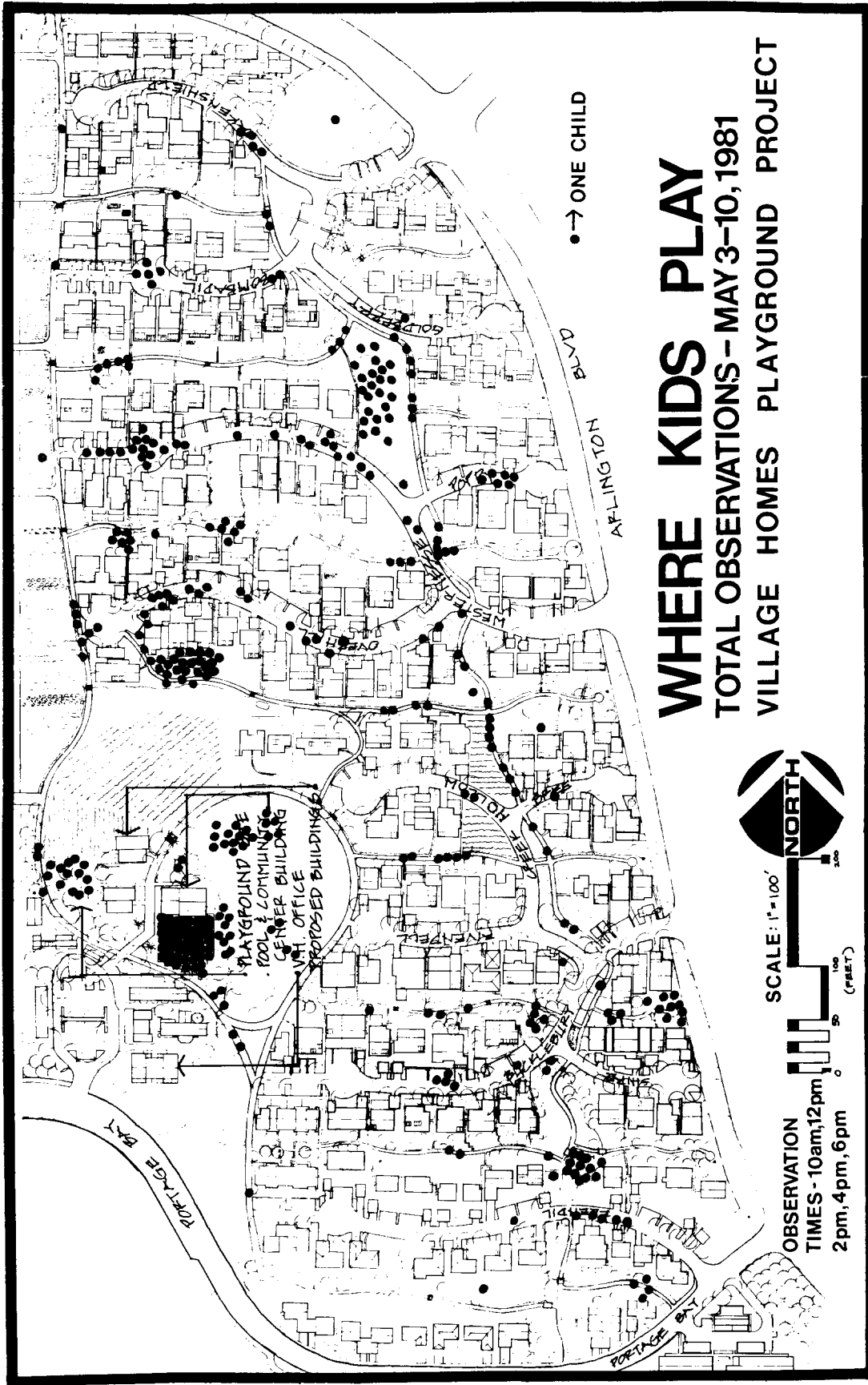•→ ONE CHILD

SCALE: 1"=100'

NORTH

OBSERVATION
TIMES – 10am,12pm,
2pm,4pm,6pm

Figure 4. Map of observed play behaviour in village homes based on research for playground

Figure 5. Use of tree fort

Table 4. Some conceptual differences in preferred open space qualities

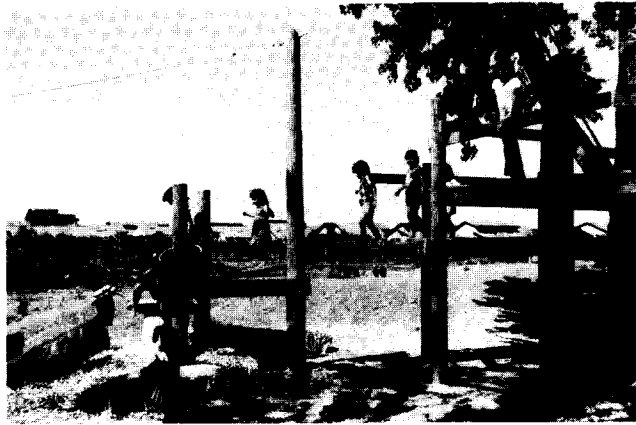| Children	Adults
– Challenging	– Safe
– Loose parts	– Fixed parts
– Water	– No water
– Fantasy	– Real
– Alternative equipment with some traditional elements	– Traditional equipment
– Change and discovery	– Static and known
– Look does not matter much	– Neat looking important
– Rough edges	– Clean edges

design ideas were negotiated occurred in the participatory design phase. Here alternative designs were developed based on the research findings. The designs highlighted differences between the two groups. At the review attended by both neighbourhood children and adults, these differences were discussed and compromises forged. For example, adults' desires for a neat, safe play structure were modified to include a tree fort which incorporated children's ideas for a self-built structure. Consensus ideas between children and adults were developed such as the provision of a slide, swings, etc. For example, the parents' idea of a traditional slide became a roller slide constructed from a factory roller conveyer. Several steps facilitated the negotiation process. First was a thorough presentation of the research findings and their implications for programming and

Table 3. Ranking of preferred playground elements at Village Homes playground

Rank	Parents (46 respondents)	Rank	Children (18 respondents)
1	Slide	1	Open imagination areas
2	Shade structure	2	Slides and swings
3	Benches	3	Bars and ropes
4	Fort	4	Fort, house, castle
5	Swinging rope	5	Things to climb on
6	Platform	6	Water feature/pond
7	Rope ladder	7	Fire pole
8	Monkey bars	8	Maze
9	Basketball court	9	Jumping on soft pads
10	Lights	10	Small entrances
11	Ladder	11	Underground caves and tunnels
12	Bouncing structure		
13	Turf field	12	Hills
14	Tyre swing	13	Merry-go-round, tetherballs
15	Sliding pole		
16	Swing rings	14	Gazebo
17	Tunnel	15	Lawn area
18	Children built structure	16	Swinging bridge
19	Bridge		
20	Balance beam		
21	Tree house		
22	Water hole		
23	Chain swing		
24	Half-buried vehicle		
25	Carousel		
26	Mudhole		

design. Secondly, a series of open meetings attended by both children and adults was an important step where critical design decisions were made. Designs were substantially influenced by these meetings. Finally, a philosophy of research and design as an evolutionary process which should be constantly managed through evaluation and redesign was employed which made negotiation possible. The first phase design elements at the Village Homes playground were evaluated 3 months after they were constructed (Figure 6). Design errors were changed. Because of this evaluation over the two years of construction and use of the playground, parents have increasingly become advocates for the more informal child build and modified elements in the playground.

FUTURE RESEARCH/DISCUSSION

Environmental psychology methods when combined with participatory design appear to offer great potential as negotiating techniques in design. The research and design phases used in both projects helped adults and children understand the differences between their landscape values and use. The methods served to educate each age group to their own unique needs. The approach served as an environmental education approach which fostered greater satisfaction and support for the designed environment in each project. This finding was reinforced by the post-construction evaluation and redesign in the case of the Village Homes playground[17,19].

In the past decade, design participation projects have grown in numbers and influence. Today, participation is frequently heralded by corporate executives, government officials, and many designers as an essential way to design. Design participation is now being used to program, design and manage many types of settings including buildings, office environments, public places and neighbourhood open spaces. Participation should continue to become an accepted and even institutionalized part of professional design activity[20].

Research on participation is needed for future projects to be successful and for designers to avoid repeating mistakes. Built projects need to be systematically evaluated using established methods such as post-occupancy evaluation. Future projects can benefit by building in an

COMMUNITY CENTER

NORTH

SCALE feet

20 10 5 0

OCTOBER 1981

FUTURE BUILDING SITE

FUTURE BUILDING SITE

DRY STREAM BED

HAY BALES

CONSTRUCTION MATERIALS
SIGN

COMPOST AREA

EXISTING TREES

BICYCLE PATH

Most Frequently Observed Activities

Code	Activities (Total Observations)
a	Climbing (198)
b	Talking, Yelling (158)
c	Swinging (140)
d	Bike Riding (121)
e	Running, Walking, Balancing (120)
f	Sliding (96)
g	Hanging (71)
h	Altering Play Structures/Spaces (71)
i	Sitting (60)
k	Observing (57)
l	Standing, Jumping (52)
m	Throwing Objects (48)
n	Messing Around in Dirt, Grass, Hay (34)
p	Bar Rolls (32)
r	Kicking Ball (25)
s	Bouncing (22)
t	Hiding (9)

VILLAGE HOMES PLAYGROUND   COMPLETED CONSTRUCTION PHASE 1
Based on Behavior Mapping of 24 Observation Periods, Oct. 19 to Nov. 11, 1981

Figure 6. Post construction evaluation, total playground use.

evaluation component in the design process to document project success and failures.

While research activity has been increasing, there is a need for more documentation comparing participation across settings and countries. Participatory designers and researchers can build in evaluation and research as part of their design contracts. Researchers in design schools can address the growing participation reserach agenda in need of critical reflection and analysis. Only after vigorous and systematic research can we fully understand the meanings and consequences of design participation.

Future research is needed to better inform designers about the differences and similarities of different age groups in landscape design and management[21]. The methods and approach used in Davis can help designers, users and researchers begin to understand different views and ideas for the design of neighbourhood and public open spaces. Research combined with design action should serve to make neighbourhood open spaces more successful in the future.

REFERENCES

1 Hayward, J, Rothenberg, M and Beasley, R 'Children's play and urban playground environments: A comparison of traditional, contemporary and adventure playground types' *Environment and Behaviour* June (1974)

2 Lynch, K *Growing Up in Cities* MIT Press, Cambridge, MA (1977)

3 Hart, R *Children's Experience of Place* Irvington Press, New York (1978)

4 Moore, R 'Collaborating with young people to assess their landscape values' *Ekistics* Vol 281 (1980) pp 128–135

5 Nicholson, S 'Theory of loose parts: How not to cheat children' *Landscape Architecture* October (1971) pp 30–34

6 Cobb, E *The Ecology of Imagination in Childhood* Columbia University Press, New York (1977)

7 Ward, C *The Child in the City* Pantheon Books, New York (1978)

8 Michelson, W and Roberts, A 'Children and the urban physical environment' in Michelson, W et al. (Eds.) *The Child in the City* University of Toronto Press, Toronto (1979)

9 Moore, G 'The role of the socio-physical environment in cognitive development' in Weinstein, C and David, T (Eds.) *Spaces for Children: The Built Environment and Child Development* Plenum Press, New York (1983)

10 Perez, C and Hart, R 'Beyond playgrounds: Children's accessibility to the landscape' in Wilkinson, P (Ed.) *Innovation in Play Environments* St. Martin's Press, New York (1980)

11 Brower, S *Activities of Children in Urban Neighbourhoods* City Planning Commission, Baltimore (1977)

12 Lukashok, A and Lynch, K 'Some childhood memories of the city' *Journal of the American Institute of Planners* Vol 22 No 3 (1956)

13 Maurer, R and Baxter, J 'Images of the neighborhood and city among black, anglo and Mexican-American children' *Environment and Behavior* Vol 4, No 4 (1972)

14 Bishop, J and Foulsham, J *Children's Images of Harwich* Kingston Polytechnic Architectural Psychology Research Unit, Environmental Education Research Report No 3 (1973)

15 Ladd, F 'City kids in the absence of . . .' in *Children, Nature and the Urban Environment* General technical report NE-30, Upper Darby, PA: Northeastern Forest and Range Experiment Station, Forest Service, US Department of Agriculture (1977)

16 Spivak, M 'The political collapse of a playground' *Landscape Architecture* Vol 59 No 4 (1969) pp 288–291

17 Francis, M 'Designing landscapes with community participation and behavioral research' *Landscape Architectural Forum* Vol 32 (1982) pp 14–21

18 Francis, M and MacDonald, B *Children in village homes: a participatory study of child ecology with implications for design of the village homes playground* Centre for Design Research, Davis, CA (1981)

19 Francis, M 'Children's use of open space in village homes' *Children's Environments Quarterly* Vol 1 (1985a) pp 36–38

19 Sommer, R *Social Design* Prentice Hall, New York (1983)

20 Francis, M 'Research and design participation' in Beheshti, M R (Ed.) *Design Coalition Team: Proceedings of the International Design Participation Conference* Department of Architecture and Planning, Eindhoven, The Netherlands (1985b) pp 211–221

21 Francis, M, Cashdan, L and Paxson, L *Community Open Spaces* Island Press, Washington DC (1984)