I. CHILD DEVELOPMENT OBJECTIVES

A well-designed, well-managed play environment should provide children with the following developmental opportunities (adapted from Schneekloth, 1985; Frost & Klein, 1983):

a. **Opportunities for motor skill development.** Large and fine muscle development, eye-hand-foot coordination, and balancing and locomotion skills must be supported. A range of opportunities to practice and test limits of abilities is required.

Regardless of the abilities of the children playing, they should have opportunities to practice and extend whatever skills they have. There should always be something further to reach. When children accomplish one skill, they can test themselves in new ways.

b. **Opportunities for decision making.** Any environment in which children live should allow them to make decisions about their own activities (Moore, 1989a). For this to happen:

1) The child must be in control of some or all of the environment.

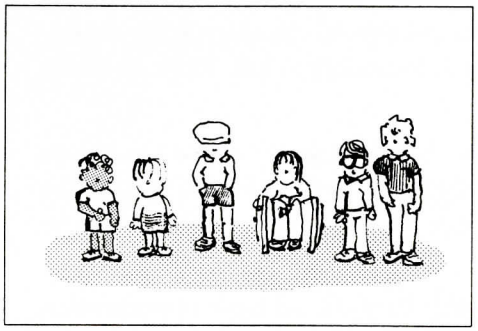
2) The experiences provided by the environment must not be "dead-ends." They must have decision points that allow the child options for continuing a current activity, terminating it, or initiating a new one.

3) Decision points must be appropriate to different age and skill levels and present a sufficient range of choices so that forced repetition is avoided.

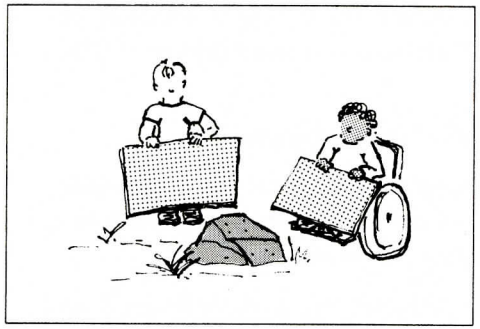
c. **Opportunities for learning.** Properties and relationships among physical objects, space, and self can be demonstrated in play settings. With appropriate supervision, children will solve problems, actively manipulate the environment, transform it, dismantle it, and re-create it in order to learn about the nature of the world.

Children need opportunities to change their relationship to the world and see it from new perspectives: from high and low places; through energy and motion; in time and space.

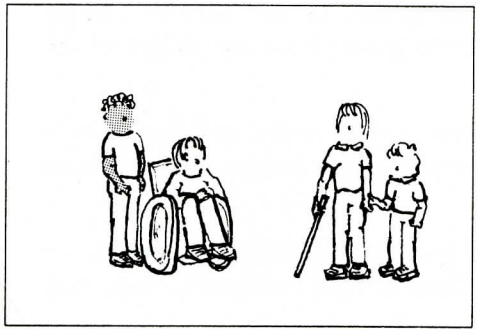
Programs must help children appreciate ecological relationships, the natural order of things, and the need for peaceful coexistence with each other, their surroundings, and ultimately, the planet.



1 Every type of child, no matter what level of ability, needs play opportunities.



2 Play settings should offer opportunities to learn about the physical world.



3 Play settings must be accessible to children with all forms of disability.

d. **Opportunities for dramatic play**. The environment is a resource for imaginative and cooperative play; it provides the props and stage. The richness of physical elements in the setting and their relationship to each other should arouse curiosity and trigger imaginative associations (Moore, 1989a). If the environment is too literal, imagination will be limited; if too abstract, imagination will not be fully stimulated.

e. **Opportunities for social development**. Settings must support positive interpersonal interaction and socialization between children with different abilities, between different ethnic groups, between girls and boys, and between children and adults (Moore & Wong, in press).

Children need opportunities for role playing, development of self-esteem, emotional development, and social skills development. Protected spaces must be available where small groups can withdraw from highly active equipment areas for quiet social play.

f. **Playing should be fun**. Smiling faces and laughter are the clearest indicators of a successful play setting.

These behavioral goals and objectives apply to all environments used by all children.

2. SITE ANALYSIS

Every site is a special situation—in its own unique location in a particular community. External aspects (location, access, visibility, etc.) and internal aspects (size, shape, configuration, etc.) all influence site development, program administration, play opportunities, and integration.

Every site should be analyzed for its appropriateness as a children's play area. Levels of analysis should expand from site, to neighborhood, to regional context.

The park planner and designer may face the task of evaluating an existing site or portion of a site for rehabilitation; a pre-selected site for new construction; or, several sites for selection and eventual development. In each case the process is the same: site features are inventoried and evaluated; climatic, biophysical, and social contexts are assessed (Cunningham, 1984; Lynch & Hack, 1984; Moore & Wong, in press; Flood Park case example, Chapter 22; Rutledge & Molnar, 1986).

2.1 Design Programming and Analysis

Site analysis should occur at the same time that the design program is being prepared because each impacts the other with constraints and opportunities. An early analysis of the site will indicate its appropriateness for the proposed uses and indicate adjustments to the design program.

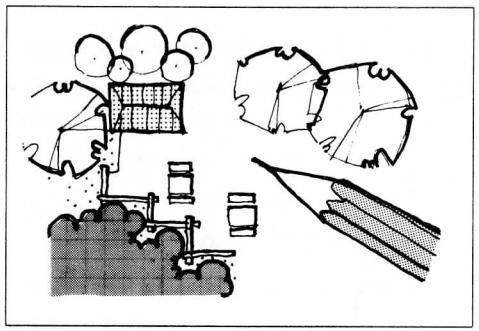
If the site designer or landscape architect is involved in the design programming, continuous reconciliation of the program will be required with site constraints, recreation program support, and the available budget for development (Moore & Wong, in press).

2.2 Existing Conditions

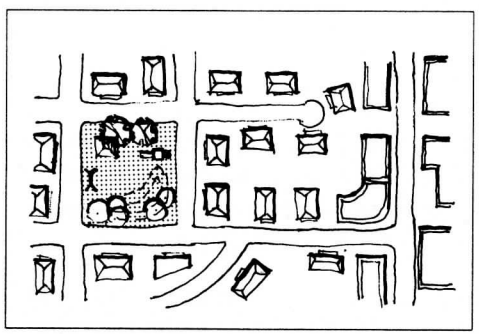
A thorough inventory of the characteristics of each site should include, but not be limited to (Lynch & Hack, 1984; Rutledge & Molnar, 1986):

a. **Location.** Is the site located so as to serve the population of the neighborhood? Is it visible and attractive? Is it easy to get to by foot, by bike, by car, by transit?

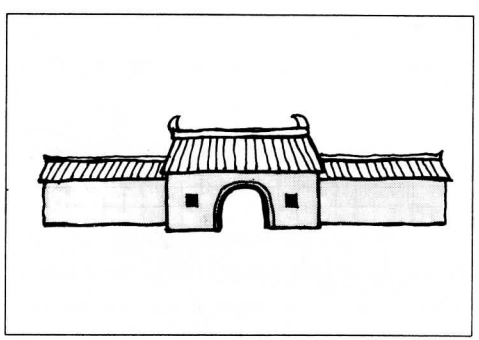
b. **Site Function.** Each site must be judged for its fitness to accommodate the intended programs and facilities. The site must have ample space for the planned use and be amenable to development. The site should not require extensive, expensive reworking to function as a play environment.



4 Both external and internal aspects are important considerations in the site planning of play environments.



5 What planning issues are raised by site location?



6 Does the site have an existing use pattern which should be taken into account?

c. **Natural Features.** What are the characteristics of the topography? Vegetation? Are there any especially valuable amenities such as water or views? Are there any potential hazards such as bluffs or swamps? Are there toxic compounds in the soil? (Freeberg, 1983)

Children have a strong interest in playing in and learning from nature: streams (natural or created), hillsides, climbing trees, dirt mounds, leaf piles, and so forth. Imported climbing rocks, wooded areas with trails, meadows, groves of trees, and amphitheaters can be natural extensions of more formal play areas.

d. **Utilities.** Is the site served by all utilities? Storm sewers?

e. **Human and Cultural Features.** Is the site in an area that is frequently traveled? Are there areas nearby where people congregate? How have people traditionally used the site, how is it used now, especially by children? Are there particular features that are well-used and valued by existing users?

What is the character, scale, and history of the neighborhood? Are there unusual design determinants such as special cultural or ethnic features to consider?

f. **Existing Park Features.** If sited within a park, how does the proposed playground relate to the entire park area with its trees, bushes, paths, walls, and drinking fountains? These must all be recognized as part of the child's play environment.

1) **Topography** in or near the playground can provide active play space on slopes.

2) **Landscaping and plantings** can provide screening, wind breaks, shade, shelter for retreat, and protective barriers.

3) **Shelters** located close to the playground area can facilitate observation of children from covered seating areas.

4) **Storage** [close by] for equipment and play props is an asset.

5) **Sports fields** are an asset, if located where the sideline activity will not interfere with the play area.

6) **Restrooms** and **drinking fountains** located adjacent to the play area are essential. If possible, they should be for play area users only.

7) **Medical facilities** information should be provided close at hand, especially in unsupervised areas.

8) **Public telephones** are needed as an extra measure of security and as a service to users.

2.3 **Community Context** (Adapted from Canadian Council on Children and Youth, hereafter CCCY, 1980*).

The opportunities and constraints of the local community should be fully recognized and used to advantage in the planning, design, and management of play settings. The following strategies will help:

a. **Adapting to local conditions.** This document should be used as a set of guidelines, not prescriptions. Adjustments in how the guidelines should be applied and to what settings will vary to suit local conditions, demographic and social factors, legal requirements, and economic resources.

b. **Involving other programs.** While these guidelines focus primarily on playspace design, the physical aspect is only one part of the total provision for play opportunities. In any situation, physical planning should be undertaken in concert with other play programs to provide maximum support of child development.

c. **Integrating with open space planning.** The planning of local play spaces must be integrated into comprehensive planning strategies for the whole community. Collaboration with departments such as public works, housing, education, and recreation will avoid duplication of effort as well as enhance opportunities for supporting child development.

d. **Collaborating with all agencies working on behalf of children.** No individual, organization, government department, or level of government is likely to have all the resources and expertise to plan effectively for the full range of children's play opportunities. Efforts must be coordinated.

e. **Encouraging community participation.** Consultation and participation by community organizations, families, and individuals contribute to successful planning for children's play. Local residents, child development experts, and children should be included as members of the planning team. Incorporation of the ideas,

* A full listing of reference abbreviations is given at the beginning of the Bibliography.

suggestions, and criticisms of citizens makes the planning, design and management of the play space a community effort. For children, it can become a significant learning experience. It is also an effective risk management strategy because it helps citizens understand and support children's developmental needs, including the need to take risks.

f. **Facilitating children's involvement.** Children and youth are important contributors to the planning process, and active participation by young people in community projects can help reduce their sense of alienation. Techniques are available to facilitate the genuine participation of young people (Hart, 1987). However, adult commitment to participation by young people in the planning and management of play spaces is the first critical step towards involvement.

3. SITE DESIGN CRITERIA

Because each site, community, and planning process is different from the next, a wide margin of choice, interpretation, and a combination of physical settings is needed to fit many different circumstances. The designer must be familiar with the particular characteristics of each situation.

The following criteria can help, but are not sufficient by themselves to produce a design solution. They provide a framework for the designer's imagination and skill.

There are five key design criteria for a good play environment (AEC, 1980; CCCY, 1980; CMHC, 1980; Cooper Marcus, 1986; Los Angeles, 1987; Schneekloth, 1985; Seattle, 1986): accessibility; safe challenge; diversity and clarity; graduated challenge; and flexibility. But there are many others of almost equal importance as described below.

a. **Accessibility**. Good places must be accessible to the intended users. This term implies that children can first of all get there safely; that it is integrated into the daily life of a child; that it is "barrier free" (i.e., it has no or few physical barriers to its use) and, further, that it is "psychologically accessible" (i.e., attractive and secure) and understandable to the children who use it.

   Entrances mark the interface between site and community and should be designed to entice children into the site. A primary entrance should be designated and highly visible while secondary entrances may be less visible so children can "discover" them. Following are general considerations regarding site access. More specific guidelines are provided under "Setting Design and Management."

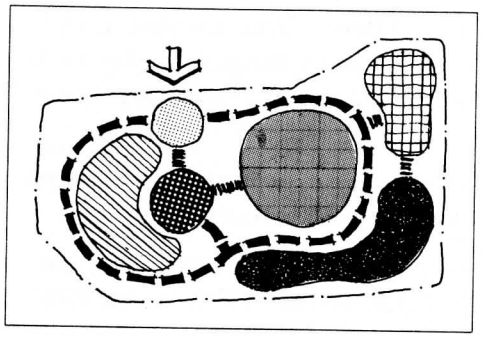
   1) Play areas should be located to minimize potential contact between children and traffic (Beamish, 1980; Sandels, 1968).

   2) Entrances to the park or playground should be clearly identified, visible from nearby housing, and used to direct young pedestrians along safe routes to the park.

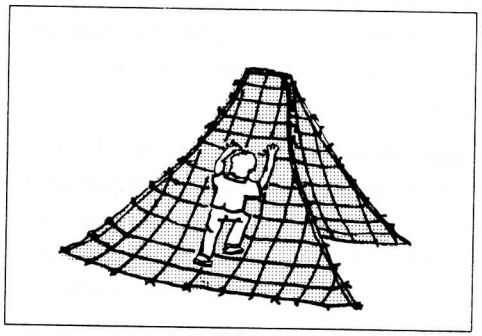
   3) Parking areas and driving aisles must be separated from play areas by barriers. Parking area perimeters should be open and unobstructed to view.

   4) Play areas should be accessible from main pathways through the park and routes to other use areas such as ballfields and picnic facilities.

   5) Main pathways should be connected with main entrances, exits, meeting areas, and working places to provide users with a clear mental image of the facility, especially children with orientation impairments.



7 Circulation is a critical aspect of site planning.



8 Play settings should include challenging environments and play elements.

6) Fences, berms, plantings, or other devices should be used to define playground areas, but not so strongly that they seem separated from the rest of the park.

7) Hard surface paths and bike paths should be separated from play areas.

8) Paths leading to restrooms and drinking fountains will inevitably carry bicycle traffic and must be separated from children's play areas.

9) Maintenance vehicles must have access to playground areas. Access ways must be at least 10 feet wide and be capable of supporting service vehicles.

b. **Safe Challenge** (Moore, G.T., et al., 1979; Seattle, 1986). Play areas should provide highly challenging settings with many different events for the physical development of the upper body, balance, and coordination without exposing children to unnecessary hazards. This function is important because of the correlation between learning disorders and balance deficits. Coordination affects judgement about taking risks—the ability to visualize a movement before making it. Activities requiring full coordination should be supported.

A hazard is something a child does not see; a challenge is a risk the child can see and chooses to undertake or not. Children need to take risks to challenge their skills and courage. A risk-free play area is neither possible nor desirable.

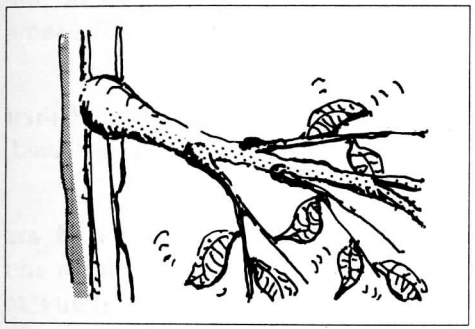
Injuries can and do occur from many different types of activities on playgrounds; falls cause the majority. Any fall can injure, particularly if the child strikes a hard surface (Boyce et al., 1984; Langley et al., 1981, 1982; Langley, 1984; Ratté et al., 1990). Far more research is needed in order to understand the relationships between accidents and environment—both physical and social aspects.

To provide safe challenges, the following should be considered:

1) Settings which stimulate upper body strength like rings, turning bars, horizontal bars, climbing trees, swinging ropes, and things to lift should be designed and positioned to promote mixed use by children with and without disabilities. Designs that protect children from common hazards, especially falling and collision, reduce the possibility of severe injury.

2) Balance settings which stimulate the inner ear, such as tire swings, climbing surfaces, bridges, narrow rails, or walls.

3) Coordination and judgement settings, such as horizontal ladders, stepping logs, climbers, tunnels, banister slides.



9 Use of the natural environment adds more sensory variety.

c. **Diversity and Clarity**. To meet their wide-ranging, ever-changing needs, children need access to a diversity of play settings. To stimulate curiosity and exploration, environments should be novel and complex. Some aspects should change continually. Other aspects should be predictable to foster feelings of security.

Novelty and predictability will be balanced in an environment that presents a clear overall image to the user. Major areas, main access routes, and principal play opportunities should be easily seen (which may differ for children with disabilities because of sensory or mobility limitations). Many minor "backwaters" should be designed to be discovered over time.

Diverse play settings can liberate creative energy from children. A breadth of action and interaction distinguishes a play environment that is well-designed and well-managed; that always has something new to offer, but at the same time is thought of as a familiar friend, a comfortable secure haven.

An aim of site design is to locate and juxtapose settings in such a way that the greatest variety of play activity patterns will be generated, producing the greatest possible range of interactions and relationships while meeting the requirements of different ages, abilities, and development stages.

d. **Graduated Challenges** (Moore, G.T., et al., 1979; Seattle, 1986). Play settings should provide activities with a broad range of challenges and graduated levels of safe risk-taking to children of different ages and abilities.

Children should be invited to test their skills and build self-confidence. They should be able to reach, jump, climb, or slide to the level of their ability without frustration and should be able to withdraw from the activity without the risk of failure and humiliation.

1) Provide several levels of difficulty for each activity: steep, steeper and steepest.

2) Provide several levels of accomplishment for each activity: high, higher and highest.

3) Provide places to enter and exit a setting at intermediate levels.

4) Arrange settings so that the next level of challenge is apparent.

5) Do not relate challenges to heights, hazards and danger, but to increasingly more difficult mastery of the body.

Settings do not have to be dangerous to be challenging. The important aspect of graduated challenges is that the challenge be "perceived" (Schneekloth, 1985). Therefore, construct physically challenging settings so that children read them as challenges, but in such a way that if they fail, they are not injured. For example:

1) Balance beams of varying widths are just as challenging one foot off the ground as six feet off the ground; it is their width that is critical. (The same is true of cargo nets and similar devices.)

2) High places are perceived as challenging regardless of the safety of their enclosure: the smaller the high place, the more dangerous it is perceived, even if well-protected by edges and railings.

e. **Flexibility.** Physical elements that can be changed and moved around are needed. Children develop continuously, so their needs change as they learn and grow. To accommodate these changes, spaces must also have the ability to change. With careful planning, a space can allow for continual "tailoring" without requiring costly or time-consuming renovations. Care must be taken to design flexible structures.

Play leaders should be trained to manage flexible spaces. The environment should allow for easy rearrangement of elements for different programs and the addition or removal of special equipment for particular activities.

The needs of children with disabilities develop just as the needs of children without disabilities. Disabilities may be associated with other predictable conditions in individual children. A disease may be degenerative, a disabling condition may improve, or a child's physical and mental abilities may develop at different rates. The physical environment for all children must be planned with present and future adaptations in mind. Methods of supporting flexibility include:

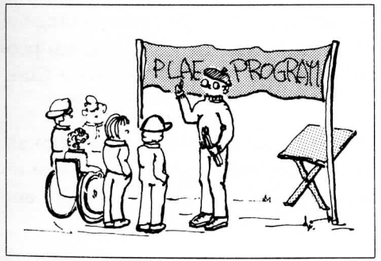
1) Modular systems that can be moved around.

2) Mobile equipment, such as inflatables, hoses, buckets, pulleys, and ropes.

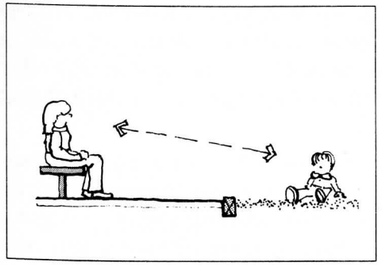
3) Play bases that can be set up, taken down and moved to a new location periodically.

4) Add-ons such as sheets that can be used to transform a play structure into a fire truck, spaceship, house, storefront, etc.

5) All manner of natural objects and materials.



***10** Program support is a critical consideration in site planning and design.*



***11** Supervision is a critical aspect of site planning.*

f. **Defensible Space.** Play areas should be visible to both parents and children, although local values vary on this issue and should be assessed. There must be no area hidden from view which could encourage or harbor deviant or criminal behavior. This is especially important in unsupervised or partly supervised areas and less important in fully supervised areas (Cooper Marcus & Sarkissian, 1986).

1) Boundaries of the play area should be defined, but transparent. There should be no high, continuous, opaque barriers between nearby houses and the play area.

2) Nearby housing or other places where adults gather should be used as the "eyes" of the neighborhood. Children's areas should be both visible and accessible (Cooper Marcus & Sarkissian, 1986).

3) Large pieces of equipment might be placed toward the back of the site; other equipment might be either slightly recessed or raised to maintain visibility throughout the area.

4) Spaces and equipment must be designed and placed to allow views over, under and around. Private play spaces should be semi-enclosed with enough openings to see a child from any angle.

5) Adults should have two directions of visibility into all play spaces: from the surrounding area and from the play area itself.

6) Structures or vegetative barriers should be open for two-thirds of their enclosure.

7) Care must be taken to balance defensible space requirements with play value. At times, it is valuable for children to have at least an illusion of privacy.

8) Tunnels, openings into or under a play space should be large enough for an adult and should have at least two means of egress.

g. **Supervision.** The presence of adult playground supervisors allows for a much greater range of activities than at unsupervised areas. Activities which would be too hazardous, too difficult to maintain, or too difficult to organize and equip without supervision can be planned if there are to be active recreational programs at the park. Play area designers should be aware of this potential and provide programmable spaces and facilities (Westland & Knight, 1982).

h. **Permanence.** Elements that remain fixed provide familiarity, security, and identity (e.g., entrance features, benches, specimen trees, large rocks, play structures).

i. **Change.** Elements that indicate changes in season (e.g., deciduous trees), weather (e.g., plants like bamboo that move in the wind, materials like sand that gets wet when it rains) and the life of the community (e.g., bulletin boards).

j. **Open-endedness.** One way to provide flexibility is with elements that users can manipulate and build onto for their own reasons (e.g., a corner of a play structure that can be draped with a blanket to make a "house," a low shelf where "mixtures" can be made from plant parts) (Moore, 1986 a,b).

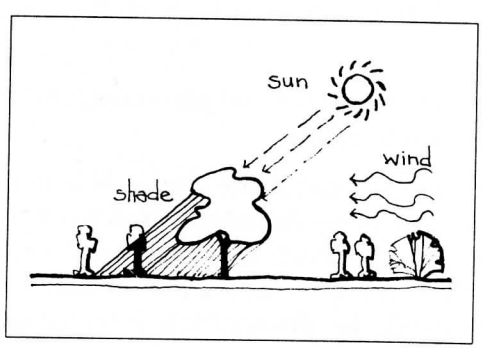
k. **Manipulability.** Some aspects of settings should allow children to manually change them to serve their own purposes (e.g., sand, dirt, water, vegetation, and small toys) (Moore, 1989a).

l. **Multisensory Stimulation.** Settings should expose users to the greatest range of colors, smells, textures, shapes, sizes, sounds, objects, materials, interactions, people, climate, time, space, movement, and change. (See also Multisensory Cues, item **w.** below.)

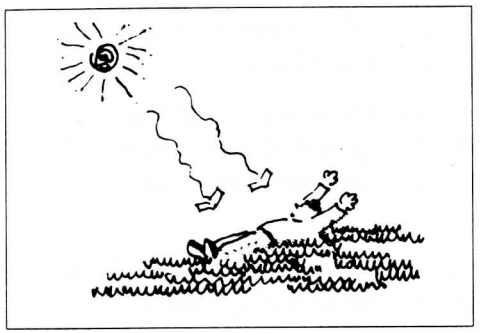
m. **Ambient Microclimate/Year-round Use.** Settings should protect users from excessive wind, rain, sun, shade, and noise (protection from smog is also necessary in some locations), and provide for year-round bodily comfort. Trees, walls, and shrubberies are important modifiers of climate (Moore & Wong, in press).

The play season for many play areas could be expanded to year-round use by consciously creating favorable microclimates and providing protection from adverse weather conditions. It is important to provide sunny areas, shady areas, wind buffers, and dry spots. Cold climate play settings of snow and ice need careful consideration (Björklid, 1984/85; Thompsen & Borowieka, 1980). The features most appreciated by children are slopes suitable for sliding and sledding activities. Such features should be located to avoid potential conflict with other users. Flat areas that can be flooded and used for skating and other sliding games are also desirable.

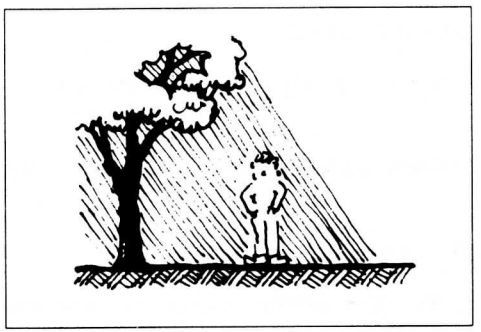
All play areas should be capable of year-round use. While some special features, such as wading pools, might not be used during the winter (although they may be flooded for skating and sledding activity in cold climates), other play elements will be. The special features that may be built with the supervised play area



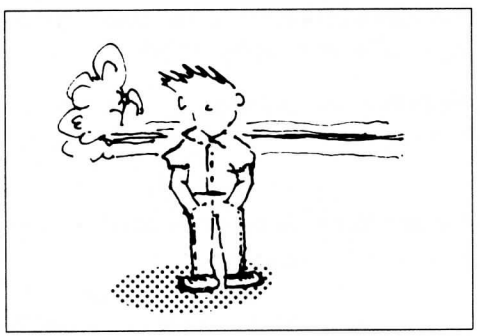
***12** Microclimate modification is a critical aspect of site planning.*



13 Play settings should be sunny.



14 Play settings should provide shade.



15 Play settings should protect children from cold winds.

must be designed to withstand weather, vandalism, and deterioration which can occur during the off-season and when supervisors are not present.

1) Local climatic conditions should be taken into account when designing play areas. Best local climates for play area sites are usually on south or south-east slopes, near water, and on upper or middle slopes rather than at their foot or crest.

2) Wind is generally quieter on the leeward rather than the windward side of a slope.

3) Wind speeds on the crest of a ridge may be 20% greater than on flat ground. Wind also tends to speed up around the sides of buildings.

4) Thick belts of shrubs or trees are effective wind breaks. They reduce wind velocities by more than 50% for a distance downwind of ten times their height and by 35% for twice that distance.

5) Structures can block winds, channel winds, or create unpleasant, gusty, "wind tunnel" effects.

6) Depending on climatic conditions, play areas and activities should be located to either avoid or take advantage of the shading effects of buildings and evergreen tree clusters.

7) Deciduous trees provide summer shade and sun in winter.

8) Proper drainage should help to dry play areas quickly after rain.

n. Shelter. There should be some shelter at every playground even though it might only be a place to get out of the rain, like a covered picnic table.

Ideally, there should be a shelter house containing indoor play space combined with storage for equipment and play props.

1) **Location.** A shelter should be located near the center of action: a wading pool, playing fields or special play feature. It should be highly visible and have clear sight lines to all areas of the play setting; however, space for quiet activities should also be available, perhaps on the nonactive side of the shelter.

2) **Storage.** The shelter can be used to store maintenance equipment, chlorine and pool-cleaning equipment, sports equipment, mobile play things, and play props.

3) **Use.** The shelter may be used as a place for children to "hang out" and play indoor games or for special events, such as plays, dances, and community activities. In this sense it would function as a "clubhouse."

o. **Social Interaction.** Settings that stimulate social development and support social relationships for different-sized groups should be provided (e.g., bench and platform groupings, enclosed sitting areas, small shelters, play houses, domes, multi-person slides).

p. **Design for All Ages.** Wherever possible, play areas should be designed for users of all age groups, although some separation may be necessary because of incompatible activities. Often, children's play areas lack facilities or accommodations for teenagers, parents, or other adults. Providing facilities and accommodations for adults will encourage family use. Barrier-free design and good maintenance will encourage use by everyone. Facilities should include:

1) Hard surfaced areas for court games and bike riding.

2) Challenging equipment, especially if there is a supporting recreation program at the park.

3) Picnic tables, barbecue stands, comfortable seating, lawn game areas, and checkerboard tables.

4) Specially designed areas for preschool children.

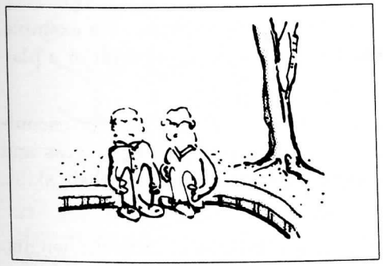
q. **Variety of Social Spaces** (Moore & Wong, in press; Seattle, 1986). A variety of spaces, from small to large, are necessary to support different-sized groups of children engaged in different social activities:

1) Small spaces for quiet play by one to five children.

   These spaces can serve as "refuges" that allow individuals and small groups to withdraw from social interaction when desired (Kirkby, 1989).

2) Private places supporting quiet exploration, that children can get into but adults cannot, such as under low platforms, spaces on different levels, and areas screened by vegetation.

   Children, like adults, need time and space to be alone or in small groups. Make sure active, noisy areas are separated from quiet spaces.



***16** Play settings should provide a variety of spaces to facilitate social interaction and retreat.*

3) Age-specific places as well as places where several age groups can play together.

   Preschool children like to play in their own groups but in the company of older children; therefore, preschool areas should be included in spaces for older children.

4) Semi-enclosed spaces for group play led by adults.

5) Large grassy spaces for large group play.

6) Large group areas designed to facilitate gatherings of an entire class, a whole family, or a complete neighborhood for a wide range of activities.

7) Child-sized tables and benches.

By providing a variety of spatial settings—private, semiprivate, and public—the stage is set for a spectrum of personal and social experiences that together can contribute to full child development (AEC, 1980).

Children with disabilities often have limited opportunities for large group experiences. Environments which allow the experience of solitude as well as group activity can help children develop social skills and positive self-identities.

Where possible, leave space for wheelchairs to pull up for peer interaction, or for a hearing-impaired child to be close to a speaker or interpreter. Note: the idea is not to make a "parking space" for wheelchairs, but to provide enough space so that a person in a wheelchair can move about easily.

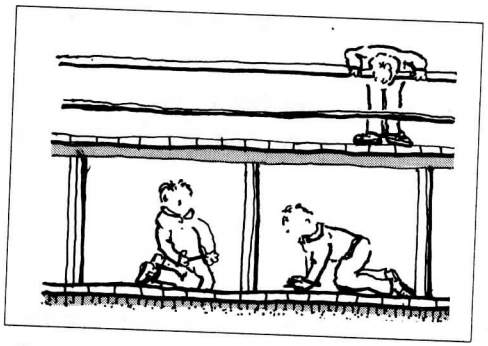
r. **Variety of Spatial Experiences** (Moore, 1966, 1974; Seattle, 1986). Children need to learn spatial concepts such as over/under, in/out, up/down, right/left, depth and directionality, and the limits of fingers, toes, and head. They also need to measure the risk of jumping, reaching, and falling. To learn these concepts, children need a variety of spatial experiences.

1) High places such as knolls and towers from which to view activities.

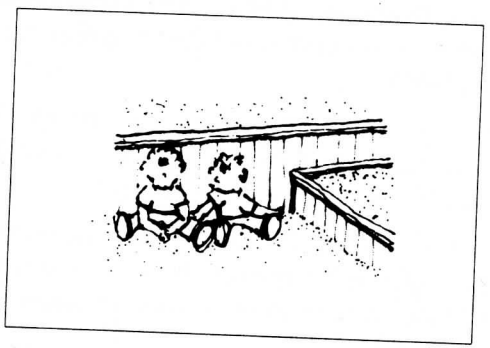
2) Differently sized spaces to crawl in, under, over, or through.

3) Environmental cues such as textures and shadows.

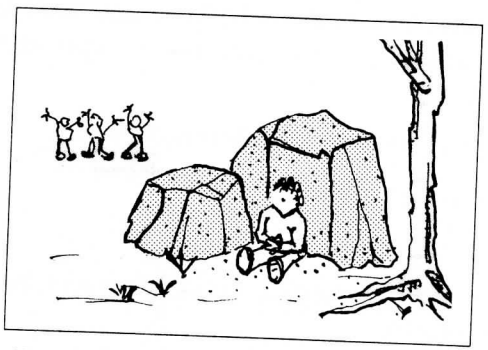
4) Opportunities to fall, jump, or drop safely (however, for children with brittle bones, a 6-inch drop may be too much).



17 Children need to learn spatial concepts such as in/out, up/down and right/left.



18 Play settings should offer nest-like spaces for quiet retreat and observation.



19 Children sometimes need to get away from the action.

5) A variety of fixed reference points for orientation.

6) A variety of climbing experiences: up/down, in/out, over/under, etc.

s. **Retreats and Breakaway Points** (Moore, G.T. et al., 1979; Seattle, 1986; Schneekloth, 1985). Although children need to interact with their peers, they also need to be alone, to get away and dream, to escape from external pressure. They need secluded spaces to engage in quiet cognitive, social, and manipulative play, individually or in small groups. Nooks are required for solitary play and for watching others (Moore & Wong, in press).

At times, all children feel an acute need for privacy, to retreat from intense play or conflict, or from a new activity that is discovered to be too difficult or otherwise unpleasant. The design should allow a child to contemplate an activity before deciding to do it, and to leave before completing an activity without feeling failure, thus helping to maintain a positive self-concept.

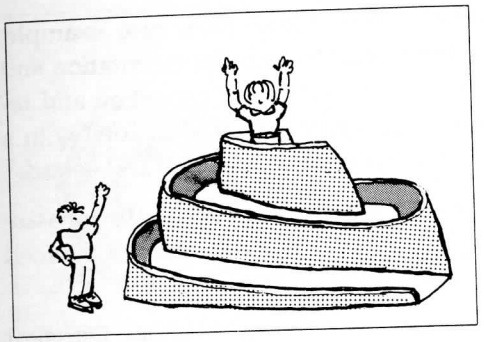
An ideal retreat is neither too close nor too far from other children; it should provide privacy and the opportunity to observe the behavior of peers from a distance (Moore, 1979).

Escape opportunities prevent panic and provide encouragement for exploration by offering face-saving exits from unfavorable situations. Some groups can benefit by retreating from the larger population, thereby avoiding inappropriate comparison and conflict. There is some evidence that ethnic minorities play more easily when not outnumbered. The same may be true for children with disabilities. Children need places to test their own abilities without feeling that people are watching (the "fishbowl effect").

Provide more than one means of egress from challenging activities. For example, a ladder may have access to two platforms before reaching a top level or a platform may have both a slide and a ladder.

t. **Visible Completion Points** (Moore, G.T., et al., 1979; Seattle, 1986). For encouragement and to avoid frustration, children need evidence of their success and accomplishments—milestones which tell them they are improving their skills. Play settings should provide:

1) Clear stages of completion, such as climbing platforms at different heights, viewed by all.



20 *Play settings should include visible completion points.*

2) Positive signals at the point of completion or accomplishment, such as a bell to ring or something that can only be seen at or from the top.

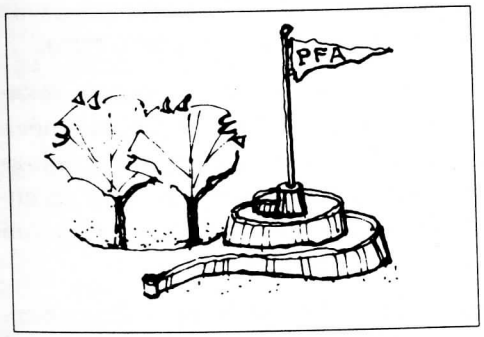
3) Combinations of challenges and completion points scaled to children's capabilities.

u. **Spatial Orientation** (Nordhaus et al., 1984). Settings must contain appropriate signage (see Chapter 7, Section 3, Program/Site Information). In addition, primary facilities such as restrooms, telephones, and program headquarters should be treated as landmarks and located so that they are visible from pathways. A direct view of a facility is the simplest and most effective means of orientation. (This does not apply to everything on the site. Less important facilities and opportunities need to be "discovered" by the users. Too much openness and visibility can destroy the pleasure of exploration.)

Spatial orientation also applies to inside-outside relationships. Siting and exposure to external landmarks can help users orient themselves to their surroundings.

v. **Landmarks/Visual Identity** (Schneekloth, 1985; Seattle, 1986). Landmarks are key orienting devices used by all people to guide their movement through space. Because of their memorable form, or strategic location, landmarks tell us where we are in relationship to the whole.

Landmarks are elements that stand out strongly against their backgrounds because of their contrasting shape, silhouette, color, texture, or size. They help establish the identity of a place (Lynch, 1961).



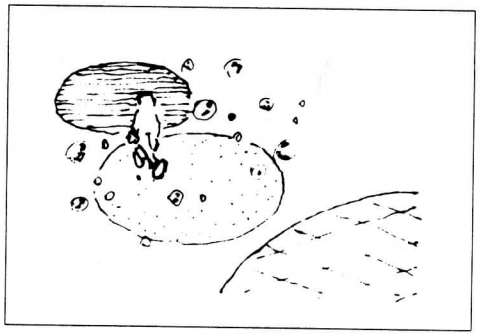
21 *Play settings should help orient children and provide a strong sense of identity.*

Landmarks can be very effective in helping children orient themselves in space, establish a sense of inhabiting their "own place," and acquire clear memories of their environment. These are valuable means for children to develop psychological independence (Moore, 1966, 1978b).

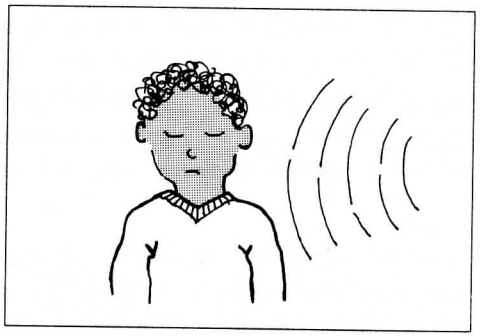
Provide easily recognizable objects and experiences (acoustic, tactile, visual, olfactory) such as play structures, trees, hills, or ponds, which have known, permanent locations in the playground. Some should have a strong enough impact to provide an identifying image for the whole site.

Tall features from which children can view their surroundings and which can be seen from a distance are powerful landmarks (Moore, 1966).

Temporary landmarks such as flags and banners can be provided and, in some cases, made by children themselves.



22 Play settings should be places of multisensory stimulation.



23 Play settings should expose children to the acoustic environment.

w. Multisensory Cues (AEC, 1980; Schneekloth, 1985; Flood Park case example, Chapter 22). A multisensory setting provides important cues for orientation and wayfinding for children with a variety of needs. The frequent repetition and reinforcement of cues can help capture attention and enable a child to cope with a strange environment. Sight, for example, can be reinforced by touch and sound.

Especially for children with sensory disabilities, play settings should emphasize all the senses: taste, touch, sight, smell, and hearing. Sites should be planned and settings designed to stimulate the development of all the senses.

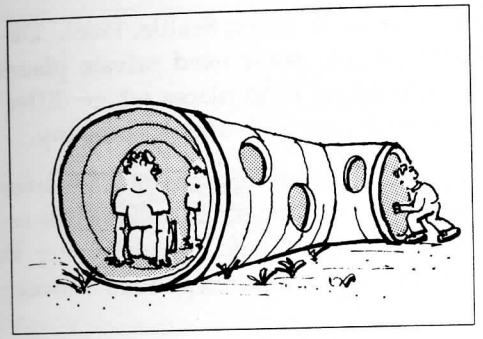
The pairing or repetition of cues reinforces information for all children. Different levels on a play structure, for example, can have a different flooring to cue children about how high they are off the ground. At the same time, this tactile cue can reinforce the visual cues of safety rails, color coding, etc. This further aids learning since one child can use the cue most easily learned and teach others.

Sound. Sound can provide landmarks for children with visual and physical disabilities. Street lights, for example, can be coordinated with a pattern of sounds to allow the child to use an auditory cue for safe passage across the street.

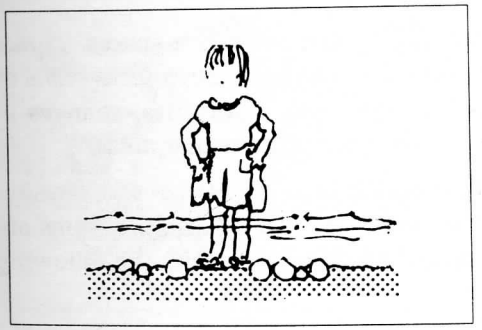
Sounds are also important as a play phenomena. Children delight in producing sounds by striking things; it gives them a sense of interaction with the environment. Therefore, play settings should be designed to produce constant and patterned sounds (wind chimes, plants that make sounds like bamboo) to encourage children to rely on auditory sensations for orientation. Identify special areas with peculiar sounds. Giant musical instruments can be constructed (Sutton, 1985).

Children with visual, mental and physical disabilities can use echoes to determine their location in an enclosed space. There are many ways to design echoes. A tunnel is a classic example that children love. Use tunnels that have openings and closings at various places so that the experience of moving through an enclosed space becomes familiar. Paths with solids and voids along one edge can be used as sound cues to indicate the approaches to intersections.

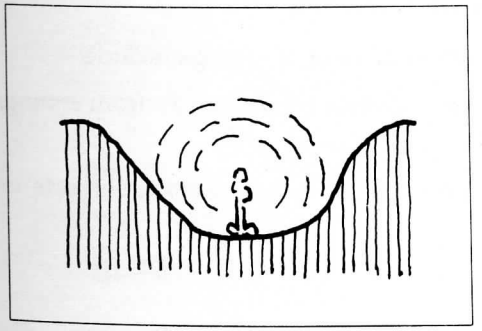
Movement and orientation skills are dependent to some extent on locating oneself with respect to the mass/void continuum in the environment. Sound is used as a major cue in this respect. Children with visual disabilities also need practice to refine their "facial vision," i.e., the ability to sense physical barriers, and to stop before running into doors and walls. A combination of solids and voids on playgrounds can provide such experiences in a fun way.



24 Tunnels can have sequences of solids and voids.



25 Tactile sensations can be exciting experiences.



26 Enclosed space.

Touch. Everyone uses touch to gather information. It tells children about changes and continuations in their environment. Unclear cues are obviously confusing and can reduce the desire for exploration. Textures should be used to reinforce the kind of experience a child can expect: changes of texture where there is a change of activity or spatial relationship; different textures to designate different areas of the playground. Such treatments must be used consistently.

Sight. For the children with partial vision, "visual tracking" is an important learned skill for movement and orientation. To support visual tracking, settings should have bright reflective colors that stimulate vision and help children move through space. Use graphics that help children practice visual tracking. At the same time, take care not to visually overload the setting for users with full sight.

Smell. Fragrant plant materials can help orientate children with visual disabilities, especially if used to reinforce other sensory cues.

x. **Scale, Size, Shape, Enclosure, and Continuity.** These are the basic dimensions of spatial design which must be varied, juxtaposed, contrasted, and orchestrated to produce a range of spatial experiences suitable for different developmental and age requirements.

(**Scale** refers to the relative size of something; **size** refers to the actual dimensions; **shape** refers to the geometrical characteristics; **enclosure** is the sense of being contained by space; and **continuity** means the ability to move smoothly from point to point.)

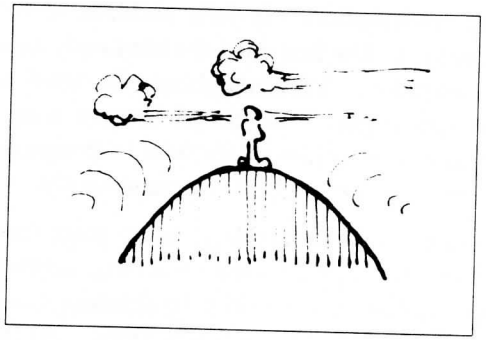
y. **Play Above the Ground Plane** (Moore, 1974b; Seattle, 1986). Children need to play and travel above the ground plane in a challenging but safe manner, always with a choice of exits. Climbing is basic to development of gross motor skills, particularly body control, hand-feet coordination, and balancing on uneven, changing surfaces. Think of children's spatial experience in all three dimensions.

Children are particularly attracted to moving up, down, and through space. Think of free-flowing activities, such as swing ropes and safe trapeze-like experiences. Consider the "climb-ability" of all elements. Provide:

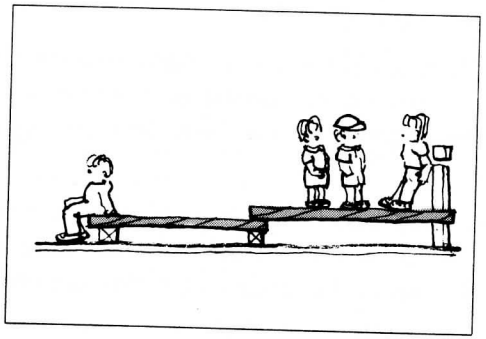
1) A variety of safe climbing experiences: both rigid surfaces (platforms, ladders, rocks, and trees); and flexible ones (cables, tires, nets).

2) Safe climbing and resting spots above the ground at many heights and levels.

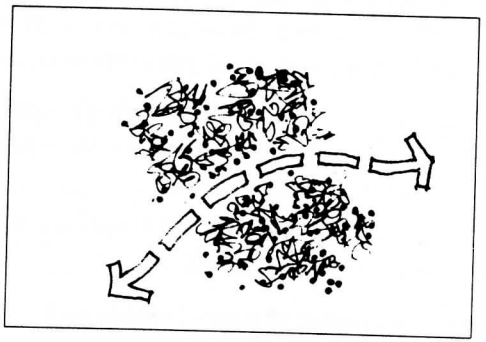
3) Space for small groups to play together above ground.



27 Open space.



28 Play settings should provide opportunities to play above the ground plane.



29 Play areas should be structured as a system of differentiated (separate-yet-connected) settings.

z. **Differentiated Settings** (AEC, 1980; Moore & Wong, in press; Seattle, 1986). Different age groups use play spaces in different ways: some need private places within sight and hearing of their parents while others need places where different age groups mingle, learn from each other, and enjoy each other's company.

Children achieve different developmental goals at different times of their lives and at different rates. Developmental stages have varying skill levels which require settings to be used in different ways. Settings should therefore vary in space, size, and location, and be interconnected to give children choices between types of play.

Well-defined activity areas facilitate children's participation in all activities. The qualities of each space depend on the activities that go on there. Children who are easily distracted or have perceptual problems will benefit from clearly defined areas.

Children can recognize what activities are appropriate to certain spaces. Space dividers that separate areas with different functions can be as obvious as walls or as subtle as changed lighting. Carefully chosen signs, color cues, changes in level, and varying textures communicate the functions of particular areas.

For the most part, settings should be differentiated in terms of size and physical character, rather than by age or some other social division. Social divisions are unrealistic and usually create more problems than they solve, with the following exceptions:

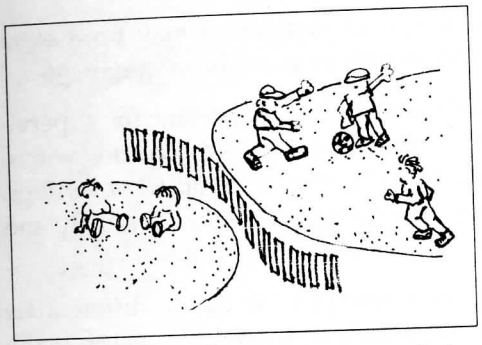
1) Areas should be set aside for the exclusive use of parents and caregivers with very young children.

2) Raised areas with shade and adequate seating should be provided for adults and older children to oversee small children.

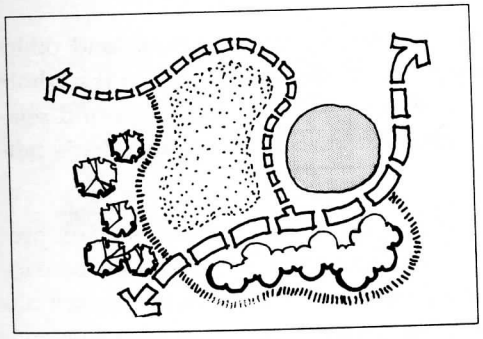
Further recommendations regarding the differentiation of settings include:

1) Locate settings and equipment for large-muscle activity away from settings for small-muscle manipulative play.

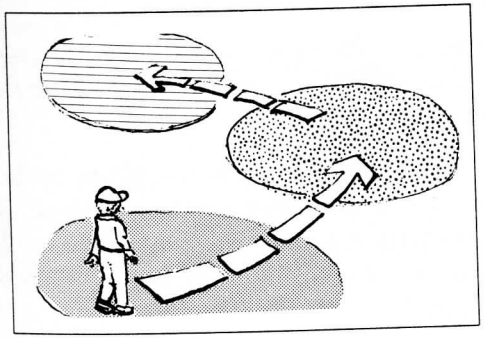
2) Locate high-density activity areas with care to avoid negative impacts on adjacent low-density settings.



30 Well-defined activity areas may help children recognize appropriate activities for certain spaces.



31 Differentiation and linkage are critical considerations.



32 Transition spaces allow children to move comfortably from one activity to another.

3) Provide links between settings so that children can move easily from one to another and children of different abilities can see and interact with each other.

4) Differentiate between settings based on attributes such as:

- Types of play, either active or passive.
- Equipment size.
- Developmental task (quiet retreat, programmed, large muscle, etc.).
- Physical character (sand area, water play, moving equipment).
- Group size (single child, one to four children, six to ten and so on).

5) Identify settings by developmental goals rather than age groups (with the exception of separating toddlers and preschoolers). Provide links between developmental levels.

6) Within play areas, design the circulation in a looping form and use it to define activity settings. Looping circulation assures no dead-ends and allows children to progress steadily from one setting to the next.

7) Use circulation to encourage a developmental progression through graduated challenges. Links between settings of different levels of difficulty should be clear.

8) Avoid straight stretches of path that tempt children to run too fast, creating unsafe conditions.

9) Locate all settings to be at least partly visible from circulation areas so children can easily choose where they want to go.

10) Clearly separate main pathways from main activity settings and related circulation.

11) Design circulation routes to be wide and flat enough for wheelchairs and turnabouts and, where appropriate, for play activity and general milling-about. Circulation routes should not overlap with activity settings that can be easily disrupted by noise and movement.

12) Provide clearly defined transition spaces to allow children to move comfortably from one activity to the next. Children who have difficulty relating to new environments—young children, shy children, or children who are autistic—need clearly demarcated transitional spaces. Without them, they may have trouble joining in and focusing on new activities.

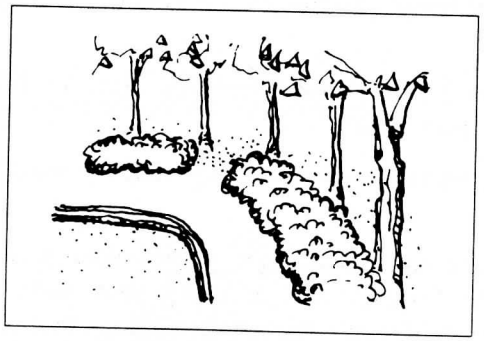
Children using wheelchairs and other special equipment may need extra space to transfer onto play features and to park or store their equipment.

13) Clearly define the play setting boundaries. This is important for supervision and to make sure children know what is acceptable behavior within each setting, especially when it is sharply different from adjacent settings. Locational awareness is important for children's psychological security and willingness to engage in new experiences (Schneekloth, 1985).

Edges are visually and tactually the most recognizable cue to differentiate settings. Even very small infants can see clearly defined edges as can many visually impaired children.

Accidents are more probable when objects, spaces, and activities are not clearly differentiated.

Define boundaries using objects and/or acoustic, tactile, visual, and olfactory cues so that the sequence of settings and their relationship to the whole can be clearly perceived. Articulate edges by contrasting field/ground relationships through color, materials, spatial relationships, and sun/shade patterns.



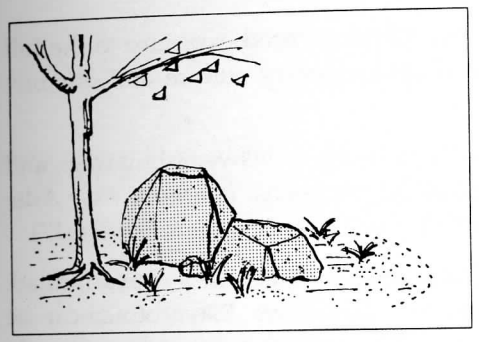
33 Play settings should contain well-defined activity areas and edges.

aa. **The "Edge" Effect.** To seek psychological and social comfort, children often prefer to gather around the edges of a space. The location of edges should be considered carefully in relation to other determinants, such as orientation, activity pattern, access points, etc. Where appropriate, build social/play elements into edges—design walls as places to sit, hide behind, climb on, walk along, etc.

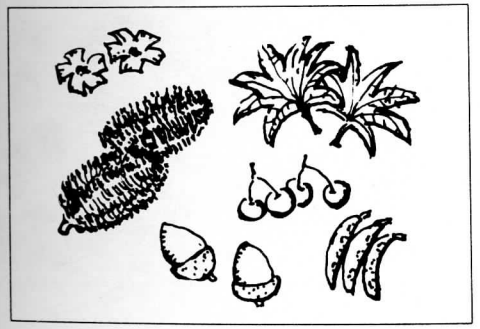
Edges are also significant habitats where plants and animals (and people) can find shelter, especially internal corners (the meeting point of edges).

Edges can be readily created in the interior of a site along setting boundaries—many times multiplying the edge effect—to support a complex pattern of interactions, particularly between people and plants.

bb. **Undefined Places** (Chawla, 1990; Moore & Wong, in press; Schneekloth, 1985). Play settings can be used to stimulate creative and fantasy behavior. There is some evidence that undefined settings support dramatic play especially well (Hart, 1979; Moore, 1986c). In such settings, an undefined structure can become anything a child wishes, from a castle to a car.



34 Open-ended, undefined spaces should be included in play settings.



35 People-plant interaction.

36 People-wildlife interaction.

Avoid making play areas that are entirely made up of realistic play objects like trains. Some settings should be undefined in real world terms. If a platform is provided, be sure that it is not an explicit copy of a fort, so that the children can turn it into anything they want. A pile of rock, sand areas, and geometric structures all provide the opportunity for imaginative play. Settings which have more than one use will be used longer and by more diverse age groups, and will provide more learning potential.

Settings and objects which are not obviously representative of a specific thing (e.g., rocketship, castle, animal, etc.) allow the child to create his or her own fantasy play world. Undefined structures become whatever the child wants them to be, and the child will then create the story that goes with the imagined setting. "Let's pretend" games stimulate social interaction and help the child to experiment.

Military objects, such as tanks, cannons, and missiles, have no place on playgrounds. They should be excluded entirely (IPA, 1977).

cc. **People-Plant Interaction.** A variety of settings are needed where users can make close contact with vegetation, including groundcovers, shrubs, and trees (Moore & Schneekloth, 1989; see Chapter 13, Trees/Vegetation).

dd. **Wildlife Habitats.** Shelter and food for small-scale animal life—birds, small mammals, amphibians, reptiles, insects, and other small organisms—must be provided. This can be on a permanent or temporary basis.

If natural habitats and features already exist on an undeveloped site, make sure they are conserved and integrated into the site plan.

Vegetation, rocks, logs, marshes, and ponds can support the modest scale of wildlife that children find attractive, e.g., beetles, salamanders, snails, sowbugs, ants, fish, shrimp, worms, caterpillars, tadpoles, butterflies, spiders, and so on.

ee. **Domestic Animals.** Domestic and farmyard animals are important resources for children, and are especially helpful for integration (*Children's Environments Quarterly*, 1(3), 1984; Handicapped Adventure Playground Association, hereafter HAPA, 1978; Shier, 1984). They require careful supervision and secure facilities for food and shelter. The City Farm concept is a viable idea here, as it stresses the needs of animals as well as children (Blue, 1986; Broadway, 1979; Schools Council, 1974a, b).

ff. **Mix of People-made and Natural Elements.** Children need exposure to the full range of settings and objects that represent contemporary culture and our biological inheritance.

gg. **Indoor-Outdoor Relationships.** A variety of transitions between buildings and the outdoors are recommended: terraces, decks, verandas, pagodas, etc. Adequate ramps are required (Allen, 1968; CMHC, 1980) (see Chapter 6, Section 17).

hh. **Ease and Economy of Construction.** Playground budgets are always limited. Unnecessarily expensive features will mean cuts elsewhere. Playgrounds can be built in phases, as funds become available. The cost/play-value benefit ratio should be carefully evaluated for all settings.