3 Design Guidelines

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Illus. 3.2: When no loose parts are provided, children bring their own. Children playing with cardboard boxes in Jubilee Square, Sunnyside, Pretoria. (Author, March 2011)

Today we will be going on the train! Aunty Emma gave us cooldrink crates from the toy library. We are carrying gold ornaments (pine cones) to all the jewellers' shops in the city. Along the way, we encounter some hazards on the track. There's highway robbers! They hold us up with swords (sticks) and demand some of the products in the crates. Then there is a fallen log over the track. We have to remove it from the track. It is heavy but 5 boys can roll it out of the way. The girls bring us cooldrink from the kiosk. Lindiwe starts selling tickets (thick succulent leaves from Crassula ovata) to other children to join the train. Nandi takes up her idea and starts selling berries from the Jacket-plum (Pappea capensis) as sweets in return for leaf money. The other day we made mudpies with the soft clayey soil from the "dirty" sandpit. We decorated the cakes with leaves. The oven was an alcove in the side of the mound, and the baking tray some of the slate tiles lying around. We used light-coloured sand from the "clean" sandpit as frosting. (Author, April 2011, based on real-life play behaviour as documented by Berry, 2001 and Wellhousen, 2002)

The Swiss developmental psychologist Piaget believes that "*intelligence is a special form of adaptation, which consists of a continuous creative interaction between the organism and the environment*" (in Dattner 1969: 23-24). Ronald Laing, a British psychiatrist, translates this into "*experience*" and "*control of experience*" (Dattner 1969: 42). The daily living environment should therefore present a person with a wide range of experiences, and some measure of control over the environment must be available to a person. The natural environment can be especially rich in stimuli.

Design guidelines as to how natural elements can be incorporated in playgrounds (research question three) were inferred from the literature research. The following investigation into existing playgrounds, and precedent studies of well-designed playgrounds (see Chapter 4) also informed the guidelines.

3.1 The problem: Why existing playgrounds in Pretoria are not well-used

An arbitrary selection of 22 parks in Gauteng were visited between March to May 2011. They are by and large representative of the typical park found in Pretoria and Johannesburg. Many of these parks consist of a general public park with a designated playground. The parks in general were assessed, not only the playground areas, as children should not be limited to a specific area. The criteria as discussed in chapter 2, as well as other general criteria necessary for a good park, such as shade and seating, were used:

1. Loose parts: Are there loose parts which could be carried around or used in play? This entails natural and man-made parts.
2. Scope for alteration or manipulation of the environment: Can the children alter the park environment?
3. Natural materials used: To what extent have natural materials such as trees, shrubs, boulders and water been used?
4. Seating: Is there sufficient seating provided for the various users, and is there a choice of seating, for example, in the sun or shade? (Seating not only denotes benches, but also walls, boulders, berms and

Illus. 3.3:Jubilee Square, Sunnyside, Pretoria (Author, March 2011)

mounds which could be used for seating.)
5. Shade: Are there sufficient amenities (seating/play equipment) provided in the shade for hot days?
6. Choice of spaces to gather: Are there intimate, more private spaces as well as larger public spaces? Is there a choice between sun and shade?
7. Safety: Are there escape routes? Does one feel exposed, trapped or comfortable?
8. Play equipment provided: Is the play equipment standard catalogue equipment, or has it been custom-made? Does it encourage group interaction and does it stimulate children emotionally and cognitively? (In this instance, man-made structures are meant)
9. Usage was not assessed, as many of the parks were visited in the mornings when children were at school, and others during weekends when it was very busy, although it could be quiet during the week. One visit would therefore not provide a realistic representation of the usage of the park.

It should be taken into account that this assessment was done by the author subjectively, and that feelings of safety, for example, could be experienced very differently by other users, and it would also be different at different times of the day and week. Also, as no standard exists for the amount of shade which should be provided in public areas, the author used the size of the park and the percentages of sun and shade to decide whether the shade provided is sufficient for the amount of users and the location. The context of the park should also be taken into consideration when reading the assessment: End Street Park in Hillbrow, for example, has a neutral grading for use of natural materials, but the park has very limited space and is situated in a very built-up area with high usage which could lead to the damage of plants.

It should be noted that parks such as the Orlando West Regional Park in Soweto, the Spruitview Multi-purpose Park in Spruitview, and Sali Park in Katlehong, are all steps in the right direction, and are very good parks in their context. However, they still do not address all the developmental needs of children due to the constraints presented by the context. The parks visited were also assessed on their existing conditions, which means that although many trees may have been planted, they do not give enough shade yet or help to define spaces. In twenty years' time from now, the assessment consequently might present a very different picture.

Illus. 3.4: Clove Park, Zakariyya Park, Pretoria (Author, March 2011)

Illus. 3.5: Venning Park, Arcadia, Pretoria (Author, March 2011)

Illus. 3.6: Orlando West Regional Park, Soweto, Johannesburg (di Monte, March 2011)

Illus. 3.7: Wilgeheuwel Park, Roodepoort , Johannesburg (Author, March 2011)

Illus. 3.8: Sunnyside Playground, Sunnyside, Pretoria (Author, March 2011)

Loose parts

very poor		no loose parts or clean, deep sand to play in
poor		some dirt/sand areas available for play, but in poor condition
moderate		clean, deep sand available
good		some natural or man-made loose parts as well/or as sand
very good		many natural or man-made loose parts as well as clean, deep sand

Scope for alteration or manipulation of the environment

very poor		all epuipment fixed to ground
poor		sand only material which can be manipulated, but without water
moderate		clean, deep sand available
good		some opportunities for changing environment with water
very good		many opportunities for changing environment besides sand and water

Natural materials used

very poor		mostly hardscape
poor		very few plants used, or only a few types of plants
moderate		sterile environment with only lawn and trees
good		effort has been made to incorporate a variety of plants
very good		great biodiversity and use of different trees, shrubs and other plants

Shade

very poor		very little shade provided with hard surfaces causing glare
poor		little shade provided or play equipment not in shade
moderate		trees planted but no temporary shade structures provided in the meantime
good		some play equipment are in the shade
very good		play equipment, seating are in the shade, with a choice of seating in sun/shade

Seating

very poor		almost no seating provided
poor		very little seating provided
moderate		seating provided, but not necessarily enough or in the shade
good		enough seating provided, but not necessarily where people might want to sit
very good		a wide choice of seating provided (sun/shade, alone/in groups)

Choice of spaces

very poor		one large homogenous space
poor		different spaces perceptible, yet it is still too large to appropriate
moderate		spaces available, but not necessarily comfortable (e.g. in the shade/ providing prospect/refuge)
good		some choice of spaces (public/private/sun/shade) available to appropriate
very good		a wide choice of spaces (public/private/sun/shade) available to appropriate

Safety

very poor		feels very unsafe due to users of the park or lack of any users/ feels exposed as well
poor		feels unsafe
moderate		feels safe, yet still on guard
good		feels safe
very good		feels very safe due to visual surveillance, users and security presence

Play equipment provided

very poor		no play equipment provided
poor		only a few pieces of fixed standard catalogue play equipment provided
moderate		many different pieces of fixed standard catalogue play epuipment provided
good		custom-made play equipment or contemporary catalogue play equipment[1]
very good		custom-made play equipment with modular units/moveable parts

Figure 3.1: Explanation of colour coding for each evaluation criteria (Author, May 2011)

1. Contemporary catalogue play equipment: currently popular climbing equipment ... Multipurpose Park in Spruitview, Johannesburg or Clove Park, in Zakkariya Park, Johannesburg.

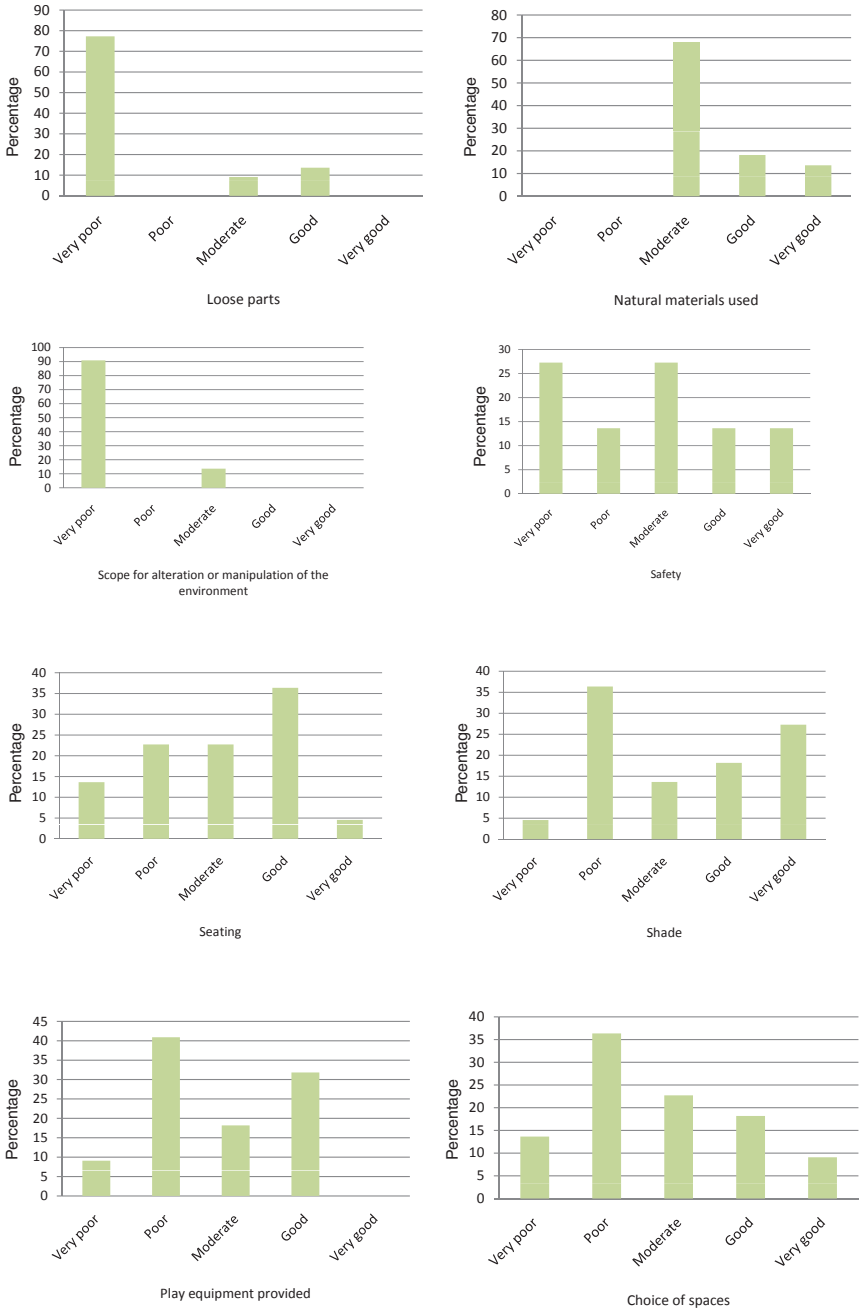
Assessment criteria	Loose parts	Alteration	Nature	Shade	Seating	Choice	Safety	Equipment
Playpark								
Johannesburg and environs								
End Street Park, Hillbrow								
Orlando West Regional Park, Soweto								
Thokoza Park/Moroka Dam, Soweto								
Sali Park, Katlehong								
Spruitview Multipurpose Park, Spruitview								
Wilgeheuwel Park, Roodepoort								
Clove Park, Zakkariya Park								
Pretoria								
Sunnyside Playpark, Sunnyside								
Jubilee Square, Sunnyside								
Muckleneuk Park, Sunnyside								
Myrtle Park, Sunnyside								
Venning Park playground, Arcadia								
Pretoria Art Museum playground, Arcadia								
Zita Park, Garsfontein								
Kruger Park, Pretoria West								
Princess Park, CBD								
Burger's Park, CBD								
Chris Steyn Park, Waverley								
Pieter Human Park, Waverley								
Nieuw Muckleneuk Trim Park, Muckleneuk								
Parks without playground equipment								
Springbok Park, Hatfield								
Jan Cilliers Park, Groenkloof								

Figure 3.2: Assessment of parks in Gauteng (Author, May 2011)

3.1.1 Findings

There was a marked difference between the older parks (such as Kruger Park and Muckleneuk Park, and others also mostly in Pretoria) and the newer upgraded ones in Johannesburg and environs, such as Sali Park in Katlehong, Johannesburg and the Spruitview Multipurpose Park.

From the assessment it can be seen that 77% of parks rated very poor on provision of loose parts and 90% rated poor on opportunities for alteration, which are the most important factors for a park to stimulate the well-rounded development of children. Sixty-eight percent of parks had only lawn and trees with no significant shrubbery or flowers, creating a monotonous and unstimulating environment. The reason for the above three statistics could possibly be concerns for the safety of the users and the equipment provided. Feelings of safety in the parks varied. However, only 27% rated as good or very good. The parks generally had a moderate amount of seating provided, but not necessarily arranged in such as way as to encourage group interaction



Figures 3.3 - 3.10: Graphs showing the results of the assessments (Author, July 2011)

Illus. 3.9: Panorama of Muckleneuk Park, Sunnyside. Note the lack of seating, shade and sense of enclosure over the play equipment.. (Author, May 2011)

I am convinced that standardised playground equipment is dangerous. When the distance between all the rungs on the climbing net or the ladder is exactly the same, the child has no need to concentrate on where he puts his feet. This lesson cannot be carried over into all the knobbly and asymmetrical forms with which one is confronted throughout life.

Helle Nebelong (Danish playground designer in Gill, 2005:2)

(see page 13), or where people might want to sit (such as in the shade). The older established parks (such as the Pretoria Art Museum's park), had sufficient shade, while the newer parks (such as the Orlando West Regional Park in Soweto, Johannesburg), do not have sufficient shade to ensure that children are able to use the parks to their full potential. The play equipment provided were mostly either poor (41%, in the older parks) or good (36%, in the newer parks). Some of the custom-made equipment are, for example, in aeroplane or dinosaur shapes, stimulating the imagination. However, despite this and being visually more pleasing, the equipment still mostly caters for the physical development of the children by being climbing or kinetic equipment without any alterable parts. Only 27% of parks had a good or very good choice of spaces. Seventy-three percent of parks had a poor choice of spaces available. The above statistics give every indication that the visited parks leaves much to be desired.

3.1.2 Case study: Muckleneuk Park

The Muckleneuk Park playground in Sunnyside will be used as a case study to discuss playgrounds in Pretoria, as it is a good example of the typical playground found in the city (see Illus. 3.9 & 3.10).

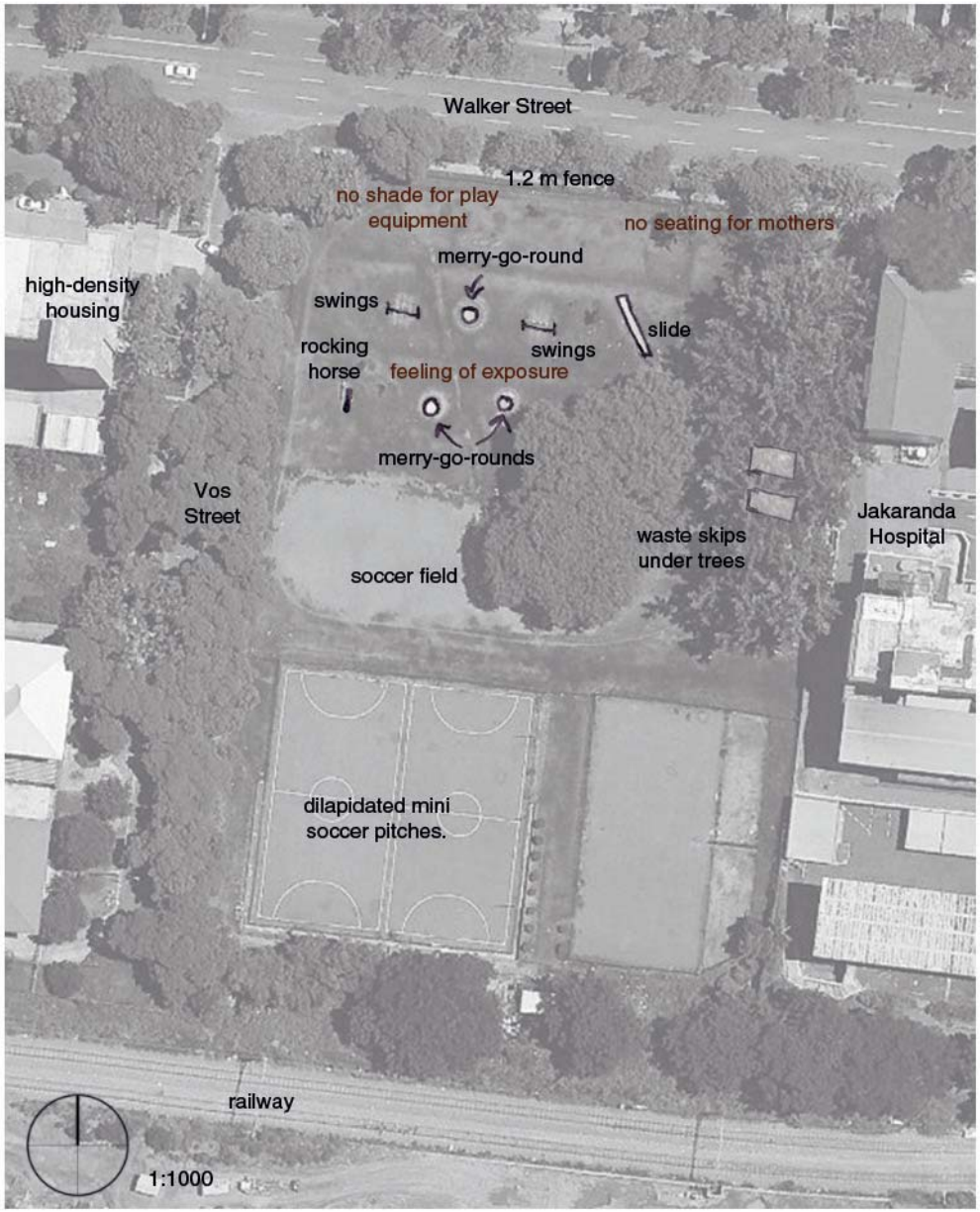
Most playgrounds in public parks in Pretoria consist of scattered climbing frames, swings and a merry-go-round. Climbing frames do cater for the physical development of children, however, studies done by Noren-Bjorn (1982: 208-224) revealed that they are used at most for a few minutes at a time. Only when loose parts were added such as moveable boards or props for dramatic play, were they used for longer periods. According to Lillis and Jaffe (1997: 1), climbing frames are the cause of 62% of playground injuries. This causes one to question their play value and safety.

Illus. 3.10 shows the typical range of play equipment found in parks in Pretoria. Playground equipment is generally manufactured from steel, and is unshaded by vegetation or other means. In the South African climate this results in the steel equipment being too hot to use for a large part of the day.

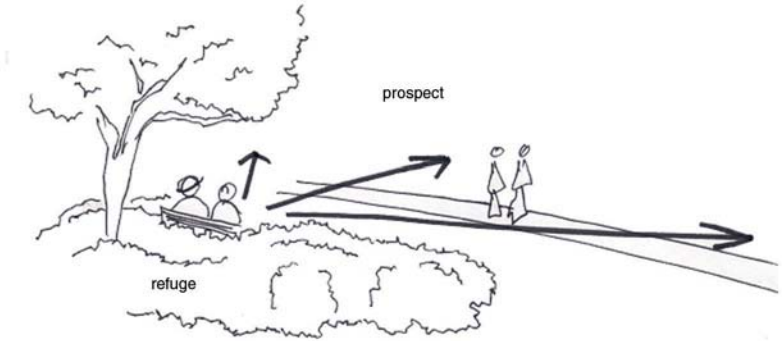
For understandable safety concerns, no sense of enclosure is created. On Illus. 3.10 it is evident that the park's surface is an expanse of lawn with no other plants. The tree canopies are too high to create a sense of enclosure. The playground is visible and open to all eyes from all angles. This makes one feel exposed.

The British geographer Jay Appleton's prospect-refuge theory is cardinal in understanding and creating pleasurable landscapes. Dee (2001: 19) asserts that people want to have a sense of enclosure or safety, whilst knowing what is going on in the rest of the landscape (see Illus. 3.11).

Playgrounds have no comfortable seating in the shade for mothers to watch their children play. This makes it uninviting for them to visit playgrounds, as they either have to sit on the grass, or stand around while their children play. Muckleneuk Park has no benches at all.



Illus. 3.10: Map of Muckleneuk Park playground, Sunnyside, indicating a typical layout of scattered pieces of play equipment on an open expanse of lawn. (Author, May 2011)



Illus. 3.11: People do not want to feel exposed (Author, March 2011)

Despite their disadvantages as discussed above, standard playground equipment is necessary, as it facilitates motor development in terms of coordination, strength and flexibility. Kinetic equipment can provide both excitement (fast speeds on a merry-go-round) and relaxation (the repetitive movement of a swing).

Lastly, research has shown that children prefer natural playgrounds over standardised ones. According to studies done by Cooper-Marcus, 86% of playspaces cited as favourite spaces are natural (Freuder, 2006: 5). Berry (2001: 21) also asserts that children will, for example, rather walk on logs, garden bed edges, rocks and tree stumps than a manufactured balance beam.

3.1.3 Conclusion

From the park assessment, case study and picture study, it is clear that South Africa has a pressing problem with regards to the design of open spaces for children. The design proposal will attempt to address these aspects, as listed on page 14, 16 and 17.

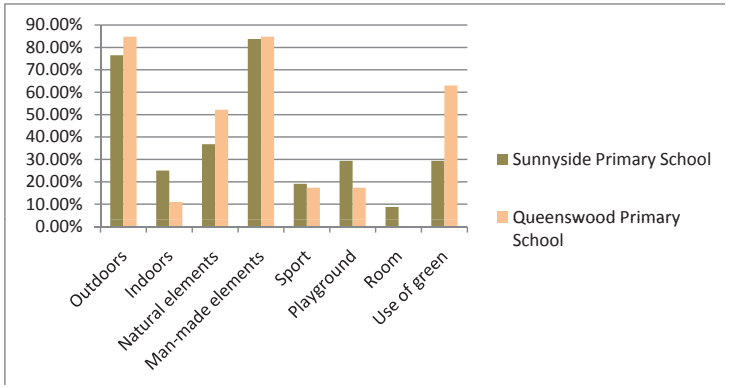


Figure 3.11: Results of picture study (Author, May 2011)

A playspace should provide spaces for discovery, relaxation, dreaming, challenges, making things, being alone, being in a group, space to stretch your legs and run, space to hide away.

3.2 Picture study from two schools

A grade 3 and a grade 4 class of children from Queenswood Primary School and Sunnyside Primary School in Pretoria were asked to draw their favourite space to play. Queenswood Primary School is located in a middle-class suburb, which consists of single houses on large erven with gardens. Sunnyside Primary School is located in Sunnyside. It is mostly the low income- to middle class, living in high-rise apartment blocks. As discussed on page 2, children do not readily have access to gardens.

The different types of play-spaces contained in the drawings were counted, recorded and the results are presented in Figure 3.11.

3.2.1 Conclusions drawn from analysis of the drawings

1. Children from Queenswood Primary (QP) have more access to outdoor areas due to the topography of the suburb. Children from both areas favoured outdoor areas by far, although many children from Sunnyside Primary (SP) drew indoor areas or their rooms as their favourite playspace. It could be argued that they play indoors due to lack of sufficient outdoor space to play. None of the children from QP drew their room as their favourite playspace.
2. Children from SP seem to be less exposed to natural elements such as gardens than children from QP. Man-made elements feature more than natural elements in both groups (in many instances children drew the garden, but the swimming pool or slide were included as man-made element).
4. Children from SP drew more public playgrounds than children from QP.
5. It was noted that there is a significant difference in the use of the colour green in the drawings. This was recorded and it was found that only 29% of SP children used green, while 63% of QP children used green. This could potentially indicate a lack of green surroundings in Sunnyside.
6. Despite many children drawing natural elements such as birds, trees, and lawn, it appeared to rather be background information to help to define the setting (for example a shade tree to sit under at the swimming pool) than to be the favourite playspace. Only 36% of SP children and 52.2 % of QP children drew natural elements as their favourite playspace.

3.2.2 Implications for the hypothesis

From the physical qualities of both suburbs and from their drawings it does not appear as if the children have access to natural playgrounds. Only one child drew a farm with a natural pool, tree house and animals as her favourite playspace. However, they do seem to favour outdoor areas.

As shown by the research in chapter 2, this lack of contact with nature has a profound impact on physical and psychological development of children. The results therefore show how dire the need is for natural playgrounds.

Illus. 3.12: The element of mystery entices (Author, April 2011)

Illus. 3.13: Children have an affinity for small secret spaces (Author, April 2011)

Illus. 3.14: This grotto behind the waterfall became the favourite space in this playground. (Conway, 2010:5)

3.3 Spaces for children

Play is process-oriented, pleasurable, exploratory, self-initiated, and constitutes activities that are pursued for their own sake (Weaver, 2000: 12). In the following section the characteristics of parks that facilitate such play will be drawn from theory.

3.3.1 Child scale

When designing for children, it should always be kept in mind that they see the world from a child's perspective of scale. What may look cluttered to an adult could provide the necessary complexity and stimuli to a child. An open area might look large in an adult's eyes, but vast and intimidating to a child. A one meter hedge can be perceived as low for an adult, yet a small child might not be able to see over it.

Researcher Wendy Titman (1994: 49,59) asserts that little alcoves, hidden child-size spaces under overhanging branches or shrubs, high positions such as tree-houses, and other sheltered, intimate nooks and crannies are all attractive to children for appropriating as their territory, such as the grotto shown in Illus. 3.14. Exploring further away from the parent is part of the process towards gaining complete independence (Slentz & Krogh, 2001).

3.3.2 Developmental needs

Figure 3.12 on page 24 discusses the developmental needs of children at different ages. These needs affect, for example, open space size, the physical qualities of the space and placement of objects. Due to the factors mentioned above and for the safety of the children, a playground should preferably have different areas for different age groups.

3.3.3 Continuous play opportunities

Passing from one area to another constitutes a large part of children's play (Herrington & Studmann, 1998: 202). This creates a need for interlinking play opportunities and well-defined thresholds[1], to increase the children's perception of the spatiality of an area, as well as aiding their creative play.

3.3.4 Archetypal landscapes

According to child psychologists Kaduson and Schaefer (2006), the stimulation of the imagination holds various benefits for a child. When children imagine things, they have control over the situation, and can create suitable outcomes to real-life situations that they may have experienced. Suggestive spaces and objects to play with "activate" the child's imagination. The application of this can be illustrated by the benefits obtained from sandplay therapy, which is used extensively in play therapy for children, with highly successful results (Pearson & Wilson, 2006).

When playing, children typically access archetypal figures such as the Bad Witch or the Fairy Godmother to act out and process their emotions, ideas and real-life situations (Linden, 2003: 246). Landscape archetypes, such as a forest, river, or mountain, offers a complex and open-ended arena for the acting out of these stories, supporting and encouraging imaginative play in a natural setting, of which the advantages have already been discussed in Chapter 2.

1. Also see Terminology. Thresholds should not act as a barrier but rather serve to reinfoce a to another.

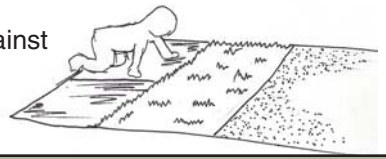
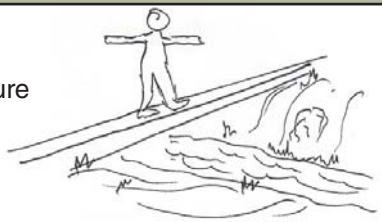
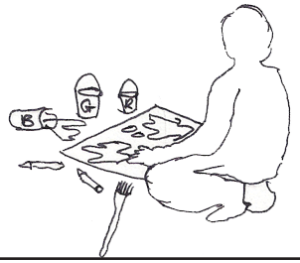
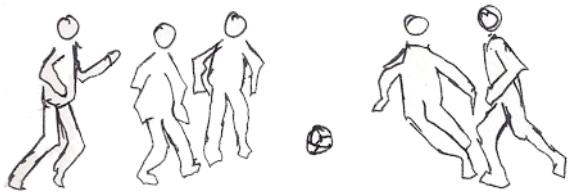
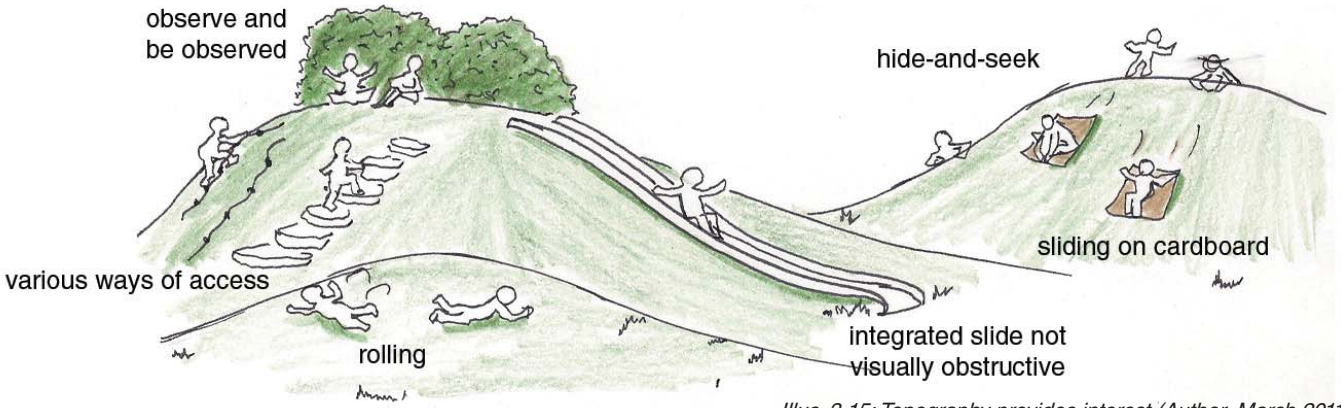
Children's development needs		
0-3 years	3-6 years	6-13 years
Infants and toddlers are just beginning to experience the world around them. They are not yet very mobile, and require less space.	Pretend and constructive play are the most prevalent in this age group. They are becoming aware of other children's worlds.	Pretend play, games with rules and social interaction are prominent.
Physical development		
- different types of textures - safe, comfortable surfaces for crawling, sitting and falling - objects to pull up against 	- rule-free chasing games - climbing and jumping up and down - kicking balls - push/pull toys - balancing exercises - fine motoric skills developed 	Like: - challenges - a sense of adventure - discoveries 
Socio-emotional development		
- parallel play (alone yet close to others) - some interaction with other children does occur 	- props for pretend play cardinal to sustain play - small groups form - do as they see others do 	- fantasy play (looking for fairies) - re-enact films or shows - quiet spaces where they can be alone 
Cognitive development		
- new types of materials enjoyed (dough, beads, paint) - pick up small objects and put in mouth - stimulate the senses (e.g. wind chimes, light through leaves) - vigilant adult care needed - large motor zone, dramatic play zone, messy zone - quiet zone prevent toddler from feeling overwhelmed 	- complexity - scope for alteration - constructions with sand/other objects - collecting objects - interested in how things work, plants and animals 	- games with rules - group interaction, resolving arguments, negotiating - new games invented 

Figure 3.12: Developmental stages and needs of children (Author, March 2011, compiled from Berry, 2001; Goodenough, 2003, Hurtwood, 1966 & 1969, Lambert & Pearson, 1974, Noren-Bjorn, 1982; and Wellhousen, 2002)



Illus. 3.15: Topography provides interest (Author, March 2011)

Archetypes lend themselves to a wide variety of play options. For example, a mountain can provide a safe castle at the top, be Mount Everest to be scaled, or provide a physically challenging route with dragons to slay in order to reach the rare flower growing at the top.

Creating archetypes also helps children to refer to their cultural heritage and makes it more tangible, since they are able to actively engage with the landscape also found in folklore.

Archetypal landscapes are a culmination of and incorporates other aspects discussed, such as child scale, the developmental needs and continuous play opportunities, as well as the need for nature. In Chapter 7 the archetypes to be used in the design proposal are discussed in more depth.

3.4 The natural environment as playground

Natural elements and loose parts originating from nature which could be incorporated into the design proposal are discussed shortly below. They will form part of the construction of the archetypes.

3.4.1 Ecological complexity

Plants define different spaces and create rooms in the landscape. They are a sustainable way of providing an endless supply of loose parts. Specific plants with large seeds or edible fruits, fragrant flowers, interesting leaves or textured bark should be used (refer to Chapter 8 for detailed planting palettes).

The plants used for the proposed site should be water-wise and frost-hardy. Thornless and non-toxic plants ensure safe interaction. Thorny shrubs could, however, be used to deter people from walking through an area.

3.4.2 Loose parts

The loose parts used in the design should be undesirable to remove permanently from the playground, and if it is done, it should be easy to replace (e.g. pine cones are produced every year). Children might want to carry play objects away, but this can be solved by making them sign for it to know who is in possession of a certain part, or by enclosing the space and having adult supervision.

All of the natural elements discussed below could be used to create a complex environment by defining, separating and joining spaces and thresholds.

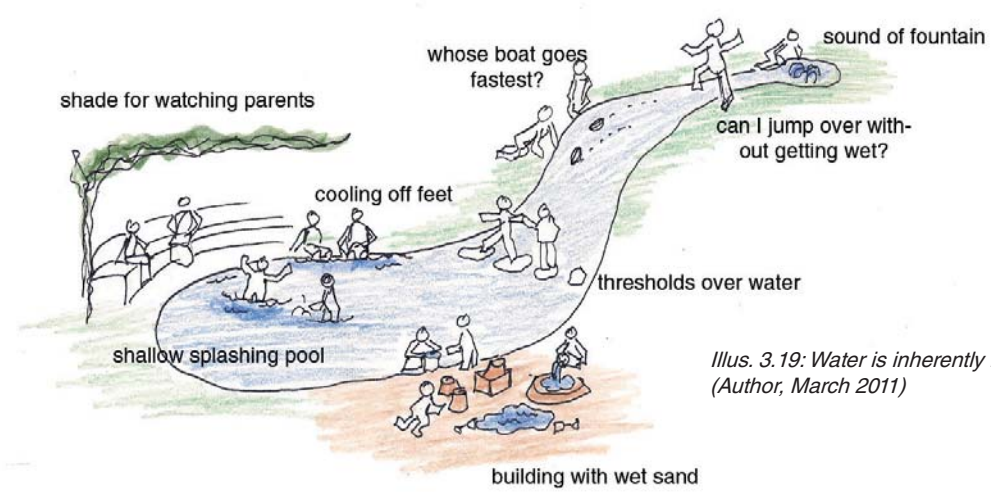
3.4.3 Hedges

Hedges could be used as vertical structuring elements in the landscape. They can be pruned or informal. Plants such as Weeping Sage (*Buddleja auriculata*) are ideal for creating small spaces where only a child can fit in (Illus. 3.13 & 3.14). They allow areas to be physically separated yet visually connected, enhacing safety.

3.4.4 Mounds as landscape reference

Mounds provide a view from an elevated position. It could be a fortress, a tower, a mountain, or simply a mound. It could be accessed by a series of stone-steps, by a rope-ladder, or by a climbing wall (Illus. 3.15).

Illus. 3.16: Natural climbing equipment in Garden City Park, Canada (Broto: 2010: 527



Illus. 3.19: Water is inherently fascinating (Author, March 2011)

Illus. 3.17: Water landscape at Pforzheim, Germany, by Herman Dreiseitl. (Dreiseitl & Grau, 2005: 151)

Illus. 3.18: Water and sand in Garden City Park, Canada (Broto, 2010: 526)

3.4.5 Logs

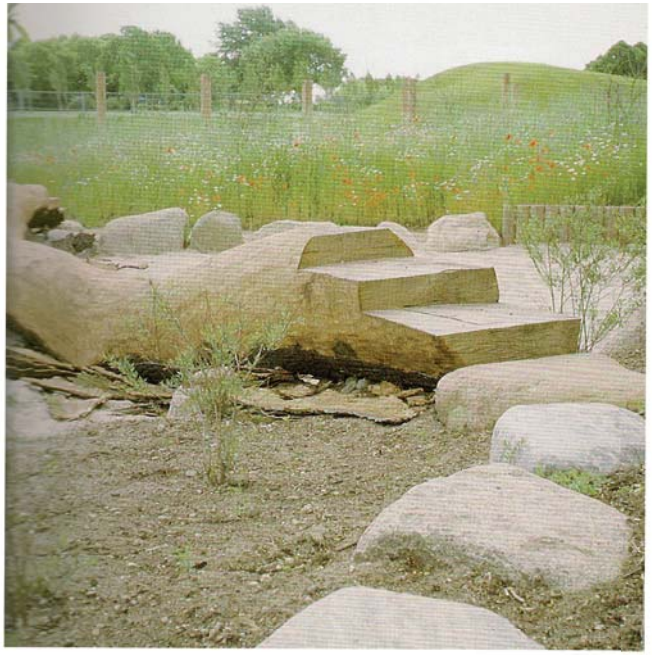
Logs could be used as natural posts or beams, or as climbing equipment (Illus. 3.16).

3.4.6 Water for interaction

Water provides endless fascination for children. It can be splashed in, dammed up, released, used for boat races, as well as being educational (Illus. 3.17 & 3.18). Wet sand is a better building material than dry sand.

3.4.7 Sand for manipulation

Cool wet sand is ideal for building. It should also be used as safety surface to soften falls as opposed to a synthetic safety material such as Masterfiber. Sand and water play encourages interaction between children, as well as stimulating them cognitively (for example learning about gravity, viscosity, weight, etc) (Dinwiddie, 1993).

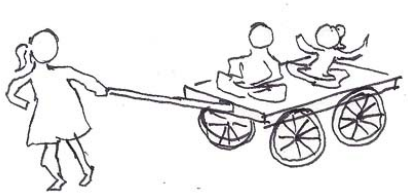


Illus. 3.20: Stepping stones and log creating route over dry riverbed (threshold). Valbyparken, Denmark. (Broto, 2010: 121)

Illus. 3.21: Crotalaria agatiflora (Author, March 2011)

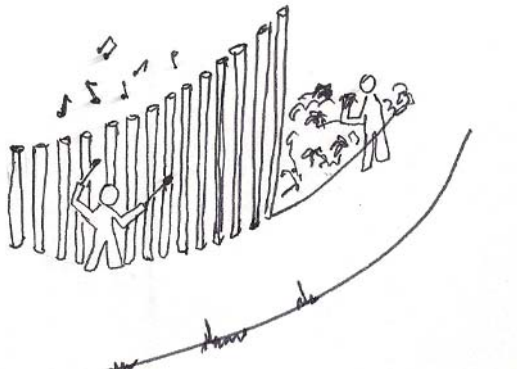
Illus. 3.22: Pelargonium peltatum has fragrant leaves (http://www.plantzafrica.com/frames/plantsfram.htm)

Illus. 3.23: Playing in autumn leaves (http://toot-siegrace.blogspot.com/2009/11/raking-leaves.html)



carts for pulling objects or children

Illus. 3.24: Loose parts (Author, March 2011)



Illus. 3.25: Sounds and smells (Author, March 2011)

3.4.8 Stones/boulders

Large stones or boulders can be used for building or to provide seating, while pebbles could be used imaginatively to represent board game pieces, or money, pills, food or anything else in children's play. Jumping from stone to stone develops balance and agility (White, 2008:74).

3.4.9 Grass

Curving pathways can be cut into long veldgrasses such as *Hyparrhenia hirta*, adding an element of discovery to the landscape.

3.4.10 Pine cones/pods/seeds/fruits

Several existing pine trees on and next to the site provide cones to play with. Plants with edible berries such as *Pappea capensis, Pittosporum viridiflorum* or *Grewia occidentalis* can provide free food and play material. Size and shape of seedpods, fruits and flowers should influence species choice.

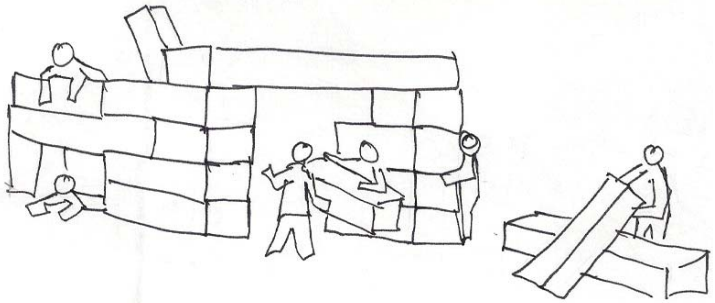
Flowers should be free for the picking. Fragrant or unusual species should be used to stimulate interest, such as *Crotalaria agatiflora, Dais cotinifolia,* and *Lippia javanica*.

3.4.11 Trees

Exotic trees such as oak (*Quercus subsp.*) or plane trees (*Platanus acerifolia*), and indigenous trees such as white stinkwood (*Celtis africana)* and river bushwillow (*Combretum spp.*), provide large amounts of coloured autumn leaves to play with.The site has a few very large existing trees, such as *Jacaranda mimosifolia* and *Tipuana tipu*, which are ideal for climbing or building treehouses.

3.4.12 Man-made loose parts

In addition to the children's play needs, the needs of other age groups (e.g. waiting for transport or gathering in large groups) as well as security issues have to be addressed. It would therefore be inappropriate, in the urban setting, to revert the proposed site to a completely natural area for children's play. Due to this



Light-weight modular building blocks
- any number or configurations possible
- teamwork: what and how will we build?

Illus. 3.26: Modular units (Author, March 2011)

limitation, other man-made loose parts should be provided as well to sustain play.

This could be buckets and shovels for playing in sand and water, small carts to pull objects or other children on, balls, building blocks, dolls, and other objects which could stimulate the imagination. For creative, non-directed play, loose parts should preferably not resemble a real-life object. It should rather be of such a nature as to be able to resemble many different objects, depending on what the child envisions. A piece of slate tile could become a baking tray, a plate, a valuable painting, a book or something to scoop sand with. Modular blocks or units enable children to build their own structures safely, are demountable and can be changed every day, as shown in Illus. 3.26.

3.5 Conclusion

From chapter 2 and 3 it is clear that natural areas can provide a complex environment which can facilitate high-quality play. When the aspects discussed, such as scale, developmental needs, ecological complexity and continuous and interlinking play opportunities are addressed, a park has the potential to stimulate the well-rounded physical, cognitive and socio-emotional development of children.

At the end of the design resolution chapter (chapter 8), the design matrix table will indicate how the programme addressed the play and development needs of children as discussed here.