



*“The fundamental sources of all our knowledge still remain rooted in nature”* . (Crowe, 1995, p.4)



figure 57. natural landscape

# *chapter 4 theory*





*“Because the city and its architecture is an extension of culture, it cannot be considered natural. But does that rule out the involvement of human nature in its creation? By extension of these definitions, we should conclude that the city cannot be considered either strictly natural or wholly artificial.”* (Crowe, 1995, p. 213)

## 4. THEORY

### 4.1.1 NATURE, ARCHITECTURE and THE CITY

There is no doubt that architecture has a long standing relationship with the natural world. Whether it is imbedding buildings into the natural fabric of a site or using architectural elements to emphasize and frame views of the surrounding landscapes, nature plays a big role in the conceptual design of many projects all around the world.

Frank Lloyd Wright's Falling Waters is cut into the mountainous rock and seems to have evolved with its surroundings, where as

Le Corbusier's Villa Savoye is set in a lush field, surrounded by a forest of trees. The gentle articulation with which these architects touch the earth seems lost when it comes to most developments set in an urban environment.

Buildings, set in concrete, tower over tarmac streets filled with gas guzzling vehicles and fast moving pedestrians on the sidewalks. Here the architecture becomes a space creating tool, to host the activities required by our cultures.

Our cities evolve as the generations living and working in them evolve, but they evolve from a need for non-natural activities and services. These needs arise as they are introduced to us by the Western world, and over time became a part of our culture. Therefore it is possible to say that our cities are an extension of our culture, playing host to people driven by material desires, instead of their natural needs.



figure 58. falling waters set into the natural landscape



figure 59. villa savoye framed by the natural surroundings



This draws back to Crowe's idea of man-made nature, where green parks and natural elements placed in the city are not seen as pure nature, but an outreach to re-connect our culture with the natural roots from where it stemmed.

People will always have a strong connection with nature, therefore it is vital to introduce the man-made nature into our cities. The same applies to the Zoo, which is seen as the largest green lung in the Pretoria CBD.

The natural elements contained within the Zoo's grounds, as well as the tree covered hills on its Northern edge are however cut off from the urban fabric. Walls built to the street edge, and solid facades block the view of the scenery. These green elements should become a part of the city, branching out and crossing over to the hardscape of the built environment.

It is the architecture that defines these perimeters, and so it is the architecture that has the power to remove these constraints.

Architecture should become the transition between nature and our cities, serving as a catalyst to re-establish nature as an integral part of our cultures, and ultimately our knowledge of the world around us.

*“We reveal our presence in the world by creating places – buildings, towns, villages, farms and cities. They are set either directly or indirectly into the world of nature, and they serve us as a kind of artificial nature”, or man-made nature. “One that we are able to control just as the gods of our remote past were seen to control the natural world that lay outside the door”. (Crowe, 1995, p. 4)*

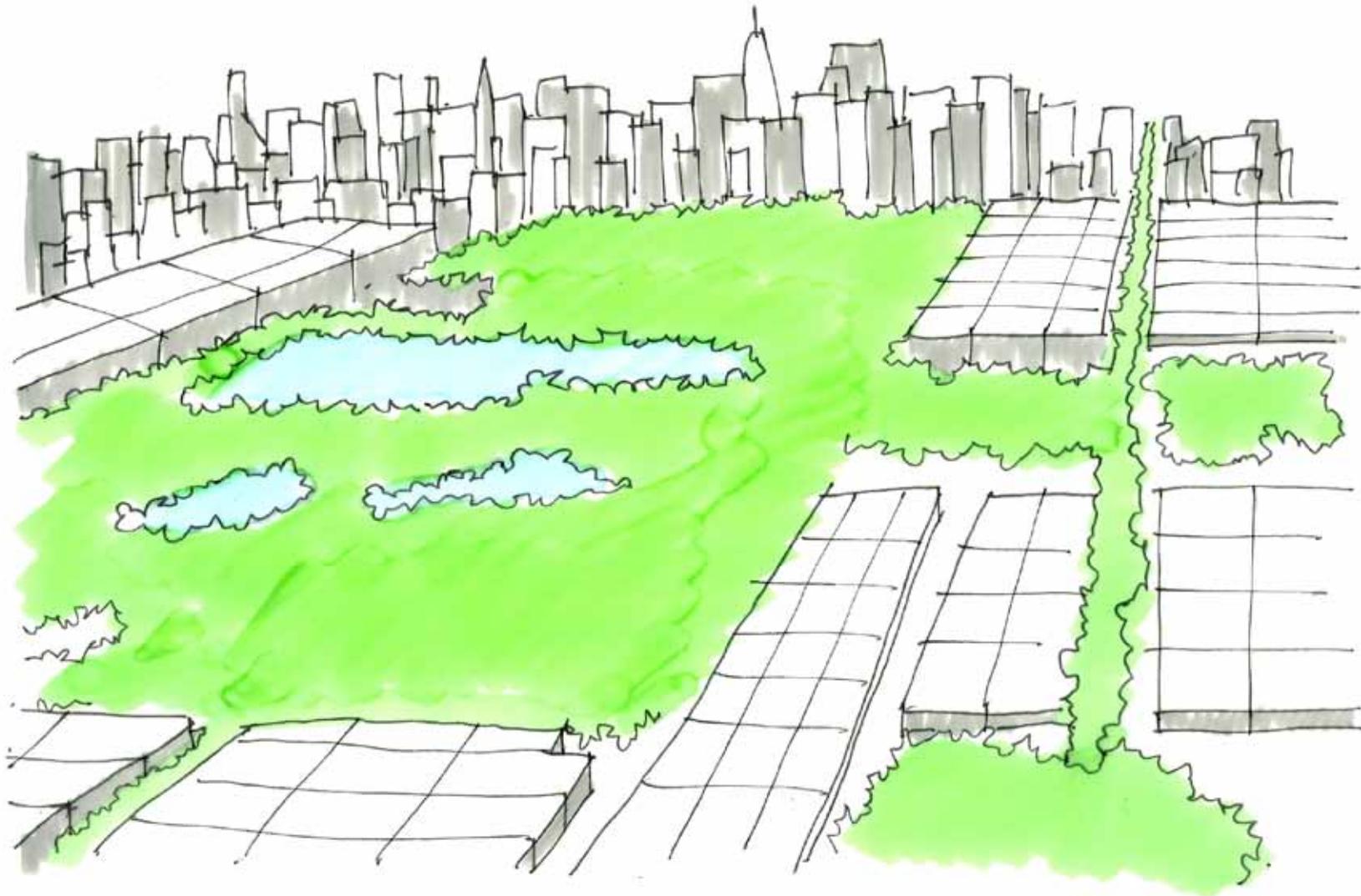


figure 60. sketch of natural elements in city



#### 4.1.2 PRECEDENT STUDY

Architects: Kerry Hill

Project: Singapore Zoo Entrance Plaza

Location: Singapore

This precedent was chosen as a study of architecture within a natural landscape.

*“The entry plaza of the zoo, designed in 1999 by Kerry Hill Architects, is an important landmark in Singapore architecture. It is both contemporary and in keeping with the place, and its calm open-air spaces forms an appropriate prelude to the open zoo and its natural setting. The entry organises functions of ticketing, arrival from different transport systems and support services, with its portico, plaza, courtyards and corridors connecting in a unified whole.” (Ali, 2007, p. 1)*

The Singapore Zoo is located in the central, forested part of the city, and is bordered by a large water dam. These two natural elements make it the ideal location for an open zoo.

The entry to the grounds is hidden amongst the forested area, and is successful in being unobtrusive, quiet and spontaneous. Once inside the grounds, the large angled roof, over the portico, reinforces the sense of arrival and hints at the forest reserve that lies beyond. The natural setting of the project is showcased, throughout the plaza, by a strong relation between indoor and outdoor: as nature is always evident no matter where one is.

The structure of the main plaza is a testament to ‘simplicity is beauty’, as there are no decorative motifs evident anywhere. This would draw attention from the surroundings and not lay focus on the natural beauty. By being simplistic and not hiding how it was made, the structure and materials add to the beauty of the building. The light and porous feel to the development compliments the natural landscape, as nature and architecture grow together to deliver a truly enchanting atmosphere.



figure 61. architects impression of entrance plaza

figure 62. natural surroundings of Singapore zoo



figure 63. singapore zoo entrance



figure 64. indoor/outdoor



figure 65. simplicity of design

*“When you build a thing you cannot merely build that thing in isolation, but must also repair the world around it, and within it, so that the larger world at one place becomes more coherent, and more whole; and the thing which you make takes its place in the web of nature, as you make it.”* (Alexander, 1977, p. xiii)

Christopher Alexander (1977) states that in our built world we find problems, or patterns, that repeat themselves over and over again when faced with design challenges. These patterns can be broken down into instructions that may help to solve challenges in creative ways. This section will deal with patterns evident in the proposal, and the theory behind them.

#### 4.2.1 ACCESSIBLE GREEN

*“People need green open places to go to; when they are close they use them. But if the greens are more than three minutes away, the distance overwhelms the need.”*

(Alexander, 1977, p. 305)

A problem arises when people living in the city, or even in suburbs, are not situated within three minutes from public green spaces. This is especially evident in the Northern region of the Pretoria CBD. The region is bordered by green hills to the North, but this is inaccessible to the public and parks to the South and East of the city are restricted. To ensure that everyone works and lives within three minutes from these landscapes, a lot of small public green spaces need to be introduced all over the city.

Professor Brian Hackett (1983) states that “perhaps you will agree that humans are still anatomically and physiologically mammals, even if our ability to think and behave has gone beyond other mammals. A fact that is symptomatic of nearly all mammals is that they live amongst vegetation. So, the question must be asked: whether we should aim for some kind of urban landscape in which we are close to elements of soft landscape for much of the working and recreational day?” The answer is definitely yes.

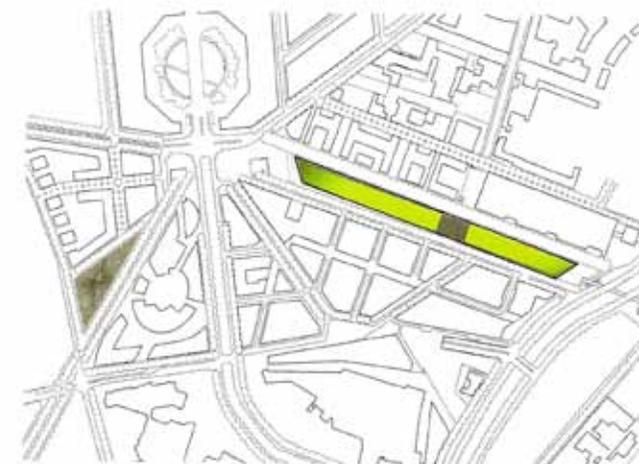


figure 66.

tilla durieux park in Berlin

#### 4.2.2 GREEN STREETS

*“There is too much hard asphalt in the world. A local road needs a few stones for the wheels of the car; nothing more. Most of it can still be green.”* (Alexander, 1977, p. 267)

In most cities, concrete or asphalt makes up more than 65% of the area. This has detrimental effects on the local environment, micro climates and also the general well being of the people who live and work in these areas. In perfect conditions, streets and sidewalks

could be covered in grass, with big lush trees planted along them for shade. Unfortunately, in city centres, where movement is often dictated by vehicles, this is not as easy. However, plans can be made to minimize vehicular traffic on streets. City parking lots can move cars off the

sidewalks and restore them to pedestrianised areas. Parks and lawns can be recessed from the street to give children an area to play. Trees can be planted on sidewalks and in squares to create shade and places to rest.

#### 4.2.3 ENTRANCE TRANSITION

*“Buildings with a graceful transition between the street and the inside are more tranquil than those which open directly off the street.”* (Alexander, 1977, p. 549)

Alexander argues that people adopt a style of “street behaviour” while walking on sidewalks. When they move into another space, their behaviour changes to something more appropriate to that environment.

This change is only possible if there is a transitional space that facilitates this transformation in the user. The path on which people move between the streets and a building is the all important vehicle for this change to occur. This path has to lead through the transitional area, and be emphasized by a change in light, sound, direction, surface texture, level, gateways, and most importantly, change of view.

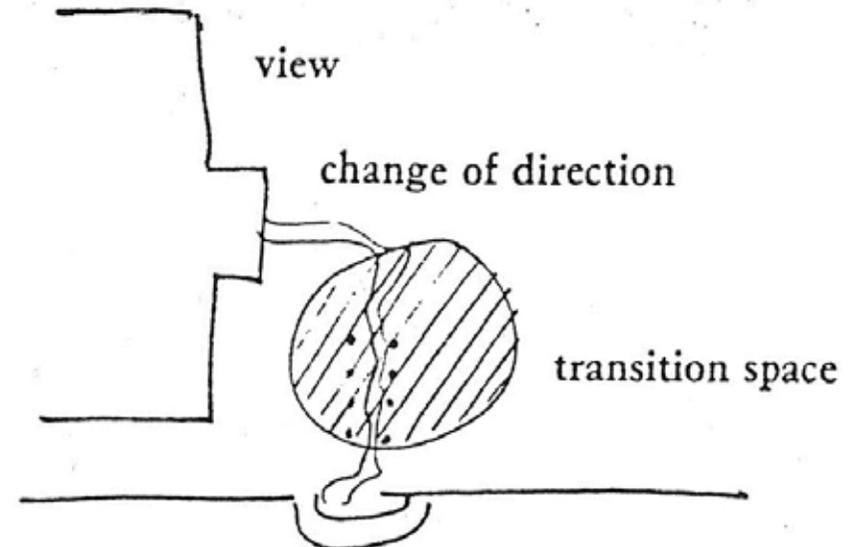


figure 67. sketch showing transitions between spaces



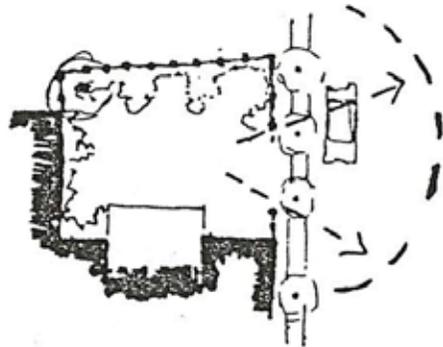
*“A town needs public squares; they are the largest, most public rooms that the town has. But when they are too large, they look and feel deserted.”*

(Alexander, 1977, p. 311)

#### **4.2.4 SMALL PUBLIC SQUARES**

It is only natural that streets, with pedestrian activity, will swell out where there is the most activity. It is at these points where public squares are the most successful. A tendency has been noted that these squares are designed too big, and this leaves people feeling isolated inside them.

As a rule, Alexander suggests that public squares should have a diameter between 18 and 20 meters. This is based on the distance that a person's face is identifiable, a human voice is audible and the area per person needed for a sense of belonging. So the aim would be to make public spaces much smaller than one would at first imagine, this will directly improve the quality of the space and the experience inside it.



*Terrace and street or square.*



*Square and vista.*

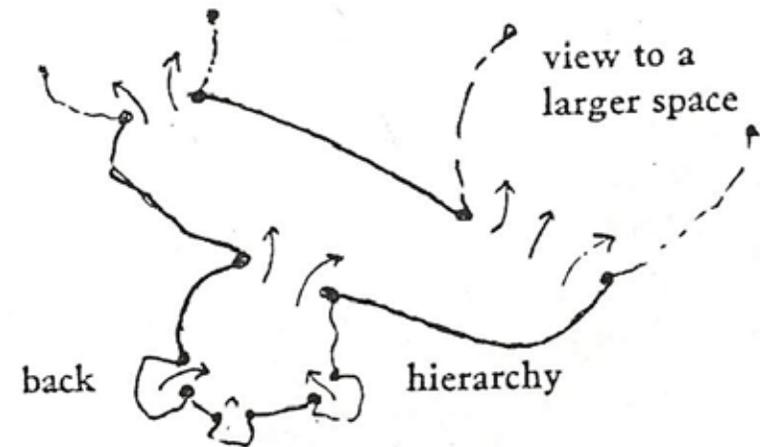


figure 68. diagrams showing hierarchy of different types of open spaces

“Outdoors, people always try to find a spot where they can have their backs protected, looking out toward some larger opening beyond the space immediately in front of them.”

(Alexander, 1977, p. 558)

#### 4.2.5 HIERARCHY OF OPEN SPACE

People do not sit facing brick walls. In short, this simply implies that a space inhabited by people should have a protective barrier behind them, and a view in front of them. This tells us that the building becomes the backing to the square, while the square opens up to a view.