Design Development
Introduction

The following chapter documents the process of the design of the astronomical centre and discusses the various factors which were taken into account to formulate the concept. It consequently discusses how the concept of the design was applied and developed.

Step 1: How to approach the zoo forecourt as part of the northern gateway

Working diagram 1: Vehicular movement

Working diagram 2: Pedestrian movement in the urban foyer

Working diagram 3: The proposed zoo entrance

Working diagram 4: Pedestrian movement in the zoo forecourt
The Result: The Zoo Forecourt Proposal

Existing Zoological Gardens

Proposed Entrance

Proposed Forecourt

Site

Figure 6.1.6
By considering the historical and cultural value of the neighboring Museum and the Zoo administration’s current plans of renovating the building, it has been decided to **not physically touch the old building** but rather integrate it into the development by making use of a series of courtyard spaces that act as threshold spaces.
The Result

Step 3: Understanding the movement

Figure 6.1.13
Figure 6.1.14
Figure 6.1.15
Figure 6.1.16
6.2 The **final concept** of the design of the Astronomy Centre

Design challenges and responses

As a result of the challenging site and unprecedented nature of project in the South African context, the following three determinants were considered to formulate the concept.

- The Context Study and Site Analysis
- The Precedent studies
- The Functional Requirements of the Facility

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**The urban foyer**

**Site indicators**

**The nucleus**

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Figure 6.2.1  Figure 6.2.2  Figure 6.2.3
**Pedestrian approach:** ‘Route of Exploration’

**Series of rooms become a ‘sequence of events’**

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**The Cosmic Pathway: Movement becomes the mediator between space and time**

Pearson argues that space and time are the essence of the universe (Pearson 2000:110). In order to communicate this concept the visitor is led through a series of spaces that represents a series of cosmological concepts. The main objective of the design therefore becomes the development of a cosmic pathway which communicates the mysteries of the universe.

The concept that informed the movement route is that of objects orbiting around the nucleus. By taking advantage of the expression of architectural form of the sphere, the visitor is led on a journey in which different views of the nucleus will be experienced.
In developing the narrative, the study on the existential expressive qualities of architectural form, discussed in the theoretical investigation, was considered to create a sequence of spaces that communicates concepts of the cosmos.

Moment 1: The approach
Moment 2: The suggestion
Moment 3: Descent into solidity, entering earth
Moment 4: Explosion, the big bang
Moment 5: Expansion, the universe
Moment 6: Infinity
Moment 7: Scale of celestial objects

Moment 8: Space contraction

Moment 9: Ascend to earth surface

Moment 10: Entering sky

Moment 11: Entering nucleus

Moment 12: Visual infinity
6.3 Design development

Figure 6.3.1

The entrance of the new structure becomes the link between old and new.

Figure 6.3.2

Create a central courtyard

Figure 6.3.3

Discard secondary auditorium, condense design

Figure 6.3.4

Discard diagonal lines in plan
Extrude entrance

Develop exterior cosmic garden

Remove the structure of the new facility from the old facility, move the entrance to the western facade. Move cosmic garden into interior of facility

Final ground floor plan
The building becomes a path of discovery, problem solving becomes the adventure. The following are the interactive features incorporated into the design whereby the visitor learns by means of involvement:

1) The 13-billion year age of the universe is communicated by the length of the exhibition journey. Along the path it is indicated how many years have gone past. At the end of this pathway the age of mankind is represented by the width of a hair (figure 6.2.13).

2) The solar courtyard will be an interactive playground, accommodating object that teaches the user about scientific concepts (figures 6.2.7 & 6.2.8).

3) The solar system scale walkway is an interactive educational tool teaching the user about the scale of the solar system. The walkway is a route through the zoo that is proposed to be lit at night. It is designed relative to the nucleus of the design, representing the sun (figure 6.2.15).

4) The star stops are marked areas on the floor in the temporary exhibition space. These areas have corresponding skylights from where certain specific southern hemisphere constellations can be seen on the first day of every month at 8pm (figure 6.2.14).
Conclusion

In this chapter the process of the design of the astronomical centre and the various factors which were taken into account to formulate the concept were considered. It consequently discussed how the concept of the design was applied and developed.