6 PRECEDENT STUDIES

The following discussion will focus on the investigation of precedents that translate the meaning of transparency through architecture and attempt to create interior spaces that illustrate the meaning of responsive, interactive environments. The use of materials together with spatial organisation will be dealt with to investigate how well a space is occupied and adapted to its specific use. The relation to spatial experience comes into play with the occupants and must be understood and used as a guiding tool through the design on different development levels. The typologies of each precedent will be different and must be understood in its context to guide the design towards a successful development within its context. The approach to translating information and visibility to the public occupying these spaces will also be investigated and whether these have been done successfully or unsuccessfully. The international precedents that will be dealt with include the Phaeno Science Centre in Wolfsburg, Germany designed by Zaha Hadid Architect. The national precedents include the Sci Bono Discovery Centre in Newton, Johannesburg; the Science Park at Observatory Campus in Observatory, Johannesburg and the annual Design Indaba Expo held at Cape Town International Convention Centre, Cape Town.

Fig 6

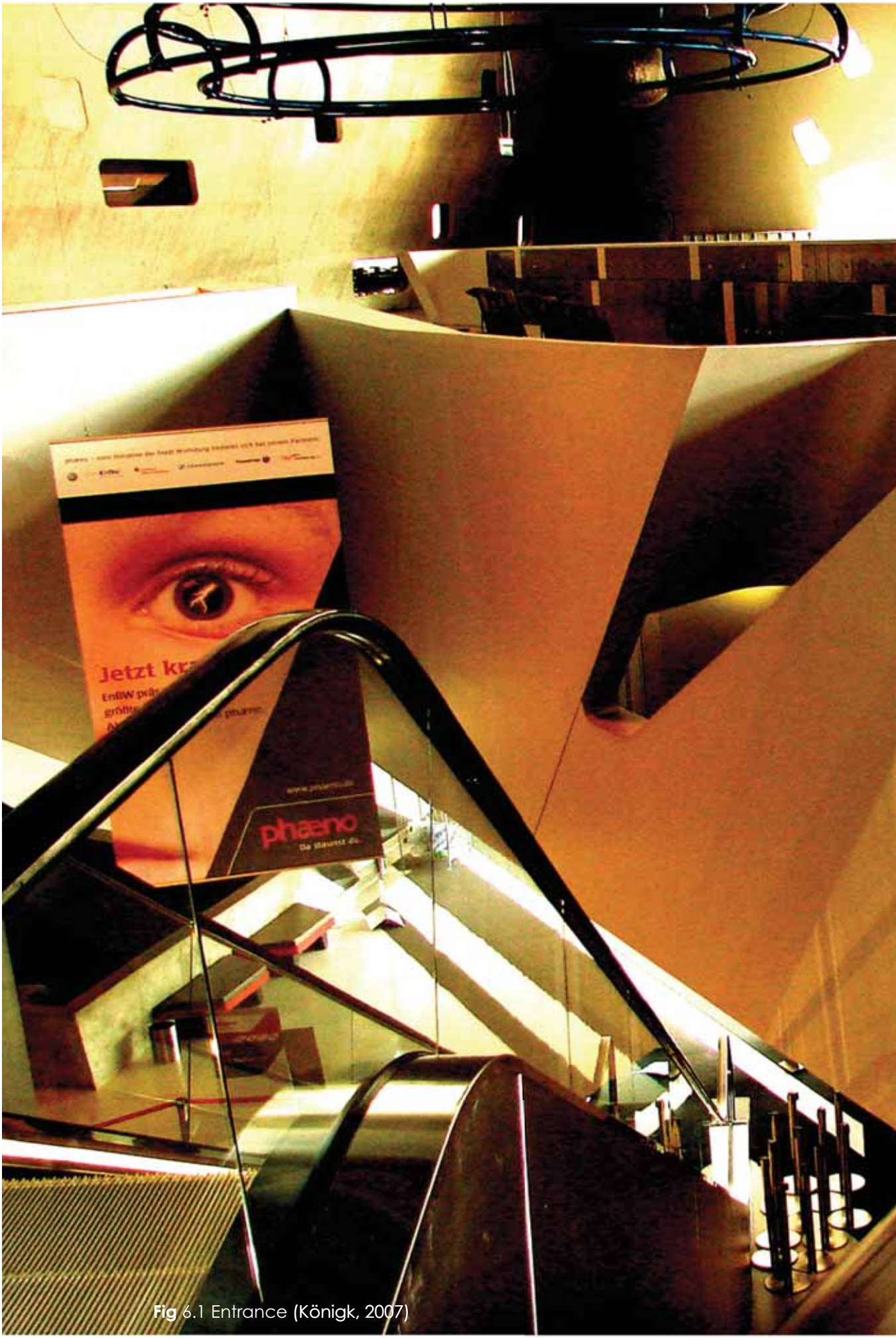
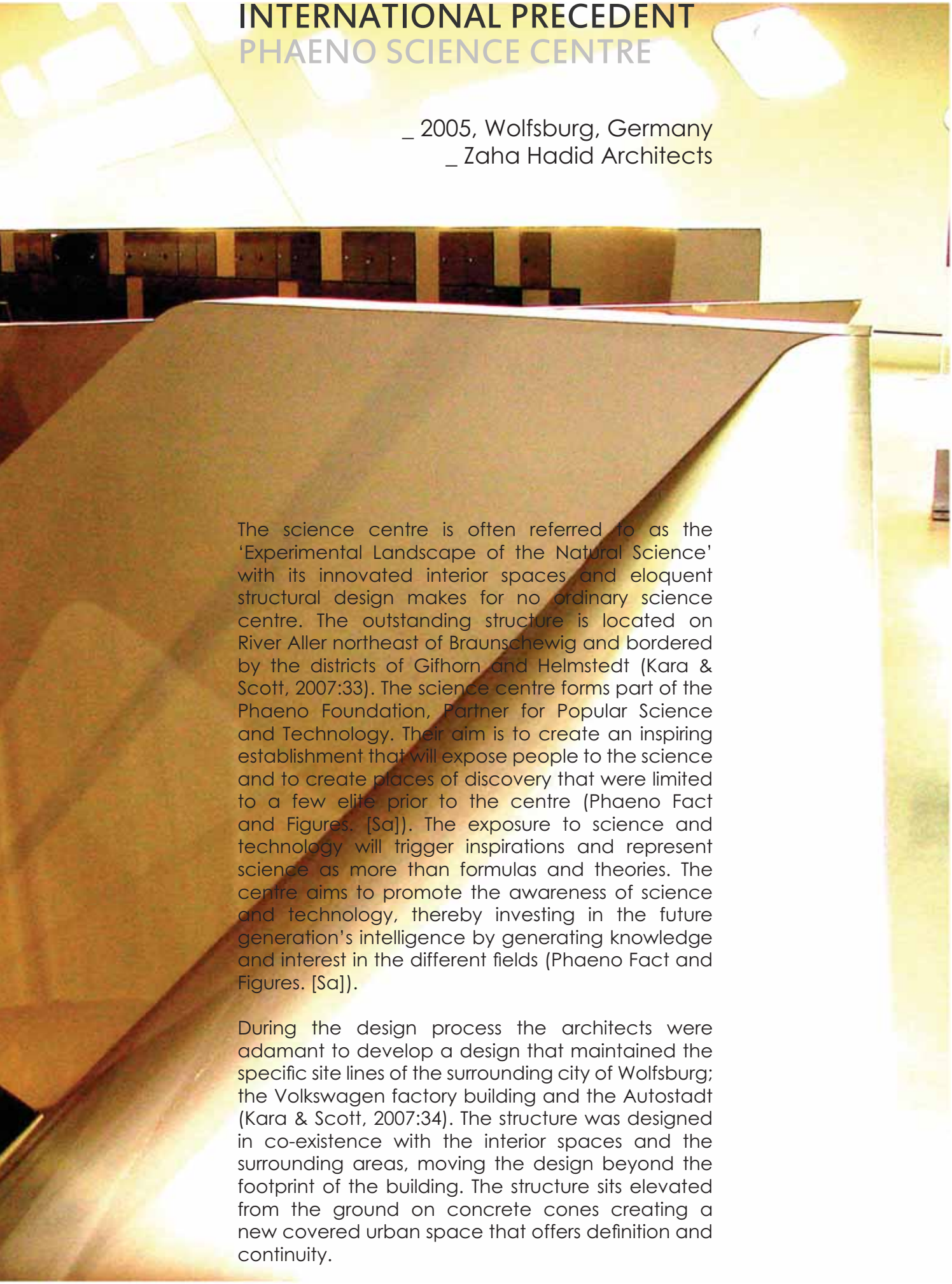


Fig 6.1 Entrance (Königk, 2007)

INTERNATIONAL PRECEDENT
PHAENO SCIENCE CENTRE

_ 2005, Wolfsburg, Germany
_ Zaha Hadid Architects



The science centre is often referred to as the 'Experimental Landscape of the Natural Science' with its innovated interior spaces and eloquent structural design makes for no ordinary science centre. The outstanding structure is located on River Aller northeast of Braunschewig and bordered by the districts of Gifhorn and Helmstedt (Kara & Scott, 2007:33). The science centre forms part of the Phaeno Foundation, Partner for Popular Science and Technology. Their aim is to create an inspiring establishment that will expose people to the science and to create places of discovery that were limited to a few elite prior to the centre (Phaeno Fact and Figures. [Sa]). The exposure to science and technology will trigger inspirations and represent science as more than formulas and theories. The centre aims to promote the awareness of science and technology, thereby investing in the future generation's intelligence by generating knowledge and interest in the different fields (Phaeno Fact and Figures. [Sa]).

During the design process the architects were adamant to develop a design that maintained the specific site lines of the surrounding city of Wolfsburg; the Volkswagen factory building and the Autostadt (Kara & Scott, 2007:34). The structure was designed in co-existence with the interior spaces and the surrounding areas, moving the design beyond the footprint of the building. The structure sits elevated from the ground on concrete cones creating a new covered urban space that offers definition and continuity.

The 10 tapered structural cones rise from the ground with variations in height to provide support to the building, both vertical and lateral support are achieved by the grouped structure (Kara & Scott, 2007:34). Each cone was designed with specific geometry and with a great deal of focus on the manufacturing and construction processes, leading to the knowledge that the development of the building and the geometric cones would need to be controlled parametrically.

Fig 6.2 Site Context

parametric/n
A constant or variable term in a function that determines the specific form of the function but not its general nature
One of the independent variables in a set of parametric equations

Most of the design work was done on 3D computerbased programmes to establish the spatial and architectural significance of the building, making the transfer between 3D models to conventional 2D drawings very difficult and unfortunate to the design process. The specific co-ordinates for the cones at the surface and the cutting planes needed to be resolved in order to produce standard sections and elevations for the building (Kara & Scott, 2007:34).

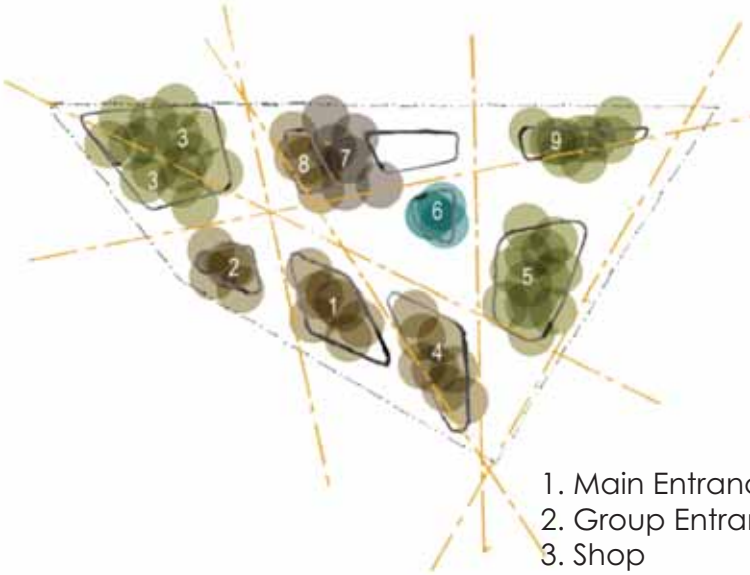


Fig 6.3 Floor Layout Entrance Level

1. Main Entrance
2. Group Entrance
3. Shop
4. Kitchen
5. Auditorium
6. Coffee Bar
7. Event Space
8. Staff
9. Laboratory
10. Ramp
11. Restaurant
12. Exhibition

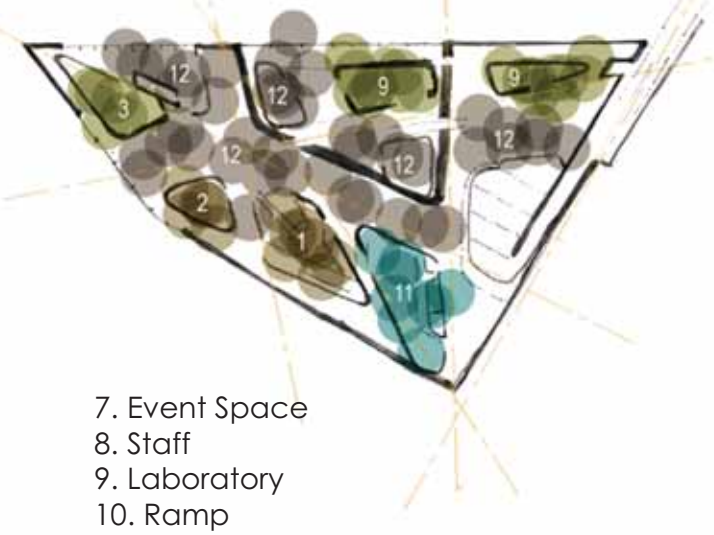


Fig 6.4 Floor Layout First Level

Fig 6.5 Exterior Ramp (Königk, 2007)

The link between the structure and the surrounding spaces is emphasized with multiple links of pedestrian and vehicle movement through the site, the building and the artificial landscape (Kara & Scott, 2007:33). The artificial landscape is an extension of the surging outdoor plaza in front and speaks of transparency and permeability to the immediate site and surrounding areas. The main exhibition space is uninterrupted by structured columns, doors or floor-to-ceiling partitions creating diagonal views to the different exhibitions areas, as well as big volumes

Fig 6.6 Interior view of Exhibition Area (Königk, 2007)

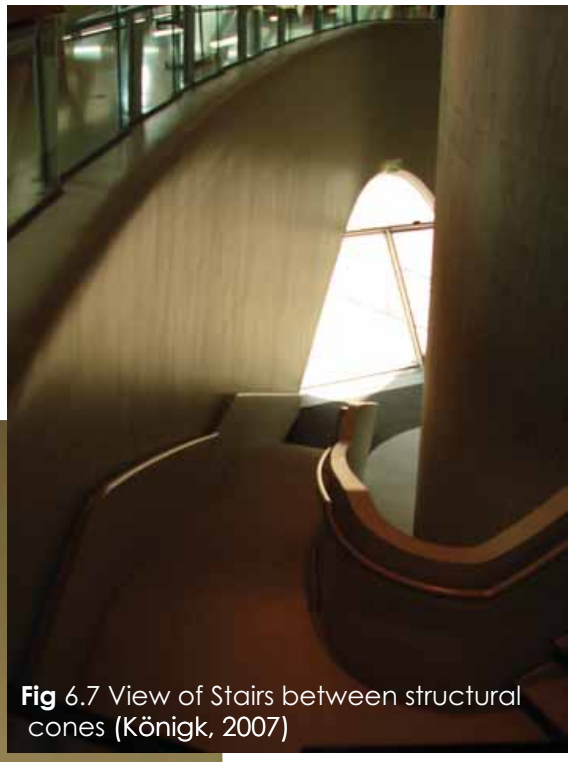


Fig 6.7 View of Stairs between structural cones (Königk, 2007)

Fig 6.9 View of Exhibition Area (Königk, 2007)

of differently used spaces that protrude to the exterior (250 Experimental Stations and a diversity of programmes. [Sa]). The different spatial qualities are created by the low rising sloping walls not obstructing the views, different ceiling heights and level changes with partially enclosed areas (Pearson, 2006:80). Light is of much importance to exhibitors therefore spaces were created with different light qualities to assist the different exhibitions (Pearson, 2006:80). The protruded volumes visually link the interior to the exterior allowing exposure to the diverse activities that occur in the interior spaces. The interior space strives to evoke the aspiration in making discoveries in the fields of science and technology, for discoveries of new and innovative ideas. Therefore, it is imperative that the interior spaces speak the language it hopes to evoke.

The 250 experimental displays are distributed throughout the main exhibition space like elements in the field, with the unfortunate outcome that they seem disengaged from the architectural space (250 Experimental Stations and a diversity of programmes. [Sa]). The activities available at the Phaeno Science Centre are the experimental stations and laboratories that offer visitors a firsthand view of and insight into nature and technology, because visitors can join in and research interests of their own. The Science Theatre is an extravagant venue for science shows, special performances, experimental lectures and exceptional conferences for science leaders from all over the world. The Ideas Forum offers people the opportunity to generate creative ideas and brainstorm about science and theories that interest them. The Phaeno Shop offers everything from highly

proclaimed science books to fundamental science experiments and games as well as construction kits and technical models (Phaeno Fact and Figures. [Sa]). The Phaeno Shop inferior to the extraordinary structure it finds itself in but enhances the qualities of the structure by offering stunning views and with leading passages that link the shop to the experimental stations.

It thus can be said that the science centre paves the way for physical visibility and creating views from different areas of views of others. It opens up the interior and creates a sense of interest, luring visitors to experience the whole centre. Transparency is also dealt with in the structure but not just as literal transparency but through phenomenal transparency where the space, depth and organization create provocative spaces.

Influences on the design approach:

_ design triggers inspiration towards exhibitions or information
_ structure was designed together with interior spaces
_ easy access to and through the site
_ create different spatial qualities by changes in volume
_ relation between exterior and interior activities (visual connection).

Influences on schedule of accommodation:

_ experimental displays
_ laboratories
_ science theatre
_ phaeno shop
_ coffee bar
_ restaurant.

NATIONAL PRECEDENT

SCI BONO DISCOVERY CENTRE

_ Old Electric Workshop Building
_ Newtown, Johannesburg
_ personal visit on 26 February 2008

The Sci Bono Discovery Centre is a unique Science Centre in the heart of the inner city renewal programme of Johannesburg, initiated by the Gauteng Department of Education and the private sector representatives (About Sci Bono [Sa]). The Science Centre prides itself in the fact that it's the largest Science Centre in Africa and creates the opportunity for exposure in the fields of Science Technology and Mathematics (About Sci Bono [Sa]). It is centrally located in the precinct of Newtown, enabling locals to visit the centre as well as the many tourists visiting Newtown.

The aim of the centre is to support education in the fields of Science, Technology and Mathematics as well as improve community engagement and interest in these fields (About Sci Bono [Sa]). Exposure and interest in the different fields will assist the community in the knowledge of education in these different fields. It is of national importance that these economically important fields are promoted and made accessible to the community.

Fig 6.10 Exhibition Area

The Science Centre is constructed in the Old Workshop building with its extraordinary structure and massive interior volumes that were adapted to enhance the existing qualities. The historical steel structures that were used in the Old Workshop were kept and placed on display for visitors to explore the history of the building together with the new vibrant information. The steel structure was accentuated to expose the structural use of building material to the visitors. The

The activities available at Discovery Centre are:
_Exhibitions that visitors can participate in;
_Workshops to illustrate a variety of Science and Mathematical concepts and
_A Science Stage for scientific shows (About Sci Bono [Sa]).

The cafeteria situated on the ground floor is vacant at the moment and if in operation provide economic contribution to the centre. As one enters the extraordinary space, it is easily noticeable where the activities are and how to gain access to the different exhibitions. Two floors were introduced using mainly a steel structure that is painted grey, which is in contrast to the red historical steel structures. Ramps offer disabled visitor the same experience as able visitors. Two large clearly indicated lifts on either side of the building provide for comfort able access to visitor's areas and areas applicable for delivery.

Fig 6.11 View towards cafeteria

Fig 6.12 Ground Floor Exhibition Area

Fig 6.13 View towards exhibition area

Most of the exhibitions are translated in an audio-visual manner and through information sheets that must first be read to understand what must be done. The different areas are displayed in the same style but with little regard to the interior spaces which they occupy. The stands where the exhibitions are displayed are distributed on the different floors and stand loosely next to the perimeter walls. The installations are thus made transferable, but do little to enhance the spatial qualities of the interior. Some sections of the exhibition are temporary but most are permanent exhibitions that could have been designed to incorporate the spatial and structural qualities of the building.

Influences on the design approach:

_ a dilapidated building adapted and transformed for a new usage, without destroying its historical value
_ bring life back to a stranded building
_ exposing the old from the new. The new materials are inserted into the exciting historical areas
_ interactive exhibitions excite the visitors
_ ramps and two lifts make for sufficient access even for disabled visitors.

Influences on schedule of accommodation:

_ workshops
_ interactive exhibitions
_ science shows.

Fig 6.14 Interactive Exhibition Area

Fig 6.15 Mirror Maze

SCIENCE PARK

JOHANNESBURG OBSERVATORY

_ 2003, Observatory, Johannesburg
_ personal visit on 26 February 2008

The Johannesburg Observatory was acquired by the South African Agency for Science and Technology (SAASTA) in 2003 and is currently refurbished to accommodate a comprehensive interactive Science Park with its main focus on Astronomy and Engineering (Science Awareness Platform [Sa]).

The Science Park includes the main Observatory, three telescopes, a refurbished exhibition space and experiment laboratories (Masevhe, L.). The exhibition displays include laser interactive displays, science experiments, a maze of mirrors and an infinity room. The displays operate on a more interactive basis than observing the exhibitions from a distance, making the visitors part of the display and experience. The large domeshaped white infinity room attempts to take visitors into space and display the magnitude of the universe (Masevhe, L.).

The following activities are planned for the public to participate:

_The Observatory Tour will expose learners, teachers and the public to Astronomy, Astrophysics and Optics through various exhibits and displays.
_The Forensics Science Laboratories are specifically for scholars from Grade 9 to Grade12 as well as for their teachers. These laboratories will assist the scholars in curriculum-based problem solving and scientific experiments.
_The Science Teachers Forum offers conferences to senior or more experienced Lecturers of Science, Technology, Biology, Geography and Mathematics.
_The Techno Youth holiday program is aimed at previously disadvantaged scholars and underprivileged youth from townships in and around Johannesburg to experience Science and Technology in a casual and exciting manner.
_The Computer Laboratory provides access to computers for scholars/students so as to work on their school projects and will assist students in becoming computer literate.
_The Resource Centre acts as an information centre for visitors to acquire books, information, experiment equipment and general information about the different science careers.

_Night Tours are be made accessible to visitors to view extraordinary space with its occupying stars and planets. The tours will be organized in collaboration with the Astronomy Society of South Africa (ASSA). (Science Awareness Platform [Sa])

The Sci Bono Discovery Centre and the Science Park, Johannesburg Observatory, aims to introduce Science and Technology to the same community group. The exhibition displays are similar in many cases but the Science Park has evolved their methods of display and interacts on a broader scale to the visitors. Visitors can take part in the experiments and physically move through a few of the exhibitions to experience it on a human scale.

Influences on the design approach:

_ technology enhanced exhibitions
_ grandeur scale exhibitions
_ working with the curriculum to increase student knowledge.

Influences on schedule of accommodation:

_ laboratories for different functions
_ exhibition areas, separated areas with different activities.

Fig 6.16 Exhibition Area

Fig 6.17 Exhibition Area

DESIGN INDABA

_ Cape Town
International Conference Centre

The Design Indaba Expo has been running since 2004 in conjunction with the Design Indaba Conferences. Over the years the Design Indaba grew from 55 exhibitors (in 2004) and 9 000 visitors to with 240 exhibitors (in 2007) and more than 20 000 visitors (Attendance Profile. [Sa]). The Expo hosts the work of some of South Africa's top designers in the different fields, ranging from architecture, landscapers, interior designers, fine artists, graphic designers, decorators, fashion designers, film directors, jewellers and crafters. The prestigious event is held annually at the Cape Town International Conference Centre and is open to the public. Many members of the press visit the event and press coverage is both nationally and internationally (Attendance Profile. [Sa]). These would include journalists and editors of TV shows, radio personalities, and magazine and newspapers journalists. The event therefore receives publication and media coverage on many different levels and is ensuring that the public takes note of the event.

The expo is supported by the Department of Trade and Industry. International buyers are invited to attend the event which gives the exhibitors international exposure and encourages trade agreement (Ideas: Design Indaba10. 2007:17). Apart from the international buyers national buyers from leading retailers and smaller boutiques are invited. The aim of the event is exposure and accessibility to good design. As a result other designers are inspired to take part in the event. The end goal is to encourage good designs and to uplift the economy through trade and industry.

The Design Indaba offers various activities for the public to take part in and through these activities attempts to expand the method in which exhibitions take place. The fashion show sponsored by the SABC is not like any ordinary fashion show with an elevated ramp, but has a more performance orientated approach with a small fashion boutique that retails the clothing items (Previous Expos. [Sa]). There is a South African short film festival that can be viewed by visitors as well as a music video festival celebrating South Africa's young talent. The graphic designers show off their talents with live shows, for example how the graphic designs are applied to

Fig 6.18 Exhibition Area

Fig 6.19 Passages between Exhibition Areas

motor vehicles. In conjunction with Woolworths My School Project the expo provides interactive hands-on opportunities for scholars to learn about design and the different fields (Previous Expos. [Sa]). For a refreshing break the visitors can join the many contemporary refreshments bars.

The exhibition spaces are designed with a master plan and the exhibitors must use the set exhibition stands. Different variations are available for the exhibitors to view beforehand and choose the appropriate stand for their specific exhibition.

Influences on the design approach:
_ an event that inspire the nation
_ specific branding and marketing strategies for each expo
_ a specific designed exhibition system that is adapted and transformed by each exhibitor.

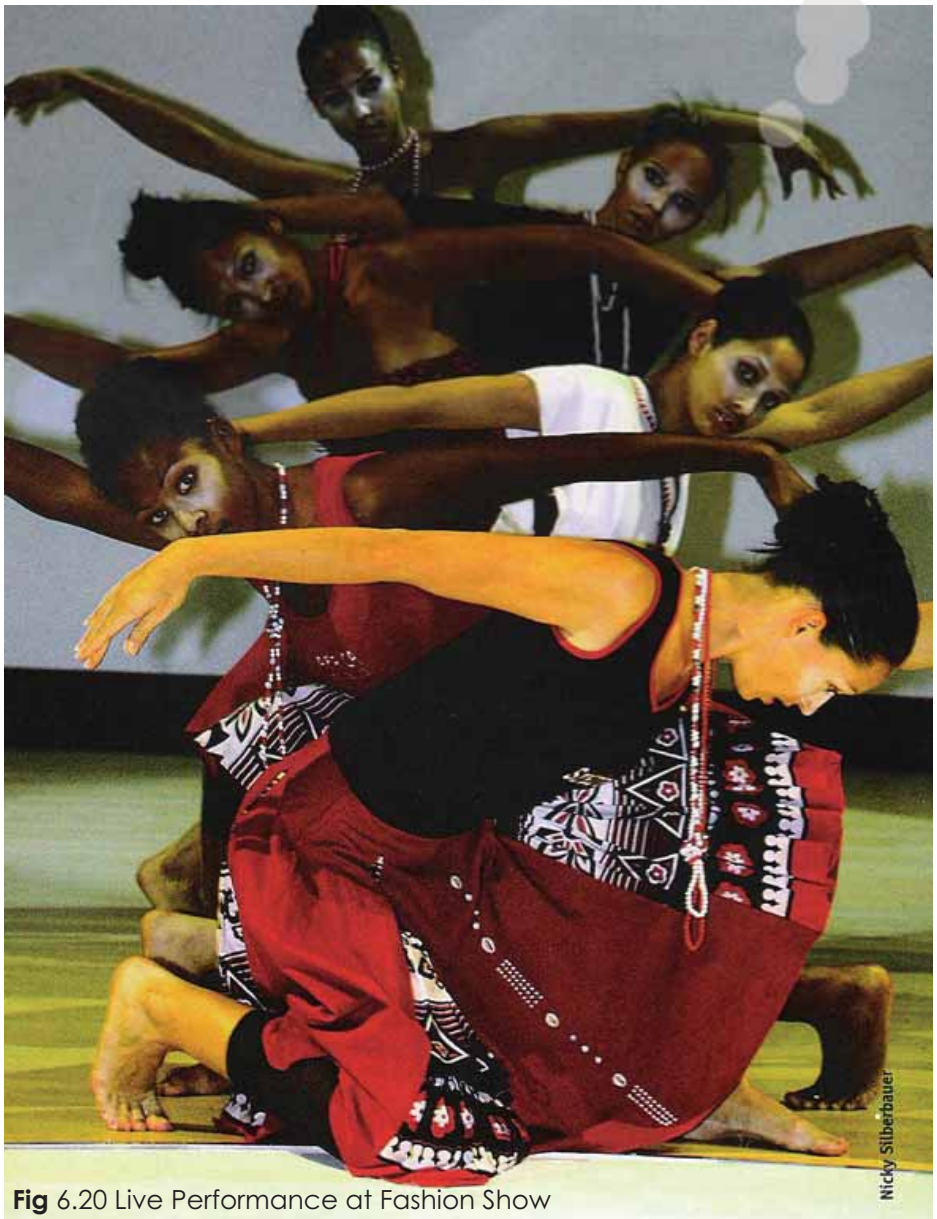


Fig 6.20 Live Performance at Fashion Show