



INTRODUCTION
PLATFORM

↑ Exit

INTRODUCTION

01:00

The real world problem

Problem statement

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The real world problem:

The world faces many challenges today, one of which is Global Warming. With the earth's natural resources declining, the cost of living is rising and the people who are suffering the most, are in low income sector. Unfortunately with South Africa's previous planning policies, these are the people who are also located on the outskirts of the city. This spatial dislocation of the poor results in long and costly commuting patterns.

"This system generates enormous amounts of movement at great cost and severely aggravates the major developmental issues of poverty, unemployment and inequality facing the society. It results in environments which are desperately inconvenient, particularly for the majority who cannot afford motorized transportation. Under these sprawling conditions society cannot afford to provide a full range of accessible social services. Many people are trapped in space and life is a desperate struggle to meet basic needs."

(Dewar, 1997: 25)

The cost of fossil fuels is sky rocketing and motorists are looking for alternative means of transport. While projects such as the Gautrain are underway and public transport facilities are lacking automobiles will continue to dominate our cities. Since the 1950's, city planners, planned our surroundings from the seat of a vehicle instead of the view of the pedestrian. The problem concludes, that when vehicles are just too costly to own or run - pedestrians will be left with an automobile orientated city. Buildings will appear randomly placed, confused and dehumanized by auto-mobile spaces. Action must be taken to give back the city to those who dwell in it. To use the urban fabric to the maximum - to encourage pedestrian movement in the urban surroundings.

South Africa is longing for adequate public transport facilities. The means by which the vast majority of the population travels to work is via train. Yet railways in South Africa today are dilapidated and act as crime centrals. In interviews with commuters and taxi users, many would rather spend more money using the bus or taxi than to use the Metrorail (the commuter rail corporation). Despite many efforts from the Metrorail management to control the ever growing problem, crime is still one of the major issues that the railway faces today. Another aspect is the lack of existing facilities and the poor design thereof.

All of these aspects limit the optimization of existing resources in the city. This dissertation will attempt to address some of these problems by redesigning Loftus Metrorail Train Station located in Hatfield, Pretoria, South Africa.

Problem Statement

How to integrate the public transport facility, Loftus Metrorail Station, into its surroundings

Tshwane is lacking integration of the public transport systems with the rest of the city. The modal interchanges are problematic, but this is also directly proportional to the lack of pedestrian integration in the city fabric. The roads are bursting out of their seams and the city has insufficient parking facilities to support the infrastructure, as well as insufficient mixed use development to provide diversity on the street for the users comfort.

Hypothesis:

The under utilized rail system is directly related to the inappropriate design of roads in South Africa. A perfect example of this is University road and Loftus Metrorail Station. The Loftus Metrorail Station, Loftus Versfeld Stadium, the University and surrounding institutions all function in isolation. Therefore the train station simply wouldn't achieve its full potential without redesigning its road system and environment, i.e. University Green route and Loftus Precinct.

Sub Problems

- How does one design movement systems for the smooth transition between commuter and the city user? And then disperse them into the surroundings?
- How does one break the barrier that exists between Loftus Stadium and the University of Pretoria?
- How does one design for optimum public safety regarding use of public transport?
- How does one optimally design the link between two nodes i.e. Loftus Metrorail Station, Loftus Versfeld Stadium and the new precinct proposed - to have the necessary public and private areas and well distinguishable boundaries of the above mentioned?

Limitations and Delimitations

- The dissertation will limit itself to the study of integration of different movement systems. Infrastructure and mode transfers will be researched limited to the railway systems in South Africa.
- The project area is limited to Hatfield, between the boundaries of Pretorius Street, Duncan Street, Lynnwood Street and Kirkness Street (fig.1.1).
- Movement analysis and applied systems will be limited to pedestrian behaviour within the defined projects area



fig. 1.1_Road map of the study area

Assumptions

With regards to the near future of South Africa (approximately 15yrs from now):

- An estimate of 46 000 users per day, is projected for the Hatfield Gautrain station
- Loftus Versfeld Stadium will remain a popular sport events arena
- The Gautrain will become a viable transport system for all types of commuters.

Client Profile

01:03

Primary

- Loftus Metrorail Station: Metrorail (SARCC - South African Rail Commuter Corporation)

Secondary

- Green Activity Route: Tshwane Municipality.
- Loftus Precinct: Loftus Management in association with Intersite.

The primary client of Loftus Train Station is Metrorail in joint venture with the Tshwane Municipality. This is perfect timing as the Government and Metrorail are injecting massive investments in the up-grading of the infrastructure.

Metrorail has started with their Turn around Strategy: "The turn around strategy of the National Passenger Rail Company (hereafter referred to as the NPRC) is about repositioning rail over the long term in the heart of public transport."



fig. 1.2_SARCC



fig. 1.3_Metrorail



fig. 1.4_Intersite



fig. 1.5_City of Tshwane



Finance Minister, Trevor Manuel has been allocating more money annually into the upgrading of the commuter rail, reassuring South African commuters that Government is committed to safe, reliant and affordable services which are at World Standard.

Turn around strategy implemented in a three phase plan:

1. Stabilization phase (2007-2010)
 - including upgrades and improvements
2. Recovery phase (2011-2014)
 - including private sector involvement
3. Growth Phase (2015-2030)
 - including 2020 Vision: Passenger rail corridors at the heart of an integrated Mass Rapid transport Network. Alliance with busses and taxi's

Objectives of the NPRC include:

- _ Changes in management
- _ Investing in people
- _ Integrated ticketing system
- _ Reduce fee evasion

Capturing Key strategic corridors such as Tshwane region
Seamless integrated transport system.

According to an article by Donwald Pressly from the Mail and Guardian -Feb 15 2006:

- 2004-2005, R655-million, in capital subsidies
- 2005-2006, R688-million, in capital subsidies
- 2006-2007, just over R1-billion, in capital subsidies.
- 2007-2008, R1,5-billion, in capital subsidies
- 2008-2009, R2-billion, in capital subsidies

(National Passenger Rail Plan : 2006)

The way forward according to the NPRP is to include Intersite (Property arm of SARCC) in more development opportunities connected with the rail to generate resources for the business.

All of the above defends and supports the reasoning behind the proposed new Loftus Metrorail Station in the heart of the developing business core in Pretoria. Loftus Precinct development, which consists of various mixed use areas leading to the entrance of the stadium, and the proposed University Green route, stretching from the proposed Gautrain Station to Magnolia Dell public green area. Parallel to the railway will connect and strengthen the rail station development.



APPROACH
PLATFORM

 Exit

THEORETICAL APPROACH

02:00

Theoretical Premise





Theoretical Premise

In this dissertation, theory in the literal sense is analysed according to the ease of movement for the user. The application of this movement theory will be illustrated and applied in the Urban Framework and Concept Development chapters.

A train station is a node

1. A point of access to trains but also increasingly, to other transportation networks.

At the same time it is a place

2. a diversified collection of buildings and open spaces.
(Bertolini, L: 1998:9)

These two characteristics of a train station are interrelated and seldom function separately. Up until now, Loftus station has been functioning as a transition space in isolation. It lacks that sense of place, the high level of accessibility necessary for development opportunities created by vital masses. In return these developmental opportunities are crucial for the support of the network in transport infrastructure, and the creation of a comfortable public transport system.

02:01



fig. 2.1_The train arriving at Loftus Metrorail Station,
Friday night 20:00,
Game night at Loftus Versfeld Stadium



According to Bertolini: "A node is a point at which subsidiary parts originate or centre (ibid), together with 'lines' or 'channels', nodes are the basic components of a network - the points where the lines are 'knotted', 'inter-connected' or 'interrelated.'" (Bertolini, L: 1998:10)

It is these points and lines of the node that are essential in the operation of the station.

In the Image of the City, Lynch expresses nodes as an important point in space to which the observer travels to and from. A junction or intersection, become places of break in transportation, but more importantly the place where the observers make decisions. "People heighten their attention at such places and perceive nearby elements with more than normal clarity." (Lynch: 1960:72)

Therefore the path and experience of the users need to be effortless and pleasant. Circulation in a node (train station), distinguishing between public and private space and legibility are critical languages the designer needs to articulate in a public building such as Loftus Train Station.

The way in which the user travels through the space is in a line, a directional line from A to B. It is how the designer leads, funnels, collects and disperse' the lines and points throughout the design that determines the success of the place.

02:03

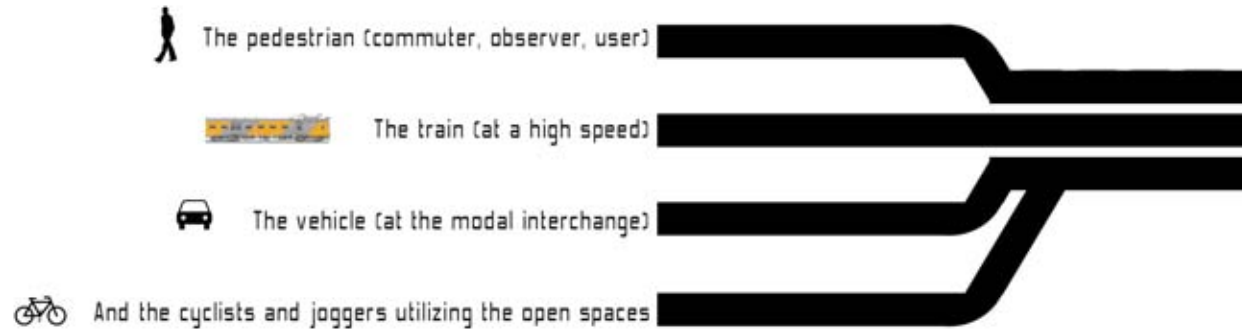


02:04

fig. 2.2_Corner of University road and Lynnwood road
Friday night 20:30,
Game night at Loftus Versfeld Stadium



At Loftus Metrorail Station simultaneous movement systems intersect.
Movement systems applicable at this point are:



The aim of this conglomerate of systems is to accommodate and ensure the ease of movement within the systems, giving the pedestrian the highest rank within this structure.

The movement system of each mode of movement is different at each means of arrival and departure - the pedestrian, the passenger, the vehicle approaching the modal interchange and the cyclist on the route.

02:05

"One must attempt to see the continuity of space experience in terms of a series of movement systems based on different rates of speed and different modes of movement, each of these interrelated with the other and each contributing its part to the total living experience in the city." (Bacon: 1967:25)

Therefore the moment of transfer from one movement system to the next is important for the ease of movement. This movement through space is the driving organizational force in the station design

Paul Klee's (Bacon:1967:47) theory on movement systems in the dynamics of design, displays how to deal with the first element of design.

"I begin where all pictorial form begins - with the point that sets itself into motion. The point (as agent) moves off and the line comes into being." This is called the first dimension. If the line shifts to form a plane - we obtain a 2 dimensional element: the 2nd dimension. "In the movement from plane to spaces, the clash of planes gives rise to a 3 dimensional body - the 3rd dimension"

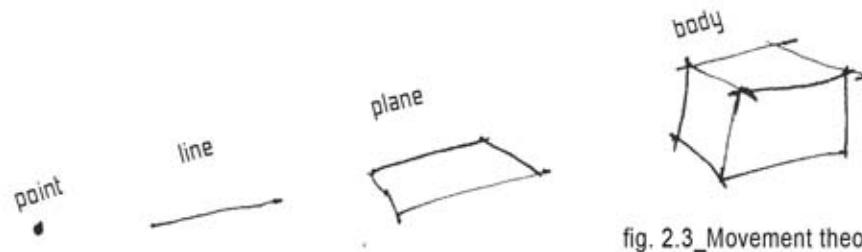


fig. 2.3_Movement theory

"The line now moves and produces the plane - the plane moves and the body comes into being." After this cycle is complete the body then reduces to the starting point and starts its journey afresh, invading the volume of the next dimension (fig. 2.3).

(Bacon: 1967:48)

This movement theory is applied in the design of Loftus Train Station by channelling the movement of people through purposeful routes of movement and strategic points of pause, using focus points within the area to lead the users as well as maintain their attention, influencing the nature of the user's response

The site already contains an important and essential focus point: Loftus Versfeld Stadium.

Upon arrival via train at the station, the first thing passengers see, is this prominent landmark (fig. 2.4), this then naturally gives the passenger direction and orientation and leads the passenger towards it. The interlocking axes becomes the connector between the station and the stadium - creating a system of axis that unifies the whole.

By visually interrelating the station to its surroundings, the vista of the station on platform level (first point of arrival and departure for commuters) is to be open and transparent, creating a sense of approach- and arrival.

When approaching the stadium users can observe all the movement systems (modal interchange, bicycle route, pedestrians in Loftus Precinct) and by making these systems visually open - the space becomes more legible and the user can identify where to go and make quick and easy decisions based on the architecture of the place, passively being aware of the internal movement system of the building within the movement systems of the surroundings.

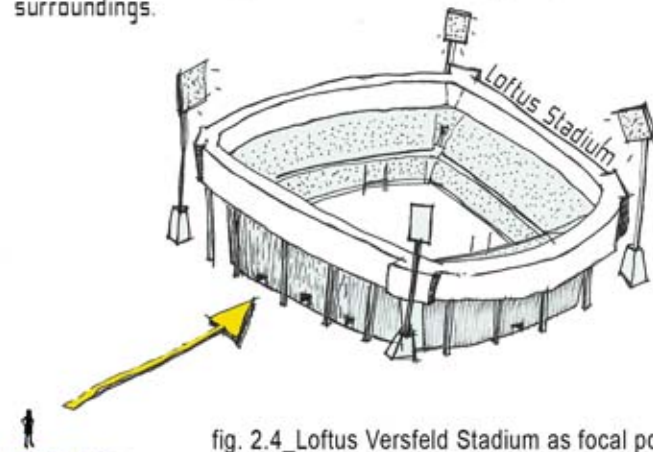


fig. 2.4_Loftus Versfeld Stadium as focal point