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## PROBLEM STATEMENT

“The fascination and freedom of road travel have long been overtaken by the grim realities of inescapable congestion, featureless motorways, frustrating breakdowns and hazardous accidents.” (Slessor 2003:52)

Pawley and Paoletti (2000:27) encourage the expansion of underground travelling as the best solution for the following reason: In most countries, major cities have attended to the need of people to travel quickly from one place to another by introducing public transport systems such as trams, light-rail systems and most importantly, the rapid underground train. As buses, taxis, trams and light-rails all compete for inflexible road space, underground transport corridors claim to be the only answer. In cities like London, Budapest, Berlin and Paris the tradition of using underground trains have been established more than a century ago (Bennett 2004:9). However, in South Africa the opportunity of travelling underground has not yet been introduced.

Gauteng, South Africa’s economic hub, is no exception when it comes to highways and roads with traffic congestion, accidents, death tolls and growing pollution; the most obvious example being the overcrowded N1 Freeway. Also known as the Ben Schoeman, the N1 between Johannesburg and Pretoria (Tshwane), has to tolerate traffic volumes that exceed 157 000 vehicles per day (<http://corporate.gautrain.co.za>).

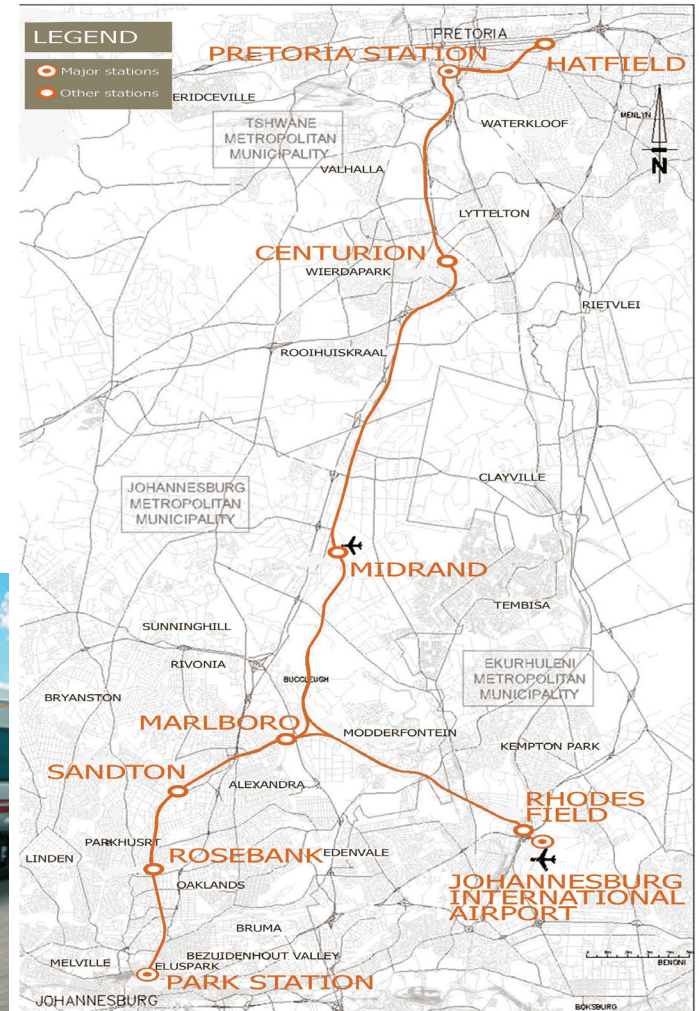
As a solution and also as a means to develop economic infrastructure in Gauteng, the Gauteng Provincial Government has proposed the Gautrain Rapid Rail Link. The Gautrain is aimed at offering a fast, safe and more sustainable method of transportation between Johannesburg, Pretoria,

and Johannesburg International Airport (JIA) (<http://corporate.gautrain.co.za>).

As the first underground public transport system in South-Africa, the Gautrain poses many design challenges and opportunities; one such being the transition from road transport to that of underground rapid rail transport. From Harding’s (2001:56) article about the new Singapore rapid transit station, it is understood that likewise, the South African public will in all probability be in favour of such a transition when the alternative of public transport is perceived as a proficient system that offers many advantages to its users. The novelty can be used to learn from the past. The history and evolution of the metro offers the opportunity to make well informed decisions, avoid past mistakes and simultaneously continue with methods that achieved superbly designed spaces.



FIG 005  
Proposed Gautrain with route alignment map



## DESIGN PROBLEM DEFINITION

An adequate and commendable identity, manifested in and portrayed through the design of safe, functional and inviting spaces in the Gautrain stations should be created. Though safety, functionality and pleasant appearance are generally required from the design, stations don't always comply with all these requirements and if they do, they are not necessarily that evident to commuters. Creating an awareness of these features is a principal design goal that should be reached to generate comfortable and successful underground spaces.

In addition, supplementary services offered within the Gautrain rapid rail link stations should assist in enhancing the image of this transport system. Additional features, such as commercial and retail components that satisfy commuters' needs, will add value and contribute to a positive perception of this new transport system in South Africa. Retail components expand the commuter experience and as a result could generate more commuters. But although the solution in concept seems fairly simple, the reality of introducing leisure activities within a punctual structure that operates at a high-frequency is complex.

The challenge lies in the integration of spaces of intermission, which require "dwell time", within a structure that primarily conveys movement and flow. One should be able to pause and linger without delaying or interfering with the main circulation of human and mechanical traffic, while similarly, main circulation should not accelerate the pace of those who dwell.

Furthermore, the station as a whole and each of its separate entities should be inclusive and comfortable, technologically advanced, predictably-legible and transparent, safe and secure, aesthetically pleasing and alas, still connected to its external context

and surroundings! Needless to say, in the South African context it is vital that the stations function as democratic and socially equitable environments where people of all races and cultures can interact.

The Subterranean Space dissertation will concentrate on the design and development of the relationships between the various components of the Gautrain Sandton underground station. Focus will be on the integration of **commercial and supplementary spaces** within the larger identity and structure of the transportation hub, and on aspects that will promote the comfort and clarity of the commuter experience.



FIG 006  
Sengkang station, North east line Singapore

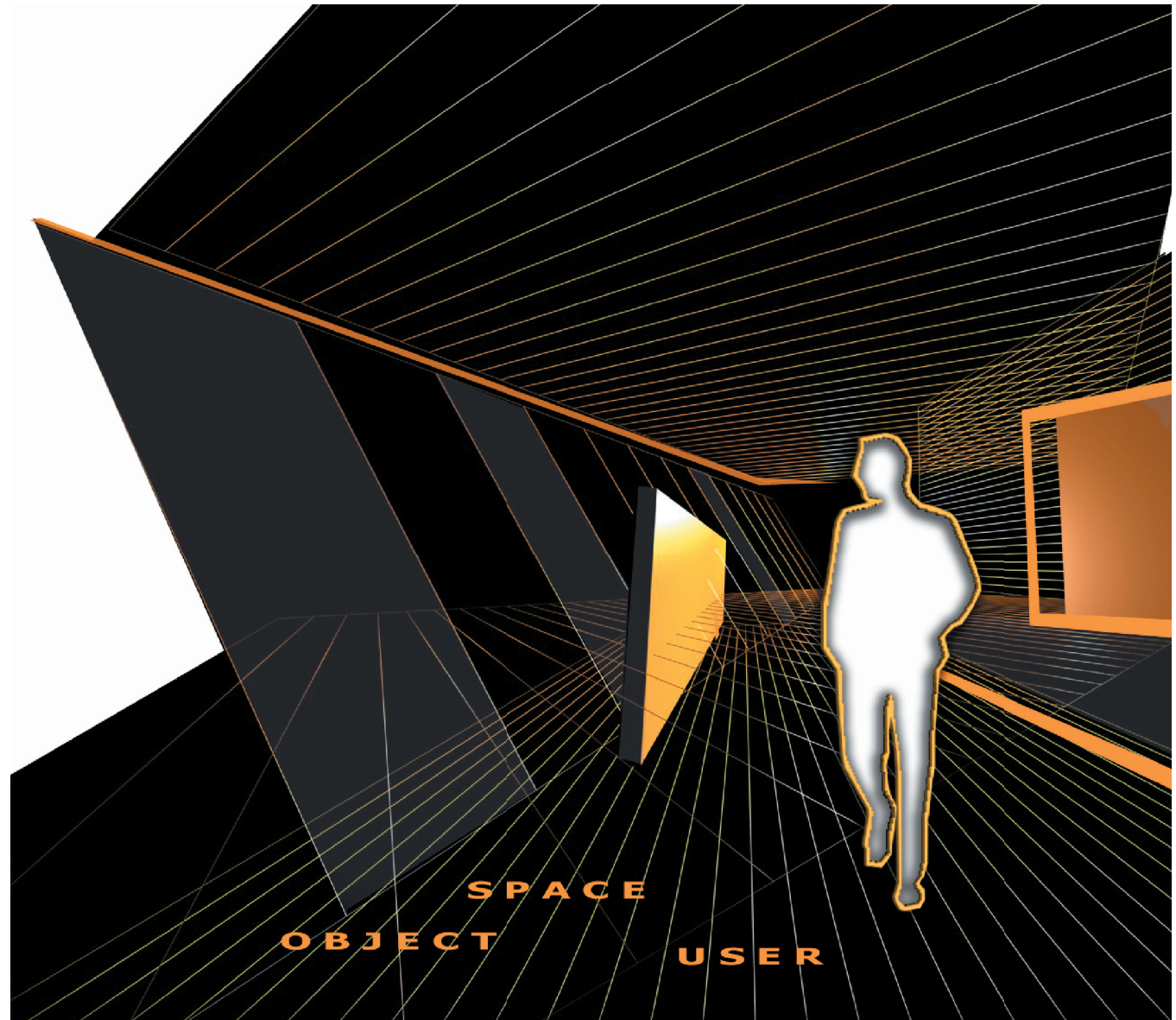
## — O — ASSUMPTIONS & DELIMITATIONS

The dissertation is conducted within the scope of the draft Environmental Impact Assessment (EIA) compiled and completed by Bohlweki Environmental, in compliance with the environmental requirements of the Government Notice R1183 in Government Gazette No. 18261 of September 1997, under the Environmental Conservation Act, No 73 of 1989.

In accordance, reference route alignments, site locations and station concepts, accepted as economically and financially feasible and environmentally acceptable by the Department of Agriculture, Conservation and Environmental and Land Affairs, will be used.

It is assumed that all necessary requirements, management plans and proposed developments set out within the EIA will be implemented and thus will not be elaborated on in this document.

Further, as the bidding process was still active during the start of this dissertation, all information regarding the project was strictly confidential and therefore this dissertation is based on the information available at that stage (May 2005). Consequently no station designs or proposed station layouts were published and therefore a station envelope had to be defined to work in. The design of the station envelope was strategically planned to address the challenges mentioned in the problem statement in order to assist the goals of the Subterranean Space. However, it should be noted that the focus is placed on the interior architecture, specifically the design and integration of commercial activities within the station structure in compliance with the requirements for the degree: Master in Interior Architecture.





## PHILOSOPHY

Within the realm of interior architecture the relationship between user, space and object compose design. It is the arrangement of these relationships within the design that create environments in which we are comfortable. Within subterranean space, the user's awareness of being underground plays a particular role. Design offers the opportunity to create underground spaces in which the user is informed and at ease. This is possible by acknowledging and using the characteristics of the underground environment to notify the user of his location - to orientate and direct to the point of aim, while keeping a link with the position of arrival and departure, thus making the space legible. This legibility and connotations with exterior surroundings, even if only subconscious, succeed in avoiding detached and confined spaces that confuse and alienate the user.

In a mass transit station, space is primarily a reflection of its function. As evident in the Avignon TGV station in France, such spaces respond to the passengers and how the passengers move through them (Slessor 2003:46). In its simplest form a station's function is just that, namely a medium through which passengers move from one destination to another. Therefore a station's design should be one of movement and flow, in which emphasis is placed on communicating direction. Supplementary activities and spaces in transportation hubs such as stations should be integrated in the holistic strategy. The placement, orientation and design of supplementary activities, and the spaces that house them, should assist the general circulation process of the station, while functioning autonomously in their own right.

So the activities that are thought to commence in a space, hence the function assigned to the space by its users, direct the composition of the relationships

between the users, objects and space. In a public space such as the Gautrain Sandton station the user has a complex and varied profile; therefore several intricate relationships should be established in order to design inclusively. In the case of the more complicated Sandton station, where the station will have a multifunctional character, which is that of a transportation hub and as retail environment, it is necessary to consider the impact different user intentions will have on the design. This implies that there will be commuters strictly using the station as a means to access and use the transport system, whereas some users will see the station as a place to meet friends, family or business associates, while others will make use of the commercial services provided. Therefore, to accommodate the extended activities and needs, the design should provide attractive and adequate facilities. Spaces which are identifiable and distinguishable through their architectural qualities and atmosphere will ease commuters' navigation of the system. Attention to materials and finishes that convey both function and aesthetic significance will allow simplicity which communicates to a larger user profile.

Space is perceived in both its physical and emotional forms. Therefore the tactile as well as intangible qualities of the space and architecture should resonate with the user. A product in which movement and flow is clear will require all facets of architecture to function as structural elements, communication elements, aesthetic elements, atmospheric elements and safety elements. For these reasons it will benefit users greatly if engineering, architecture and interior are **integrated** and a **holistic** design methodology is used.

