

“Those who look to the laws of nature as a
support for their new works collaborate
with the creator”

Antonio Gaudi
(Browning 2005, p.57)

Chapter

Brief & Project Description

Real World Background to the Problem

Sustainability, although an exhausted topic in the arena of architectural thought, is still of great relevance. Despite the debate around these issues, the influences are relatively insignificant on the South African city fabric.

Any attempt to overcome this gap with a single document is rather naive. This dissertation serves as an exploration of the mind sets and social conditions that assisted in the current environmental crisis.

The document that follows aims to highlight skills, products and awareness that will filter into the local construction industry, impacting and reaching wider than just a single intervention.

Problem Statement

A high-tech sustainable building system, research and development centre. The unit should address job creation and access to commercially viable green building systems, information and skills.

The Client & Requirements

The client is envisioned as a partnership between government and the private construction sector. The concept of skills

development and establishment of small to medium enterprises is fundamental to the growth of South Africa's economy. It also aligns with some of the aims of the current government.

Due to the current shortage of skilled labour and product within the construction industry, the centre should also attract local construction companies to this venture. It is important that the enterprises created from this development feed resources and training back into the facility.

Central to the topic of environmental awareness is the reduction of the consumption of fossil fuels. To address this concern and add value and potential attraction for investment, the project will include a filling station that could act as a local distribution point for bio-diesel.

Sub Problems

This essay is divided into various sub problems, due to the vast scope of the problem statement. These need to be addressed in order to achieve the initial objectives and goals.

A study in contemporary design theory and environmental philosophy. In an attempt to establish a theoretical framework, the topic of sustainability is evaluated at the hand of different theoretical arguments. Although at times conflicting, the aim is to obtain a clear understanding of the relevant issues. The problem and the proposed intervention,

articulated through illustrations.

Research into existing sustainable building systems or principles, with the aim of identifying effective systems. However, the underlying principles are of paramount importance. These should be understood first, before they can be “de-contextualized” to South Africa's current level of technological, social and economic development. Therefore, certain mainstream construction methods and their impacts on society and environment have been analyzed.

The social and historical context of the greater Pretoria, and more specifically Marabastad, is addressed Chapter 3. This was done to gain a better understanding of the existing skills in the area. Possible entrepreneurial ventures that could address unemployment through development were identified.

Certain aspects of the proposed site as well as macro and micro climatic contextual data was studied in order to assist in the implementation of sustainable building principles.

The Problem within the context

The proposed site is situated in the north west of Pretoria, just south of Marabastad. It is a brownfield site in a somewhat neglected part of Pretoria. Situated close to the main train station and taxi rank, it is part of a gateway to the city for those from outside Pretoria coming in to town. Initial site analysis seems to indicate rampant

unemployment and crime levels within the area. There are various religious activities, most popular being the Z.C.C churches. In addition a mosque and a Hindu temple is situated in the vicinity.

The following aspects have been addressed in the context analysis; physical, cultural, social, and economic context as well as history, demographics and climatic context. In addition an urban framework that was developed by Aziz Tayob Architects in 2002, was critically analyzed, in an attempt to understand various contextual influences, in order to make informed design decisions.

There is an array of entrepreneurial activities within Marabastad. These include; cooking maize cobs, tyre repair & fitment as well as car mechanics, and other informal trading. It is thus, important to maintain and facilitate development of the existing economic activity.

This study was an exploration of existing notions and ideas on sustainability within the built environment. In addition, a serious attempt was made to incorporate these within the unique South African environment.

The study area demarcated by the studio master, extends from DF Malan drive on the west to Nelson Mandela on the East, with Boom street forming the northern boundary and Church street the southern boundary.

Due to the study of the above mentioned

area, an informed decision regarding site selection could be made. Subsequent to this a group of Masters students working in close proximity to one another embarked on a more detailed study with the intention to develop a group framework for the area.

This area was selected due to the many possibilities the existing urban decay created. It is also suitable because of the conveniently located railway, allowing easy access to transport for both people and products.

Literature Study

Due to the broad scope of the topic of sustainable or green architecture, it is crucial to clearly define and limit the topic to the most relevant information. For the purposes of this dissertation the focus will largely be on state-of-the-art sustainable systems, developed by keeping in mind the local context and climatic conditions. The research draws from many global precedent studies in order to learn from the successes and failures they've encountered.

The author investigated existing sustainable premises in order to generate a theoretical argument. more specifically the relationship between sustainable architectural theory and environmental philosophy. Certain principles were evident, and these eventually informed the design.

Delimitations

The research focuses on fundamental principles of environmentally responsive architecture with the focus on the application to medium scale high tech commercial buildings. The study will not focus on singular systems in isolation but will attempt to explore the effectiveness of combining and overlapping different systems to attain all year round comfort through day and night.

Precedents

In the research several examples have been found of projects that showcase the potential of sustainability in architecture. They are the following, these include amongst others:

Nicholas Grimshaw's
British Pavilion
Renzo Piano's
Beyeler Foundation Museum
Michael Hopkins'
Jubilee Campus
Norman Foster's
Commerzbank Headquarters
Noero Wolf
Red Location Museum
Shigeru Ban
The Naked House

Goals & Objectives

In the architectural profession there is a responsibility to look further than the interests of clients; duties also extend beyond that of only taking into consideration the desires of mankind.

Thus, there is a need for a more holistic approach to architecture. Although much has been said on the topic of relevant architecture or sustainable architecture, it is still evident that the concepts surrounding these topics are scarcely implemented in the South African architectural practice today.

This project aims to empower the local built environment by means of a facility providing skills development for hi-tech alternative building technology. The facility will not only aim at empowering the local community, but allow for the development of small enterprises by providing necessary facilities to produce such products or develop new technologies. Furthermore this facility needs to be a commercially viable business venture.

The project aims to demystify sustainable building technologies in order to make them accessible to a broader market. The small enterprises that are developed will have an opportunity to work hand in hand with the centre, commercial developments can be used as pilot projects in order to exhibit and test the principles developed by the facility.

At this stage it is difficult to put an empirical value to the necessity for intended outcomes of such a facility. But few would doubt that it is imperative that the issues are faced.

In an industrialized capitalist society is important for us not to redefine the values of what is socially and environmentally responsible, but rather re-contextualising or “re-branding” sustainability as a commercially viable approach to architecture. This would allow sustainability to become accessible to all, enabling us to coexist with and thereby, appreciate the surroundings and natural environment.