figure 00:1
Laura Letinsky, Untitled 10, New Haven, 1999
TABLE RULES

Reprogramming dead or under-used space through the intervention of food and architecture
Submitted by: Werner O. Nothnagel
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Submitted in fulfilment of part of the requirements for the degree Masters in Architecture (Professional) in the faculty of Engineering, Built Environment and Information Technology, University of Pretoria.

October 2007
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Laura Letinsky, Untitled #38, Berlin, 2001
Food is not just what we eat. It is an expression of who we are, how we live, and the world we inhabit (Kurlanaky 2007:32).

Once, food was defined by very small geographic zones, prescribed by the products and traditions of an area. Never has food been more of a global commodity than it is today, however, because of the ease with which exotic ingredients cross borders and oceans. Today, trade is shift and global, and therefore food no longer reflects its place or time. For that matter, the same can be said about architecture. Globalization is fashion.

Surely architects have to create and determine much more than just shelter, architecture for the eye and meeting the physical requirements of space. What they create shapes the minds and experiences of the people exposed to it. It is the art of transforming spaces into environments that will enhance the psyche through sensory pleasure and the use of space. The aim is to create a sensory experience, in which a building is seen as ‘food’ and how it nourishes the people and the city.
figure 00:3
Laura Letinsky, Untitled
#33, Rome, 2001
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<http://humanities.uchicago.edu/cmtes/cms/faculty/letinsky.html>
(accessed September 2007)

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Figure 00:02 Laura Letinsky, Untitled #38, Berlin, 2001
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"Everything in this room is edible, even me! But that is called cannibalism, my dear children, and is in fact frowned upon in most societies” (Dahl 2001:72)
figure 10:2
Pigs in a bathroom
Background to the Problem

Cuba's economy collapsed at the end of the twentieth century as the Soviet Union started to unravel. Subsequently, extreme fuel, food and material shortages endangered everyday life. In the capital city, Havana, were the scarcities hit the hardest, Cubans called the situation ‘the Special Period’. (Cardinal-Pett 2004:94)

It was in this context that urban farming and food education appeared. When food failed to arrive in the city, farms appeared in vacant lots and urban parks. Compost was piled over rubble in urban neighborhoods and planted with seeds. Pigs were kept on leashes or inhabited bathtubs. Parks were transformed into urban farmlands. The city went 'green' out of need.

Today, the scarcity of food of the Special Period may be over, but it has transformed Cubans mindsets and Havana's urban fabric. Schools and factories are linked to programs educating and providing food for students, teachers and workers.
Havana's Institute of Physical Planning is a government organization that was set up to educate and lend space to organizations that grow food in the city. The Cuban Revolution made a point of educating urban dwellers in rural values and knowledge. Consequently, most Cubans know where their food comes from and how to harvest and prepare it for themselves.

Naturally, imitating this idea directly in South Africa’s capital city is problematic, in terms of creating and establishing a local market, as well as of identity and mindset. However, South Africa, with its growing trend of urbanisation, certainly does not exist in isolation. The Pretoria CBD currently has an unemployment rate of 12% and a ‘not economically active’ rate of 40% for the individuals aged from 15 -65 (Municipal Demarcation Board S.A.).

The idea of the project is to investigate the concept of an educational place of food production and consumption, with space for a sense of entrepreneurship.
figure 10.3 (above)
Santa Fe, Havana - rooftop garden

figure 10.4
Typical suburban house in Havana before permaculture

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figure 10:5
A chef's chief accessories
Vision

The project vision is to create an iconic educational building, serving as a prototype way in which food can be experienced and grown in the urban areas of South Africa. The building will be an expression of the rituals of eating food and of eating architecture.
Problem Statements

Real World Problem: primary

In the face of urbanization and Westernisation, families across the globe are abandoning ancient farming methods, diets and dining habits. Food production today has transformed most of the world, but more examples are needed to educate city-dwellers on how to grow and prepare their own food in the urban context.

We can get ideas from ancient and country cultivation preparation methods; combined with our technology these can be applied in our increasingly complex urban context, educating our society for our ever-accelerating and naive consumption of the Earth's resources.

Schools, business groups, government institutions, and both informal and formal trades can undertake programmes in understanding and applying culinary knowledge in the urban context.
Real World Problem: secondary #1

As part of the educational programme for Biotechnology and Food Technology (cookery schools), students have to complete a certain number of practical hours in order to fulfill the requirements of their course (Du Rand 2007: interview). Currently, promotion of their food projects is extremely scarce, if not nonexistent in the Tshwane metropolis. Although cookery schools exist, these facilities are located mostly on the edge of the CBD, or within the various tertiary campuses. The facilities are outdated and accessible on unpredictable schedules to small groups of visitors. A real need exists in the contemporary environment for cookery schools to equip their students with entrepreneurial skills while promoting their cooking to paying customers.

Real World Problem: secondary #2

Unlike the environmental department of Johannesburg, which has embarked on a drive to ensure that food sold in the city is safe and disease-free, the Pretoria CBD has, to date, not encouraged hawkers to observe hygienic food preparation. Should a hawker in the Pretoria CBD require any information on this, he or she has to order a 20-page booklet entitled ‘Food Safety for Informal Traders’ from the environmental health department, or participate in sessions of at least two hours – offered in Johannesburg (Dhiliwayo 2002)
This is the nerve centre of the whole factory, the heart of the whole business! And so beautiful! I insist upon my rooms being beautiful! I can’t abide ugliness in factories! In we go, then! But do be careful, my dear children! Don’t lose your heads! Don’t get over excited! Keep very calm! (Dahl 2001:87).

figure 10:09
Mr Wonka from the 2005 Warner Bros. movie Charlie and the Chocolate Factory
The Client

The Tshwane University of Technology (TUT) has been established as the principle client for the project. According to its 2005 strategic plan, an increase in academic research and innovation needs to be established and reflected in all its seven faculties. In order to maximize income from its research and to commercialize its outputs, TUT has established an Innovation and Technology Transfer Office. This office is aimed at patenting and licencing business development and innovation.

The Health and Social Development Department of Tshwane, has been identified as the secondary client. It is proposed that, like Johannesburg, the city of Tshwane too will adopt a programme for educating hawkers on food and safety-related subjects.
Welcome at the Tshwane University of Technology. We empower people.

We recommend that you take Struben Street to the Arts Campus and Proes Street from the Arts Campus to the Pretoria Campus. DRIVE SAFELY.

Figure 10.10
Tshwane University of Technology - Route Map
TUT is divided into seven faculties spread out in different locations throughout Tshwane. The seat of each faculty is indicated in brackets below:

- Faculty of Economics and Finance (Ga-Rankuwa Campus)
- Faculty of Engineering and the Built Environment (Pretoria Campus)
- Faculty of Humanities (Soshanguve Campus)
- Faculty of Information and Communication Technology (Soshanguve Campus)
- Faculty of Management Sciences (Pretoria Campus)
- Faculty of Science, incorporating Natural Sciences, Health Sciences and Agriculture (Arcadia Campus, Pretoria CBD)
- Faculty of the Arts (Arts Campus, Pretoria CBD)

The idea proposed in this project is to add a new central building in the Pretoria CBD to act as an iconic image for TUT's principals and vision.

**Requirements**

The requirements of the project for the Department of Biotechnology and Food Technology under the faculty of Natural Sciences and Agriculture for TUT are envisioned as including an integrated approach to structure and the innovation of cultivating, preparing and consuming of food. The Tshwane University of Technology (TUT: 2007) requires that students should be equipped with an entrepreneurial focus in order to become job creators and entrepreneurs. TUT thus requires the establishment of prosperity through the stimulation of innovation, creative thinking and the physical environment.
General needs as interpreted by author for the Department of Biotechnology and Food Technology:

- Access to an available clientele for food promotion
- A pleasant and educational environment for visitors, staff and students
- Easy access to public transport
- Adaptability
- An innovative and recognizable building reflecting the university’s principles
- Lecture facilities that can be adapted for different usages
- Offices for staff, with private lounges and kitchenettes
- Utilization of the view and natural light on offer
- Security

Users

The Student

The TUT student will undertake various practical programmes, from harvesting to preparing and serving food in order to gain his or her degree. They will gain not only theoretical knowledge, but also practical skills with an entrepreneurial approach.

The Staff

This group will consist of both graduate TUT lecturers and local people with no formal education who have undergone various stages of the food programme offered in the building to educate visitors.
The Informal Trader

This group will be divided into two subgroups.

- The permanent informal trader undergoes various programmes to develop basic entrepreneurial skills and learn hygienic food preparation. The knowledge gained is then implemented back in his or her previous working context.
- The temporary trader’s main aim will be to develop his or her entrepreneurial skills through various programmes in order to become a formal business trader of food.

The Visitor

The visitor will frequent the restaurants, kiosks, bars, nursery and public spaces of the building. Visitors are important in the funding of the life cycle of the building. Provision needs to made for both individuals and groups of visitors using the building.
Cookery School: General requirements

A minimum of two lecture rooms for fifty students each must be provided for. It is crucial that these lecture facilities should be adaptable and multifunctional.

Staff facilities should be provided, with offices for lecturers and lockable units for students and permanent staff.

Cookery lecture rooms should be provided for practicals. It is crucial that the design complements the instructor’s cooking, and that he or she be visible to the audience.

Circulation

Circulation inside the building is an important issue. In multifunctional buildings, different users have different agendas. It is important to separate staff from the public on certain routes. The users must be able to navigate the building with ease, and wheelchair users should be catered in all areas.

Sustainability

Social, economic and environmental sustainability must be achieved in both the short and long term. The main aim must be that of an informative precedent for how an urban landscape can be transplanted onto the urban fabric, creating jobs, saving energy and re-using and sorting waste on site. The building should also aim to respond in a sustainable way to the local climate of its context.
1) **The cooking circle**

- Goods inwards: food supplies, service yard.
- Storage
- Processing
  - preparation
  - cooking
  - serving: food transferred to circle 2
  - equipment cleaned and prepared for re-use
- Goods outwards: disposal of waste

2) **The servery circle**

- Goods inwards: supplies purchased
- Storage
- Processing
  - Servery: food added to dishes
  - Moved to table; food moves to circle 3
  - Returned from table - dishwashing
  - Storage for re-use
- Goods outwards: breakages and disposables

3) **The customer circle**

- Customers inwards: parking reception cloakroom
- Storage: bar, waiting area
- Processing
  - Food transferred from circle 2
  - Drinks provided
  - Billing and payment
  - Customers outwards, coats returned.
figure 20:01
Photograph collage of site, with northern view of the surrounding context
The urban areas of South Africa have undergone radical changes since 1994. The biggest metropolitan cities, like Johannesburg, Cape Town, Durban and Pretoria, have surely felt the changes most intensely.

*Public space is being occupied in new ways. Previously uncluttered, sanitized urban parks and open spaces are now dotted with braziers and campfires, and used for storing goods overnight or conducting commercial transactions; pavements have become crowded with hawkers, tailors and hairdressers; streets are congested with taxis.*

*The spaces it vacates, whether commercial, retail or residential, are boarded or bricked up, “mothballed” against occupation by the poor.* (Bremer 2005:6).
Open sites which are boarded up or bricked in between buildings, creating harsh environments, are still available to be transformed into interactive spaces. Rather than demolishing buildings or evicting traders to create open space, new layers can be activated when a function is connected to a dead or underused space.

According to Jan Gehl, the built fabric creates physical and psychological boundaries which in essence define the edges of open spaces. These spaces take the form of streets, pavements, alleys and urban parks (Gehl 1987:52).

The precinct’s pavement is currently used by informal traders selling food and daily necessities to pedestrians en route to public transport and the commercial areas. An opportunity exists for an architectural intervention utilizing dead or under-used spaces, that can form part of the urban fabric by connecting the street to the surface of the site.
Income vs Nodes

The Pretoria CBD, unlike suburbs like Moreleta Park, Menlyn, Brooklyn and Centurion, has seen a rapid decline of income in relation to the node, due to businesses moving out of the CBD. The City of Tshwane Spatial Development Plan for 2010 aims to re-establish the Pretoria CBD as the main income node connected to the other nodes and the city of Johannesburg (Municipal Demarcation Board S.a.).
Could not find work
Choose not to work
Seasonal worker - not working permanently
Unable to work due to illness/disability
Pensioner or retired
Homemaker/housewife
Sholar/student
(Source: Municipal Demarcation Board, S.a.).

Map; indicating reasons for not working.
Throughout history, much in the built environment has been designed around food. Currently in South Africa, and globally for that matter, plans to regenerate sectors of the urban economy have been organized around the production and consumption of food. In many deteriorating areas, the socio-economic situation has been changed by the opening of new cafes, lounges, restaurants and speciality food stores.

The idea of this project is thus to investigate a place for educating people in the food production process, with space for interaction and consumption, creating an iconic cookery school where the process of gastronomy can be displayed and the products of performance be sold to the public. This would be a place where local food products and the community can be combined with architecture to create and promote local development. Success is envisioned as a space with regional identity, a space where market appeal is combined with architecture to turn an underused site into a destination for food and city lovers.
Map indicating proposed site in relation to commercial, residential and transportation nodes *
Site Selection

The site chosen is located in Struben Street, north of Church Square in the CBD of Pretoria. Struben Street passes the northern edge of the site and stretches from the residential node in the west all the way towards the Union Buildings in the east. Paul Kruger Street forms the eastern Edge of the site, connecting Church Square with the Pretoria Zoo to the North.

Site Criteria and Motivation

Proximity to existing and future mass transit facilities.
Proximity to residential nodes
Proximity to educational nodes
Proximity to existing commercial nodes
Visual impact, as the building will have to sell itself and its function

The Site has the following strategic advantages.

It is centrally located in the CBD.
It is located between the residential and commercial nodes.
It is within walking distance from the Belle Ombre station and the Pretoria taxi rank, and is right across the street from the proposed tram system.
It is close to museums and local schools.
It is within walking distance from Pretoria Zoo, the second most visited place in Pretoria.
Parking facilities already exist adjacent to the site, and more parking is proposed on immediately surrounding sites.
The site is within walking distance of Church Square.
Road Network

Connecting the Site

The CBD is directly connected to major highways: the N1 (north/south), N4 (eastwards towards Nelspruit), R21 (towards O.R. Tambo International Airport) and the N14 leading towards Krugersdorp.
**Private and Public Transport**

Although many people live west of the Pretoria CBD, most people in the city work east of it and in Johannesburg. The largest majority of people commuting from or to the CBD use either taxis or private transport.

The Gautrain rapid rail link aims to connect the city of Tshwane to Johannesburg, easing the traffic load on the major roads. A Tshwane tram system is proposed, connecting the Pretoria CBD with other major suburbs and with a proposed station across the street from the site.

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**Inner city taxi network**

- Movement generated by taxi ranks and stops
- Traders/Hawkers generated by the movement
Current and proposed places of interest surrounding the site *
The existing parking area located in Struben Street, east of Paul Kruger Street, was chosen for this dissertation as it provides the necessary requirements for an architectural intervention. Currently the site is underused, and functions as an open parking area for the SA War College. It is a barren, unaltered space between high rise commercial buildings and heritage buildings. It is connected to educational facilities such as the Transport Museum, the War Museum, and the Post Office Museum, and is within walking distance of the Pretoria Zoo and Church Square. It is also a point of intersection between the commercial and residential areas of the CBD en route to major public transport nodes of Pretoria.

The site is flat, with no significant topographical features. It has a one metre fall from the southern edge towards the northern edge. The site has previously been cleared and covered with a tar surface, and serves as an open air-parking area for the SA War College. Two rows of six, indigenous trees each have been planted in the middle of the site to provide shade for the cars. Otherwise, vegetation is nonexistent. The northern edge of the site is separated from the public street level by a two-meter-high steel palisade wall.
figure 20:13
Three-dimensional perspective of the site and surrounding areas *
Visual Impact

**The site will have a strong visual impact because:**

- It is centrally located in the CBD and next to the Telkom Towers.
- Struben Street, forming the northern edge, is proposed as a government boulevard connecting to the Union Buildings.
- the Panagos and Synagogue heritage building form the eastern edge.
- the SA War Museum and Transport museum are directly opposite the site.
- the site is connected to the proposed pedestrian route connecting the Pretoria Zoo and Church Square.

**Views from the site:**

- Directly to the North, the Pretoria Zoo and natural landscape are visible.
- To the east, the Panagos and Synagogue heritage buildings are visible, with a view of the Union Buildings in the background.
- The Telkom Towers form the south-western view.
- Directly behind the site, what was previously the five-story Peugeot building forms the southern view.
figure 20:14
Map indicating residential link with commercial link and the proposed site.

figure 20:15
Map indicating view of natural landscape connected to orientation of the proposed building.

figure 20:16
Map with linkage networks between the proposed site and places of interest, public transport and educational facilities.
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<th>Opportunity</th>
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<td><strong>Strong commercial activity in Stuben St and Paul Kruger St</strong></td>
<td>Companies are investing in other suburbs</td>
<td>Reinforce commercial activity in Struben Street and surrounding streets</td>
<td>The CBD could lose all its commercial strength</td>
</tr>
<tr>
<td>Reasonable amount of light industrial activity in Struben St between Bosman St &amp; Schubart St</td>
<td>Little or no shopping or formal eating facilities in streets other than Bloed St</td>
<td>Create formal and informal retail facilities in streets other than Bloed St</td>
<td></td>
</tr>
<tr>
<td>Fair amount of buying power</td>
<td>Buying power in lower income groups only</td>
<td>Improve retail facilities to draw wide range of income groups</td>
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</tr>
<tr>
<td>Hawker stalls add to street character</td>
<td>Stalls make pavements cluttered and impede pedestrian traffic</td>
<td>Widen pavements and provide trading space</td>
<td></td>
</tr>
<tr>
<td>Pedestrian traffic in Church St and Struben St via transport nodes</td>
<td>Pedestrian routes underdefined and in deteriorating state</td>
<td>Strong pedestrian routes can be established between nodes</td>
<td>Sterile atmosphere threaten if only few people are on streets</td>
</tr>
<tr>
<td>Victorian, Art Deco and Modernist architectural heritage buildings</td>
<td>Heritage buildings neglected and in deteriorating state</td>
<td>Heritage buildings can be used as source of tourism</td>
<td>Heritage buildings can be lost to future generations</td>
</tr>
<tr>
<td>Numerous educational institutions</td>
<td>No street activity once schools and businesses close</td>
<td>Create an academic hub for the city</td>
<td>Lack of safety for children are not particularly catered for</td>
</tr>
<tr>
<td>Large Open Space: school sports field</td>
<td>Access to open space restricted</td>
<td>Improve access to sports fields and other public spaces after school hours</td>
<td></td>
</tr>
<tr>
<td>Mix-Use in buildings: government, education, commercial, light industrial</td>
<td>No residential premises</td>
<td>Attract residential development</td>
<td></td>
</tr>
<tr>
<td>Fair number of restaurants &amp; takeaways</td>
<td>Lack of upmarket shops and food outlets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area well served by bus and taxi routes</td>
<td>Taxis impede orderly traffic flow and cause congestion, few bus stops</td>
<td>Regulate taxi lanes</td>
<td></td>
</tr>
<tr>
<td>Street frontages of buildings generally in good or average condition</td>
<td>Back yards and backs of buildings generally in bad condition</td>
<td>Attract more light industry to area</td>
<td>Light industry could add to visual deterioration of area</td>
</tr>
<tr>
<td>Little vacant space other than sports fields</td>
<td>Vacant spaces other than sports fields used for parking or no activity</td>
<td>Improve usage of vacant spaces</td>
<td></td>
</tr>
<tr>
<td>Lack of human scale and proportion around Telkom Towers and Dept of Transport building</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Swot Analysis of Precinct</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No public toilet facilities</td>
<td>Install public toilet facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of street furniture</td>
<td>Create public surface</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient parking space</td>
<td>Create more parking space (e.g. underground parkades)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug problem prevalent according to people spoken to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed people gather in Struben St in the hope of finding employment</td>
<td>Create opportunities for economic upliftment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived lack of safety</td>
<td>Increase police presence and lighting in area</td>
<td>Lack of safety deters people from entering area</td>
<td></td>
</tr>
<tr>
<td>Transport Museum closed</td>
<td>Opportunity to re-open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of tourist attractions in area</td>
<td>Create tourist attractions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
figure 20:17
Map indicating current site usage *

figure 20:18
Existing open-air parking area in the CBD of Pretoria

figure 20:19
View of Panagos building and Telkom Towers.
### Table 2: Current Usage of Surrounding Sites

<table>
<thead>
<tr>
<th>No.</th>
<th>Erf no</th>
<th>Building name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2885</td>
<td>Parking for SA War College</td>
<td>Government (Parking)</td>
</tr>
<tr>
<td>2</td>
<td>4/102</td>
<td>Panagos Building (group of buildings)</td>
<td>Commercial (retail: restaurant, shops, offices)</td>
</tr>
<tr>
<td>3</td>
<td>2686</td>
<td>Ex-Peugeot Building parkade</td>
<td>Commercial (parking: Telkom)</td>
</tr>
<tr>
<td>4</td>
<td>2686</td>
<td>Pawn shop &amp; Princess Park College (ex-Peugeot offices)</td>
<td>Commercial/institutional (retail: pawn shop &amp; educational)</td>
</tr>
<tr>
<td>5</td>
<td>2894</td>
<td>Government Printer sales office &amp; other shops</td>
<td>Government/commercial (retail: maps, hair salon, liquor)</td>
</tr>
<tr>
<td>6</td>
<td>2894</td>
<td>Correctional Services (Masada Building)</td>
<td>Commercial (retail: restaurant/shops) &amp; Dept of Corr Services</td>
</tr>
<tr>
<td>7</td>
<td>3264</td>
<td>Telkom Tower East</td>
<td>Commercial (offices: Telkom)</td>
</tr>
<tr>
<td>8</td>
<td>3264</td>
<td>Telkom Tower North</td>
<td>Commercial (offices: Telkom)</td>
</tr>
<tr>
<td>9</td>
<td>3264</td>
<td>Telkom West Wing (ex-Hilda Mansions)</td>
<td>Commercial (offices: Telkom)</td>
</tr>
<tr>
<td>10</td>
<td>1/139</td>
<td>Molemo Building (target High School)</td>
<td>Institutional (educational: private)</td>
</tr>
<tr>
<td>11</td>
<td>2861</td>
<td>Dept of Transport (ex-Forum Building)</td>
<td>Government (offices: Department of Transport)</td>
</tr>
<tr>
<td>12</td>
<td>1/3297</td>
<td>Steyn’s Auto Ford</td>
<td>Commercial (retail: car dealer)</td>
</tr>
<tr>
<td>13</td>
<td>R/3333</td>
<td>SA War College (ex-Protea Hotel, ex-Boulevard Hotel))</td>
<td>Government (education &amp; accommodation)</td>
</tr>
<tr>
<td>14</td>
<td>R/3333</td>
<td>SA War College (ex-Protea Hotel, ex-Boulevard Hotel))</td>
<td>Government (Education &amp; accommodation)</td>
</tr>
<tr>
<td>15</td>
<td>R/60</td>
<td>Struben Street Motors</td>
<td>Commercial (retail: car dealer)</td>
</tr>
<tr>
<td>16</td>
<td>3/60</td>
<td>V&amp;R Printers</td>
<td>Light industry (printing)</td>
</tr>
<tr>
<td>17</td>
<td>R/19</td>
<td>Old Synagogue</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Table 3: Architectural Language of Surrounding Buildings

<table>
<thead>
<tr>
<th>No.</th>
<th>Building materials</th>
<th>Style</th>
<th>Height in storeys - estimate</th>
<th>Heritage assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Masonry</td>
<td>Victorian/Edwardian</td>
<td>2</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Concrete &amp; masonry infill</td>
<td>Modernism</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Concrete &amp; masonry infill</td>
<td>Modernism</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Concrete &amp; masonry</td>
<td>Modernism</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Concrete with masonry infill</td>
<td>Modernism (1968)</td>
<td>12</td>
<td>Low</td>
</tr>
<tr>
<td>7</td>
<td>Concrete with masonry infill</td>
<td>Brutalism</td>
<td>5</td>
<td>Low</td>
</tr>
<tr>
<td>8</td>
<td>Concrete</td>
<td>Brutalism</td>
<td>17 &amp; 28</td>
<td>Low</td>
</tr>
<tr>
<td>9</td>
<td>Concrete with masonry infill</td>
<td>Art Deco (1930s)</td>
<td>4</td>
<td>Medium</td>
</tr>
<tr>
<td>10</td>
<td>Concrete &amp; masonry infill</td>
<td>Modernism</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Concrete &amp; masonry infill</td>
<td>Modernism</td>
<td>7</td>
<td>Medium</td>
</tr>
<tr>
<td>12</td>
<td>Concrete &amp; masonry building &amp; car sheds</td>
<td>Industrial (car sales)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Concrete &amp; masonry infill</td>
<td>Modernism (1954)</td>
<td>2 - 4</td>
<td>High</td>
</tr>
<tr>
<td>14</td>
<td>Concrete &amp; masonry infill</td>
<td>Modernism (1954)</td>
<td>2 - 4</td>
<td>High</td>
</tr>
<tr>
<td>15</td>
<td>Masonry building &amp; steel car sheds</td>
<td>Modernism</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Concrete &amp; masonry</td>
<td>Modernism</td>
<td>2</td>
<td>High</td>
</tr>
<tr>
<td>17</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
figure 20:20
Map indicating Pretoria’s location in South Africa

<table>
<thead>
<tr>
<th>Table 4: Climate Data (Source: Schulze 1986:49)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
</tr>
<tr>
<td>Lowest minimum:</td>
</tr>
<tr>
<td>-5,5 °C; average 12,1 °C</td>
</tr>
<tr>
<td>Highest maximum:</td>
</tr>
<tr>
<td>36,3 °C; average 24,8 °C</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>57% at 08h00 to 29% at 14h00 (September)</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>75% at 08h00 to 48% at 14h00 (March)</td>
</tr>
<tr>
<td><strong>Rainfall</strong></td>
</tr>
<tr>
<td>Average</td>
</tr>
<tr>
<td>674mm per year</td>
</tr>
<tr>
<td>Rainfall Region</td>
</tr>
<tr>
<td>Between October and April</td>
</tr>
<tr>
<td>thunderstorms</td>
</tr>
<tr>
<td>rate of 90 – 100mm per hour</td>
</tr>
<tr>
<td><strong>Sun</strong></td>
</tr>
<tr>
<td>Summer sun angle</td>
</tr>
<tr>
<td>88 ° altitude</td>
</tr>
<tr>
<td>Winter sun angle</td>
</tr>
<tr>
<td>44 ° altitude</td>
</tr>
<tr>
<td><strong>Cloud cover</strong></td>
</tr>
<tr>
<td>Average 33%</td>
</tr>
<tr>
<td>Varying between 13% in July to 54% in December</td>
</tr>
<tr>
<td><strong>Wind</strong></td>
</tr>
<tr>
<td>morning</td>
</tr>
<tr>
<td>North-eastern direction</td>
</tr>
<tr>
<td>afternoon</td>
</tr>
<tr>
<td>north-western direction</td>
</tr>
</tbody>
</table>

NAMIBIA

BOTSWANA

ZIMBABWE

LESOTHO

INTEGRAL OCEAN

ATLANTIC OCEAN
Climate Data

The Pretoria CBD is characterized by generally high temperatures due to thermal mass of the built-up environment. Relatively high local humidity can combine with high afternoon temperatures to cause uncomfortable heat. The site's climate can be described as unpleasant. Designing for the micro- and macro climate will have to be an important consideration in the surface of the site and the building.

(Source: Schulze 1986:49)
### Table 5

<table>
<thead>
<tr>
<th>Solar Times</th>
<th>06h00</th>
<th>08h00</th>
<th>10h00</th>
<th>12h00</th>
<th>14h00</th>
<th>16h00</th>
<th>18h00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clock Times</td>
<td>06h18</td>
<td>08h18</td>
<td>10h18</td>
<td>12h18</td>
<td>14h18</td>
<td>16h18</td>
<td>18h18</td>
</tr>
</tbody>
</table>

| Azimuth - 21 December | 112 east | 101 east | 91 east | 0 | 91 west | 101 west | 112 west |
| Altitude - 21 December | 10 | 35 | 63 | 88 | 63 | 35 | 10 |

| Azimuth - 21 June | N/A | 55 east | 34 east | 0 | 34 west | 55 west | N/A |
| Altitude - 21 June | N/A | 14 | 32 | 40 | 32 | 14 | N/A |

Table used in conjunction with diagram in figure 20:26 to calculate sun angles for various times of the year.

Diagram indicating azimuth & altitude for calculating sun angles for various times of the year.
The Future

The Tshwane Inner City Spacial Development Framework by Gapp served as a precedent for the proposed renewal of the site for this dissertation. The project aimed to reinforce proposals made for improving the city of Pretoria’s inner urban environment as proposed by Gapp. Aspects such as urban security, public spaces, and accessibility forms the backbone of their proposal.

The proposed site is included in the GAPP proposal as a public space forming part of the proposed Synagogue Square and will contribute to inner city renewal and rejuvenation.
Summary of the Paul Kruger North Precinct as developed by GAPP Framework proposal:

1. Synagogue Square focus for the precinct

2. Paul Kruger Street to be dedicated to public transport and to pedestrian movement
   - Trading to be limited to between Proes and Bloed Streets
   - Major negative impact on intersections in favour of pedestrians
   - Integration of hard and soft spaces, i.e. transport facility and road
   - Accommodation mostly Government
   - New 295-bay parking facility on corner of Proes and Paul Kruger - allow for transfer station due to central location
   - New ring road = Proes-Bosman-Vermeulen-Andries
   - Preserve holistic quality: urban with vegetation
   - Preserve buildings with architectural quality
   - Preserve vitsas to heritage buildings

3. Pedestrian improvements to Proes (link to school grounds)
   - Struben (Link to Library)
   - Bloed (Link to Taxi Rank)
   - Boom (Link to Zoo and to Belle Ombre)

4. Due to the lack of public space, all such space must be accentuated - school grounds must be multi-use and could be a flagship model for new-type schools that share their grounds with the city

Building guidelines:
- No highrises
- Ratio: 3-4 high /1 wide
- Incorporate building into surroundings
- Allow for accessible courtyards
figure 30:01
Painting based on 'Smiling Lion'
apartment section, 1982
“I believe that the crippling European and American amputations an artist has to go through to turn himself into one are a severe limitation [SIC]. He reduces himself to a mere part in his attempts to suppress his contradictions, his confusions and his conflicts.

As for myself, I do not care – I am more than one. I am often the opposite,
I am sometimes the other.”
Amancio Guedes. 1977
figure 30:02
Sections of Saipal bakery showcasing the sculptural quality of the structure
Saipal bakery

The Saipal bakery was designed by Pancho Guedes in the former Lourenço Marques (now Maputo), in Mozambique in 1954 and 1955. It was designed as the headquarters and factory of the Lourenço Marques Bakers’ Co-operative.

The section is generated from two parabolic arches creating special scales, spaces and forms. The façade was designed to be an important ‘introduction’ to the building in its context.

The success of the building lies in the fact that it has given a suburb, and the local baking industry, a landmark symbol in a building they can identify with. Its honesty lies in its simplicity of forms and structural clarity. According to Pancho Guedes (Green 2005) in its early days Saipal bakkery had a powerful symbolic charge - the bakers loved it and explained often how marvellous it was that he had made their building in the shape of a huge Portuguese bread.
figure 30:06 (above)
View of the exhibition capsules of the British Airways London Eye

figure 30:07
View of the gigantic A-frame legs and wheel of the British Airways London Eye
The British Airways London

Designed by David Marks and Julia Barfield, and built in 1999 as an observation wheel to serve as a landmark of British prosperity in the then forthcoming millennium, today the £85 million London Eye attracts 3.6 million visitors a year (Thompson & Smiths 2001).

On a clear day, the highest point on the ride gives views of about 40km in all directions. The capsules rotate in mounting rings outside the wheel rim, to give passengers the best unobstructed views. The hub of the wheel sits on top of the A-frame legs, and the forces are taken by six steel cables attached to a 1 200 tonne block of concrete in the ground.

The London Eye is a lesson in how a design of an observation box can become a landmark, communicating an abstract idea to the visitor.
Wind power

Roof terrace

Trees

Water tanks

Composting area

Figure 30:09
Section drawn by author based on MVRDV's Dutch Pavilion, showcasing the stacked landscapes.
MVRDV's Dutch Pavilion, in Hanover, Germany, presents the visitor with a series of stacked landscapes based on natural and manmade environments (Gissen 2003:94).

You pass through a polder, a forest, and a marsh, ending up on the roof, which has a lake and viewing platform. The design also includes a water-reclamation system to capture and distribute rainwater throughout the building, and generates its own energy via windmills.

The consumption of fossil fuels is one of our biggest environmental problems, and with buildings consuming more than half the energy used worldwide according to David Gissen (2002:19), architects have to come up with new ideas by which buildings can generate their own power, or have to inform the public about how to sustain themselves and their cities. MVRDV architects redesigned an existing parking garage in 2000 so that it would consume less energy, and to showcase how alternate sources of energy made from renewable sources can sustain a building.
figure 30:12
Pick ‘n Pay Cooking School’s information booths

figure 30:13
Pick ‘n Pay Cooking School’s learning kitchen, showcasing the extractor fans.

figure 30:14
Pick ‘n Pay Cooking School’s lecture rooms, with mirrors and digital screens used to project the instructor’s preparation process.
The Pick ‘n Pay School of Cooking offers one kitchen and a lecture room catering for up 84 students per week. The class is situated in the demonstration kitchen in the conference centre of Pick ‘n Pay Office Centre, in Rosemead Ave, Kenilworth, Cape Town.

Pick ‘n Pay advertises its course as an easy, accessible cooking school for all of the public (Graham 2007:1). However, after visiting it and going through three security checks and a boom, one can hardly imagine anyone from the street walking into the school. A vital lesson learned from the Pick ‘n Pay school is that although security is currently a major issue in South Africa, open public access will have to be a crucial design focus.
figure 40:01
Guests enjoying food in the 1987 film *Babette’s Feast*
DESIGN DISCOURSE AND DEVELOPMENT

ALL:  Double, double toil and trouble;
      Fire burn, and cauldron bubble.

SECOND WITCH:
      Fillet of a fenny snake
      In the cauldron boil and bake;
      Eye of newt, and toe of frog,
      Wool of bat, and tongue of dog,
      Adder's fork, and blind-worm's sting,
      Lizard's leg and howlet's wing,
      For a charm of powerful trouble,
      Like a hell-broth, boil and bubble

ALL:  Double, double toil and trouble;
      Fire burn, and cauldron bubble.

SECOND WITCH:
      Cool it with a baboon's blood;
      Then the charm is firm and good.

(Shakespeare: 2005:58)
Babette’s Menu:

Potage à la Tortue
Turtle Soup
Amontillado Sherry

Blini Demidoff au Caviar
Buckwheat cakes with caviar
Veuve Clicquot Champagne 1860

Caille en Sarcophage avec Sauce Perigourdine
Quail in Puff Pastry Shell with Foie Grass and Truffle Sauce
Clos de Vougeot 1846

La Salade
Water

Les Fromages
Cheese and Fruit Selection
Port

Baba au Rhum avec les Figues
Rum Infussed Yeast Cake with Dried Figs
Coffee

(Friedman 2003:118)
The 1987 winner of the Best-Foreign Language Film Oscar, *Babette's Feast*, was originally written by Danish Isak Dinesen and directed by Gabriel Axel (Friedman 2003:116). It tells a story that compels us to meditate upon the needs of the flesh and the needs of the spirit. It is a story about poetry and the sensuality of food, accompanied by the psychology of people's preconceived ideas and of reconciliation.

After years of service to two Danish women who are carrying on their father's ministry in a remote fishing village, Babette, a French refugee, vows to prepare a French banquet for the sisters and other members of their religious sect, which has renounced all earthly pleasures. The church members agree to eat the food, but not to enjoy or praise it. Babette cooks up a masterpiece, making the kitchen her orchestra, the spoon her baton, and serves seven unpredictable, incredibly sensual dishes.

The guests are transformed, one by one. Their joy and surprise in Babette's feast awake their sensory pleasure and question their preconceived ideas of food and pleasures.
D. H. Lawrence stated: “The sense of wonder, that is our sixth sense. And it is a natural religious sense” (quoted in Lawrence 2001).

As, in the arts of gastronomy or music, the composer often uses particular forms and conventions to expand the literal meaning of his or her works, or to evoke emotional and sensual responses, so the poet uses devices such as assonance, alliteration, onomatopoeia and rhythm to achieve a musical or cohesive whole. Each word or note, or each painter’s stroke of the brush forms part of a greater mosaic of little places of desire, which in totality creates a cuisine, a poem an artwork - a structure. In the world of the built and the unbuilt, we find ourselves in a confused situation. We want to make sense of what we experience around us, we want to determine the meaning (intended or unintended) of the built and the unbuildable. It seems that architecture can learn from the poet and chef in creating or encouraging desire.

The design approach of this project borrows much from Babette's culinary approach. Through designing a series of several unpredictable spaces that are nevertheless connected to one another, the project aims to construct a cohesive whole that speaks lovingly to all ‘six’ of the senses. Applying a series of spaces in such a way that the viewer experiences each space differently: an open space vs an enclosed one, symbolism vs symbols, the use of rhythm, light, nature and different materials, celebrating the different seasons, evoking the six senses. All this, a cocktail of elements that can be used to create delightful little pockets of desire along the way through the building, which the consumer experiences as a total cuisine.
A site filled with symbolic experience, to its surroundings and existing environment, bringing architecture, food and the sensory experience as close as possible to their audience and the imagination. It is for this reason that, although the building will read as a cookery school, unconsciously, through a series of individual spaces, it should be the individual's mind's eye, fantasies and dreams that experience the space. The built should not directly represent the world, but should rather let the fantasy, memories and imagination of an individual mind's eye create the sensory experience.

*Might I suggest an intimate bench under an existing tree, rich in its romantic simplicity. A table for a group built in an 'exhibition box' of steel and glass. Trees accidentally growing through the slab, as if in their natural setting. Triangular windows, which could be rather a frustrating surprise, forming a glass wall that flows into the city and towards the natural landscape to the north. Gardens that flow through pathways and penetrate into the main building, with bridges that lifts you from the natural ground. Structures randomly placed and styled, like dishes, framed by windows and highlighted by cornfields, sunflowers and the sent of herbs, all in an urban context.*
Boxes are highly variable receptacles of objects within. It is in this context that food can be celebrated as a performance medium. The production, the presentation, the consumption, and the disposal offer a stage on which food can become a theatrical exhibition of architecture. A column-free rectangular 'exhibition box' offers the culinary process a clean canvas for the preparation of meals and the production of space.
Dancing Structure

“The silent space is the space not for the predator, it's for the terminator. Buildings want to act. They want to expose or deploy their own bodies” (Libeskind 2001:70). The sketches are thus based on a choreographer making art of structures, that are in movement, by exploring food as a structure of expression and social interaction. The sketches also explore the idea of ‘dancing legs’ as a medium for lifting the individual within the floating exhibition box from the ground, creating an elevated platform from which the senses can experience the city, food and, ultimately the structure.
figure 40.8
North-east perspective of cookery school
and view of surrounding buildings
Site approach and orientation

The building is positioned between the seven-story Department of Transport building and the group of two-story Panagos heritage buildings. It will be perceived by the motorist and pedestrian as a series of vertical and horizontal stacked layers projecting into the sky and over the road. The aim of these vertical and horizontal elements is to unsettle viewers' senses, and also to represent the different layers involved in the culinary and architectural processes.

“One experiences a dish in its environment, it should be impossible to abstract the dish from its environment. The odor in the air, the taste of the seasons all form a seductive mix of the artist's work.” (Rousseau 1979:64)
View of Wonderboom Nature Reserve hills

RESIDENTIAL NODES

STRUBEN STREET

TRANSPORTATION & COMMERCIAL NODES

PUBLIC BUILDING

PUBLIC CIRCULATION

SERVICE BLOCK

STAFF CIRCULATION

Dept. of Transpor

Commercial Parking (Telkom Towers)

Panagos Building

Panagos Building

Park College

figure 40:9
Site usage*
Site usage and definition

The site will be divided into public and service areas by a circulation tower. The transparent 'dancing' main building will serve as the exhibition box, connected to the vertical circulation tower and enclosed service building.

Building orientation:

- Creating an intersection node for informing and interaction between the residential, commercial and transportation nodes
- Connecting the natural with the manmade
- Connecting main roads, existing alleyways and buildings with the exhibition box
- Announcing the destination with filtering layers of different architectural experiences and usages leading to the main building

figure 40:10
Site plan and orientation of buildings
Figure 40:11
00 Open-Air Level with unpredictable, individual spaces connecting to form a cohesive whole
The Individual’s Space

The individual’s minds eye, fantasies and dreams interpret and experience space differently. A series of unpredictable spaces celebrating the culinary process, creating an opportunity where the individual can see, feel, hear talk and smell food. Food has become not only a powerful cultural expression, but also an alternative art form, serving as a theatrical stage where our senses can perform.

The design aims to construct a series of unpredictable spaces, forming a cohesive sensory experience, where the parallel between the preparation of meals and the production of space can be experienced.
Western perspective of the exhibition box, showing the different levels.
The exhibition box will be divided into five levels, with layers of complexity rising with each floor:

- **00 Open-Air level**: A series of open-air eating areas aimed at the local businesspeople or the person en-route to the city and public transport nodes needing a quick bite and a relaxing seating area, with benches under trees, kiosks, small informal and semiformal restaurants, and platforms in different vegetation fields.

- **10 Play level**: This level serves as a link to the Panagos heritage building via a roof garden.

- **20 Consumption level**: Formal eating areas, a restaurant, a self-cooking area, a bar and lounges, as well as the main preparation kitchen, serving as a space for eating and for gaining entrepreneurial knowledge.

- **30 Preparation level**: Cookery school classes and lecture halls for the theoretical and practical preparation of the production stage of the food cycle.

- **40 Arrivals level**: A nursery level aimed at educating urban residents on the various stages of plant growing within the built environment.

40 design discourse and development
The Service Block

The service block will be divided into a visitor and a staff area. Separate circulation shafts and bridges leading to the exhibition box are also required for security reasons.

The northern side is allocated to the visitor, for its proximity to Struben Street and the proposed tram system and its abundant northern sunlight. The southern side is allocated to staff, for its proximity to the service yard and the existing servitude road leading to the parking garage.
The Circulation Tower

The tallest building of the three, with emergency staircase wrapped around the red-painted lift shaft, has to announce the destination and vertical circulation to the visitor. The circulation shaft is oriented with a direct view towards the exhibition box, to announce the destination and minimize confusion. The orientation also aims to create a viewing platform, from which the functions within the exhibition box are displayed.
The exhibition box requires abundant natural ventilation and sunlight, and all events and functions within it had to be exposed and visible from street level.

The Pretoria CBD climate is characterized by the generally high temperatures due to the thermal mass of the built up environment. Combined with local humidity and high afternoon temperatures this causes uncomfortable heat.
The first step in the design approach is to place the exhibition box within another box. The interior box will be framed by rectangular manually-operable aluminium window frames, allowing for natural ventilation. The exterior box will be covered with perforated sun louvre screens, filtering direct sunlight for interior comfort and energy savings whilst still allowing natural airflow to penetrate into the interior box.

The second step involves orienting the long sides to face east and west, with the smaller side of the rectangular exhibition box facing north. The building was selectively placed on the western edge of the site, so that all harsh western sunlight is screened by the seven-story Department of Transport building.

The structure is then lifted from the ground, allowing for holes to be punctured into the interior box's floor so that air can be extracted throughout the building.

The nature of the programme of the building, a cookery school, creates another challenge: cooking. Hot air created by the processes and energy involved in cooking has to be extracted from the building. The solution is to place a vertical spiral extraction shaft in the centre of the building, with a network of horizontal ducts serving each floor and feeding the central spiral shaft with hot air to extract. During the cooler winter months, the effect of the spiral shaft could be reversed, using the hot air to warm the building with exposed flaps that are closed during the summer to extract the hot air.

Skylights in the roof allow for sunlight and natural air to filter into the interior of the arrivals level for the nursery.
figure 40:22
Bird’s-eye view of building showing the roof as seen from the Telkom Towers
The Roof

It is important to note that the site is located in the CBD of Pretoria, which is characterized by highrise buildings. It is located on the same block as the Telkom Towers, which consist of seventeen and twenty-eight storeys respectively. The roof thus becomes an important space that people can enjoy from the neighboring buildings. It is a concrete slab cut through by the spiral ventilation shaft. The space is further emphasized by the skylights that form exhibition boxes for the functions within. The concrete form work of the roof is also landscaped with flowing curves, forming shadow lines and patterns.
figure 40:23
Three dimensional view of building in context, with proposed development for the area.
The Future

Ultimately, if the building succeeds as an exhibition space for urban food production and consumption, the existing five-storey parking garage directly behind the proposed site could be converted into a five-level stacked urban agriculture exhibition, showcasing urban farming and the use of renewable clean sources generated for the site and the city.
figure 50:01
North-east perspective as seen from the proposed tram station
"The chef knows not only from which region come the finest petits pois (small, young green peas), but from which town" (French Cuisine: 1998).

During the design process, four main design components emerged:

1. The urban context, where the site’s surface was manipulated into usable public space
2. The idea of the exhibition box
3. The service block (with all the administration, ablution and back of house facilities)
4. A circulation tower with bridges and viewing platforms developed to link the other components
figure 50:02
00 Open-Air level, indicating different entrances and floor finishes to distinguish between different hierarchy levels
**1. Urban Context**

The 00 Open-Air level forms the public space of the building, extending between the street level and pavement. Three layers were chosen for this overlapping medium between public street space and the buildings.

**Paving**

To allow for minimal maintenance, hard surfaces were chosen over soft, which is an important consideration for the context of the Pretoria CBD. The public surface material type varies with hierarchy level of usage. The busier primary entrance and secondary entrance 1 are represented by 500x150x150 precast concrete paving blocks. Secondary entrances 2 and 3 are paved with brown facebrick in a basket-weave pattern, accompanied by custom-made mosaic tiles. The intimate quieter paved areas for restaurants and kiosks are represented by grey rectangular slate tiles with mosaic tiles. The elevated platforms and their ramps are cast-in-situ concrete.

The green zones are cast-in-situ sculptural planters and vegetation. Type of vegetation range from cornfield and sunflower pods, in the areas exposed to abundant sunlight, to vegetable and herb planters in the semi-shade, to a range of mushroom species covering the shaded areas.

**Street furniture**

Cast-in-situ sculptural concrete seating has mosaic patterns placed in the concrete surface and is accompanied by concrete drinking and hand washbasins.
NOTE: Paint on steelwork

1. All steelwork to be treated with factory primer.

Paint on steel:
- Apply two coats of zinc phosphate primer.
- Finish with two coats of structural steel intumescent paint, to have a three-hour fire resistance.

2. All base plates to be galvanized.
2. The exhibition box

As a design idea, inspired by the forces of gravity working on a structure, steelwork must be tapered to indicate where the forces are transported through one element to the next, working from the idea of water (forces) in a bathtub (the structure). The water flows towards the drain, indicating where the forces meet and where they are transported or converted to the next medium.

The same principal applies to the horizontal service ducts, with end points tapered to indicate less intake of air.
**Quick calculations for structure**

**Bracing Element for Floor**

Safety factor due to end bracing

\[
L/d = \frac{1}{3}(l/d_{\text{min}} - l/d_{\text{max}}) + L/d_{\text{min}}
\]

\[
= \frac{1}{3} (10) = 18
\]

\[
= 21
\]

\[
L/d = 21
\]

**Ring Element**

Safety factor because of cantelever

\[S_f = 2\]

\[S_{ft} = 2 \times (0.8) = 1.6\]

\[S_f = 0.8\]

\[
L/d = \frac{18}{S_f}
\]

\[
d = \frac{17000}{18 \times 1.6}
\]

\[
= 1511 \text{mm}
\]

\[
^\wedge 1500 \text{mm}
\]

**Vertical Element**

\[
h/d \geq 7 - 18 \]

Min: \[h/d = 7\]

\[
h = 4.0
\]

\[
d = \frac{4000}{7} = 571 \text{mm}
\]

\[
= 571 \text{mm}
\]

Max: \[h/d = 18\]

\[
h = 4.0 \text{m}
\]

\[
d = \frac{4000}{18}
\]

\[
= 222 \text{m}
\]

Take Min: \[h/d = \text{Add Safety Factor (sf)} S_f = 3\]

\[
h/d = \frac{7}{S_f}
\]

\[
d = \frac{4000}{7 \times 3/1}
\]

\[
= 1714 \text{mm}
\]

**To be conservative**

\[
L/d = \frac{1}{3}(l/d_{\text{min}} - l/d_{\text{max}}) + L/d_{\text{min}}
\]

\[
= 1/3 (10) = 18
\]

\[
= 21
\]

\[
L/d = 21
\]

**Bracing:**

Safety factor due to middle support system

\[
L/dp = \frac{18}{S_f}
\]

\[
d = \frac{14000}{21}
\]

\[
= 666 \text{mm}
\]

\[
^\wedge 680 \text{mm}
\]

**Top Roof:**

\[
L/d = \frac{21}{S_f}
\]

\[
d = \frac{17000}{21 \times 1.6}
\]

\[
= 1295 \text{mm}
\]

\[
^\wedge 1300 \text{mm}
\]

**Ring:**

\[
L/dp = \frac{21}{S_f}
\]

\[
d = \frac{17000}{21 \times 1.6}
\]

\[
= 1295 \text{mm}
\]

\[
^\wedge 1300 \text{mm}
\]
The internal structure

**The internal structure is built up with seven main elements:**

- **The vertical elements**, two massive tapered 3000x600x150 hot-rolled steel columns, welded together on site. Segments are to be aligned horizontally and clamped together before welding. The vertical elements are to be hoisted and placed into position to be bolted with custom-made bolts, with nominal bolt size larger than M36, to the 2 x 2000x450x150 custom-made tapered steel base. After the vertical elements are bolted to the base connections, they are to be spot welded. The base connections are to be anchored via 25mm steel base plates resting on grout and epoxy layers fixed with threaded rods into reinforced concrete foundations with minimum strength to 45MPa.

- **The top roof beams**, consisting of 2 x 1300x600x150 custom-made castellated I-beams resting on the vertical elements.

- **Ring elements**, consisting of 2x 762 X 267 X 25 I-Beam @ 14000 cc, tapered towards cantilevering edges and bolted to steel columns.

- **Cross bracing** for the ring elements, cross braced with castellated 610 x 305 x 16 @ 4000 cc steel beams, cut away to achieve a flush surface with the tops of ring beams.

- **The floors**, 45 x 183 x 0.6 ribbed metal floor sheets bonded to 100 reinforced concrete slab with 12mm Powerscreed floor, finished to manufacturer’s specifications.

- **Triangular aluminium glass wall**, consisting of double glazed manually-operable windows fixed to the edge of each floor slab.

- **The roof**, insulated against heat gain/loss, consisting of Woolblock panels placed 50mm away from the exterior cladding, creating an air cushion. The depth of the trusses is also used as a second layer of insulation placed right above the ceiling plane, creating an air cushion between the outer skin of the building and the interior ceiling.
The external structure is built up with three elements:

- **Cross bracing**, 102 x 4 hot-rolled circular hollow sections supporting the external screen and the main structure against wind loads.

- **Perforated Sun Louvers**, with Celoscreen Sun Louvre System vertically and horizontally curved perforated louvres fixed to the cross bracing steel hollow sections.

- **Fluorescent lights**, T12 30 watt tubes with differentiating colors to be fixed to perforated sun louvres.
figure 50:08
Image collage of Luxalon’s Architectural Products: perforated sun louvres

figure 50:07
Photograph collage of the Swiss Tower’s use of triangular window frames in London

figure 50:09
Powerscreed floors, for a durable low-maintenance floor finish
figure 50:10
Eastern perspective, showcasing the solid service block and the lighter exhibition box structure
3. The Service Block

As a design principle, the exhibition box is lifted from the ground with two massive vertical steel feet. The function of the service block is thus to supply all services (power and water) to the main building, and to accommodate all the ablution facilities with service shafts connecting to the municipality network. The building is a rational concrete column and beam system with infill brickwork and an expanded steel mesh skin. In contrast to the exhibition box, the service building is firmly grounded and the structural system is quite conventional.

The main columns are rectangular 440 x 260 x 400 concrete columns at 6000 cc, with 110x75x220 non-face bricks, plastered with skim plaster to a thickness of 3mm. The column thickness was chosen to line up with the brickwork.

A weight-bearing skin system is attached to the brickwork and columns. The system consists of 30x30x3 galvanized expanded steel mesh screens welded to 10mm steel plate and connected to a 50x50x3 hollow steel section network.

The idea is to communicate a firmly grounded, conventional structure, framed appropriately to accentuate this idea, in contrast to the 'dancing' structure of the exhibition box.
figure 50:11
Northern perspective of circulation tower, with connecting bridges to exhibition box
4. Circulation Tower

The tower is mainly identified with a freestanding public elevator shaft. The shaft is cast-in-situ concrete and is aligned with four columns. The shaft is to be painted red. The concrete is to be prepared with one coat of bonding liquid and one coat of alkali-resistant plaster primer, and finished with two coats of alkyd Super Universal enamel paint, colour Signal Red to manufacturer’s specifications.

The public circulation and viewing platforms of cast-in-situ concrete with steel and expanded metal balustrades wrap around the elevator shaft.

The tower has a four flight public staircase with a steel frame structure with timber decking at landings and expanded metal stairs. There is a viewing deck at the end of each flight, directly orientated towards the longitudinal view of the exhibition box and the spiral service shaft. Concrete blocks are inserted into the steel framing structure.
figure 60:01
North-west perspective of chef exhibiting building
CONCLUSION

This dissertation aimed to create a feast, whilst investigating the present state of architecture. Exploring ideas for the future urban context, with architecture exhibiting the ritual of food as a cultural expression.

It began with an underused open parkade in the Pretoria CBD, wedged between multi-story building towers and small two-storey heritage buildings. This surface grew into an urban park with a series of individual spaces, where the individual's mind’s eye, fantasies, memories and dreams could create a sensory experience, an interaction node where people could come to experience food from their flats or offices.

Vertically, out of the surface, the structure began to 'dance', setting a theatrical stage for the senses to come alive in the city.

As time passes, architects will attempt, as history has shown before, to re-invent and revolutionize our societies, the built and the unbuilt. With a little luck, we might succeed in creating a little jewel that will speak lovingly to all our senses.

One by one, transformed, the guests issue openhearted gestures of reconciliation and friendship.

They retire to the parlor for coffee, awash in the emotional and physical glow of the evening: '[T]he rooms had been filled with a heavenly light, as if a number of small halos had blended into one glorious radiance. Taciturn old people received the gift of tongues; ears that for years had been almost deaf were opened to it. Time itself had merged into eternity. Long after midnight the windows of the house shone like gold, and golden song flowed out into the winter air.' As Lorens prepares to leave he confesses to Martine his lifelong love, admitting, 'in this world anything is possible' (Friedman 2003:120).
REFERENCES:


General References


Electronic


Interview


Journals


20 Consumption Level
North Elevation

TWO-DIMENSIONAL TECHNICAL ENQUIRY
TECHNICAL ENQUIRY:
Details
1. Dancing Steel Columns Connection Detail

**NOTE:** Paint on steelwork

1. All steelwork to be treated with factory primer.
   Paint on steel:
   - Apply to coats of zinc phosphate primer.
   - Finish with two coats of black-based structural steel intumescent paint.

2. All base plates to be galvanised.

**Steel sections bolted to 2 x 450 x 2000 x 150 custom made tapered steel base sections**

**25 Steel base plate resting on 20 epoxy layer & 50 grout, bolted to threaded rods cast in concrete base**

**Reinforced concrete foundation with minimum strength of 45MPa tapered towards base to structural engineer.**

**Continuous welded joint**

**Custom made bolts with nominal bolt size larger than M36**

**3000 x 600 x 150 Thick Walled hot rolled steel sections, welded together on site. Segments are to be aligned horizontally and clamped together before welding.**
2 Floor Connecting Detail

- 3mm Operable Aerobise Sun Louvre extended to 100 x 50 x 3 rectangular flow section to manufacturers specifications
- Double glazing safety aluminium frames window frames to manufacturers specifications
- 150 x 150 x 2.5 Angle bolted and welded to beam on site
- 12mm Powerscreeed Floor finish fixed to bonding slurry onto concrete slab to manufactures specifications.
- 45 x 183 x 0.6 Ribbed metal floor sheet bonded to 100mm reinforced concrete slab. Shear metal studs welded through floor sheet onto I-Beam
- Castellated 610 x 305 x 16 @ 4000 cc beam to be cut away to achieve flush with the top of beam
- 762 X 267 X 25 I-Beam @ 14000 cc bolted to Steel Columns on site
- Custom made 10mm steel gusset, bolted with M30 Bolts to column and welded to beam
- 3000 x 600 x 150 x Thick Walled pre-Cast Steel sections, welded together on site.
- 102 x 4 Hot-rolled circular hollow section, welded to hollow architectural connection

3 Glass to slab detail

12 Double glazing safety aluminium frames window frames to manufacturers specifications

Purpose cut & welded steel 75 x 50 x 5 angle bolted to sawn softwood pad

Silicone rubber sealant

Purpose cut steel 1.6 channel bolted to steel angle

Purpose cut & welded steel 130 x 140 x 10 angle welded to I-beam and steel capping

Purpose cut steel 1.6 channel bolted to steel angle & I-beam profile

12mm Powerscreeed Floor finish fixed to bonding slurry onto concrete slab to manufacturers specifications

183 x 45 x 0.6 Ribbed metal floor sheet bonded to 100mm reinforced concrete slab with 12mm Powerscreeed Floor finish to manufacturers specifications

762 X 267 X 25 Galvanised I-Beam bolted to Steel Columns on site

Castellated 610 x 305 x 16 beam to be cut away to achieve flush with the top of beam

12 Double glazing safety aluminium frames window frames to manufacturers specifications
4 Plan of external structure connecting to internal structure

5 Sun Louvre Detail
6 Roof Ventilation Detail

- 1200 x 600 x 0.6 Copper roofing sheets fixed to Timber joists fixed to beams with 2.8 diameter x 22 copper wire clout nails
- 1500 x 38 x 38 x Sawn pine softwood laminated timber battens @ 200 centres fixed beams
- 60 x 40 x 3 Rectangular hollow section welded to 60 x 3 x 4 Circular hollow profile with steel mesh welded sides
- 5 mm Steel plate fixed to concrete with 4 M20 Bolts
- Single layer of 4 Bitumen torch on waterproofing membrane

7 Circulation Shaft Base Detail

- 63.5 x 0.5 Drywall steel studs @ 300 centres
- 12.5 Rhinoboard base layer
- 12.5 Rhinoboard face layer
- Custom made 2mm channel

- 2 x 25 x 25 x 3 Steel equal angles spot welded to form 50 x 50 T-profile vertical support members @ 1200 cc
- 30 x 80 x 3mm Galvanised flattened expanded metal screen fixed to square section.
- 120 x 120 x 3 Hot-rolled square hollow section fixed to 4mm steel plate
- 25 x 3 Steel plate welded to square section and expanded metal
- 25 x 25 x 3 Steel angle welded to square section and expanded metal
- 60 x 60 x 5 Equal steel angle welded to form base for 4mm steel head plate recessed and welded to square section
- 250 x 350 x 10 Galvanised steel footplate bolted into concrete slab with 6 M20 Bolts.
- 600x600x450mm Concrete Base to Structural Engineer
8 Connecting Bridge Detail

30 x 30 x 3 Steel expanded metal screen welded to 10mm steel plate

12mm Safety double Glazing door with aluminium frames

10mm Steel plate

PAR 22 x 108 Meranti timber tongue and groove flooring

32 x 194 Meranti timber joints bolted to angle with M10 galvanised steel bolts @ 800mm centres

2 x 150 x 150 x 10mm Angle attaching Joints to I-beam

45 x 183 x 6.6 Ribbed metal floor sheet bonded to 100 reinforced concrete slab with 12mm Powerscreen Floor finish to manufactures specifications

Castellated 610 x 305 x 179 @ 4000 cc beam to be cut away to achieve flush with the top of beam

762 x 267 x 25 I-Beam @ 14000 cc bolted to Steel Columns on site

18000 x 600 x 150 Thick Walled hot rolled steel sections, welded together on site. Welded with a 10mm purpose made steel gusset bolted to I-beam

30 x 30 x 3mm Galvanised steel expanded metal screen welded to 10mm galvanised steel plate

30 x 30 x 3mm Galvanised steel handrail

0.6mm Copper cladding in 600mm sheets attached to Galvanised 50 x 50 x 3 Hollow steel sections. Hollow steel section bolted to Brickwork with stainless steel anchor bolts with aluminium frames

PAR 22 x 108 Meranti timber tongue and groove flooring

10mm galvanised steel plate

12mm Powerscreen Floor finish fixed to bonding slurry onto concrete slab to manufactures specifications.

250mm Reinforced concrete slab to structural engineer

150 x 150 x 10mm Galvanised angle bolted and welded to beam on site

20mm Bitumen impregnated softwood

203 x 133 x 25 mm Hot-rolled I-beam Bolted to concrete beam and slab with a galvanised angle cleat

PAR 32 x 194 Meranti timber joints bolted to angle with M10 galvanised steel bolts @ 800mm centres

110 x 75 x 220 Non - Face Bricks (NFB) plastered with skim plaster to a thickness of 3mm to Manufactures specifications
Paving turned on side and laid in bed of mortar

Paving 20MPa burnt clay bricks, SABS1575, mortar class 1, 1,18 sand groove, with gradient of 1:100

25mm Sand bed layer

Aggregate to be compacted to 90%

MOD AASHTO in layers of 150

Concrete base of 10MPa

440 x 260 x 400 Cast in-Situ Concrete column, special finis, to accuracy grade 1

300mm In-Situ concrete beam

200mm Concrete beam

150mm Topsoil Layer

Gravel

Clay

Drainage gravel backfill

20mm Bitumen impregnated soft wood

100 uPVC drainage pipe

20mm Bitumen impregnated soft wood

250mm In-situ concrete slab to 20MPa

Hard core compacted gravel in 2 layers of 150.

One green 0.25mm Polyolefin membrane to be placed beneath slab and compacted layer

Concrete Column 440 x 260 x 4000mm

2 Bitumen impregnated soft wood

200 Cast In-situ slab with strength of 20 Mpa

Hard core compacted to 90%

MOD AASHTO in 2 layers of 150.

One green 0.25mm Polyolefin membrane to be placed beneath slab

Concrete base 1000x500mm

9 Plywood& Hanging Lights detail

2 x 600x600x3,2 mm Plywood sheets to be connected to channels

2 x 600x600x3,2 Plywood, with reset grid system

10 Shadow Line Paving Detail

4 x 183 x 0.6 Ribbed metal sheet bonded to 1000 mm shear stud to achieve flush surface

Floor sheet onto Beam

6mm Steel galvanised checkered plate steps with 180mm risers and 300mm tread

Paving turned on side and laid in bed of mortar

Paving turned on side and laid in bed of mortar
12 Roof garden Detail

Beams
The way we build, pg35
T or L Beam
Pre cast Concrete

L/d = 20-30
l/d = 6000/300
= 20

Concrete Floor slab
The way we build pg 34
One way solid slab
pre cast concrete

L/d = 22-32
l/d = 6000/125
= 48

Columns
The way we build, bl33
In-situ columns multi story

L/d = 6-15
l/d = 4/6
= 0.6
= 600mm

L/d = 6-15
l/d = 4/15
= 0.26
= 260mm

0.25 Polyolefin damp proof membrane (white)
100 uPVC Perforated drainage pipe
Screed to fall
Gravel layer wrapped in geotextile
PAR 22 x 108 Meranti timber tongue and groove flooring
32 x 194 Meranti timber joists bolted to 60 x 60 x 2.5 angle with M10 galvanised steel bolts @ 800 centres
203 x 133 x 25 Hot-rolled I-beam Bolted to concrete beam and slab with 10 mm gusset
Reinforced concrete slab