introduction

This chapter will give a succinct background discussion to formulate a problem statement, thereafter the author will state her hypothesis and bring sub questions to the table. The chapter will introduce the client to the reader and also explain the methodology and methods used in the dissertation.
“People like heritage industrial buildings. They are usually accessible by public transport and instead of swallowing precious greenfield land are helping the wider regeneration of existing communities. Above all, they give back pride to communities because people’s spirits are raised by the sheer quality and elegance of these surroundings.”

(Stratton, 2000:5)
1. Background

1.1. Deindustrialization

The world is teeming with abandoned industrial buildings and objects; lost, but waiting to be rediscovered. These buildings are frozen in time, they inspire the imagination and tell us things about the past in an intuitive way. They are abandoned relics - creepers run up and down empty staircases, birds and other small animals mark it as their home, broken windows give nature free access. It is here where past, present and future forcibly intersect in the form of memory. They stand as icons at the core of communities and are thus as much part of our history as cathedrals, monuments and artefacts.

Globally In many cities around the world, industrial areas were located on the fringes of cities or close to harbours because of their proximity to unskilled labour and railways. Today due to urban expansion these industrial areas lie close to or in the heart of urban centres (Schiffer, 2005).

EUROPE In the 20th century, and especially after World War II, European cities began to grow very rapidly. Historic inner-city areas currently occupy less than 5% of the total urban area of the old cities. This implies that the industrial sites, dating from the beginning of the 20th century, are no longer situated on urban peripheries, but are to be found in the central areas of cities (Vrijthoff, 2006:3).

BRITAIN Britain was the world’s first industrial nation, they were therefore also the first country to experience the full effects of the industrial decline. The effects of de-industrialisation left many industrial buildings unutilised. This issue has been discussed broadly over decades in many countries. According to Van Der Toorn Vrijthoff (2006:4), the mono-functionality, in combination with uniformity of industrial areas, is recognised as one of the main reasons why these areas are sometimes unattractive.

SOUTH AFRICA Industrial areas were used to segregate the apartheid city from informal settlements. The Group areas Act (1950), stated that people from different cultures should share the same areas and that “black and white spaces” should be segregated by buffer zones (Shepherd & Murry, 2007:6). Pretoria CBD (see fig_02) is surrounded by thee industrial zones that kept the city isolated. Silverton industrial divides the city from Mamelodi in the East, Roslysn industrial divides Soshanguwe and Mabopane in the North and lastly the study area, Pretoria West Industrial, segregates Attridgeville from the city in the West.
fig. 03_ Aerial photograph of Pretoria CBD and the West
1.1.2. Pretoria West Industrial Area and The Power Station

On 1 December 1888 an agreement was entered between the Government of the South African Republic and S Neumann for the production and reticulation of gas for lighting, heating and other proposes in Pretoria. When the gas lamps in the streets failed, a request came through, asking the president permission to amalgamate with a new company that would generate electricity. It is under this concession that the Pretoria Lighting Company began its operation in 1892. The first power station was built on the corner of Schoeman and Van der Walt Street, it is today known as the Tram Shed (Stark, 1952:127).

It soon became evident that the Schoeman Street station was too restricted in area and facilities. The site also had no railway access, therefore a new site was selected in 1919: Mitchell Street. This site had adequate access by rail and road and there was a small dam which could be expanded to provide circulating water for the condensers (Stark, 1952:60).

In 1922 the power station moved to the west of Pretoria and became known as the Pretoria West Power Station. The station moved to the west where there was ample space for growth, the station formed the base for industrial expansion. This was a very important milestone for the industrial development of South Africa. City Engineering Works Limited, as well as ISCOR (South African Iron and Steel Corporation Limited) located their companies in Mitchell Street and by 1923 this industrial area flourished (Stark, 1952:61). The Power Station grew over the years as well as ArcelorMittal (formerly known as ISCOR), today both of these industries are partially underutilized. It is only a matter of time before they become obsolete.

South African cities are likely to have vacant industrial floor space (factories, power stations etc.), which becomes problematic when it is ultimately abandoned. These buildings rapidly become derelict and potential problems include dead city space, safety issues and ultimately sprawling. The Turbine Hall in Newtown, Johannesburg went through these motions in the year 2000, when it became an informal settlement for 300 people (see precedent study page 68).

“Since industry is a human creation and humans are social animal, we need an approach which brings industry and environment together with a social or community perspective.”

fig. 05. Social sustainability - diagram illustrating the basic human needs
Abandoned heritage industrial buildings are found right across South Africa. Those buildings that are still structurally sound can contribute immensely to the adaptation process as well as the industrial culture.

Since 2000 a sustainable industrial culture started to immerge in the form of Sustainable Industrial Production. Products are designed, produced, distributed, used and disposed of with minimal environmental impact, occupational health damages and use of new resources (material and energy) (Alting & Jorgensen, 1993:163). Researchers argue that industrial sustainability should focus, not only on economical and environmental factors, but also on industrial social sustainability. We have to build up what scientists call human capital, this include people, skills, well-being, health, motivation, as well as rules, standards and culture (De Paula & Cavalcanti, 2000:110). Together with the natural capital (clean rainfall, fertile ground etc.), our generation can provide a human capital that will enable future generations to prosper in a sustainable world.

Social sustainability requires that the cohesion of society and its ability to work towards common goals are maintained. Individual needs, such as those for health, well-being, nutrition, shelter, education and cultural expression, should also be met (Van Wyk, 2009: 23).

John Tomlinson (2003) articulates in his article ‘Globalization and cultural identity’, that once before the era of globalisation (which to force in the 1980’s) there existed local, autonomous, distinct and well-defined and culturally sustaining connections between people and their industrial surroundings. Therefore between place and experience. Identity was something that a culture ‘just had’, passed down from generation to generation. With the outset of globalisation, mass production evolved and this ‘identity’ proved to be a very fragile phenomenon. With mass production large quantities of products are produced in a short period of time. This allows for larger output per work-hour, fewer labourers are needed and products can be sold at lower costs.
fig. 06. Workers at Shenck brothers sawmill, Hogspack, Eastern Cape

fig. 07. Many production processes close when products are cheaper to produce in foreign countries.

fig. 08. Closed industry
1.1.4. Industry in South Africa

Before the development of mass production, techniques were adopted, craftsmen were involved with the whole production process. Carpenters for example had to mould and shape individual components, fix them together and add decorative finishes. Today all of the above can be done by machines (Harmon, 2010).

South Africa’s economy is already under severe pressure to compete in a largely knowledge-driven global economy, and there is increasing pressure from developing economies i.e. Brazil, Russia, India, and China. If we don’t pull together and aim at increasing manufacturing competitiveness immediately, there won’t be a sustainable industry to support (Peinke, 2010).

South African industries are closed down and left unoccupied, because products are mass produced in countries like China and Japan. Local industries in South Africa are oppressed because production becomes too uneconomical to sustain. It is less expensive to manufacture products elsewhere (China) and import it to South Africa, than it is to manufacture it locally (Thompson, 2006).

Developing countries are losing unique skills, partly due to of mass production, but also due to the ignorance of the general public. Several products we use everyday are imported from other countries: South Africans blindly buy these products and they don’t realize what effects it has on our local economy.

Adapting an industrial building by reusing part of it, makes it economically viable, using it as a ‘brownfield site’, makes it environmentally sound, but what makes it socially viable? The vacant building is not necessarily the problem, but rather the monofunctional (repetitive) environment thereof. The ultimate question will then be: how can heritage industrial buildings be adapted to be more socially responsive, to the actor (worker) and the viewer (public)? Hence creating a building and environment that encourage proudly South African produce and skills.
Can heritage industrial buildings be adapted to create a connection between production and daily life and hence lead to a sustainable industrial culture?

1.2. Problem statement

Through the adaptation and reuse of an old industrial building, architecture can enable a physical connection between production and daily life.

Architecture can generate a sustainable industrial culture that promotes a integrated city where people can live, work and play. Architecture can also connect the man on the street (viewer) with the industrial process by its connection to public space (the street). This connection between industry and daily life can create a new industrial culture and ultimately strengthen the local economy.

1.3. Hypothesis

1.4. Sub questions

1. What is a sustainable industrial culture?
   i) Social
   ii) Environmental
   iii) Economical

2. How can heritage industrial buildings be adapted for reuse, so that it can support a sustainable industrial culture?

3. How can heritage industrial buildings become more socially responsive?

4. How can social responsive environments have a positive effect on our local economy and skills development?

5. How can connections be established between production and daily life and how can architecture facilitate these connections?
fig. 09_ Diagram illustrating the interconnectivity between sub problems
1.5. Aim of study
The main objective of the study is to create a socially viable/responsive industry. An industrial structure, that people can relate to, a structure that embraces heritage and interacts with the public.

1.6. Methodology
This notion of experience, as a phenomenological experience, will be adopted for this study. Experience and observation will mould the design and its intentions to the final product. Social responsiveness rely on experience and experience rely on interaction between buildings, the user, the observer and the environment.

The Pretoria West Power Station site has a distinct, majestic character: the quality of the atmosphere is already rich and meaningful. Adaptation of the buildings on site should therefore intervene in such a way that the majestic character is retained, so that future visitors will also be hallowed the experience.

PHENOMENOLOGICAL EXPERIENCE
The term “phenomenology” is often restricted to the characterization of sensory qualities of experience (seeing, hearing, etc.) sensations of various kinds. However, our experience is normally much richer in content than mere sensation. Accordingly, in the phenomenological tradition, phenomenology is given a much wider range, addressing the meaning things have in our experience, notably, the significance of objects, events, tools, the flow of time, the self, and others, as these things arise and are experienced in our “life-world” (Stanford Encyclopedia, 2008).
Phenomenological experience also played a role when the program for the dissertation was chosen. The author is of opinion that an architect cannot design something for someone else without experiencing that space with the people that will use it. One needs to understand how the space and the environment around it, will be used.

Alvaro Siza designs by acknowledging reality. He is always attentive to landscape, materials, building systems, uses and to the people who inhabits his buildings. He states that architecture does not have a pre-established language, it’s merely a response to a concrete problem: a situation in transformation in which one participates (Moneo, 2004: 202).

Siza always keeps the user of the spaces in mind, because evidently it is they that will determine the success of the building. His architecture recognises the value of the momentary and relishes the being of things that might have turned out differently (Siza, 2010).

It is only by recognising the uncertainties, that one can address specific problems. Logically, the site is the most important point of reference. By drawing the existing architecture as well as the urban and landscape settings, the first unique moment of intervention comes to life. Architecture then becomes the consequence of the relationship between life and work: the program needs reinterpretation through observation and sensational experience.

A Simplified version of Siza’s observations are:

**PLACE**: origin of all architecture.

**DISCUSSION**: understand who will use the building and how it will be used.

**POSSIBILITY**: the conflicts we find in a specific programme may have multiple solutions: it’s about finding the most adequate one.

**UNCERTAINTY**: the vagueness of the goal ends as a source of satisfaction - only if a job is done thoroughly.

**MEDIATION**: two heads are better than one. Sometimes one becomes so involved in a project that obvious things become obscure.

**EVIDENCE**: every project is an opportunity to test the uniqueness of things as well as one’s reaction to experiences (Moneo, 2004:207).
Three data collection methods will be adopted to analyse and comprehend the problems that have been identified:

1.7.1. MAPPING:
Mapping is the recording and translating of quantitative data into a qualitative two-dimensional system. This method is used to explain and orientate the observer.

Mapping is a technique used in many professions: art, psychology, politics, science, literature, etc. “The hard world of numbers and scientific fact collide with the soft world of sensation, memory, illusion and aspiration” (Porter, 2004:114).

Mapping can reflect reading, experience, buildings, roads, movement or people. It is used to render new ideas and to develop or predict how we might intervene in order to solve problems.

This technique was used for:
- The calculation of the heritage significance of buildings.
- New movement patterns of transport and pedestrians in and around the site.
- The placement of new structures in relation to heritage buildings.
- Production process: material and waste, influx and distribution.

1.7.2. PARTICIPANT OBSERVATION:
This method involves the observation of a subject in a certain situation, one hopes to gain a better understanding of the behavior, motivation and attitudes of the people under study. The author will specifically conduct an overt participant observation, where the people under study will know who she is and what she is doing (Dawson, 2002:32).

- The programme for the dissertation was observed by visiting a sawmill in the Easter Cape as well as a furniture maker in KwaZulu Natal. The author could form a better understanding of the people, machines and systems that occupy the space.
- Interviews were conducted, with people at the Power Station, to gather information on the history of the site.
- Historic photographs were studied to get accurate information about the development of the area.
- Precedents on materiality, program, heritage and design were studied.

1.7.3. DESCRIPTIVE RESEARCH:
With descriptive research methods, data is collected through observation. The information must be organized and presented systemically, so that valid and accurate conclusions can be made. Case studies, archival and survey research are all forms of descriptive research methods (Leedy, 1992:185).

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- Historic photographs were studied to get accurate information about the development of the area.
- Precedents on materiality, program, heritage and design were studied.
The study area is located in the West of Pretoria, at a partially mothballed Power Station. The Pretoria West Power Station is located between Church, Buitekant, Rogger Dyson and Quagga Street. The Station is a remnant of South Africa’s industrial revolution and of important historical value, not only for Pretoria but for the whole of South Africa. ArcelorMittal located just south of the Power Station site, is in the process of being mothballed (ISCOR, 2010) and the future of the Power Station foresees its decommissioning in the year 2020. When both these sites eventually become obsolete, these massive pieces of land holds the potential for a diverse urban renewal project. A project that will protect and reuse the industrial heritage in the area.

Through analysis and observation it became evident that the industrial area around the station is already experiencing some form of urban decay. Archival articles proved that Pretoria West once was a significant place of industrial production. Products were produced locally for export. Today the Pretoria West area is filled with informal dwellings, scrap yards, second hand car wholesalers and panel beaters. Some manufacturers are still trying to survive; but they are enclosed by high walls or fences - there is subsequently very little interaction with the streetscape.
1.9.1. CLIENT

Corrie Lynn & Co timber furniture makers in collaboration with the United Nations Human Development Program (UNHDP).

1.9.2. PROBLEM STATEMENT

In 2006 the UNHDP observed that even though there was a decline in income in almost all income groups, the most drastic decline occurred in least wealthy households (Shivambu, 2006). According to Shivambu, it is almost clinically proven that there is a direct link between quality skills and poverty reduction.

The Accelerated and Shared Growth Initiative for South Africa (Asgi-SA) identified that the quantity of unskilled people in South Africa could directly be linked to the decline in economical growth. In 2006 the Deputy President Mlambo-Ngouka also launched the Joint Initiative on Priority Skills Acquisition (Jipsa), this is a team that identify skills that are urgently needed and advise on how targets can be met.

For higher levels of growth and development South Africa needs high levels of both quantity and quality in skills, education and training (Shivambu, 2006). This will provide more job opportunities and more families will be able to sustain themselves.

Growth and development can only occur when there is a expansion in the manufacturing sector. The UNHDP recommends that the focus be on two very broad sectors of the South African economy: activities that will receive large scale financial support and those that will fund themselves. The activities that require financial support will consist of small scale agriculture, small and medium projects and larger businesses that must either operate at high levels of labour intensity or generate substantial employment multipliers (Shivambu, 2006). Skills development will therefore be supported if local production is endorsed.

Corrie Lynn & Co is a thriving wood furniture workshop housed in restored farm buildings in Dargle Valley, KwaZulu Natal. The owner Robin Fowler designer and furniture maker, called for the expansion of the company and wants to relocate to Pretoria. Furniture
making is a very labour intensive industry, they therefore qualify for financial assistance by the UNHDP. Designer furniture will not only be produced for local retail, but will also be exported as proudly South African products. Corrie Lynn & Co follows an environmental and social sustainable policy. They only use trees that are taken out by the municipality or timber from demolished buildings. Robin trains all personnel and prefers that they are unskilled in wood making when they arrive, this way he can train people to the level of skill needed. He also believes that each furniture maker should have a level of emotional investment in the work they do, he thus teaches to make furniture from start to finish. The development of skills and the implementation of emotional investment not only provide the individual with the knowledge of producing a sophisticated product, but also nurse self-confidence and self-respect (Fowler, 2010).

Prior to the decision to expand Corrie Lynn & Co could financially manage to provide transitional accommodation to employees, while training. They had to seek financial assistance in this regard.

1.9.3. RESPONSE_
The UNHDP agreed to subsidise transitional housing for 10 employees of Corrie Lynn & Co. The company’s social policies will not only add value to the industry but it will also help individuals to sustain themselves in the greater spectrum of life. This skill exchange give individuals the opportunity to practise the skill after hours or even implement further skill exchange in their communities.
Lumber is collected and dried off site.

Tree trunks go through a ripping and cross-cutting process - timber is cut into more manageable sizes and put into storage.

Furniture maker receives a design and cutting list. Cutting lists are drawn up to determine how trunks should be cut to maximise timber usage.

Furniture makers move between work benches and power tools to create the parts that will later be assembled.

The parts are then shaped, drilled, mortised, sanded, chiselled etc. to perfection.
Manageable size planks are shaped and planed to correct thickness with a thickness planer, only a small amount of material is removed.

A table saw and ban saw is used to roughly create the shapes needed.

Assemble the parts are assembled with jig frames and glue, furniture pieces are then left to dry.

Quality check, finial touches and sanding.

Painting and drying.
fig. 20. Workers taking a break at Schenk brothers sawmill, Hogsback, Eastern Cape. The aim of the study is to create a connection between the blue collar worker and the public, the design should be socially responsive.
1.9.4. BRIEF_
As the client follows a very distinct and sustainable policy, the architect was asked to assist in the location of an appropriate site. The client insisted on finding a vacant industrial building that calls for conservation, this ties in with their sustainable approach.

1.9.5. PROGRAMMES_
Design and manufacturing_ This is the main programme for the development. The design studios for designers and workshop spaces for furniture makers need to be located close to each other. This will insure social interaction between the spaces and the people that use them.

Show room and retail_ These functions must be physically separated from the manufacturing process, but must have a visual link to connect production with product and educate the public in this regard. The social aim is not only to train unskilled people, but also to show the general public how the production process works. This will emphasize the connection between production and daily life, without disturbing the production process.

Rentable workshop space_ The client wants to create a wood craft hub, where not only furniture designers, but also smaller craftsmen can be part of the process of exchanging skill and energies.

Event Space_ Furniture and craft designers often design new collections to celebrate the level of skill and the unique products produced. The client insisted on having an event space to launch new designs. The space should have a double function: if it is not used by Corrie Lynn & Co, it should function as a furniture gallery and coffee/cocktail bar.