Die/Dye

A liminal mediation between nature and industry in a changing industrial Silverton context

Philippus Johannes Venter

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I further state that no part of my dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this dissertation is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

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A liminal mediation between nature and industry in a changing industrial Silverton context

By Philippus Johannes Venter

Faculty for Engineering, Built Environment and Information Technology
University of Pretoria

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Course Coordinator
Prof. Arthur Barker

Study Leader
Prof. Arthur Barker

Address
345 Derdepoort Road
Silverton, Pretoria

GPS Coordinates
25°43'14.4"S 28°17'36.1"E

Research Field
Memory, Legacy and Identity

Client
Silverton Parks Management

Theoretical Premise
The creation of a theoretical framework that consists of regenerative theory, non-modern theory and weak theory to contextualise a liminal mediator between the natural and industrial conditions found in a changing industrial Silverton context.

Architectural Approach
Industrialising a stagnant Silverton Cemetery through ecological means by introducing new programmes that allow for industrialised processes to be re-aligned to the natural counterparts. In this juxtaposition the mediation and perhaps reconciliation is to occur between nature and industry.

Abstract

Set in industrial Silverton, this project deals with the mediation between nature and industry through the lens of liminality. The site for this investigation is the Silverton Cemetery, connected to the Moreleta Spruit. With access to both natural and industrial processes on the site, a re-alignment of industrial process towards natural processes is proposed. The Silverton Cemetery is to be redeveloped with a resomation route reconnecting the cemetery with the spruit and the re-introduction of the historical leather dyeing process.

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Journey to an architectural project

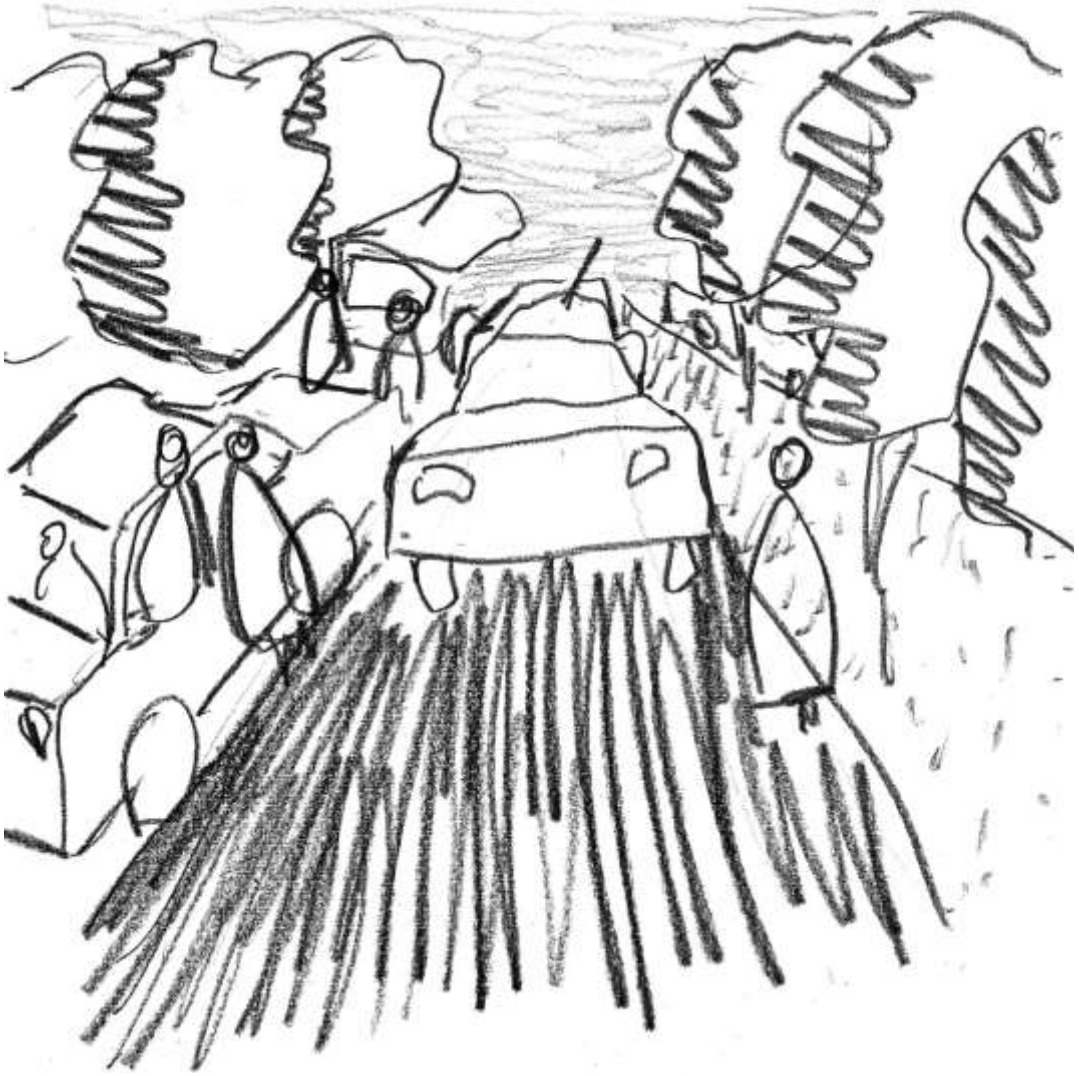


Figure 1: Driving home in traffic and noticing change (Author March 2021)

Driving home in traffic is an event synonymous with living in Sinoville on the periphery of northern Pretoria. Caught between the crowd of cars, I became aware of a slow and unacknowledged process of change has been taking place in Sinoville.

Figure 2: House of a childhood friend (Author March 2021)

I search for a familiar scene amongst the suddenly strange Sinoville, recognising the house of my childhood friend. It beckons me closer into a warm embrace of nostalgic memories coated with laughter and fun. At least some memories tether me to that nostalgic past, resisting the effects that change can bring to a context.

Figure 3: The childhood friend's house changed into a car dealership (Author March 2021)

Even this house is not immune to change, as the once loving home has been renovated into a second-hand car dealership. Those nostalgic memories of a happy childhood are still present but now it is supporting the advertisement board for a new Polo Vivo marked down for a sale.

Interlude

Realising my nostalgic memories tie me to a forgotten past, a new context had to be found. One where I could freely explore the meaning, consequences and possibilities of changing contexts.

Figure 4: A scene of change in Silverton (Author March 2021)

Travelling to Silverton in March, to fix the air-conditioner of my grandfather's car, a strange scene transpired outside the mechanic's workshop: the initial street scene revealed a palimpsest of various isolated layers (Figure 4). This voyeuristic position allowed me to observe and note processes of change happening independently in Silverton, producing a new identity (Figure 4).

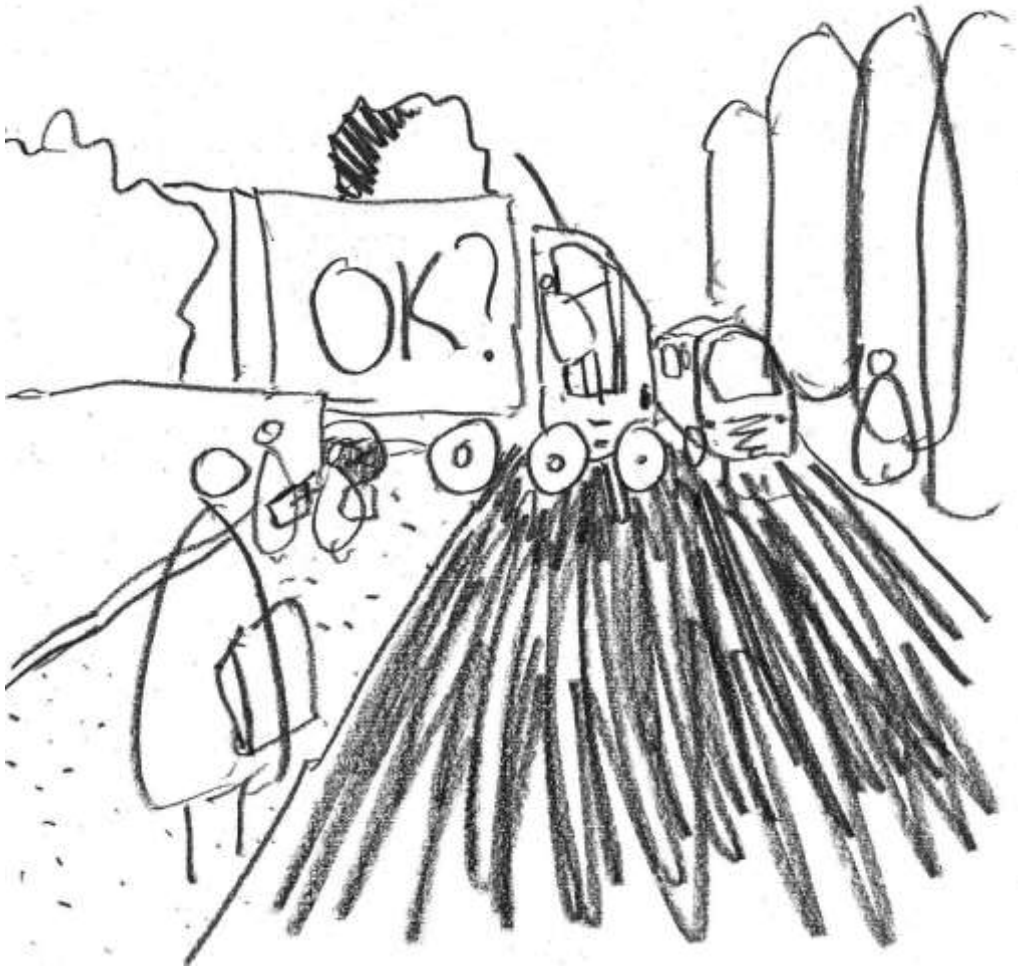


Figure 5: Delivery truck driving out of Silverton cemetery (Author 2021)

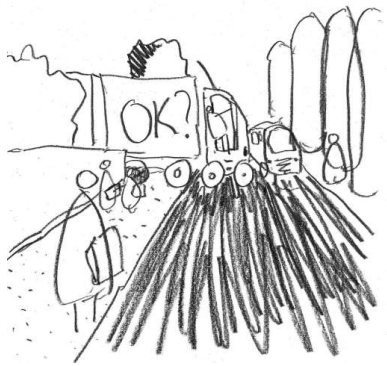
Travelling back to Sinoville, this palimpsest of the change became further apparent as a food delivery truck thundered out of the cemetery, almost running over a pedestrian (the proximity to the cemetery not overlooked). Reflecting on this particular event, it became apparent that the change of industrialisation in Silverton over time has produced a new identity – one that excludes the public realm and public space from the industrial urban fabric.

Change as an ever-present, slow and unacknowledged process in every context.

Nostalgia preventing the system to be able to evolve and adapt.

Through the process of change a new identity is created. But the old memories are still present.

The process of change occurs unevenly across the entire system at varying rates.



Through the process of change a new identity is created.

Figure 6: Devolving the narrative into core themes for the project (Author 2021)

The devolution of the narrative

The personal reflection on the narrative experience of the process of change in Silverton and Sinoville revealed an underlying structure to the process of change that consists of four core themes (Figure 6):

Firstly, change is an ever-present, slow and unacknowledged process, persisting in all contexts (Du Plessis 2012: 15-16)(Landman 2019: 1)(Peres 2016: 97) (Figure 7). Secondly, the acknowledgement and investigation of change enables systems and contexts to fully mature and continually evolve in answering new urban and architectural opportunities (Folke 2006: 258-259)(Mang & Reed 2012: 26) (Figure 8).

Thirdly, processes of change and evolution occur at various rates in the same system due to these processes of change being accounted for but not prescribed (Folke 2006: 258-259) (Figure 9). Lastly, Du Plessis (2012: 18) argues that the existence of continual change maintains, engages and creates identities rather than ignoring or burying it (Broad & Fox 2007).

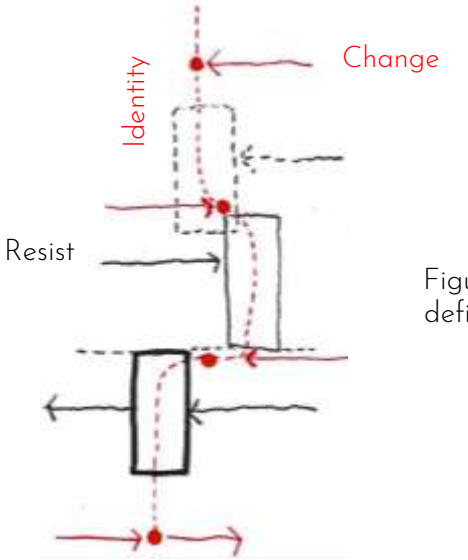


Figure 7: The process of change defines/produces a new identity (Author July 2021)

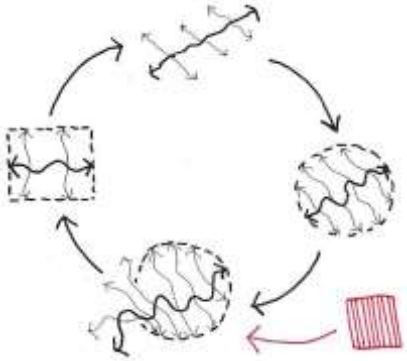


Figure 8: Change as a necessity for the relevance and evolution of the system (Author July 2021)

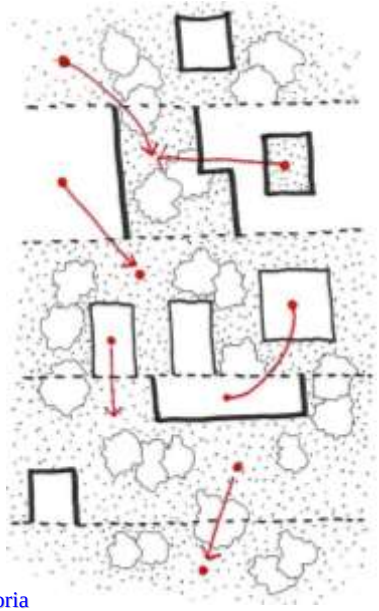


Figure 9: Change over time as an inevitability and should be accommodated for (Author July 2021)

Understanding the journey taken

1 Silverton Introduction

The exploration and investigation of the described narrative identified change as an overarching theme for this project. The changes in industrialisation, specifically for the Silverton context, have slowly excluded and eroded the role of natural systems and environments.

In attempting to fully understand and trace the typological development of industrialisation and its effect on nature, it is important to contextualise changing industrialisation in the global context and how it correlates with industrialisation found in the Pretorian context.

The Global Industrial Change

Wilkinson (2015: 32) suggests that the continuum of change in industrialisation has its origins in the First Industrial Revolution ,1760 – 1840, where steam engines started replaced idiosyncratic residential workshops with homogenous communal industries focussed on efficiency (Schwab 2016: 6-7). Human development became dependant on consuming natural resources to keep enabling industrial developments and process (Schwab 2016: 6-7).

These compact communal industries were again supplanted in the Second Industrial Revolution, late 19th Century – early 20th Century, with more efficient production lines housed in larger horizontal factories capable of containing more industrial processes and machines (Schwab 2016: 6-7)(Wilkinson 2015: 35). On top of the increased natural resource consumption, the natural environment was pushed aside to allow for more space to house the horizontal factory typology and industrial processes (Wilkinson 2015: 35).

The current era of the Third Industrial Revolution (early 1960's – current era) was catalysed by the personal computer and internet connectivity in the 1960's, increasing the pace of human developments and further improving the efficiency of industrial processes consuming natural resources (Schwab 2016: 6-7). This increased efficiency allowed for sustained industrial development over time, creating the illusion that the burden on natural resources and systems had decreased (Reed 2007: 676).

The increased pace of development enables an increased tempo of major technological innovations, decreasing periods between changes in industrialisation (Schwab 2016: 6-9). The Fourth Industrial Revolution (FIR) is slowly manifesting with the introduction of machine learning and inter-connected communication systems, profoundly changing the industrialisation system (Schwab 2016: 6-9).

The FIR is set to reconcile the demands of industrial developments with protecting "nature" however, this is only to achieve future sustained development over time (Du Plessis 2012: 8)(Reed 2007: 377).

Through the increased reliance on finite natural resources and space for further development, nature has taken a subservient role to that of developing human and industrial processes (Schwab 2016: 6-9). Being subservient natural processes and environments have been separated, and eventually excluded, from industrial contexts and industrial processes through the constant change of industrialisation.

Change of Industrialisation in Pretoria

For the industrial development of Silverton to be investigated and critiqued, it is necessary to explore the political, historical and cultural context of Pretoria against which industrial development took place. Four stages will be investigated deemed integral to the industrial development of Pretoria: the settlement of Pretoria (1855), the First Anglo-Boer War (1880–1881), the formation of the South African Union (1910) and the First World War (1914-1918) (Naude & Naude 2007: 48).

Anecdotally, the Bakwena tribe (eastern Sotho people) was dispersed in 1825 with the arrival of Mzilikzi, the chief of the Matabele empire, migrating from Zululand (Potgieter 1953) (Naude & Naude 2007: 45). The Voortrekkers occupied the abandoned valley of the Apies River in 1837, with the church village named Pretoria on 16 November 1855 (Potgieter 1953)(Naude & Naude 2007: 45). The 1866 Pretorian economy consisted mainly of ivory trade as Pretoria, forcing the industrialisation of basic construction materials required to construct warehouses and supporting facilities (Naude & Naude 2007: 45).

After the First Anglo-Boer War, the South African Republic bolstered its treasury by granting a concession to Alois Hugo Nellmapius, a pioneering businessman, to open the Eerste Fabrieken in 1883 (Naude & Naude 2007: 48). Other industries were subsequently developed, namely: the Kirkness Brickfields situated south of UNISA in Groenkloof in 1888 and the Portland Cement Company located at Daspoort (1892) (Naude & Naude 2007: 48).

During the First World War, Pretorian engineer Cornelius Delfos (21 June 1868 – 23 October 1933), with the support of his brother Johan, capitalised on the lack of steel supply in South Africa constructing his first steel factory, later forming the Iron and Steel Corporation Limited (ISCOR) in 1928, officially opening in 1931 (Naude & Naude 2007: 51). With the steel production from ISCOR, Pretoria was able to increasingly develop independently from the rest of South Africa (Naude and Naude 2007: 48).

Naude and Naude (2007: 51) note that Pretoria has historically been a bustling economic and trading node in an otherwise rural landscape. Three key features allowed Pretoria's industrial development: firstly, a road structure that connected Pretoria to a larger network of trade, secondly, the construction of the NZASM (Nederlandsche Zuid-Afrikaanse Spoorweg-Maatschappij, or translated, Netherlands-South African Railway Company) railway system in 1894 expanding Pretoria's economic reach towards major harbours and industries in South Africa and Delgoa Bay (today Maputo) (Naude and Naude 2007: 47). Lastly, in the 1890's, Pretoria was the first town in South Africa to receive electricity, increasing its industrial efficiency and independence (Naude and Naude 2007: 51).

Change of industry in Silverton

Silverton is located on the historical farm, Hartebeespoort 308, owned by D.A. Botha in 1848 (Naude & Naude 2007: 52). H. Mundt purchased the farm in 1869 and sold a portion of the farm that would become Silverton to a silver trading company (Naude & Naude 2007: 52).
Situated within the industrial development of Pretoria after the formation of the South African Union, Silverton developed from a small agricultural village on the periphery of Pretoria to a major leather tanning industrial suburb (Naude & Naude 2007: 52).

By 1890, erven were already occupying the landscape of the Silverton town with electricity being supplied to the town in 1936 (Naude & Naude 2007: 52). The town of Silverton was a separate municipality before its incorporation into the Pretoria municipality in 1964 (Naude & Naude 2007: 52). Four main elements of the "original" Silverton still exist today, namely, the Moreleta Spruit, the Silverton Cemetery(since 1910's), the Silverton Tannery, opened in 1915, and the NZASM railway ruins. What is curious with these spaces are that they are untouched and excluded from the industrial developments of Silverton. In a sense they have become static features in an otherwise dynamically changing industrial context.

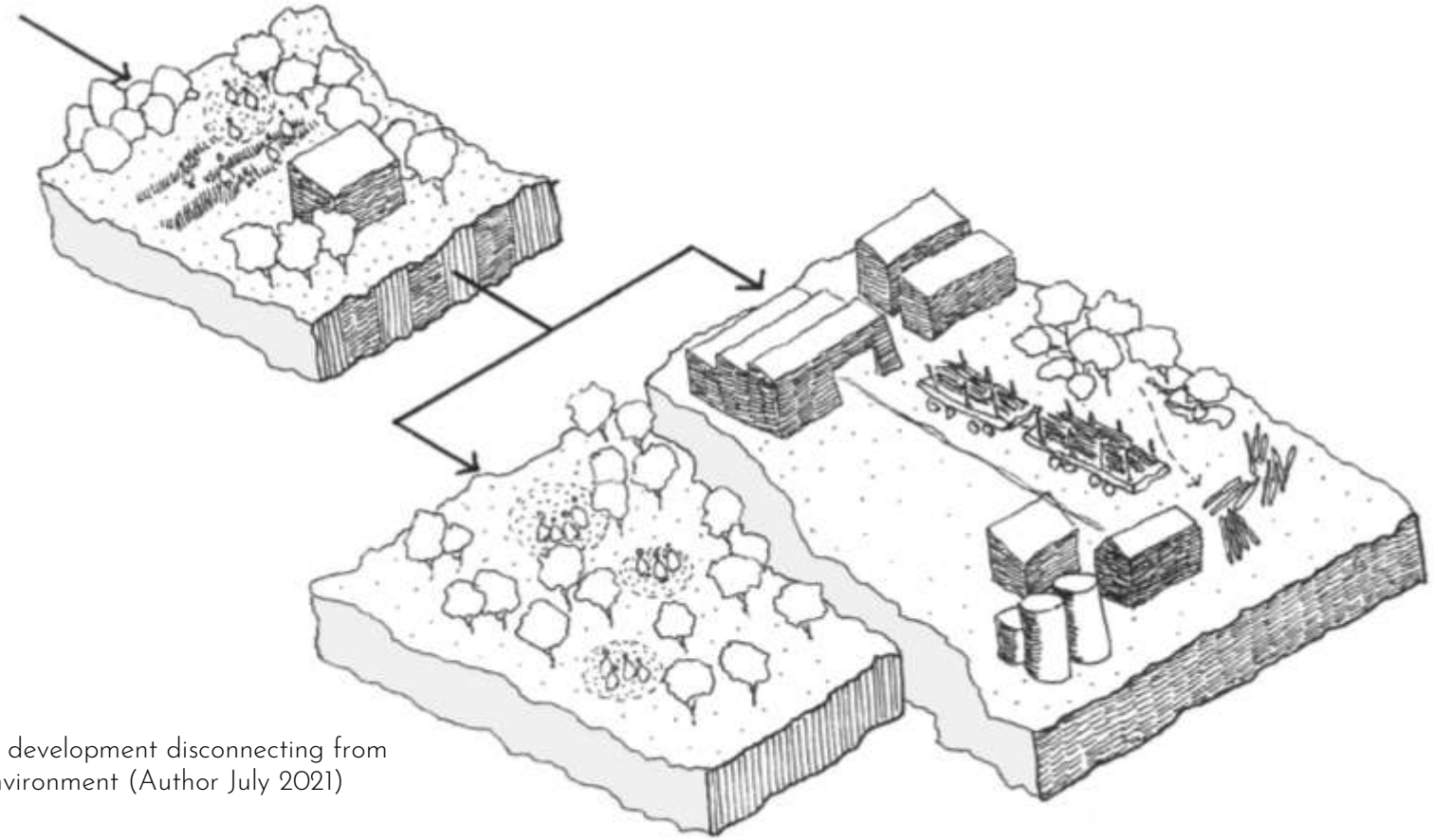


Figure 1.1: Human development disconnecting from the natural environment (Author July 2021)

General Issue

Due to the nature of changing industry, natural processes and environments have been excluded from the industrial context of Silverton. This has caused human development and industry to become separated from the surrounding natural environments and processes, allowing industry to continue exploiting natural systems.

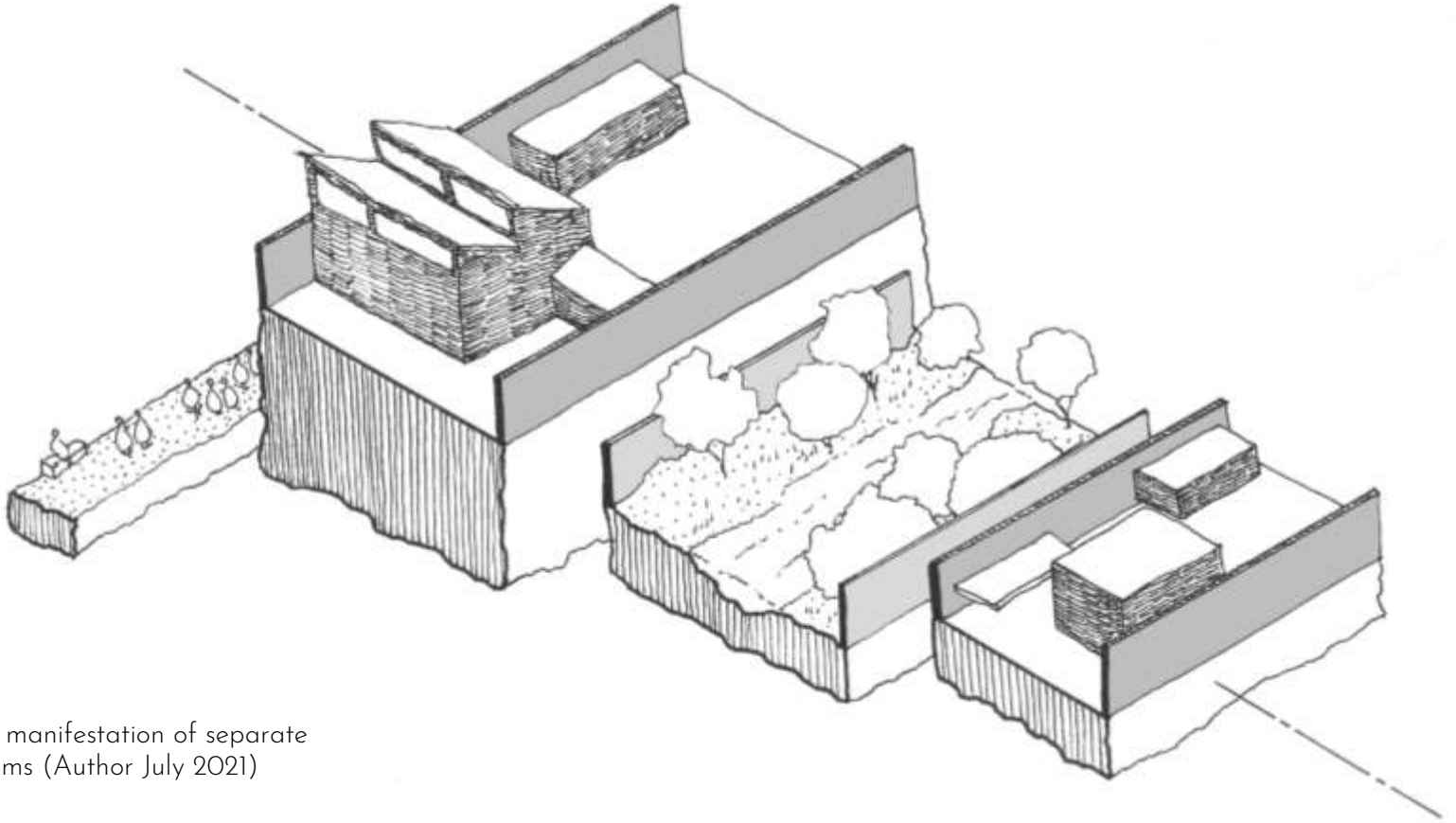


Figure 1.2: The manifestation of separate urban realms (Author July 2021)

Urban Issue

This disconnection of human development from the natural environment has created various separate realms, each mutually inaccessible. As such, future connections and potential opportunities for integrated human and natural development are disregarded and overlooked.

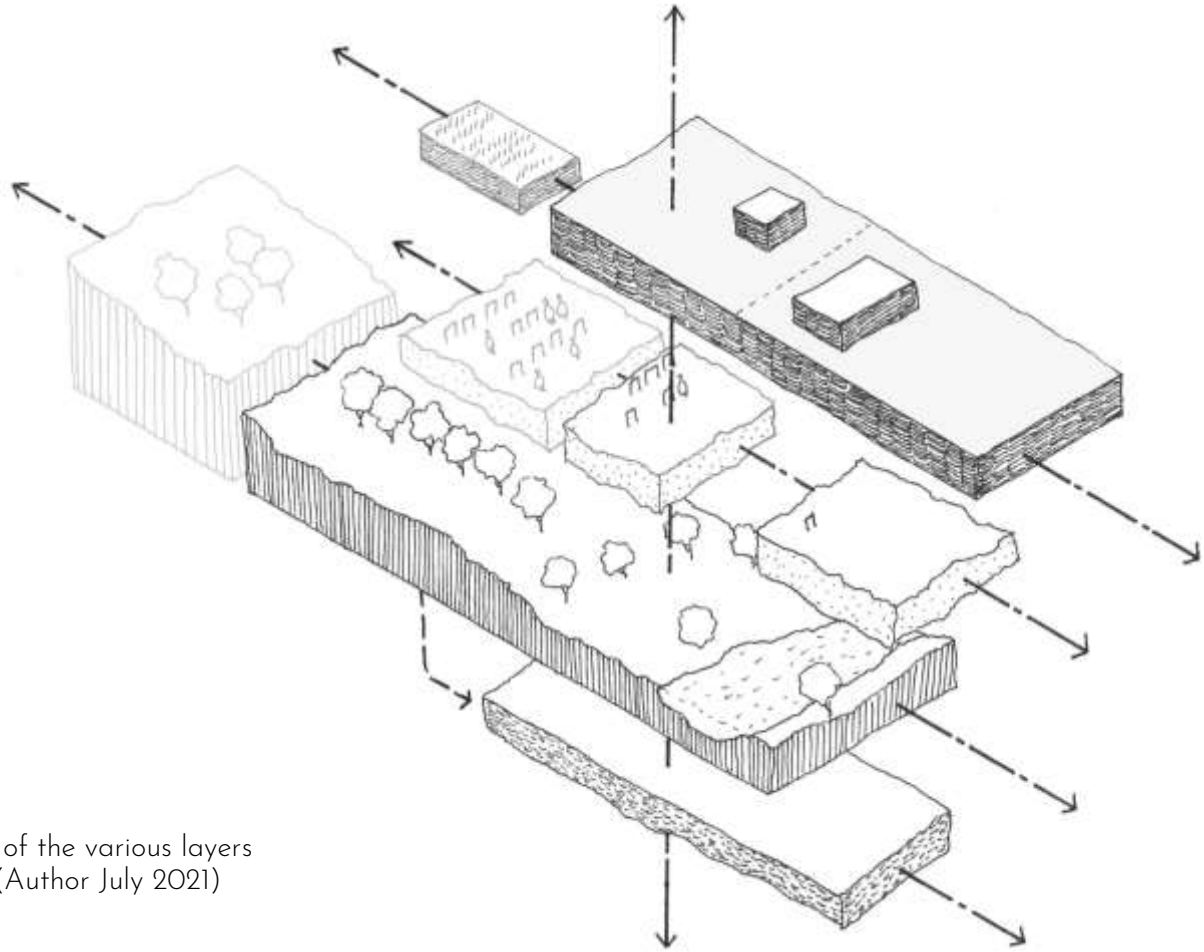


Figure 1.3: The disconnection of the various layers of the Silverton cemetery (Author July 2021)

Architectural Issue

A process of continuous industrialisation surrounds, but never intervenes with, the Silverton Cemetery, ultimately changing the ecological, cultural and historical layers of the cemetery to become disconnected, undefined and underutilised as compared to the industrial context.

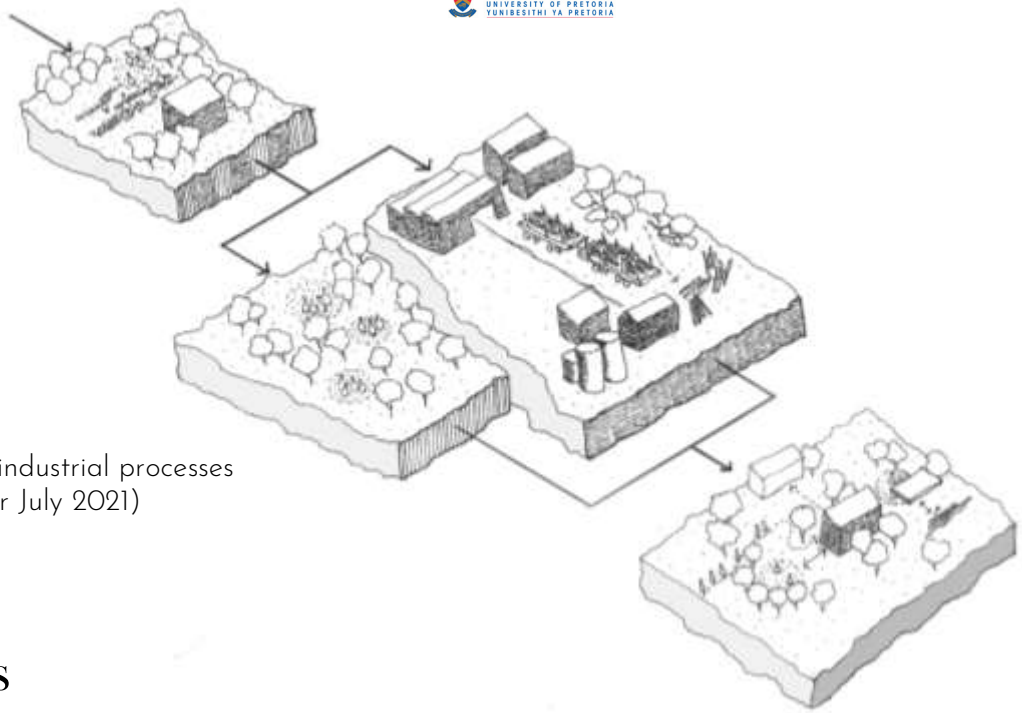


Figure 1.4: The re-alignment of the industrial processes to natural processes (Author July 2021)

Research Questions

Main Research Question

Which mediation strategies are appropriate and necessary to achieve reconciliation between the currently incompatible industries and industrial processes of Silverton with the natural processes found in the natural Silverton context?

Sub-questions

How can this emergent mediation be used to as a catalyst for other locations and situations where natural processes have been excluded from industrial Silverton?

What formal, programmatic and spatial solutions are required to integrate two opposing and separate conditions into one architecture?

Which alternative methods can be used to integrate and include natural systems and environments into industrial and architectural processes?

What are appropriate responses to regenerate and evolve existing, historical and cultural programmes and rituals found in industrial Silverton.

Architectural Contribution

This architectural project seeks to contribute to the wider architectural discourse of South Africa by questioning and exploring the seemingly incompatible relationship between nature and industry through the lens of liminality. A deeper, parallel subliminal investigation is simultaneously occurring between the sacred and profane that underpins and defines the dichotomous relationship between nature with natural processes and industry with industrial processes.

Research Methodology

This project is situated in the interpretivist research paradigm allowing subjectivity, personal experiences and personal discoveries to permeate into the design-led research (Kivunja & Kuyini 2017). The design methodology that was followed attempts to work from the general to the specific. Applied to this project, a general understanding of the industrialisation process led to an understanding of Silverton. These multi-scalar design explorations enrich the design by constantly rechecking and re-investigating the same element on various levels and scales.

In finding a methodology that can mediate and integrate nature with industry, multiple design-led research tools and methods were consulted in completing the required research. The main aspects that the methodology should elucidate is namely, the spatial, formal and programmatic requirements of this mediation, possible alternatives in integrating nature with industry and whether mediation is even an appropriate response to between nature and industry.

In achieving the outlined issues and architectural contribution, a series of possible design-led research tools have been identified to aid in the process:

Historical Research

Investigating and exploring the historical value and development of the industrial Silverton area reveals that the natural processes and environment have been slowly eroded and excluded from the industrial context. Furthermore, this investigation leads to possible programmes and relationships that can be revised into the present to enrich the project.

Mapping

This tool allows for the context of Silverton to be better understood and seen in relation to the site and the greater context. This also allows for the site to be layered to include past, present and possible future activities and relationships.

Qualitative Research

This method involves the immersion of the researcher into the context to understand it as a living and changing system that has specific demands and concerns.

Precedent Analysis

Through the research it is apparent that the project is located in a wider discourse of architecture, where similar problems and solutions have been discussed. The reason for including precedent studies is to situate this project among the other, similar, projects to gauge its worth and contribution.

Theoretical Framework Exploration

As the result of this project is largely unknown due to the design-led research process, theoretical explorations and framework constructions allow for various approaches and ideas to be tested before committing to one.

Environmental Software Modelling

To determine the daylighting effectiveness of the design, the Sefaira environmental assessment tool is used. Utilising software modelling allows for fairly accurate and quick design iterations and explorations, as

well as what the impacts of these explorations and iterations are.

Physical Models for theoretical and design application

Translating the theoretical framework into a design solution or approach is challenging, however multiple physical model explorations allow for the identification of the most appropriate translation to be identified. Furthermore, the size and the scale of the model allow for a quick investigation into the formal language of the architecture without too much commitment and effort.

Assumptions

The site features a series of currently utilised freestanding structures that has been deemed to have no unique and contributable heritage value. As such, it has been assumed that these structures are safe for demolition, with their materials re-used in the new architectural intervention.

It is also assumed that the programme and functionality of the current Silverton Cemetery will continue, with the new architectural intervention acting as an addition and extension.

Limitations

The Moreleta Spruit is currently inaccessible for site visits and closer inspection due to palisades and fences. This was not a detriment as it allowed alternative methods of visualisation and qualitative analysis to be used, namely: photos, aerial photography and electronic maps.

Delimitations

Due to the vastness and size of the chosen site, only one specific section of the site will be developed into an architectural intervention. For the rest of the site, the intent is be conveyed by indicating and describing the general programmatic and qualitative aspects but not fully developed.