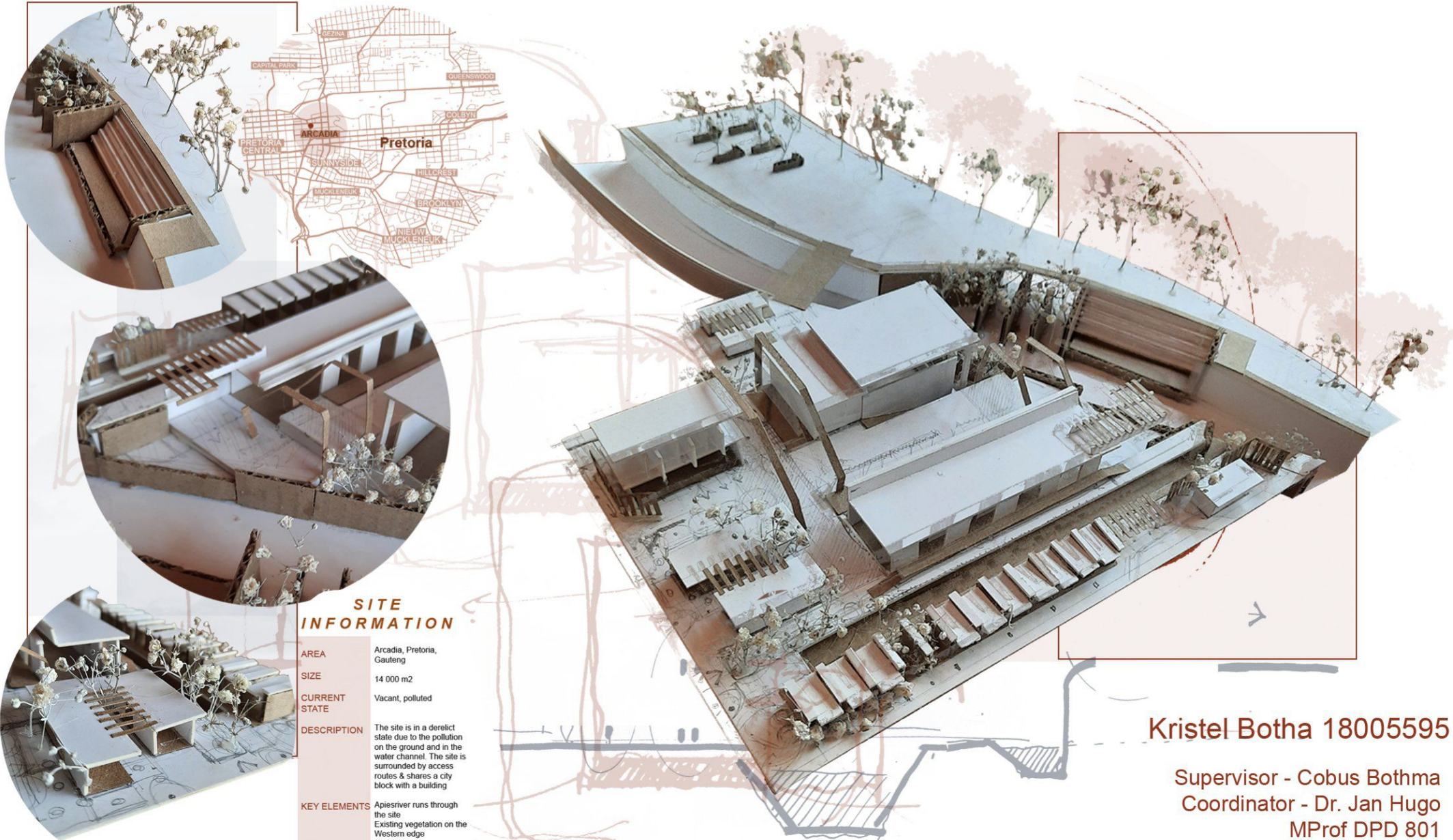


EXPANDING ARCHITECTURAL ACCESSIBILITY

A CPD CONVENTION CENTRE IN ARCADIA, PRETORIA

"pursue, produce, prototype, public"



SITE INFORMATION

AREA	Arcadia, Pretoria, Gauteng
SIZE	14 000 m ²
CURRENT STATE	Vacant, polluted
DESCRIPTION	The site is in a derelict state due to the pollution on the ground and in the water channel. The site is surrounded by access routes & shares a city block with a building
KEY ELEMENTS	Apiesriver runs through the site Existing vegetation on the Western edge

Kristel Botha 18005595

Supervisor - Cobus Bothma
Coordinator - Dr. Jan Hugo
MProf DPD 801

My aim as a designer is to create humane spaces that are responsibly constructed and easily maintainable by its inhabitants.

My designs are developed on an intuitive basis after research on context and influences has been conducted. I aim to create spaces that invoke an emotional response from the user/s by considering how each element, material and construction choice will influence the archetype of the area where the design is situated.

I believe that architecture is the physical embodiment of a metaphorical hand reached out by the built environment towards humans.

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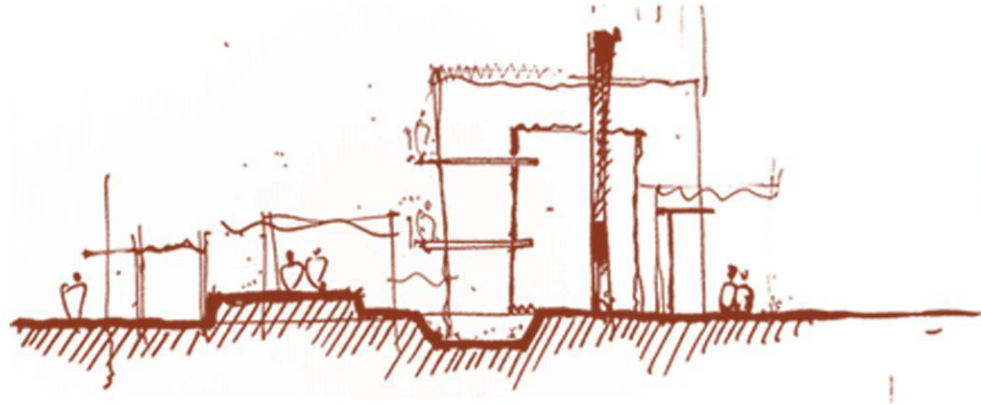
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First and foremost, I want to give thanks to the Creator of all, who gave me my talents and abilities to create. My strength comes from God alone and I will continue to dedicate my work as a designer to Him.

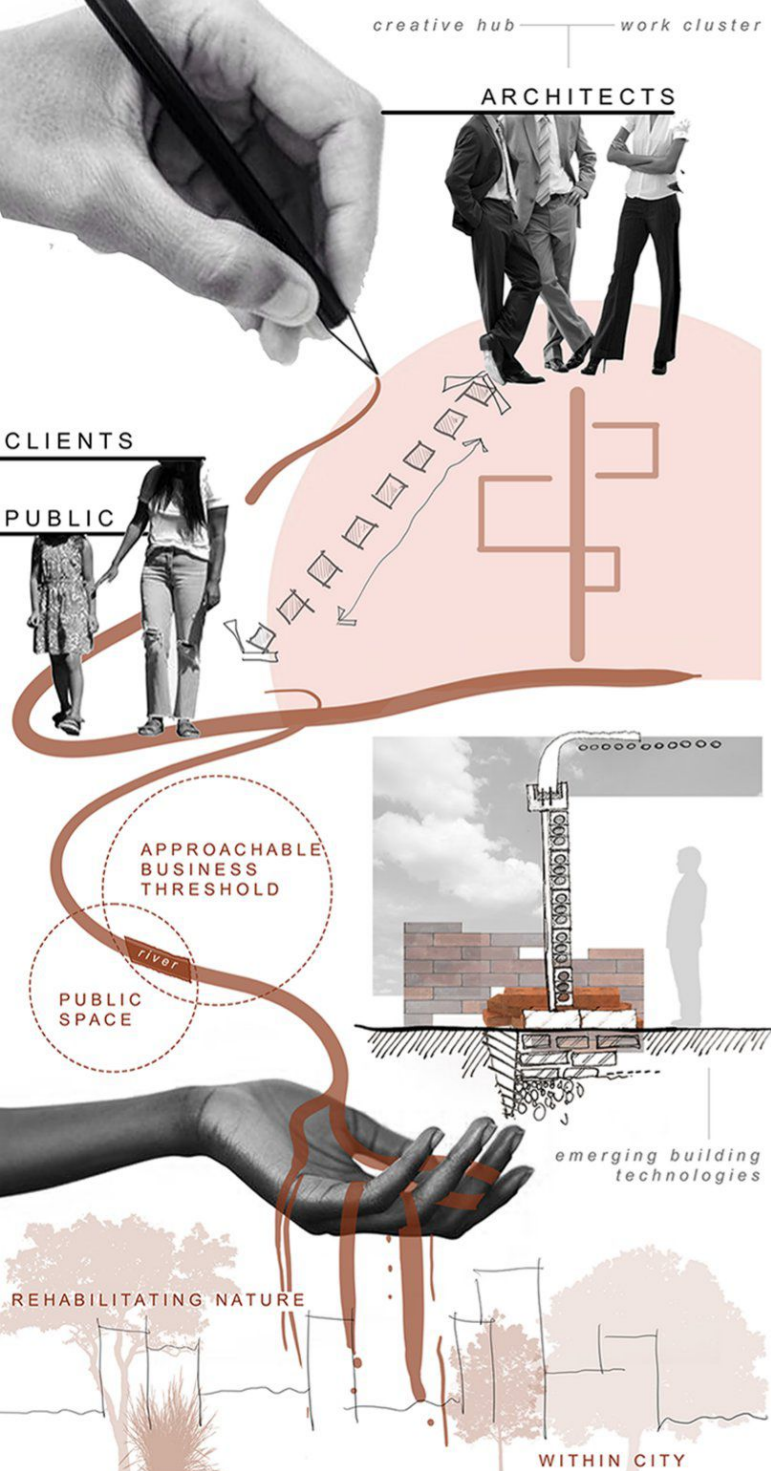
Thank you to my parents, Dirk and Janine, who have supported me through my studies and all other aspects of my life.

Thank you to my supervisor, Cobus Bothma, who guided me through my dissertation and masters design project. Thank you for your continual inputs and advice. Thank you to our coordinator, Jan Hugo, for guiding our group through this challenging year with such vigour.

Thank you Dylan, for your loving support and encouragement. Thank you to all my friends and family.



SPECIAL THANKS



On a once vacant site in Arcadia next to the heart of the Pretoria CBD now lies a series of buildings that integrate the public realm of the city with an intricate system of a distinctive discipline - architecture. This project is an architectural hub that accommodates Continuous Practice Development conventions hosted by the Pretoria Institute of Architects, as a permanent location for workshops and lectures. The primary aim will be to introduce professionals to emerging building technologies (EBTs) in the industry with events that result in the practical application of new knowledge gained by designers. Presenting EBTs will address the issue caused by conventional building technologies to the environment and add the opportunity for architects to engage in CPD conventions that result in a physical structure.

The Apies River that runs through the site (fig. 8 & 9) presents a key opportunity to expand this project along the route of the river, creating a promenade of projects that were created and tested on site. The effects of the CPD conventions will echo along the river in the form of various installations that benefit existing programmes along the river that are currently disconnected from the natural space.

The buildings on site is the epicentre and the CPD convention projects that are created on site and installed at various locations along the river will be connected to the project as the branches of the system. The community is not only meant to benefit from these installations along the route that will enhance current programmes, but from the site itself as it will accommodate the public by creating walkways, ablutions and resting spaces, which will be interwoven with the workspaces to break the barrier between the architecture profession and the larger community.

The emphasis will be placed on creating visual and physical accessibility by dispersing the buildings across the site with approachable interfaces. The built form is meant to read as a palimpsest of legible, yet intriguing, layers that are a blend of both emerging and conventional building technologies.

KEYWORDS

emerging building technologies, architecture hub, lecture, exhibition, workshop, public integration, nature rehabilitation, promenade of projects, river network, CPD conventions, Pretoria Institute of Architects

Figure 1: A visual depiction of the project's abstract description (Author 2023)

INTRODUCTION

This project takes an **existing system (CPD system)** required by our profession's council (SACAP) and manifesting it in a way that **structures it to be a hub for architects** that will have a **lasting impact beyond the isolated learning session**.

Besides hosting regular CPD events - identical to the current way the events are structured - CPD events that contain a practical component will be brought into the programme in this project. This will result in participants applying the knowledge they gained to build different installations of various EBTs. This project will be part of a **network** that functions within a master plan due to the nature of its greater goal - **creating structures from knowledge gained at the conventions** and inserting it at existing, currently-disconnected locations **along the Apies River in Arcadia**. The buildings on site will be the **epicentre** that will **echo** its effects along the programmes of the **river**.

The programme will offer **meeting rooms, workshop areas, printing facilities and outdoor facilities**. The built areas will mainly **accommodate architectural professionals** that attend conventions, exhibitions or lectures. Spaces will also provide them the opportunity to meet clients at a definite location, print plans for council, attend larger meetings with other parties of projects and attend PIA social events. These spaces will also be made available to **other professions** in the built industry that have CPD systems in place, such as engineers and quantity surveyors. This will ensure that the venue has an **ongoing occupancy** throughout. The printing facilities and small coffee shop will be **income generators** to the project which will be operated by external management/ owners.

The surrounding **community**, as well as commuting individuals, will be able to **access and utilise the public walkways, ablutions, meeting spaces and viewing platforms** that overlook the workshop areas throughout the site while the CPD programme is running. This will ensure that the larger public gains **exposure** to the events taking place within the **architectural discipline**.

Driven by the goal to integrate building technologies that will prove to be less harmful than current conventional building technologies used, the project is centered around the programme of **introducing EBTs into the built industry** and thus the buildings on site will be **built from EBTs**. **Additive Manufacturing/ 3C Concrete Printing** will be the main EBT applied in this project along with complementary EBTs such as **Rammed Earth Walls** and **Composite Walls**. Research was conducted on the subject of EBTs in the South African context, which invoked the interest to include the findings in a tangible design project. This will serve as an **exhibition of the project's ethos**, as well as every other **installation** that will be **produced** from this architectural hub and placed along the river.

The **existing vegetation** on site will be **celebrated and multiplied** throughout the new spaces to **enhance rehabilitation**. Special attention will be given to the condition of the water channel, introducing floodplains into the stream where plants can flourish.

For the **water harvesting system**, the roofs will be created to collect water that will be kept in **storage** and distributed to the **public ablutions** as well as the **new water channel** that will be located in the courtyards. These will contribute to the **passive cooling strategies** as well as regulating **irrigation** of the vegetation throughout the site.

Basement parking will be provided for users although public transport is encouraged by its proximity to various transport networks.

This project is on course to not only accommodate the current needs the conventions hosted for the architectural discipline, but to be an **expansion beyond current limitations**.

A project brief:

- Reception Space
- Exhibition Areas
- Lecturing Halls
- Coffee Shop
- PIA Office Space

The initial part of the brief was established after consulting various role players

- Print Facilities
- Workshop Area
- Viewing Platforms
- Public Ablutions
- Basement Parking
- Natural Public Spaces
- Meeting Rooms

Additionally, more facilities and public spaces are included in the project with the goal of expanding the current structure of the environment where architects continue to obtain more skills

This project has been undertaken with a great passion for the architectural discipline and the vision to create a platform where professionals can be continually inspired and involved while maintaining their status as architects. The project is meant to be encountered and explored by each individual that visits it, ensuring the **accessibility of the architectural discipline to all**.

PROJECT QUESTIONS

GENERAL QUESTION

In what way can CPD programmes become optimised to challenge professionals with new knowledge within their industry?

URBAN QUESTION

To which extent can Arcadia, Pretoria accommodate a project that blends innovation in the architectural profession with the public?

ARCHITECTURAL QUESTION

How can the buildings become the exhibition of emerging building technologies on site and create space for the PIA to host workshops that convey EBT knowledge to architects and other members of the built environment?

PROJECT VISION

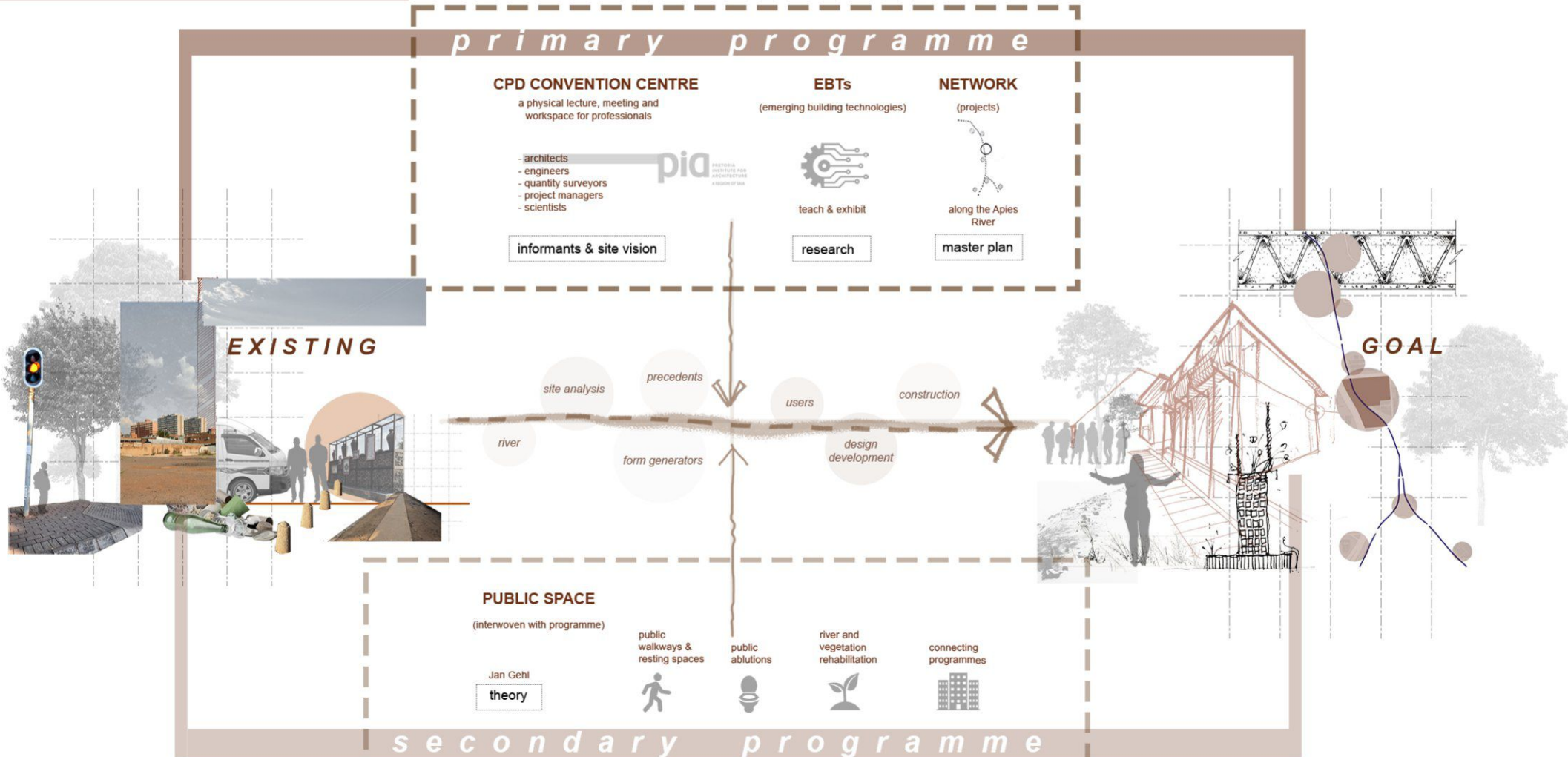


Figure 2: A visual depiction of the project intention with adapted photos that were taken on site (Author 2023)

PROJECT INTENTION

PROJECT INTENTION



EXISTING TO GOAL

Vision for the project at the beginning of the design process

URBAN FRAMEWORK

The suggested masterplan that will result in a promenade of emerging building technology installations along the river, connected to various existing programmes

CONTEXT



SITE

Macro and micro analysis on existing programmes and spaces

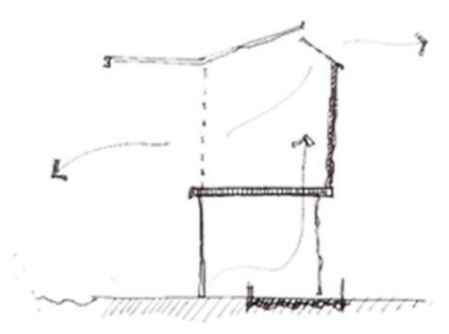
CONDITIONS

Natural and planned spaces on site with services and systems

RIVER

Apies River in the Arcadia area that runs through the site

THEORY



BUILDINGS

Repetition and hierarchy in built form (Ching, 1979)

PUBLIC

Public spaces within cities for people (Gehl, 2010)

GENERAL

Integrated design perspectives (DeKay, 2011)

EMERGING BUILDING TECHNOLOGIES



RESEARCH

EBTs in the South African context - how they can be used along with current conventional building technologies in order to reduce harm caused by the industry to the natural environment and create an influx innovative ways of creating buildings

PRECEDENTS



TECHNOLOGY

EBTs from the research catalogue of projects done in South Africa in the past 15 years

SPATIAL

Global and local projects with spatial qualities that resonate with the intention of this project

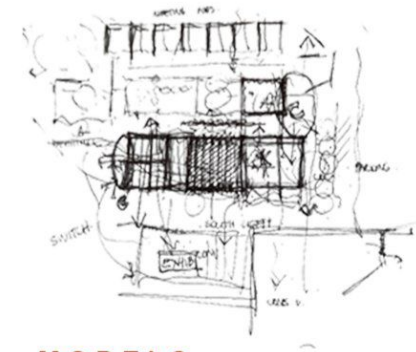
FORM GENERATORS



FIVE PRINCIPLES

Five form generators as principles put into place to guide the spatial arrangement on site according to information gathered from previous site analysis and applicable theory

DESIGN DEVELOPMENT



MODELS

A series of models built to different scales that explore the design in a three dimensional way

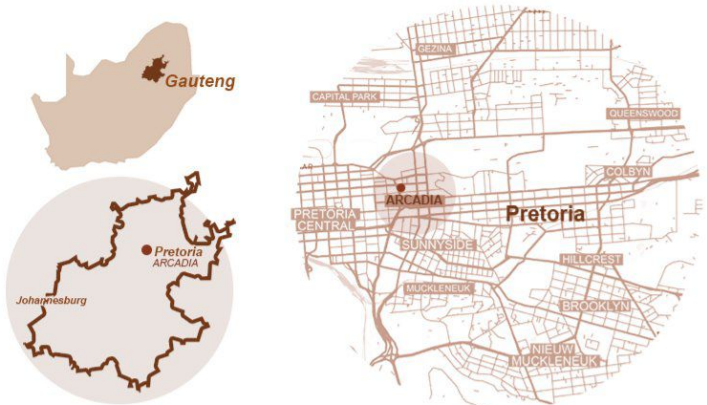
SKETCHES

Rough sketches and parti diagrams that aided in the design development

Figure 3: Sketches that depict different informants of the project (Author 2023)

DESIGN INFORMANTS

LOCATION



SITE INFORMATION

AREA	Arcadia, Pretoria, Gauteng
SIZE	14 000 m ²
CURRENT STATE	Vacant, polluted
DESCRIPTION	The site is in a derelict state due to the pollution on the ground and in the water channel. The site is surrounded by access routes & shares a city block with a building
KEY ELEMENTS	Apiesriver runs through the site Existing vegetation on the Western edge



ONE EXISTING BUILDING ON SITE TO BE DEMOLISHED

(car storage)

Figure 4: Adapted maps that indicate the site's location (Google Maps 2023)

Figure 5: A photo of site taken from the Northern Boundary in its current condition (Author 2023)

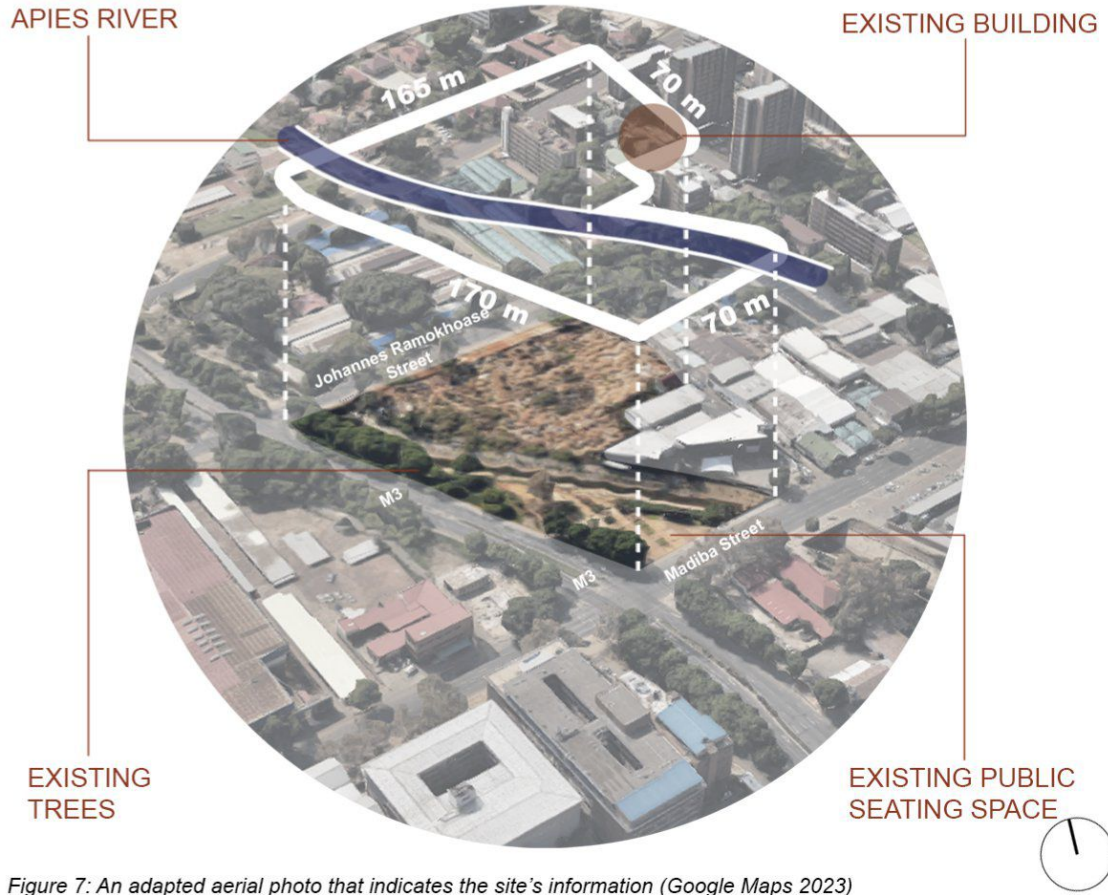
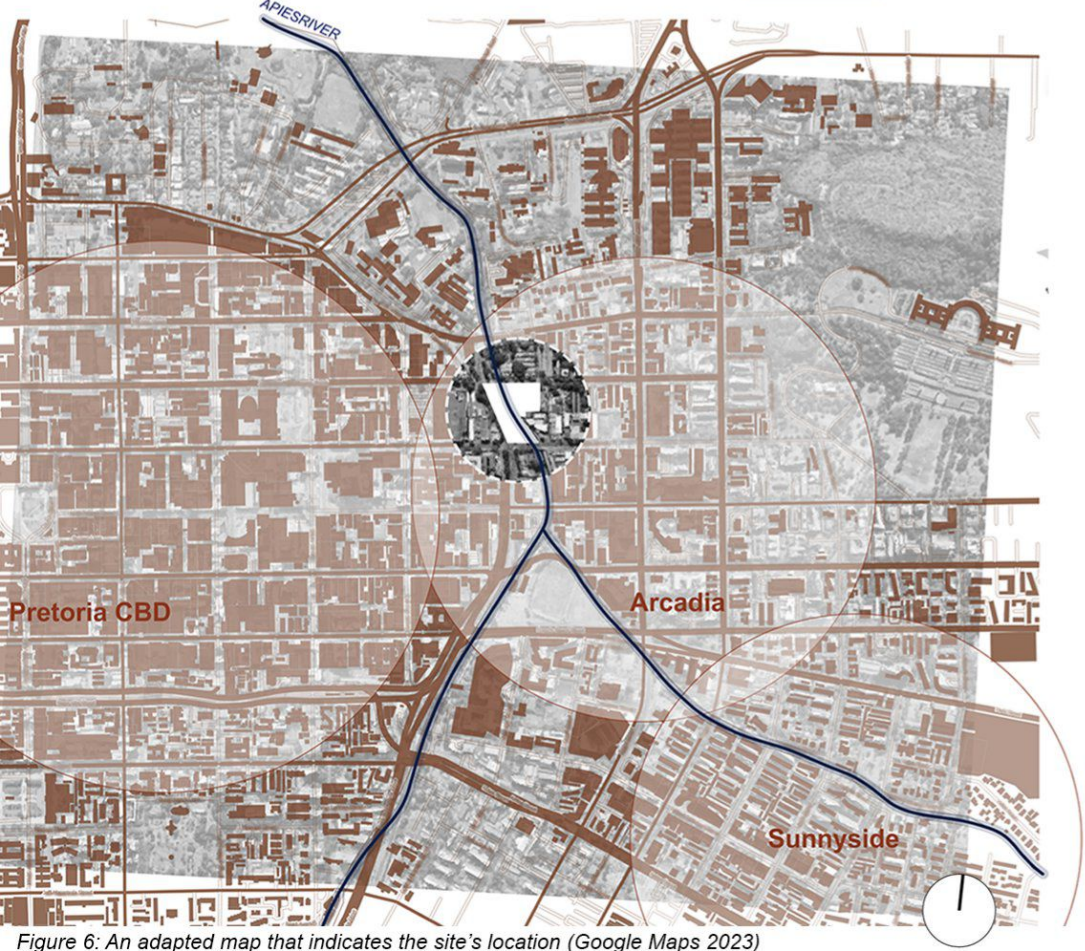


Figure 6: An adapted map that indicates the site's location (Google Maps 2023)

Figure 7: An adapted aerial photo that indicates the site's information (Google Maps 2023)

CONTEXT

SITE

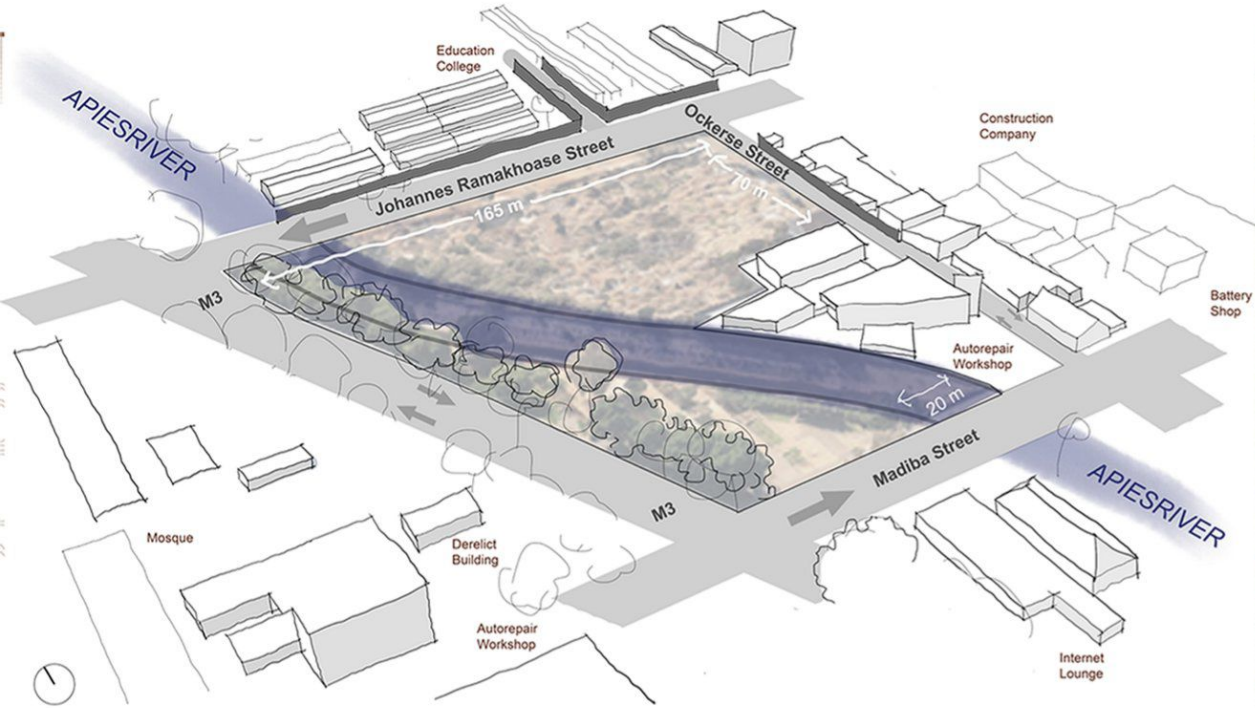
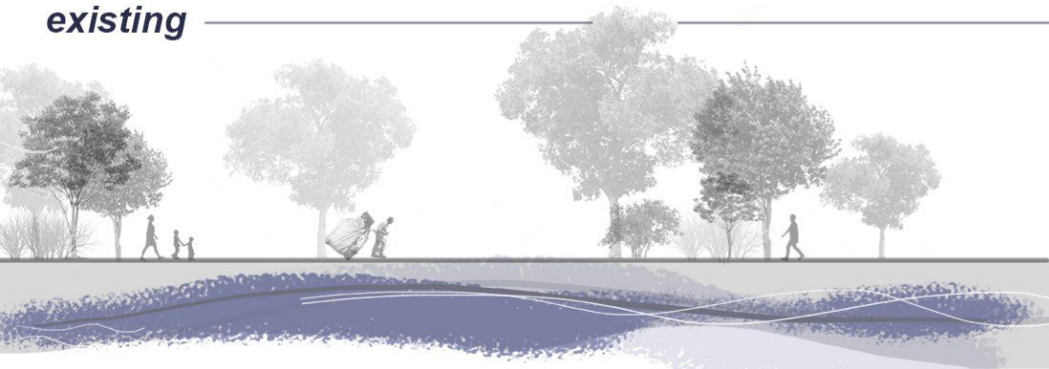


Figure 8: An adapted aerial map of site in its current condition (Google Maps 2023)

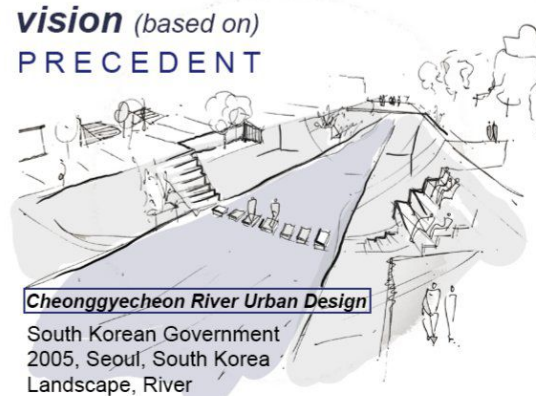
Figure 9: Photos on site of the Apies River that runs through the site (Author 2023)

APIES RIVER

existing



vision (based on)
PRECEDENT



Cheonggyecheon River Urban Design

South Korean Government
2005, Seoul, South Korea
Landscape, River

RIVER AS A CATALYST

- REHABILITATION OF NATURE
- ECONOMIC GROWTH
- LINK TO THE BUILT FABRIC
- PEDESTRIAN POINT

Figure 10: An abstracted depiction of the disconnected activities along the Apies River (Author 2023)

Figure 11: A depiction of the precedent study's river (Author 2023)

CONTEXT

BUILDINGS



FRANCIS CHING 1979

Form, Space and Order

Frank Ching's book "Form, space and order" (Ching, 2014) was used to establish hierarchy and the repetitive placement of selected components on site. In his book he talks about hierarchy by size, shape and placement. The question of which parts of the design should be more dominant is raised which informs the design process. The repetition is used to bring a certain element of order amongst various other design strategies employed. With visually repetitive elements, the components do not need to be identical to have a striking impact on an individual's perception of space.

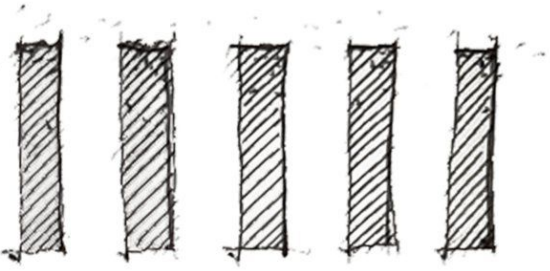


Figure 12: A sketch of Ching's theory (Author 2023)

PUBLIC SPACE



JAN GEHL 2010

*Cities for People
& In Search of Human Scale
& Life Between Buildings*

Jan Gehl's theory in "Cities for People" (Gehl, 2010) states that people have been neglected in cities. This project is in agreement with that statement with specific focus on the lack of attention given to public green spaces in cities. Jan Gehl explores the difference between human dimensions and planning ideologies and the disconnect between these concepts, with simple design solutions such as walking-, sitting- and meeting spaces as the solution towards safer, more sustainable and healthy cities. In another book "In search for human scale" he echoes this idea again by noting the confusion of people when navigating their way in cities due to the loss of human scale. Making and maintaining contact with people with activity as an attraction is another solution that the author offers for design in the city realm.

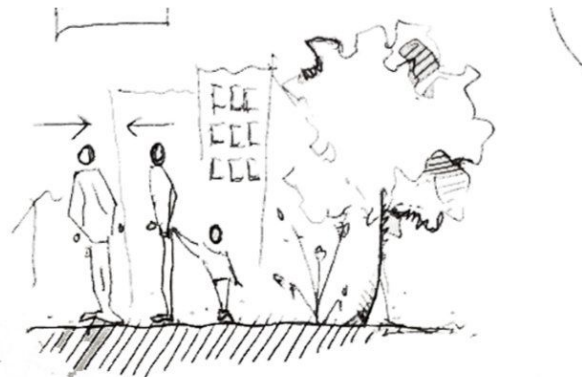


Figure 13: A sketch of Gehl's theory (Author 2023)

GENERAL



MARK DEKAY 2011

*Integral and Sustainable Design:
Transformative Perspectives*

The author, Mark Dekay, wrote this book "for sustainability and for the positive effect on people and nature" (Dekay 2011). This book proposes that integral designs for sustainability are found in considering multiple levels of developing complexity: the self, culture and nature. The intersection between these realms is the ideal space from which an integrated design should emerge. The integral theory suggests that the four quadrants used to analyse a design would include the inside and outside perspectives of the collective- and individual user.

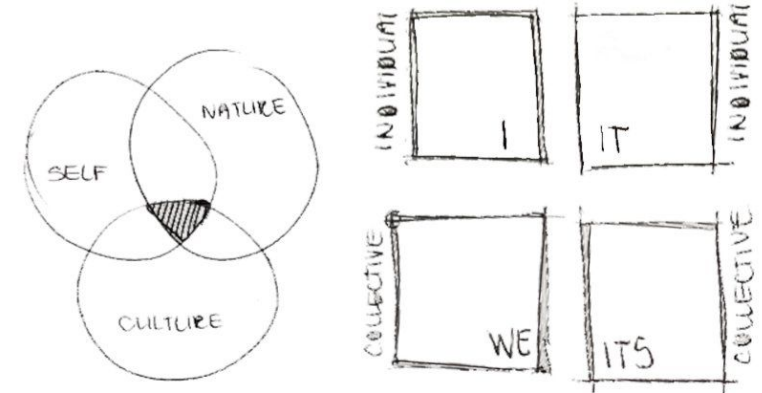
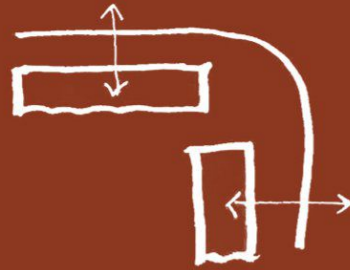


Figure 14: A sketch of Dekay's theory (Author 2023)

FORM GENERATORS

1. Buildings on boundaries



2. Hierarchy and threshold



3. Natural space
- as landmark



4. Movement across site
- stitching sides



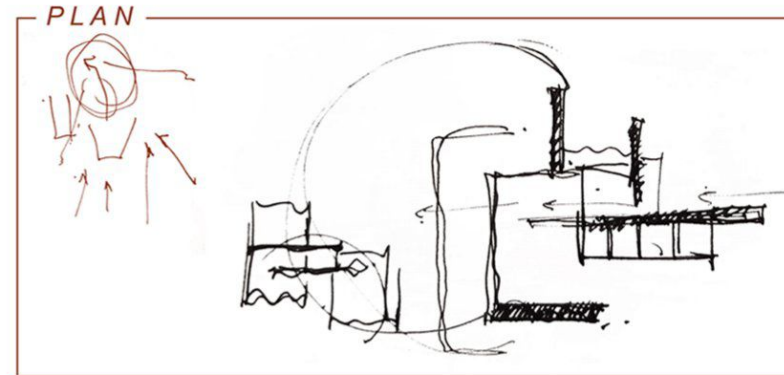
5. Buildings as exhibition
(of ethos)



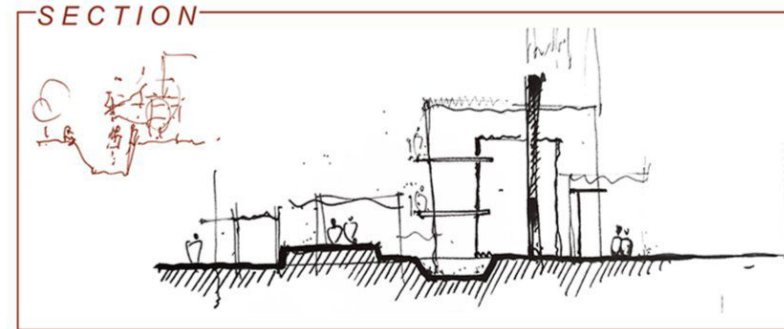
Figure 15: The project's form generator sketches (Author 2023)

INITIAL IDEAS

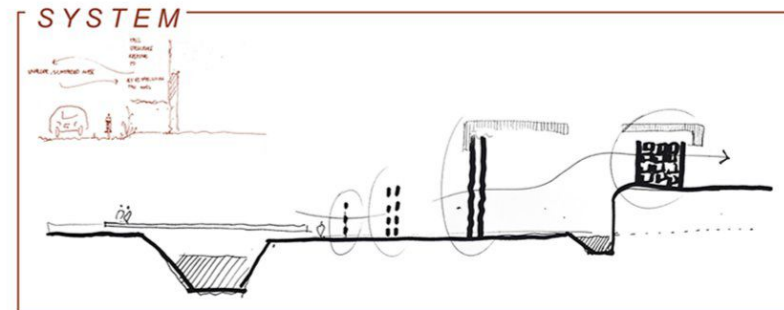
Initial ideas that prefaced the design development consisted of concept ideas in plan, section and system planning. The design originated from a place that aimed to restore identity on the site by creating a palimpsest of activities, materials and users on site. Before growing in complexity, this project began with a few initial ideas.



The built form on plan was meant to be fragmented, yet have intersecting circulation spaces from the start. Variations of thick and thin walls were envisioned.



The concept behind the section was to move in vertical levels of hierarchy through the site. Ground level variations were planned.



The system of movement on site would be created to take the user through different thresholds that creates exposure to various EBTs.

Figure 16: Sketches of the project's initial design stages (Author 2023)