(Bio)diversifying Identity

Leveraging urban biodiversity to enhance the identity of post-war apartment blocks.

P2 Presentation
Architectural Engineering Studio
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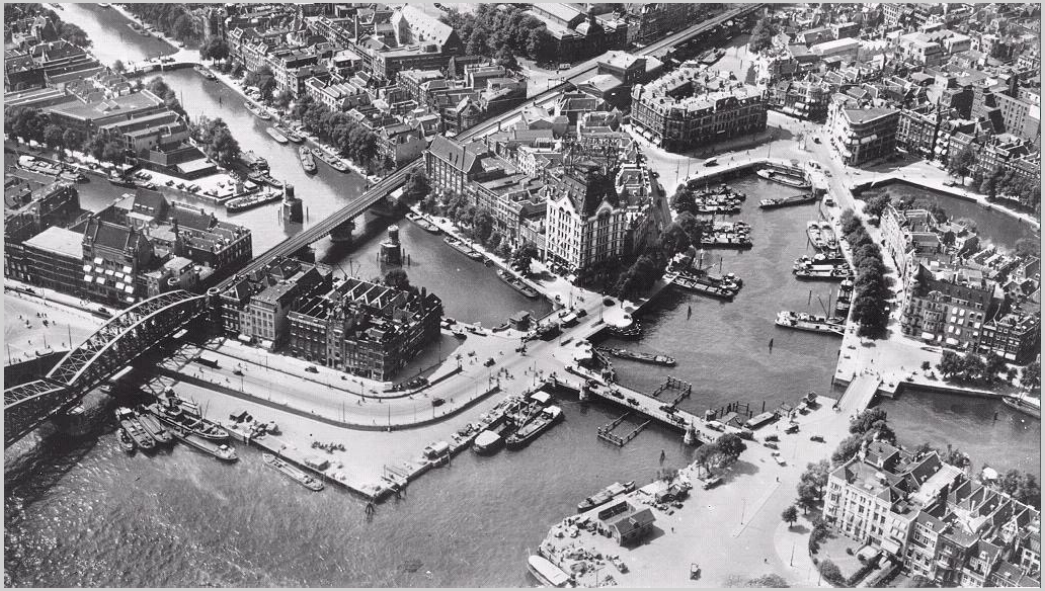


Rotterdam before the war - 1940

Rotterdam after war bombings - 1941

Post-war reconstruction challenges

1. Introduction & Problem Statement

1950

Stringent need for housing

Rise of modernist style

Developing construction technologies

Trends and challenges in the building sector

1. Introduction & Problem Statement

1950

Stringent need for housing

Rise of modernist style

Developing construction technologies

Up to 60% of the European housing stock

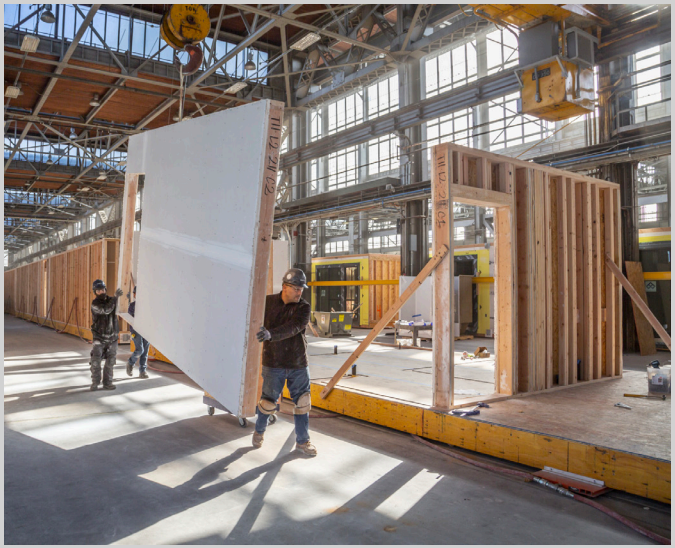
was built in the post-war era (1945-1980).

Including large numbers of affordable multi-storey apartment blocks

2020

Stringent need for housing

Climate change



Developing construction technologies

Trends and challenges in the building sector

1. Introduction & Problem Statement

“Bland uniformity & lack of identity”

1. Introduction & Problem Statement

1950

Post-war housing block
Insufficient environmental performance

2020

Modern-day housing block
“Sustainable” environmental performance

“Bland uniformity & lack of identity”

1. Introduction & Problem Statement

2024

Post-war housing block
Insufficient environmental performance

Social problems

Bland uniformity

Identity "*sacrificed to modernity*" (Koolhaas, 2014)

"*infrastructurally and socially disconnected from the city*" (Ferreira & Tostoes, 2017)

strengthen "identity"

Environmental problems

Restoration, transformation or destruction planned

Technically obsolete, energetically wasteful

Environmentally underperforming

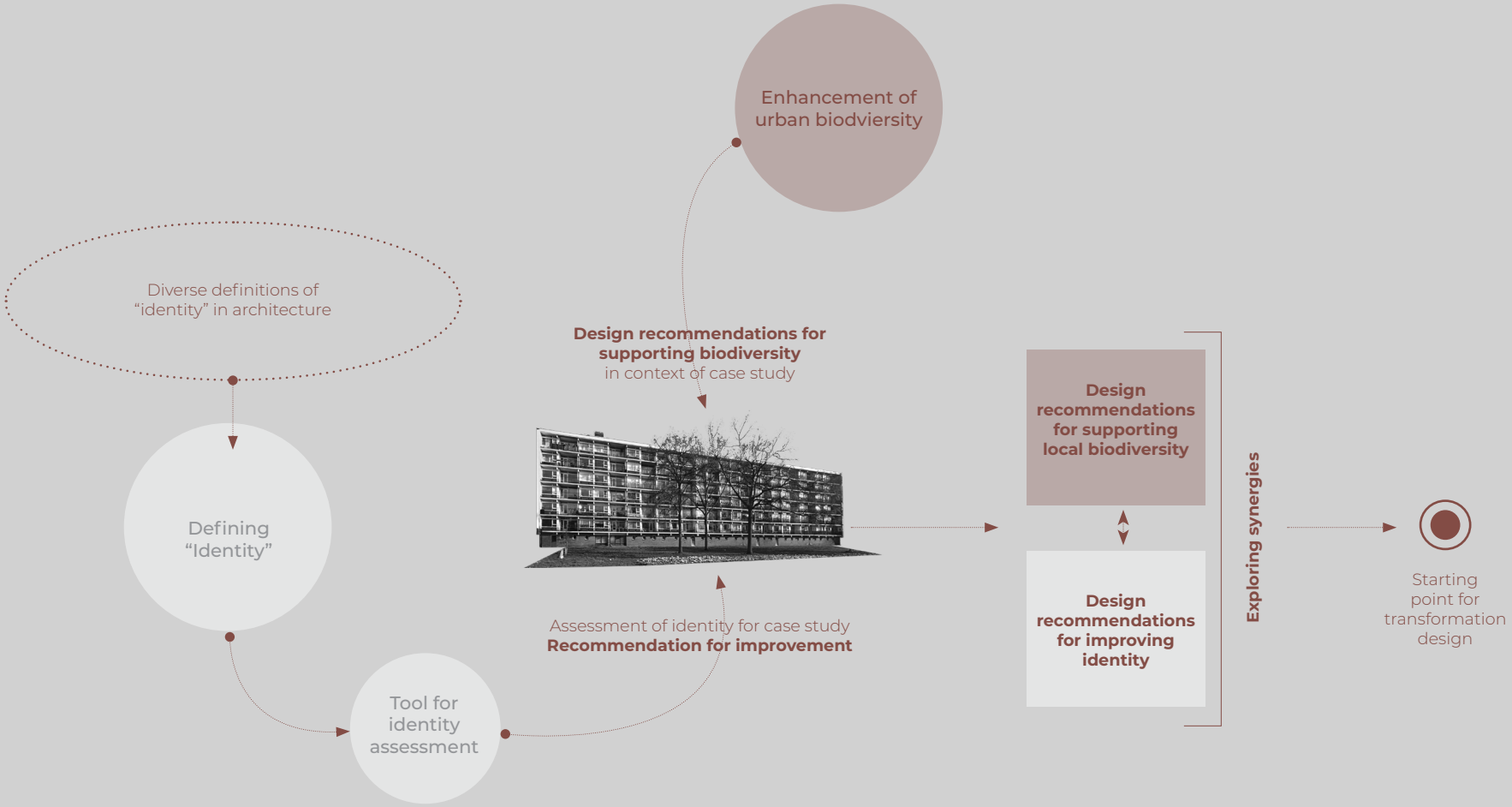
enhance local urban biodiversity

What to do with the underperforming post-war housing stock?

1. Introduction & Problem Statement

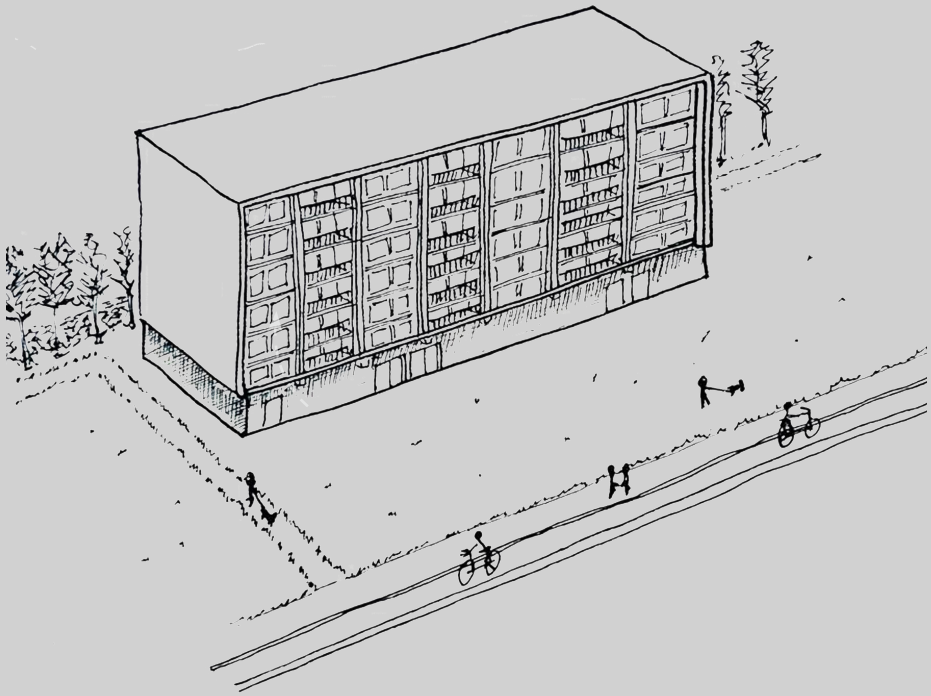
*How can **urban biodiversity** be leveraged to **enhance the identity** of a typical Dutch post-war apartment block in its transformation process?*

1. Introduction & Problem Statement



Organisation of the research

2. Methodology



1. Plot

2. Plinth

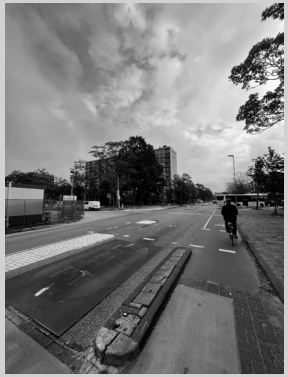
3. Facade

4. Roof

5. Interior

Organisation of the research

2. Methodology



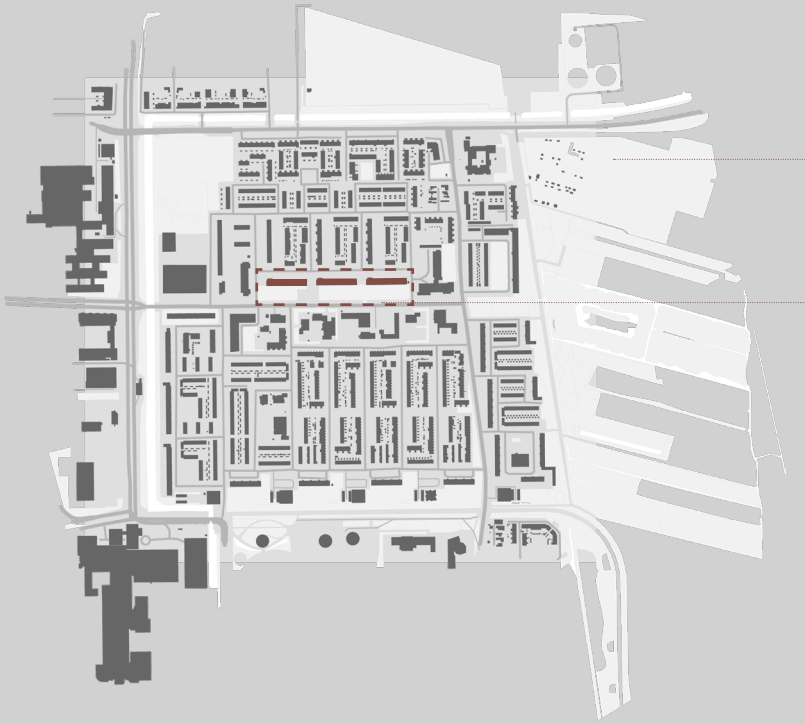
Floris van Adrichemlaan
Boerhaavewijk, Haarlem

District of Schalwijk, encircled by “green” territories (agricultural land, grass, forests or wild fields).

The territory of the Schalwijk district is delineated by rivers (and other water bodies) from 3 sides, separating it from the rest of the city of Haarlem.

Case study: Boerhaavewijk, Haarlem

2. Methodology



Case study: Boerhaavewijk, Haarlem

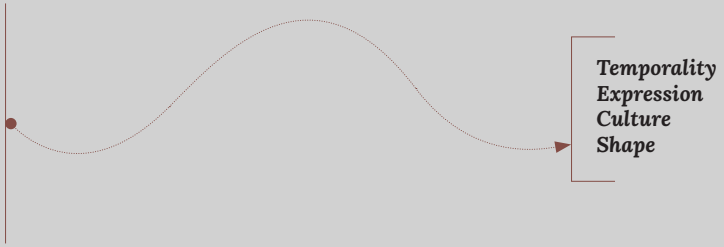
2. Methodology

*The concept of "**Identity**" in architecture*

3. Theoretical Framework

"Identity" = *the distinguishing characteristics of an object, making it unique, different from others, but also unify its elements within. It is about both what the object conveys, and how it is perceived by others.*

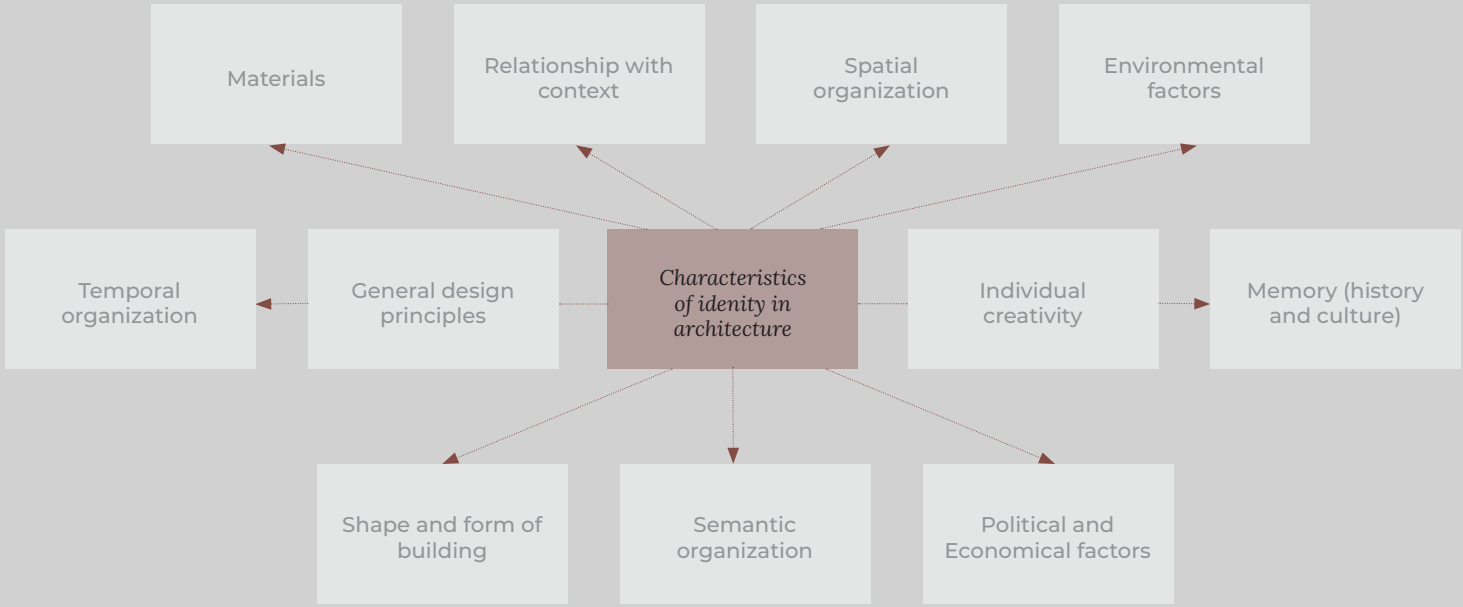
(Miriam Webster Dictionary).



"Identity" in academic discourse

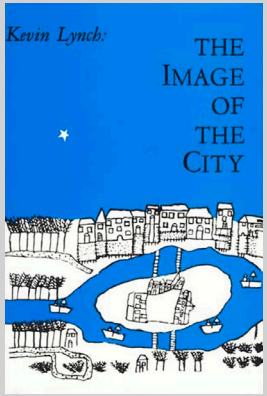
3. Theoretical Framework

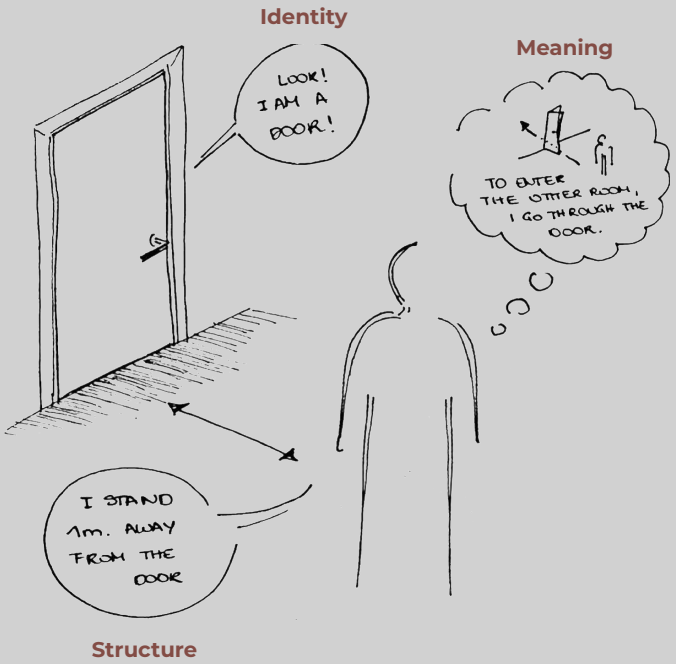
The collection of various “characteristics of identity in architecture”
collected from the works of Brahman & Torabi (2013) and Alavi & Tanaka (2023).

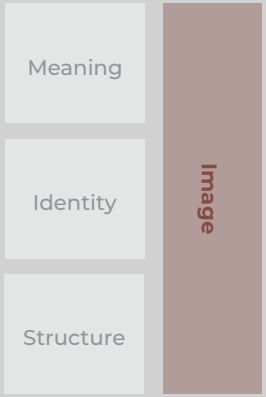


“Identity” in academic discourse

3. Theoretical Framework



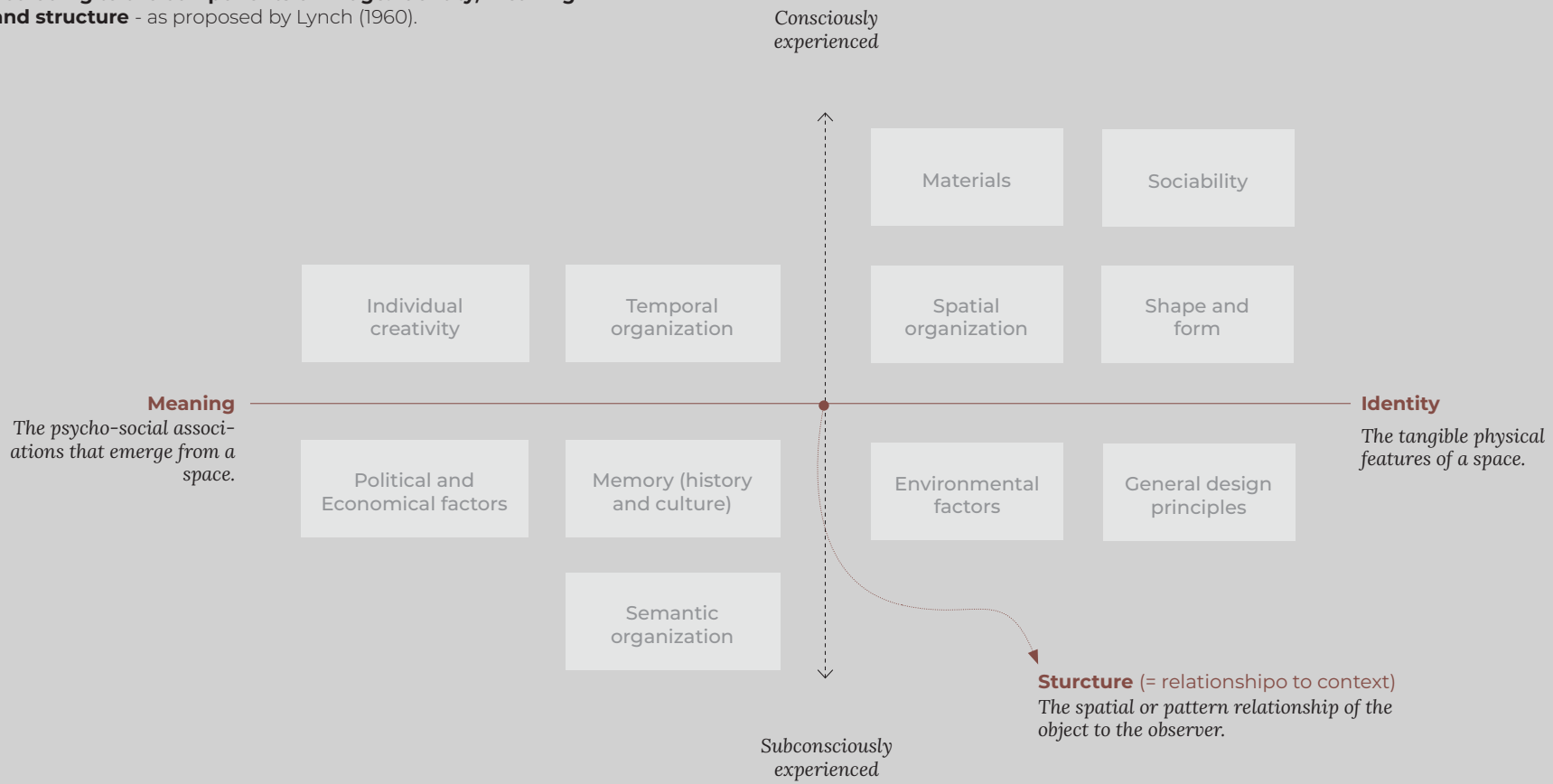




"Identity" in academic discourse

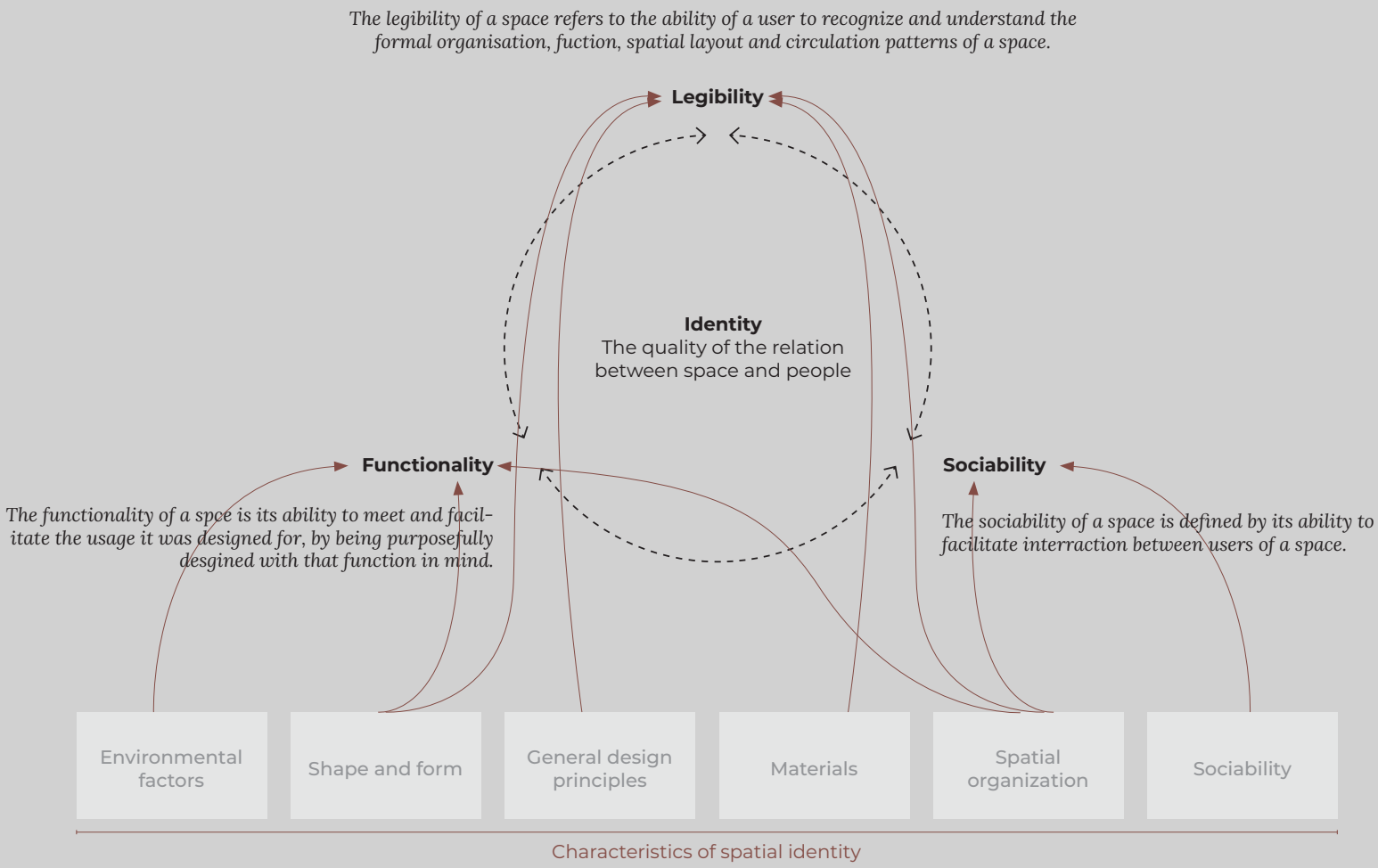
3. Theoretical Framework

Organizing the "characteristics of identity in architecture" accroding to the components of image: identity, meaning and structure - as proposed by Lynch (1960).



"Identity" in academic discourse

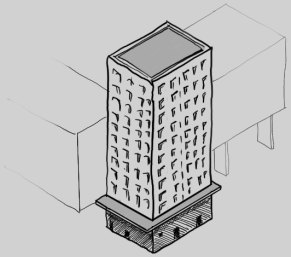
3. Theoretical Framework



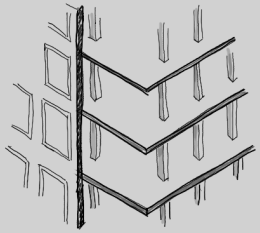
"Identity" in academic discourse

3. Theoretical Framework

4. Identity post-war neighborhood

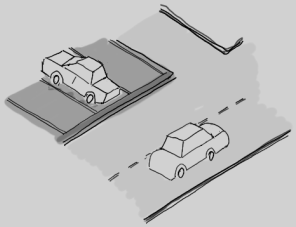


"L'habitat pour le plus grand nombre" low-quality functional mass housing complexes

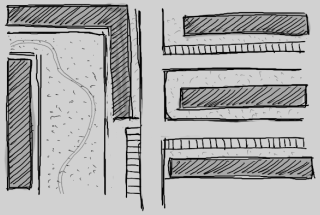


Rapid pre-fab concrete construction meant that that designs were repetitive and of poor quality

Limited public services & weak link to the city which were seen as nests of social decay



Car infrastructure was prioritized at the expense of historic sites and pedestrian comfort

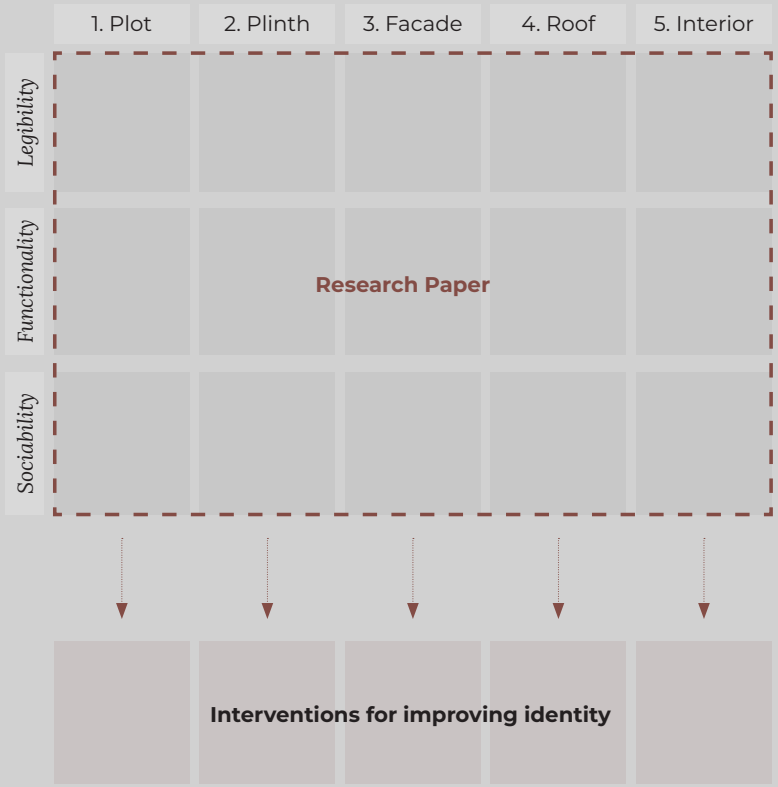


Greenery, light and space were the new modernist ideals

Functional, orthogonal spatial planning different social functions were kept separate

Context

4. Identity post-war neighborhood



Applying the identity framework to the case study

4. Identity post-war neighborhood

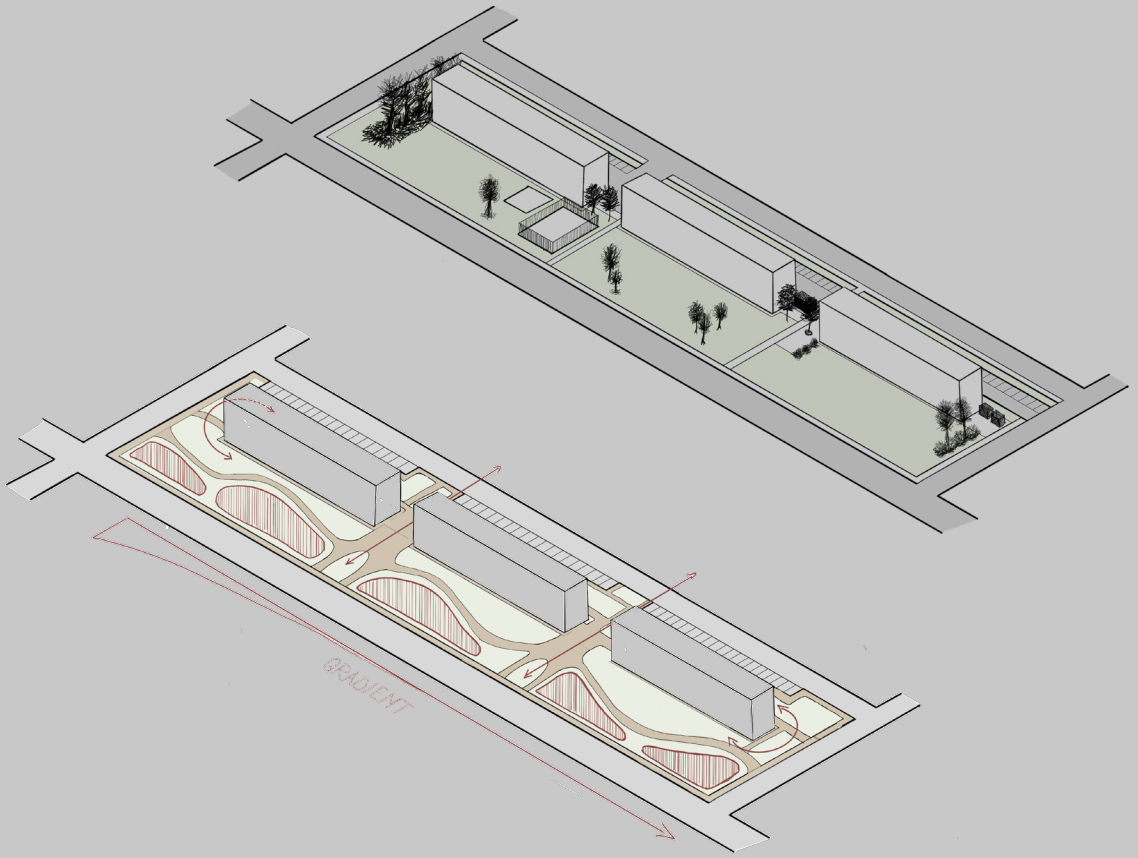
1. Plot

Visual and physical connection between the back and front of the plot: keeping the line sight open in the space between buildings.

Pedestrian infrastructure: path going around and between buildings, leading up to them and their entrances. Seating and lighting along the paths.

Densify or give clear functions to unused space: allowing to give a back a human scale back to the plot and use it for social engagement. The south side remains for stationary activities, and the north one for movement and connectivity.

Minimize space for car infrastructure: change the access to parking places to gain useful space on the northern side of the plot.



Applying the identity framework to the case study

4. Identity post-war neighborhood

2. Plinth

Material contrast between the plinth and upper floors.

Opening the façade of the plinth: strengthens the visual connection between the inside of the building and the outdoors, at the pedestrian level.

Clear & visible entrances: provide spatial indicators for entrances to the building.

Applying the identity framework to the case study

4. Identity post-war neighborhood

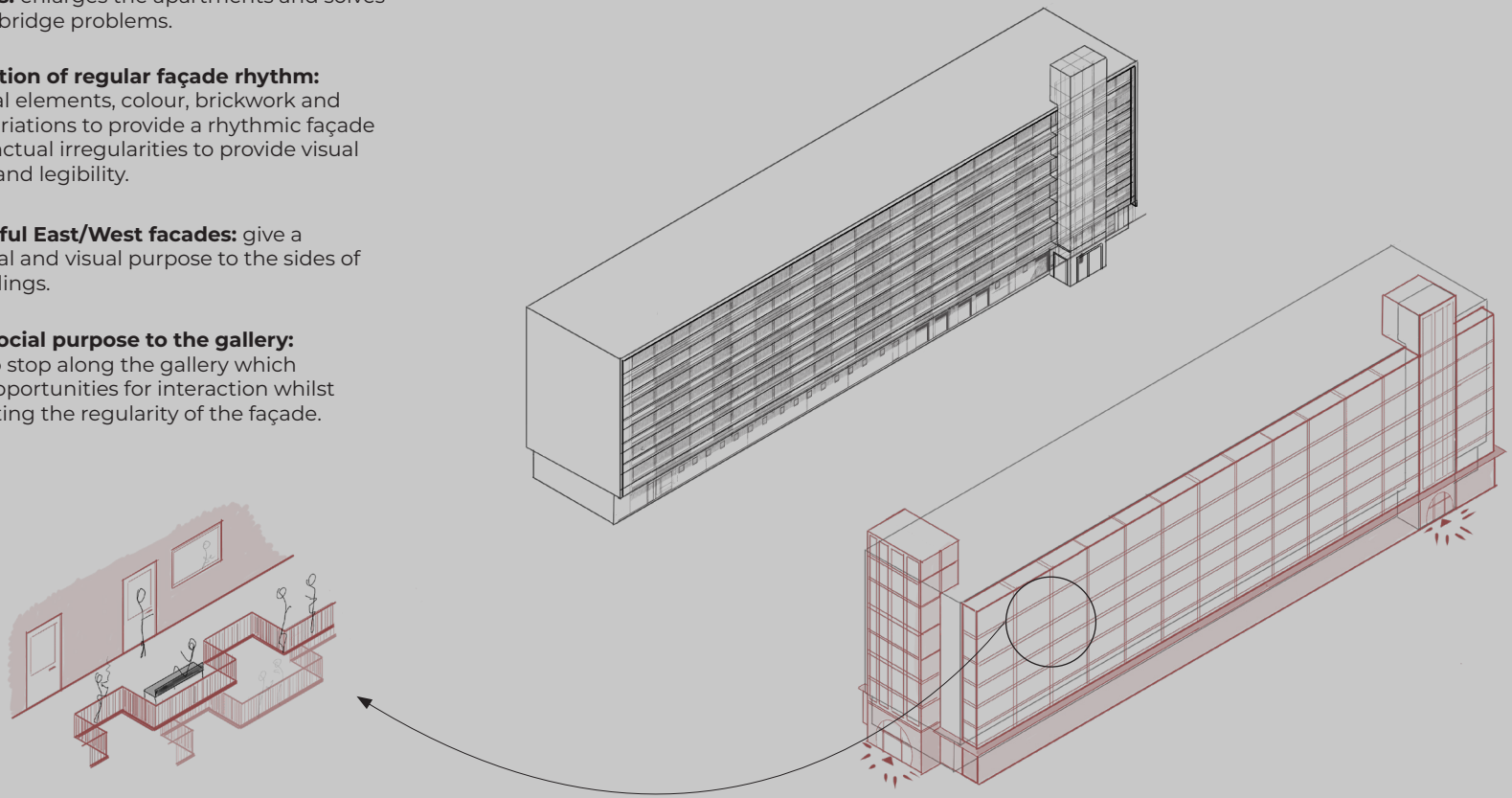
3. Facade

Adding a new façade layer beyond balconies & loggias: enlarges the apartments and solves thermal bridge problems.

Interruption of regular façade rhythm: structural elements, colour, brickwork and depth variations to provide a rhythmic façade with punctual irregularities to provide visual interest and legibility.

Purposeful East/West facades: give a functional and visual purpose to the sides of the buildings.

Giving social purpose to the gallery: places to stop along the gallery which create opportunities for interaction whilst interrupting the regularity of the façade.

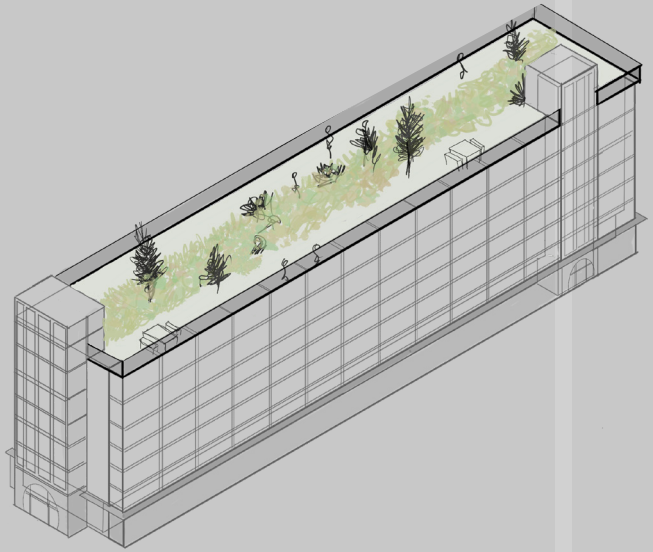


Applying the identity framework to the case study

4. Identity post-war neighborhood

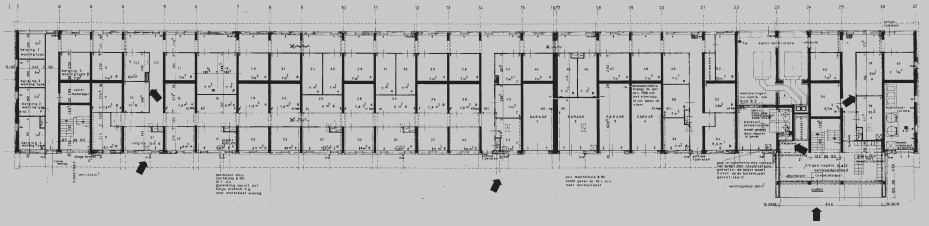
4. Roof

Accessible roof for building residents.



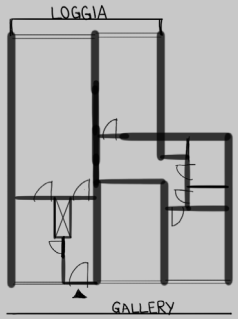
5. Interior

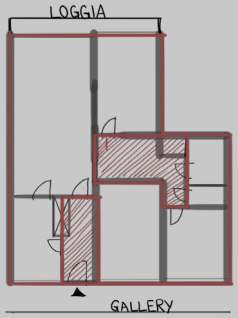
Change function ground floor: Sacrifice the storage on the ground floor to make pleasant, shared spaces, or dwellings that are open to the street.

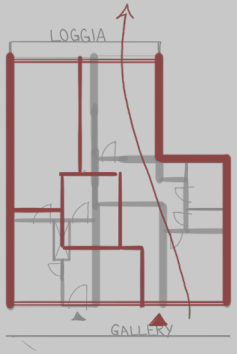


Improve accessibility: create new entrances with their own halls (interphone, letterboxes, elevators), in addition to the existing ones.

Optimize interior spaces: increase the size of the kitchen, minimise space lost to halls and corridors, and create space for storage which is lost to the change in function on the buildings' ground floors.

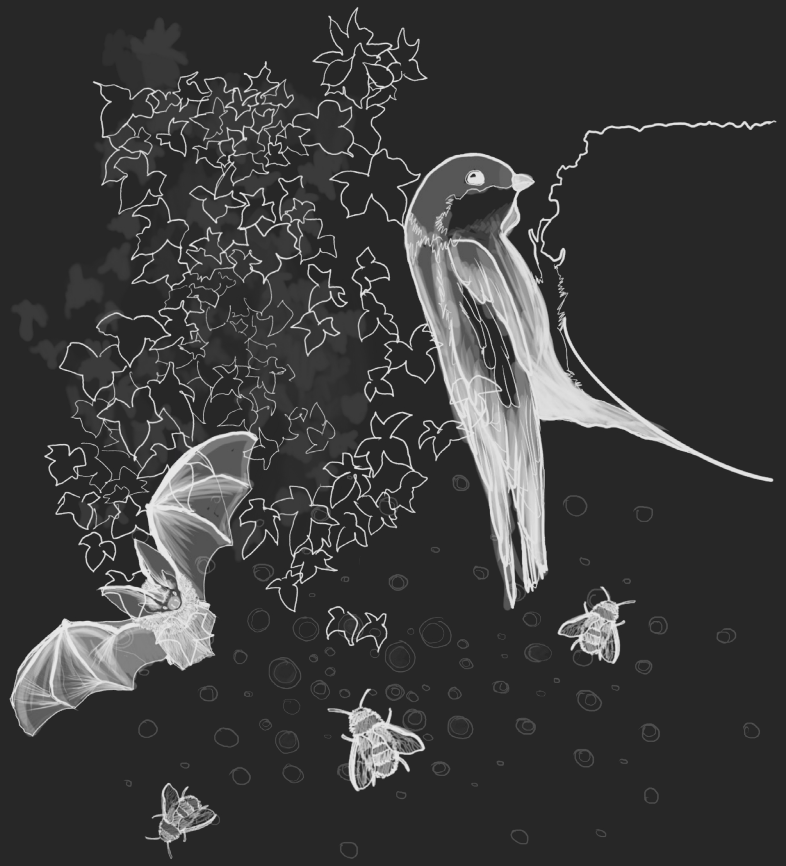






Applying the identity framework to the case study

4. Identity post-war neighborhood



5. Biodivresification strategies

Terrestrial fauna and flora

Building-reliant species

Birds

Bats

Insects

Plants

Larger mammals

Rodents

Optimizing conditions for building-reliant species,
focusing on native Dutch species whose populations are endangered or in decline

Defintion

5. Biodivresification strategies

Birds

Bats

Birds and bats regularly use buildings for nesting. It is essential to provide **nesting** and **feeding** opportunities for them nearby.

Bat access brick and tile, creating opening to roosting cavity.

Siwft (right) and sparrow (left) ready-made nest.

Hidden bat nesting box

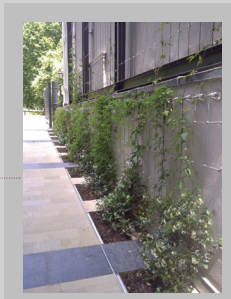
Birds and Bats

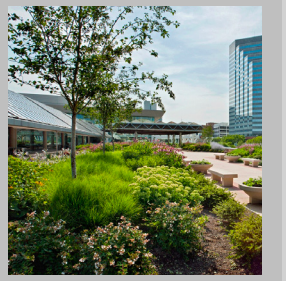
5. Biodivresification strategies

Bee bricks for pollinators

Insect hotels

Maximizing space for flora on buildings: **living facades** and **green roofs**





Insects

Plants

Insects and flora diversity are intrinsically linked, and birds and bats depend on it for feeding. Ensuring a **diversity of native plant species with flowers and nectar** is essential.

Insects & Flora

5. Biodivresification strategies

1. Plot

Patches with diversity of native species of flora, with a focus on evergreen and floral species

Presence of water is preferable to atrract birds

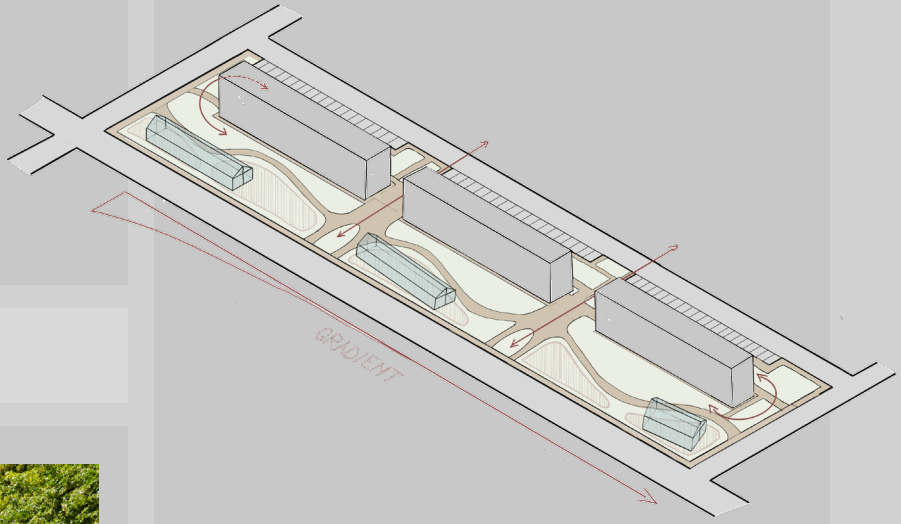
Insect hotels

Integrate wildflower meadows or communal gardens

Use vegetation patches and/or water to guide pedestrian circulation.

Create clearly delineated spaces dedicated to biodiversity such as insect hotels or communal gardens

Maximize the space attributed to diverse vegetation (instead of plain grass)



2. Plinth

Integeration of insect hotels or bee bricks on Southern plinth.

Floral patches or hedges

Use insects bricks (which are see-through) to open up the grond floor and create material contrast with the upper floors

Use flower compositions or hedges around entrances to highlight them.

Biodiversity interventions for the case study

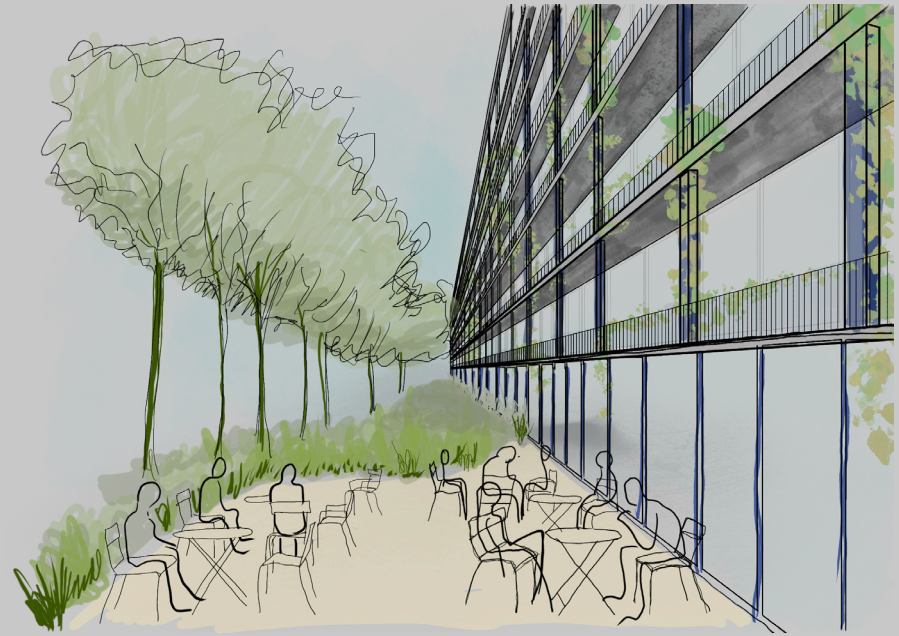
5. Biodivresification strategies

3. Facade

On non-southern facades, above plinth level, create ledges, eaves with nesting cavities with holes of varying sizes for birds.

On Southern facades, create cavities for bats

Create living wall using trellis (preferably Ivy)

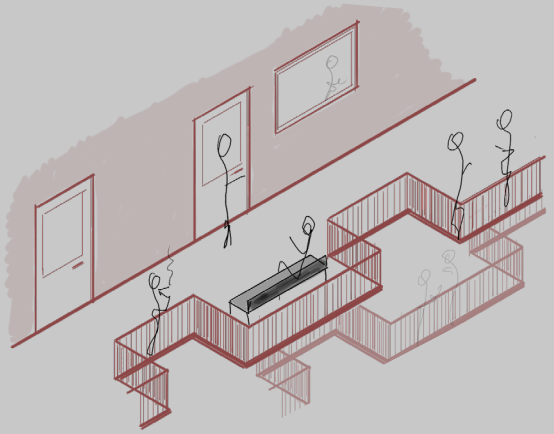


The edges of the gallery can integrate ledges suitable for bird nesting.

The localized placement of either bat or bird roosts in the facade can break its regularity.

The localized use of trellis with vegetation along the facade can break its regularity.

The east and west facades can be used for growing native vegetation along trellis as well as for bat roosts.



Biodiversity interventions for the case study

5. Biodivresification strategies

4. Roof

Create intensive green roof: patches of diverse native plants.

Integrate bird nests: for species nesting at higher altitudes such as Peregrine Falcons.

Integrate wildflower meadows or communal gardens

Create an intensive green roofs as those are preferable for making accessible roof gardens.

Use vegetation patches to guide pedestrian circulation through the roof.

Create communal gardens to enhance the sociability of the roof.

5. Interior

Identity interventions may be carried out indepedently from ones aimed at biodiversity.

Biodiversity interventions for the case study

5. Biodivresification strategies

Remarks, annotation and result application

6. Conclusions

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MSc 3 Architectural Engineering
Graduation Research - January 2024

Design Tutor: Annebregje Snijders
Research Tutor: Nico Tillie

Thank you!

End