Re-structured.
Transformation strategy for mass-housing blocks on the example of ERA buildings in Buitenhof, Delft.
Fascination - emergence of new trend - housing transformation.

Lacaton & Vassal doctrine: never demolish.


"Plus" Large-scale housing developments.

For:
1 demolished dwelling
Investment: 10,000 €
+ 1 newly built dwelling
Investment: 100,000 €
+ Loss of operational revenues, social cost, cost of previous studies, mortgage cost: 57,000 €

For:
1 transformed dwelling
Doubling the surface area
Creation of terrace and balcony
Investment: 60,000 €
+ 1 new dwelling
Increased surface area
Investment: 100,000 €
Research Question:
To what extent/how through research-based and participatory design, mass-housing blocks in the Netherlands can be transformed to address the needs of new users and changing society?
What are the architectural characteristics and potential of existing mass-housing buildings?
1. SITE

1. SITE

Local community scale. L. Stam-Beese designed urban layout: spaces starting from the angled buildings (knikflats) to the details about public gardens.
1.2. STRUCTURE

Presence of ERA buildings in the Netherlands (1971). Not filled dots mark the building under development. ERA system was similar to the other, casted in-situ systems (Sander, Berda, Wilma II, EBA) and significant in terms of building technology advancement.
1.2. STRUCTURE
“Contractors architecture” - complete design from structural system...

Re-housing presentation: Jan Ksiazek - Simone Schade - Dimitrios Papatheodorou - Eva Führer
1.3 SKIN, SERVICES
1.5. SPACE PLAN

Standard gallery apartment for a family in 1960’s
Research subquestions.

What are the architectural characteristics and potential of existing, mass-housing buildings?

What are the design interventions used in the selected housing renovation projects? What is the role of architects and inhabitants in the process? (case study)
Case studies summary:
Transformation interventions in 4 types of space:
1. Public, accessible to all dwellers
2. Community space & circulation
3. Semi-private balcony space
4. Custom dwelling - private domain
Research subquestions.

What are the architectural characteristics and potential of existing, mass-housing buildings?

What are the design interventions used in the selected housing renovation projects? What is the role of architects and inhabitants in the process? (case study)

Discussion: Transformation process and resilience of housing estates. Is Ommoord a site suitable for radical housing transformation?
3. Discussion:
Is Ommoord site suitable for housing transformation?

Photography from 1967:
17/30. Rotterdam Ommoord. Een wederopbouwgebied van nationaal belang
3. Discussion:
Is Ommoord site suitable for housing transformation?

Photography from 2016’s site visit.
2.1 Case studies

Steps in design process of “klusflat” - DIY apartment typology:

2. Catalogue of floor plans
1.5. SPACE PLAN

1.5. SPACE PLAN

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1.5. SPACE PLAN

Research subquestions and research process

What are the architectural characteristics and potential of existing, mass-housing buildings?

What are the design interventions used in the selected housing renovation projects? What is the role of architects and inhabitants in the process? (case study)

Discussion: Transformation process and resilience of housing estates. Is Ommoord a site suitable for radical housing transformation?

Discussion: Is the methodology of radical transformation applicable to the other sites of ERA housing?
4. Reflection

Is methodology of radical transformation applicable to the other sites of ERA housing?
Other ERA housing projects: Buitenhof post-war development in Delft.

“textbook example of sweeping modernist urban planning, which development was stopped around 1970s.”

Other ERA housing projects: Buitenhof post-war development in Delft.

Location: secluded, bordered by hospital complex and not-accessible polder
DANNY ZOEKT PROBLEMEN

Vanavond 21.50
Other ERA housing projects: Buitenhof post-war development in Delft.

Basic facilities in the area.
Comparison: Buitenhof and Ommoord

Conclusion: Blocks in Delft as pure execution of ERA system, without research-based urban planning visible in Ommoord, Rotterdam.
2.1 Case studies
Kleiburg: NL Architects and XVW Architectuur, Amsterdam

Strategy: “Revamp the whole”
Other ERA housing projects: Buitenhof post-war development in Delft.

Necessity of re-connection
Other ERA housing projects: Buitenhof post-war development in Delft.

Necessity of re-connection in larger scale, to the centre of the district.
Other ERA housing projects: Buitenhof post-war development in Delft.

Existing program: monofunctional district of housing blocks.

4 HOUSING BLOCKS - ERA-SYSTEM 99,360 m²
- 630 dwelling units, 65,856 m²
- Local businesses within dwellings: Funeral Home, Driving school, Vietnamese restaurant, Sport Store, Gardening Association, Gardening shop, Hairdresser.

PARKING LOTS 14,923 m², approx. 565 parking spaces

SPACE BETWEEN BLOCKS 33,550 m²
- Neglected, empty lawn

Physiotherapy facility ~1,325 m²
Elementary school ~2,500 m²
Social diversity, however separated in 4 blocks
Transformation design in 3 aspects:

Multi-level strategy of reconnecting ERA flats to the district and opening towards the polder

1. Connection
2. Re-programming
3. Activation
Steps of Transformation Design

1. CONNECTION
Narration inspired by “Townscapes” by G. Cullen

1. Supermarket plaza
2. “Observatory” pavilion
3. Outdoor lobby
4. Elevated path
5. Opening towards polder
6. Ramp over the canal
7. Entrance from the polder
Steps of Transformation
Design - Connection.

“Elevated street” composed of glulam “portals” every 7.8 m and secondary beams
Steps of Transformation
Design - Connection.

“Elevated street” composed of glulam “portals” every 7.8 m and secondary beams
Transformation design in 3 aspects:
2. Re-programming

Introduction of 3 public buildings into the path: bringing public attention
Transformation design in 3 aspects:
2. Re-programming

Introduction of public function under the path - kindergarten
Transformation design in 3 aspects:
2. Re-programming

Introduction of public function under the path - kindergarten
Transformation design in 3 aspects:
2. Re-programming

Building as structural support for the elevated path face sun from the southern site.
Entrance on the western side - towards ERA’s gallery
Independent “gardening shed” on the eastern side - towards ERA’s balconies.
Transformation design in 3 aspects:
2. Re-programming

Building as a ramp providing access to the path and creating gradient of privacy between public path and communal space on the gallery side of ERA flats.
Transformation design in 3 aspects:
2. Re-programming

Functional rooms (playrooms for kindergarten) on the south side - open to the restricted playground.
Transformation design in 3 aspects:
2. Densification - kindergarten

Entrance to the kindergarten - creation of small “urban plaza” in front of the entrance to the block. Slow-traffic drop-off for cars.
Transformation design in 3 aspects:
2. Densification - kindergarten

Continuous open space below the sloping roof functions as a foyer, open playroom and canteen
Transformation design
in 3 aspects:
2. Densification - kindergarten

Service functions located under the elevated path
Transformation design in 3 aspects:
2. Densification - kindergarten

Playrooms connected accordingly to concept of “one open playspace” where following the route around the building, activities change.
Steps of Transformation
Design - Densification

climate control: winter
Steps of Transformation
Design - Densification

climate control: summer

- PV panels - reducing energy consumption during opening hours
- Retention roof reducing "urban heat island" effect
- Mechanical ventilation with counterflow heat exchanger (recovery) if needed
- Summer day: cooling
- Aquifer layer
- Cold storage
- Warm storage
- Earth-to-water heat pump
- 100 m underground

south facade shading
summer: 62 deg sun angle
Steps of Transformation
Design - Densification

“elevated path” detail
Steps of Transformation Design - Densification

ventilated facade, CLT wall and timber panel slab in detail

Wall layers:
1. CLT panel (vapour-tight), 200 mm
2. Insulation, e.g. Rockwool, 100 mm
3. Airtight membrane
4. Distance rafters, 100 mm
5. Facade cladding: alternating parallel and perpendicular Accoya planks (matching ballustrade), 20/100 mm
6. Facade cladding: alternating parallel and perpendicular Accoya planks (matching ballustrade), 20/100 mm

Roof layers:
A. Structural timber roof panel, Lignatur LFE, h=280 mm
B. Airtight membrane
C. Insulation, e.g. Rockwool, 100 mm
D. Granule-surfaced butumen felt, 2 layers

Bridge elements: linking public building to the ERA flat

1. 5.2. 3. 1% 4. 6.
Steps of Transformation Design

3. ACTIVATION
creation of necessary functional “patches”.

paved road for cars accessibility
Steps of Transformation Design

3. ACTIVATION
creation of necessary functional “patches”.
Steps of Transformation
Design - Activation

Creation of necessary functional “patches”.

Extension of paved road - more parking places or urban modules, accordingly to preferences of block’s community
Steps of Transformation
Design - Activation

Creation of necessary functional “patches”.

Extension of kindergarten - playground
Steps of Transformation
Design - Activation

Creation of necessary functional “patches”.

Creation of borders
- privacy for rowhouses and security for playground
Steps of Transformation
Design - Activation

Modules - framework for incremental change accordingly to the needs
Steps of Transformation
Design - Activation

Modules - shifting responsibility of the shared community space

garden: urban farming

garden: forest farming

garden: planter boxes

garden: picnic tables
Steps of Transformation
Design - Activation

Modules - shifting
responsibility of the shared
community space