GRADUATION REPORT

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P5. Graduation Studio MSc4 Dwelling, At Home in the City, Amsterdam
Responsive Suburbia: dwelling and working in IJburg
Tutors: Nelson Mota, Ype Cuperus
Date of P5: 26.06.2013
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## Personal information

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## Dwelling: At Home in the City: Amsterdam

### 'Responsive dwelling'

> The new (collective) vernacular: dwelling + working in a responsive environment

- Paul Kuitenbrouwer, Olv Klijn, Nelson Mota

## A - Graduation Plan P5: Architecture


<table>
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<th>Product</th>
<th>Problem Statement</th>
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<td>The island of IJburg is a new, monofunctional residential area lacking connection with the city of Amsterdam.</td>
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<th>Research Question</th>
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<td>How can the working + dwelling typology be re-evaluated in order to reintegrate a neighbourhood into a web-functioning, sustainable community?</td>
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<td>My goal is to design a new type of collective dwelling suited for contemporary living, which incorporates responsive design on sociological, economical, and environmental levels. The objective is to investigate in a new typology (from dwelling scale to urban scale) which could be appropriated as a positive example for living collectively.</td>
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## Process

### Method description

- site visit(s), sketches, photographs, experimental observations, interpretation of data
- generating physical models at 1:1000 and 1:500
- research: documents pertaining to development of site as well as zoning laws, regulations
- map analysis of given location and respective areas; study of morphology of site at larger scale as well as within the building scale
- typology analysis of existing built form within site; number of dwellings, number of levels, building types, materialization, accessibility
- programme analysis of existing site; what is there, what functions are lacking, which could potentially improve the area and or neighbourhood

## Argumentation of studio choice

After doing my first housing project during fourth year Bsc Arch, I was immediately drawn to the subject of housing. I am especially interested in analyzing middle-to-high density residential complexes. The concept of living or dwelling affects us all. It is my goal (throughout this studio) to rethink our current lifestyles, resource usage, building materials, typologies, and incorporate these aspects within the design process. Coming from Canada, I see a lot of poor housing projects which do not take any consideration of the future. Instead, the private, free-standing family home is still sought after, with no other available and encouraging options for collective living, besides the standard stacked apartment block. This is one of the main reasons I am in the dwelling studio: my response to North America’s backward-thinking approach to housing solutions in the present day.
theme (responsive dwelling + support/infill)

- conducting group meetings to discuss theme and providing our final analysis outcome in a book format
- readings on various topics: responsivity, flexibility, work-live, community, collectivity, activities
- diagramming defined case studies and re-interpreting them to suit theme (ie. axonometric, figure-ground, etc)
- incorporating theme into design by careful analysis and interpretation of sources
- sketching, quick plans, initial ideas, perspectives
- formulating quick collage on Photoshop in order to convey ‘feeling’ and or certain idea of the design
- browsing through online as well as literature and journal sources for inspiration regarding similar typologies and or styles of expected design (high density dwelling books, collective living, semi-detached housing, etc)
- generating massing models in order to work directly with scale, and volume within the site context
- referring to housing manuals: floor plan layout, construction, sustainability issues
- investigating theoretical themes which will be incorporated into the design, eg. ‘mat’ building, the vernacular
- using computer-aided design software such as: AutoCad, SketchUp, Revit to help formulate spatial and a more technical (an precise) understanding of the project

Literature (no date)

Anne Mikoleit and Moritz Pürckhauer, Urban Code: 100 Lessons for Understanding the City (The MIT Press, October 2011

LIVE/WORK, Northeastern University School of Architecture, ARCH G691 Graduate Degree Project Studio fall 2009

Herman Hertzberger, "Flexibility and polyvalency", Forum 3, 1962, p115-188


Leupen Bernard. Frame and Generic Space. 010 Rotterdam. 2006.

Tim Eschuis and Fransje Hooimeijer, "What is Collective? Designing the Collective Domain" OASE 71: Urban Formation and Collective Spaces, 54-71

Bernard Leupen, Frame and Generic Space (010, Rotterdam)

Jan Gehl, Life Between Buildings: Using Public Space (The Danish Architectural Press, 2010)

Herman Hertzberger, "Flexibility and polyvalency", Forum 3, 1962, p115-188


Tatjana Schneider and Jeremy Till, Flexibile Housing, (Elsevier, 2007)


B - Process Documentation

General practical reference: building technology references, Neufert, housing manuals, software references for Revit, consultations with professors / architects for professional feedback.

Two academic housing projects completed in the past.

Two academic housing projects completed in the past.
P1 initial design outcomes / programme

P1 sketch-up perspective studies

P1 dwelling typology study
In the future there will be a change of paradigm related to collective housing. Collective housing will be emancipated and change in character from a mass-oriented, mainly public and standardised form of building into a consumer-oriented, flexible and individualised form of architecture. It can offer a real alternative to suburban housing. The change can have enormous consequences for urban development and can give new meaning to the concept of density.

- Atelier Kempe Thill. Specific Neutrality, p50

The twenty-first century’s return of urban dwelling fights against the modernistic idea of sprawl and suburbia, where a free-standing dream home was sought after. The planning of livable compact cities is on the agenda at the moment. An approach to doing so would be through collective dwelling, where proximity to urban services brings about quality living.

"...mixed use is essential to the creation of sustainable communities, ensuring daily vibrancy and flexibility over time."

- Industry in the City, p9

Located in Amsterdam, the graduation studio project will incorporate the theme of responsive dwelling. The design takes this theme into account by means of responding to evolving economic conditions, demographics, and lifestyles. Designing a non-monofunctional, flexible building is key to meet this criteria. A contemporary typology fitted for 21st century living will be analysed.
"mat-building can be said to epitomize the anonymous col-
lective; where the functions come to enrich the fabric, and
the individual gains new freedoms of action through a new
shuffled order, based on interconnection, close knit patterns
of association and possibilities for growth, diminution and
change." - A. Smithson
ground floor plan with predetermined divisions (party walls) during design phase

1. studio loft, 2. home office, 3. ground floor workspace, 4. community complex

‘addition’ rule: no overhangs; too hard to construct and creates shadows within dwelling complex.

45 degree sunlight rule applies for built mass as well as additions. The higher the building, the further away the next one should be.

International Building code: a non-residential (work) area should be max. 50% of the total unit size. A maximum amount of 5 workers / employees are allowed to occupy this type of unit. Dwelling + working units can be no larger than 279m².

additions are kept within the line of the individual dwelling (party walls) structural support of dwellings shown with horizontal extensions emphasized.

The new collective vernacular: design on the level of the dwelling

divisions (party walls) during design phase

The new collective vernacular: design on the level of the dwelling

of 5 workers / employees are allowed to occupy this type of unit. Dwelling + working units can be no larger than 279m². Should be max. 50% of the total unit size. A maximum amount of 9m² for external and added / carved out units may be allowed to extend to back, no closer than 3m to the next dwelling (extra sunlight rules apply). As well as additions. The higher the building, the further away the next one should be. A 45 degree sunlight rule applies for built mass as well as additions. The higher the building, the further away the next one should be.

3) ground floor workspace, 4) community complex

Horizontal extensions emphasized. Structural support of dwellings shown with 3 x 3 x 3m ratio adapted for dwelling units. 'Addition' rule: no overhangs; too hard to construct and creates shadows within dwelling complex.

A quick impression of a cut through one of the courtyards.

Concept of additions for ensemble studied + section through main street (study of heights, proportions, mass)
1:1000 balsa wood model.
A section through the ‘stoncy enclave’ showing fairly low heights, and a feeling of vast space.
zoning: maximum volume
3m x 3m x 3m carving streets + creating blocks
minimum SAR (before infill)
(type C) additions added
program: dwelling (pink), services/shops/work (blue), communal services / art studios (green)
(circulation) formal study of overall complex
parking
Traditional projects developers in the Netherlands still describe the qualities of a house in terms of square meters and number of bedrooms. But the experienced buyer, busy with a ‘living career’ knows better and looks for cubic rather than square meters. These, and not the qualities defined by the developer, are better indication of the potential of a house. People can create their own paradise within a given envelope. More individually and freedom can also be built into the collective housing projects. By splitting the house into structure and infill, and enormous variety of typologies can be created inside a basic structure.

- Atelier Kempe Thill p55
theme research: responsive dwelling
axonometric drawing of the ensemble
“In the future there will be a change of paradigm related to collective housing. Collective housing will be emancipated and change in character from a mass-oriented, mainly public and standardised form of building into a consumer-oriented, flexible and individualised form of architecture. It can offer a real alternative to suburban housing. The change can have enormous consequences for urban development and can give new meaning to the concept of density.”

- Atelier Kempe Thill. Specific Neutrality p50
View from main street onto the secondary street, courtyard, shopfronts, dwellings above

axonometric defining dwellings to be studied at 1:50
Dwelling type A

108-216m²

90m² + 18m²

SECTION G-G 1:50
Dwelling type B

108-162m²

108m² + 36m²

SECTION F-F 1:50
dwelling programme study / orientation (public vs. private functions)
The permeable block study of the level of solidity and permeability.

Commutual gardens of all the blocks.

Courtyard perspectives study (Revit Architecture).

Volumetric study of the dwelling ensemble.

Courtyard design inspiration (SANAA approach), 'mat landscaping'.
dwelling Type A with permeable wall between live/work

1:50 and 1:100 study models: spatial explorations

using Sketchup to aid in spatial configurations with furniture
perspective of main street

interior perspective of type A

ground floor of 4.5m (dwelling type B)
design of activity strip (same use of 'meat' landscaping) using the 6x6m grid.

facade and construction study of the complex
Introduced black slate shingles.
shopfront study. 'infill' windows depending on the function inside.
materiality + storefront facade study
dwelling type A: includes a permeable divider

dwelling type B: physical separation

1:200 MDF model for block massing purposes
3x3 grid

streets define blocks

min FSI

dwelling type A

max FSI

dwelling type B
perspective onto one of the internal communal / semi-public courtyards
Existing situation of the IJburg site (zoning: Block 125). A feeling of vastness, lacking human activity.

Design proposal, perspective of main street. Black shingle facade line public perimeter of the permeable blocks.
Community garden
(urban farming)
Greenhouses
Playground
Dance studio
Sand pits
Public Wi-Fi access
Computer center
(workshare spots)
Swings
Tennis courts
Storage
Garbage/recycling
Picnic area
South waterfront
Pergolas
Mech.
Outdoor bike parking
22 ground/floor parking spots
North waterfront
Office
Utility
Office
Exhibition space/gallery
Site pavers
Low grasses
Decorative gravel
Green grid
Pavers
Wood decking
Grass
Flower bed
1 shrubbery
Flowerbed
2
level-1 parking scheme 1:500 (196 spots + extra bike storage, mechanical rooms)
Looking down from roof terrace of House B onto public activity strip with landscaping and pavilions following the grid.

Incremental growth (type A example)
Dwellings are designed to grow vertically and outwardly over time.
(Left: extension matrix for Houses A and B; array of possibilities)
View of collective courtyard and the IJ. A white render coat is used for the courtyard-facing facades acting as canvases for additions.
CLT partition wall
Gaulhofer triple glazed tilt and slide wooden window
underground parking
75mm cast in-situ polished concrete floor incorporating underfloor heating and cooling, waterproof membrane, 100mm rigid insulation, 300mm concrete slab
suspended floor construction: 18mm plywood, 100mm insulation with timber beams, room for HVAC and MEP services, 125mm KLH floor panel
internal single glazing triple-glazed wood-frame operable window
white steel stair
triple-glazed wood-frame facade
solid wooden door (street entrance)
stone pavers above 1.5% slope (drainage layer)
triple-glazing facade wooden canopy and sun shading
6mm Marley Eternit black fibre cement slate cladding (500mm x 250mm) fixed with treated sw battens and counterbattens, 140mm Knau insulation Ecobatt with ECOSE, timber battens every 578mm 900mm KLH 3-layer cross-lam. timber panel
wooden decking on top of soft floor drainage layer: gravel polymer bitumen seal 140mm Ecobatt insulation (pressure-resistant) moisture barrier: bitumen aluminum 125mm KLH floor/roof panel
5mm white render coat, Fermacell HC reinforcing mesh, light plaster render, 125mm Fermacell HD Building Board, 140mm Ecobatt insulation with ECOSE timber battens every 578mm 900mm KLH 3-layer panel
finish coat (white wax)
roof of type A: gravel drainage layer, polymer bitumen seal 140mm Ecobatt insulation (pressure-resistant) moisture barrier: bitumen aluminum 125mm KLH floor/roof panel
heating ventilation water supply
CLT partition wall

Gaulhofer triple glazed tilt and slide wooden window

underground parking

75mm cast in-situ polished concrete /floor incorporating under /floor heating and cooling, waterproof membrane, 100mm rigid insulation, 300mm concrete slab

suspended /floor construction: 18mm plywood, 100mm insulation with timber beams, room for HVAC and MEP services, 125mm KLH /floor panel

triple-glazing facade

solid wooden door (street entrance)

stone pavers above 1.5% slope (drainage layer)

triple-glazing facade

wooden canopy and sun shading

6mm Marley Eternit black fibre cement slate cladding (500mm x 250mm) fixed with treated sw battens and counterbattens, 140mm Knau/f_insulation Ecobatt with ECOSE, timber battens every 578mm

900mm KLH 3-layer cross-lam.timber panel /finish coat (white wax)

roof of type A: gravel drainage layer, polymer bitumen seal, 140mm Ecobatt insulation (pressure-resistant) moisture barrier: bitumen aluminum, 125mm KLH /floor /roof panel

soffit construction of dwelling type B: wooden decking, drainage layer (gravel) polymer bitumen seal, 140mm Ecobatt insul. MB: bitumen aluminium, 125mm KLH panel

exterior (back) facade: 5mm white render coat, Fermacell HC reinforcing mesh, light plaster render, 125mm Fermacell HD Building Board, 140mm Ecobatt insulation with ECOSE timber battens every 5/8mm/900mm KLH 3-layer panel

ground floor slab (without parking below): 75mm cast in-situ polished concrete floor incorporating under floor heating and cooling, waterproof membrane, 100mm rigid insulation, 300mm concrete slab

suspended floor construction: 18mm plywood, 100mm insulation with timber beams, room for HVAC and MEP services, 125mm KLH /floor panel

Detail A

Detail B

Detail C

Detail E

Party wall construction (type A meets type B)
D - Reflection
A housing project comprised of 72 units is located in IJ Burg—a new suburban area that is part of Amsterdam’s IJburg project. A new Dutch suburban housing. The change can have enormous consequences for urban development and can give new meaning to the concept of density.” – New Forms of Collective Housing in Europe.

The graduation studio project incorporates the theme of “responsive dwelling”. The design takes this theme into account by means of responding to evolving economic conditions, demographics, and lifestyles. Designing a non-monofunctional, flexible building was key in order to meet this criterion. Block 125 integrates this theme from the very start of the design process, and within all scales, respectively. The project evolved thanks to continuation of the following questions: How does the building respond to its surroundings? How does the building respond to the users? How does the facade respond to the dwelling? And so on and so forth. These were all questions which helped generate the outcome of the research theme topic into a successful dwelling project.

As mentioned earlier, the project is designed to grow and transform over time. Residents of Block 125 have potential to make changes prior to occupation as well as being capable to adjust one’s housing over time after occupation. This notion of additions and change (Pikko gives the group-conducted theme research on incremental housing (Quinta Monroy), or ‘responsive dwelling’, rather.

As a lively catalyst for the neighborhood. This ‘mat’ consists of landscaping and supplementary functions such as: tennis courts, a soccer field, playgrounds, picnic zones, pergolas, a climbing wall, a dance studio, and storage facilities. The newly-added layer of economic districts, and new technical explorations and programmatic variations, as well as a multitude of activities (light production, small-sale businesses as well as offices).

This dream of being in a house in the idyll of one’s own garden, even though it is still deeply lodged in people’s imaginations, must compete today with choices of habitat that lay their emphasis on the proximity of urban services and demand an architectural quality which is applicable to the ways people live today... A new awareness... – "New Forms of Collective Housing in Europe.

As a healthy model for designing blank development sites.

The graduation studio project is located in IJ Burg, generating dwellings within the waterside sector, a soccer court, a football field, playgrounds, picnic zones, pergolas, a climbing wall, a dance studio, and storage facilities. The newly-added layer of economic districts, and new technical explorations and programmatic variations, as well as a multitude of activities (light production, small-sale businesses as well as offices).

This dream of being in a house in the idyll of one’s own garden, even though it is still deeply lodged in people’s imaginations, must compete today with choices of habitat that lay their emphasis on the proximity of urban services and demand an architectural quality which is applicable to the ways people live today... A new awareness... – "New Forms of Collective Housing in Europe.

As a healthy model for designing blank development sites.

We need to design dwellings which are more integrated with the city and its’ infrastructure. It is my objective to focus on how this can be done if the project focuses on seemingly isolated from the rest of Amsterdam. Block 125 is the missing link between the city and the installations of light production, small-scale businesses as well as offices.

The graduation studio project incorporates the theme of “responsive dwelling”. The design takes this theme into account by means of responding to evolving economic conditions, demographics, and lifestyles. Designing a non-monofunctional, flexible building was key in order to meet this criterion. Block 125 integrates this theme from the very start of the design process, and within all scales, respectively. The project evolved thanks to continuation of the following questions: How does the building respond to its surroundings? How does the building respond to the users? How does the facade respond to the dwelling? And so on and so forth. These were all questions which helped generate the outcome of the research theme topic into a successful dwelling project.

As a healthy model for designing blank development sites.
Responsive Suburbia: dwelling and working in IJburg


Dwellings are designed to grow vertically and outwardly over time.

(left: extension matrix for Houses A and B; array of possibilities)

Bedroom + living room

Axonometric of Responsive Suburbia ensemble. Activity strip shown.

2 extra bedrooms basic unit: roof terrace

Dining room

Spa / salon

Restaurant / cafe

Bedrooms for 2 kids

Additional home office

Dentist

Photography studio

Master bedroom + study

Community garden (urban farming)

Greenhouses

Play ground

Dance studio

Sand pits

Public Wi-Fi access

Computer center (workshare spots)

Swings

Storage

Garbage / recycling

Picnic area

South waterfront

Pergolas

Mech.

Outdoor bike parking

Ground-/floor parking spots

North waterfront

Office studios

Utility office

Exhibition space / gallery

Level 0 1:200

10m 20m 30m 40m 50m 60m 70m 80m 90m 100m 110m 120m 130m 140m 150m 160m 170m 180m 190m 200m 210m 220m 230m 240m 250m 260m 270m 280m 290m 300m
Existing situation and condition of the IJBurg site (zoning: Block 125). A feeling of vastness, and open space lacking ... courtyard and the IJ. A white render coat is used for the courtyard-facing facades acting as canvases for additions.

WORK
LIVE

House B allows for a physical separation within the unit