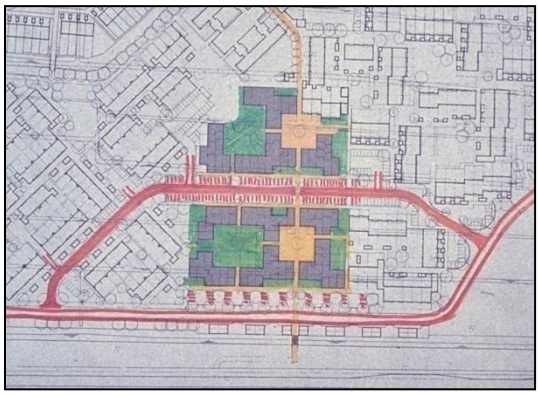
THE MOLENVLIET PROJECT

The housing association “Papendrecht” in the city of Papendrecht wanted a project of 80 two-room dwellings for rent on a site close to the competition area (see ‘preliminary study’). During the first meeting I presented my ‘pattern’ *“Differentiation in dwelling size”*, in short:
Issue: Social relations in a neighbourhood mainly occur among occupants living in the same or adjacent urban space(s). These contacts are far more interesting if they take place among people of different ages and different stages in family life.
Idea: Dwellings on an urban space should be as diverse as possible in form and size: from 1 to 6 rooms and more.
Then, the client accepted the support principle with very different dwelling types and sizes.

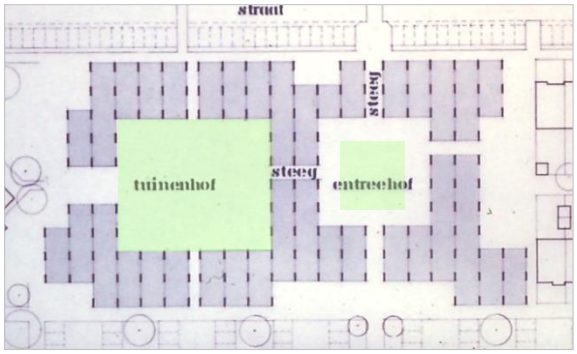
In the given building site we could design one parking street and four courtyards.

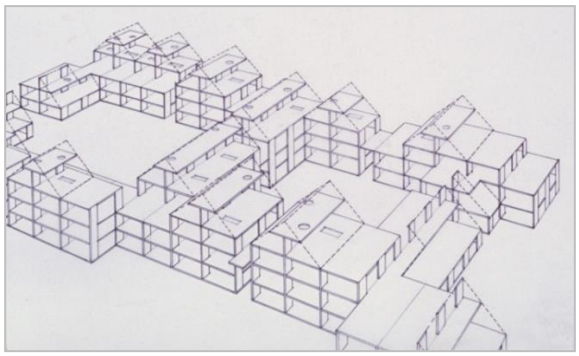


The plan met two other housing projects and a common tissue plan was clearly missing!

Support structure and parcellation

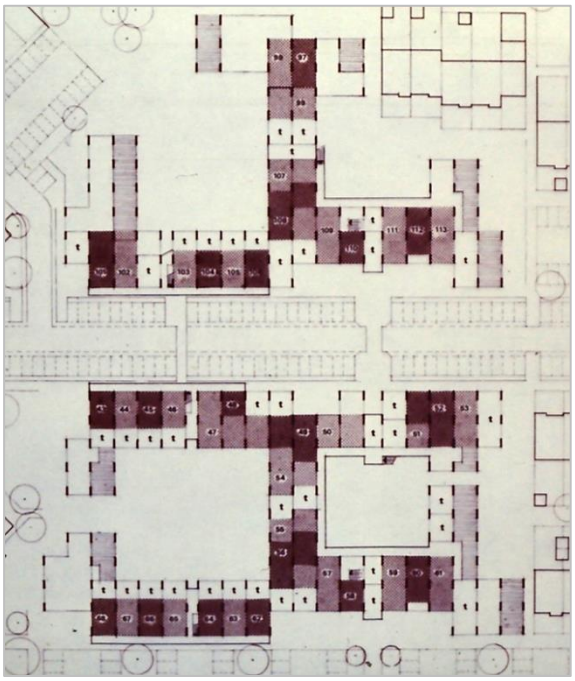
The simple support structure of the study - parallel standard piers, floors and roofs - have been formed around the four courtyards mostly in three levels plus attics. The parcellation of the three dimensioal structure has been decided in consultation with the housing association. It resulted in 123 units of 67 different types of empty units. Units with a ground floor have a garden, units on the first floor a loggia and the units on the second floor a large roof terracce.





Support structure, groundfloor

Groundfloor parcellation with gardens,



Second floor parcellation with roof terraces,

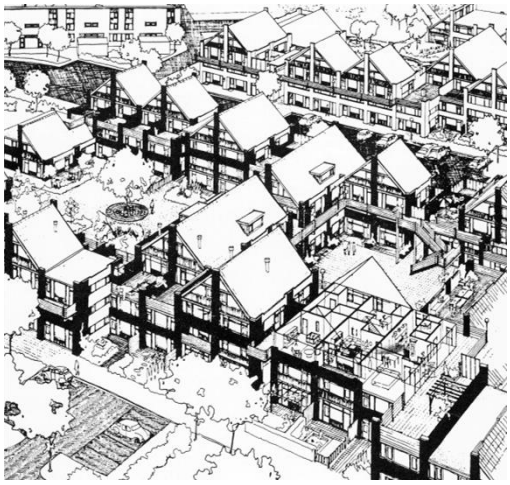
After the parcellation the project of 123 units counted 67 different (empty) dwelling types. The Dutch Ministry of Housing titled the project ‘Experimental Project’ and admitted officially the free lay-out of each unit. Nevertheless we had to make a –fictive- dwelling layout for each dwelling type, according to the Dutch rules of social housing in order to calculate the capacity of each type. On that base the housing association and the users kept the normal national subsidy for social housing – a big step for Open Building- reased with a contribution to experiment costs.

INFILL

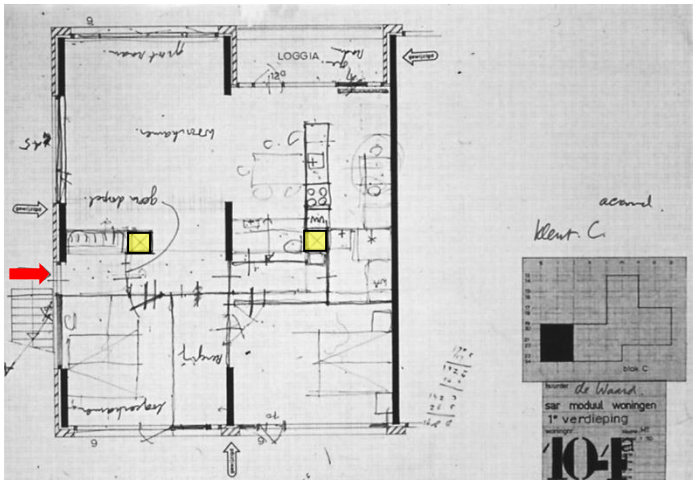
Once the contractor started building construction I had two private infill consultations of one hour with each of the users, following the routing of the building blocks on site. We kept a copy of the empty dwellings to work with the users and added the accompanying facade frames. During the first meeting we discussed the needed spaces and functions related to the ages, hobbies and preferences of each family member. After two weeks a second meeting was spend on confirmation or small changes and on details in kitchen and bathrooms.

Many consultations have been evaluated by A. Gotink, a researcher at the Faculty of Social and Behavioral Sciences of the Utrecht University. She also followed the users after moving in and after three years living. Generally speaking we discovered two important principles: The unique life experience of each of the users had to be valued and we needed confidence in the flow of designing unprejudiced and without own preferences. Hobbies of the users were as important as basic activities. So we had to be open, listening carefully and designing quickly as shown by the movie 'Molenvliet' by Jacques van de Noort.

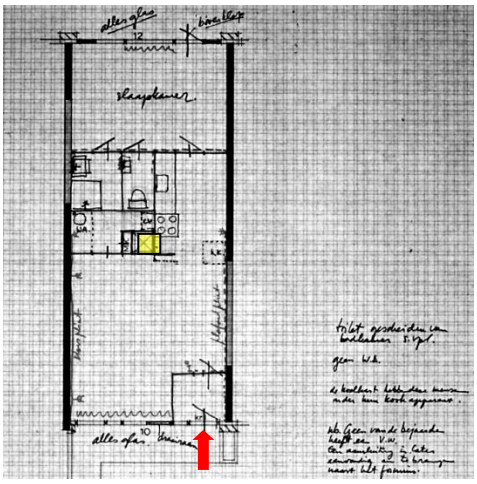
Two times one hour consultation with a family to design the specific layout of their dwelling. (Ans Gotink of Utrecht University in the back)



Artist impression to help users to find location

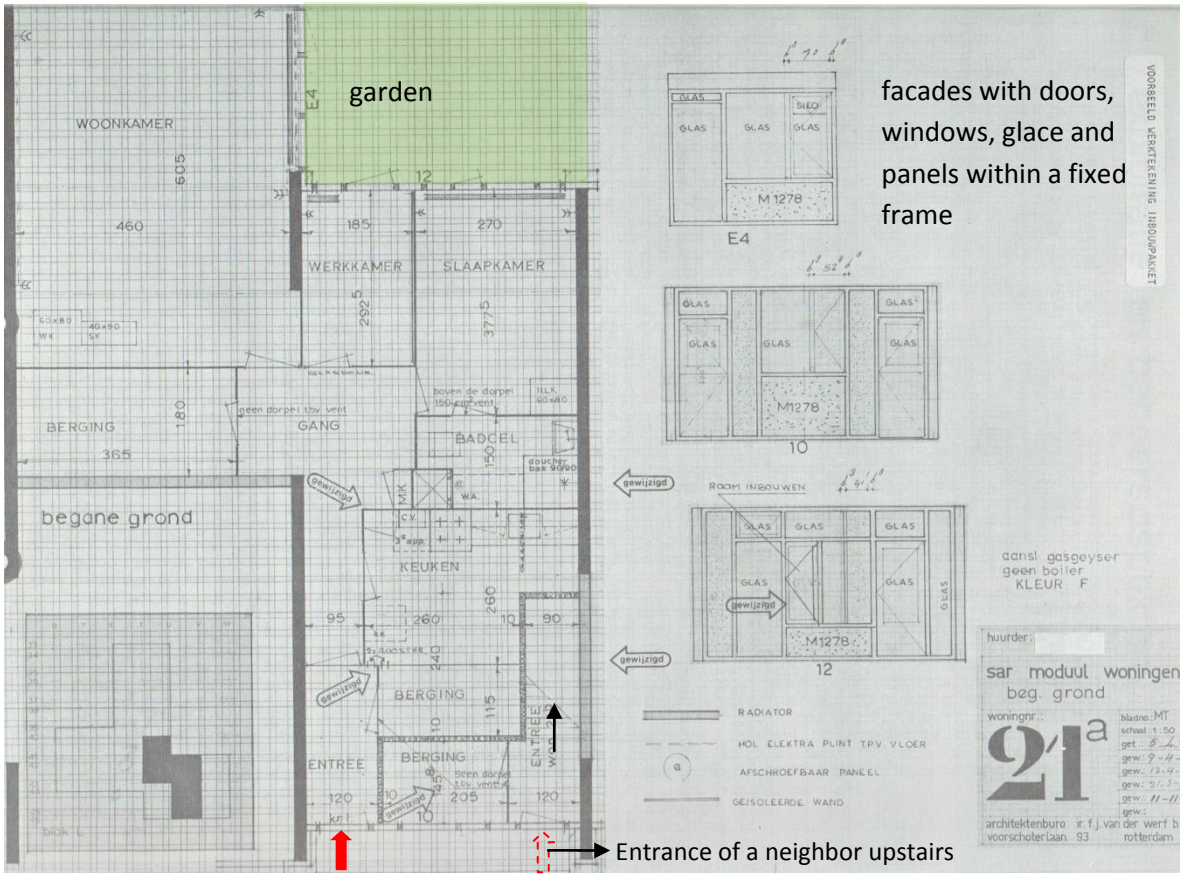


Infill sketch after user consultation

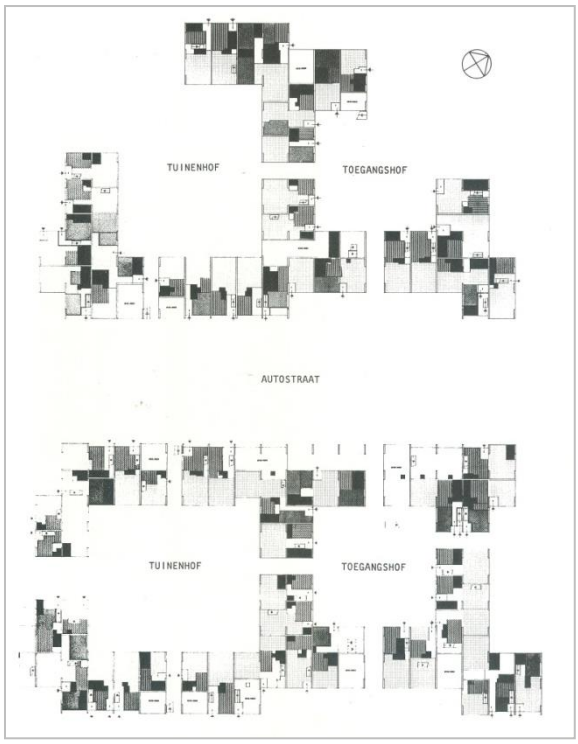


Infill contract drawing

Contract drawing of a 5 bedroom dwelling on gallery level and - to the right - 1 floor higher



Execution-drawing of an infill plan, made on the 10-20 cm grid paper, scale 1: 50.



Layouts of the dwellings, groundfloor

Layouts of the dwellings, second floor

At the end of the second consultation meeting we discussed in short the lay-out of the facades as a result of the spaces inside. This was not only functional on light and ventilation. It made infill variation visible from the outside. Than the users chose their particular facade coloring out of the next 8 pairs of colors each with an own character.

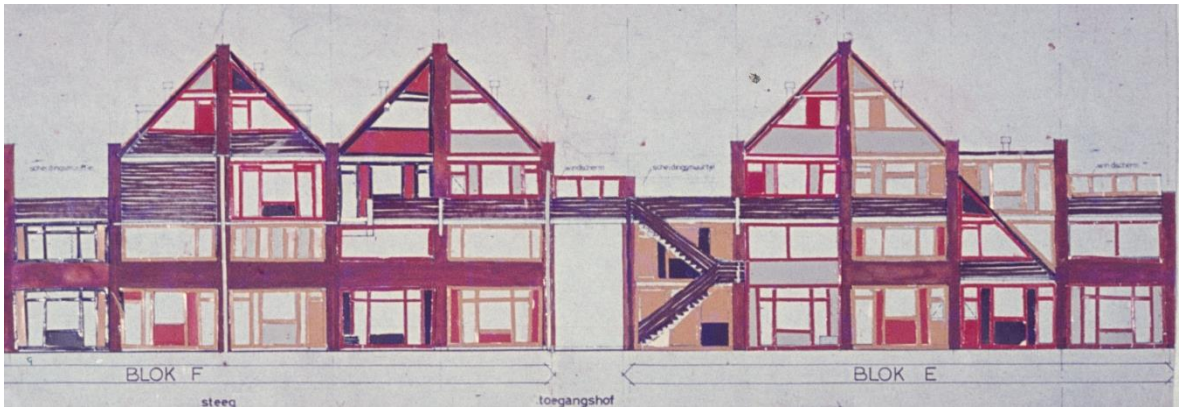


Illustration drawing for color choices by users during the user consultation

The outcome of the user participation was amazing: Within a simple support structure no dwelling was alike. According to the extensive evaluation report form 1976 to 1979 by A. Gotink of the Utrecht University, and to the subtitled movie “Molenvliet” of 1982, the occupants liked the infill processes and loved the small scale diversity in their own built environment.

Parking street

Alley seen from a courtyard

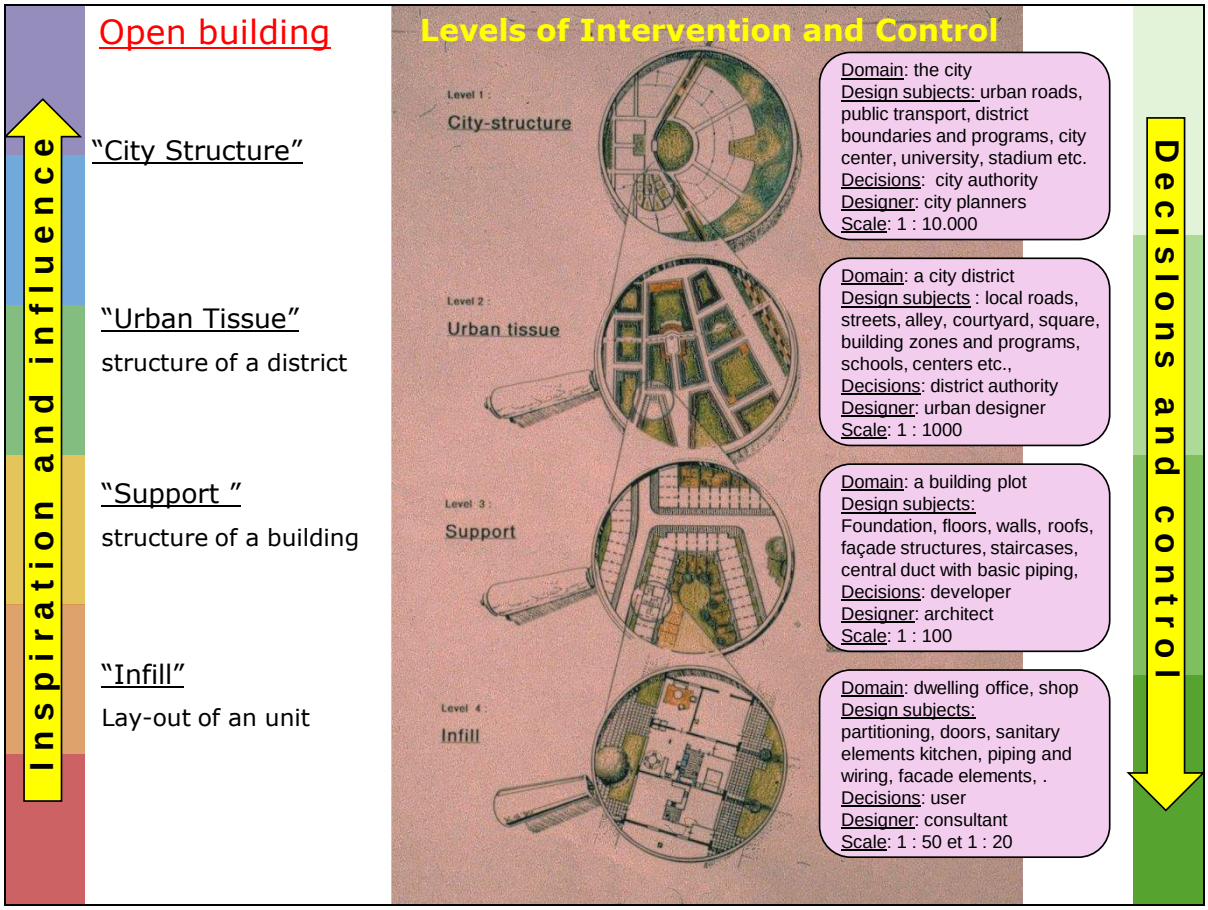
Entrance courtyard

Roof terrace on second floor, seen from a living room

A living room on the first floor

Open Building

In my design practice in Open Building I experienced the *distinction of decision levels* as the essential key idea. The next four levels have been my basic tool.

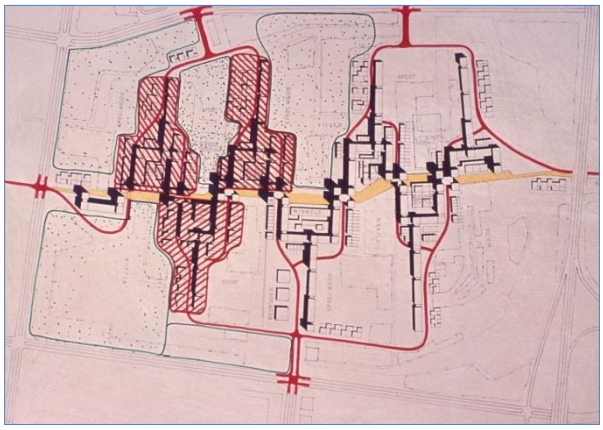


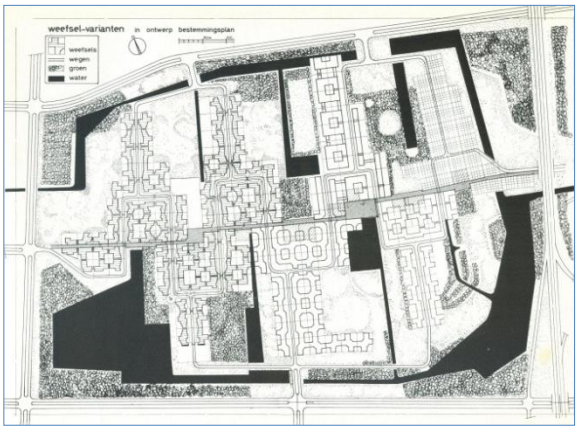
What makes this scheme most interesting is the fact that on each level a *very limited number of design components are thematic*, meaning that those components relate on a regularly base in place and dimension all over the considered field of design, and define as such the essence of a typology on that level. This allowed in my projects to discuss and substantiate those thematic components by the 'pattern language' (Alexander c.s.), a tool for communication on form and its effect on daily life. The result was not only a deepening of meaning about form but also a considerable gain in time and conviction during the whole design process.
Our pattern *"Differentiation in dwelling size"* (see on next page) was such an example.

The scheme indicate on each level also domains (the city, a district, a plot and a unit), decision makers (city board, district management, developer and user), and designers (city planner, urban designer, architect and consultant). Components, domains, designers and decision makers, all form a related sequence.
I discovered in my practice how wonderful decisions - respecting the levels - did work top down in leaving fundamental freedom to the next level, and how at the same time a fruitful stream of information and inspiration did work bottom up from a lower level to a higher one. The result manifested a tremendous variety within a collective structure.

PRELIMINARY STUDY

The aim of the award-winning project was to build in a new district of Papendrecht seven neighborhoods along a pedestrian walkway, each in a high density of 90 dwelling/ha, through which 2/3 of the land could be reserved for water, and all kinds of vegetation.
The study wanted to transform the original high-rise typology into a low-rise one.

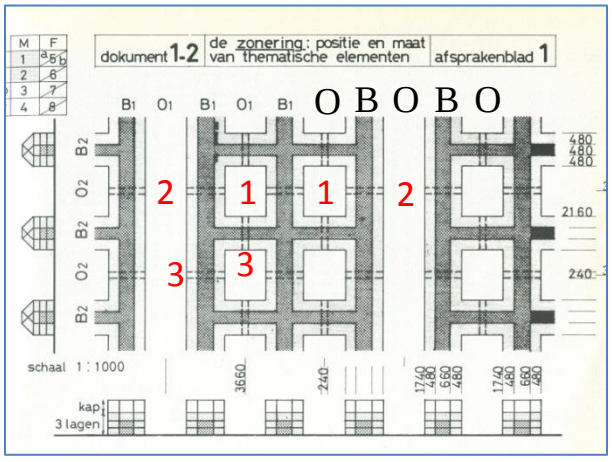




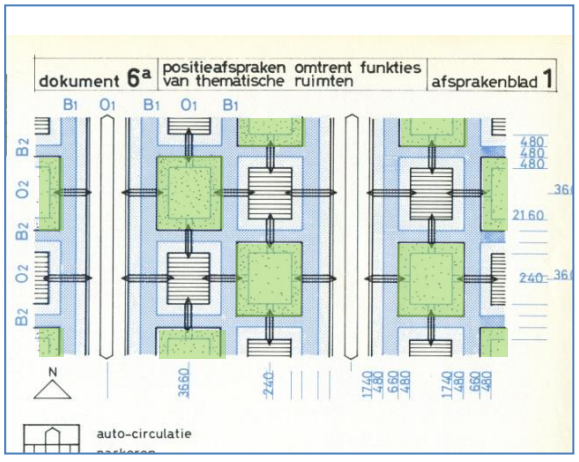
Wilgendonk plan with high rise buildings and the new urban tissue in a low rise fabric.

URBAN TISSUE of the new typology

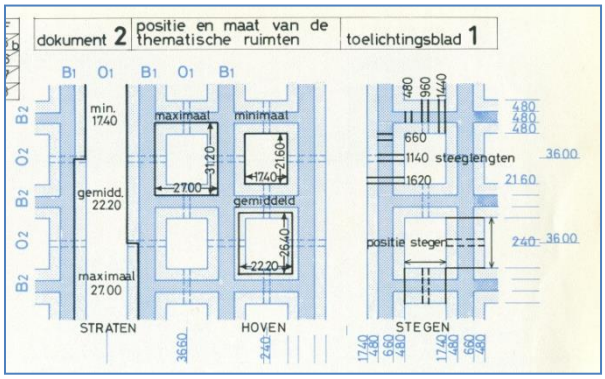
The urban tissue of this typology is composed by 3 thematic outdoor spaces (O):
1. Courtyards (1), streets (2) and alleys (3). Those spaces are formed by building zones (B) with margins on both sides and rendered in a Tissue Model.



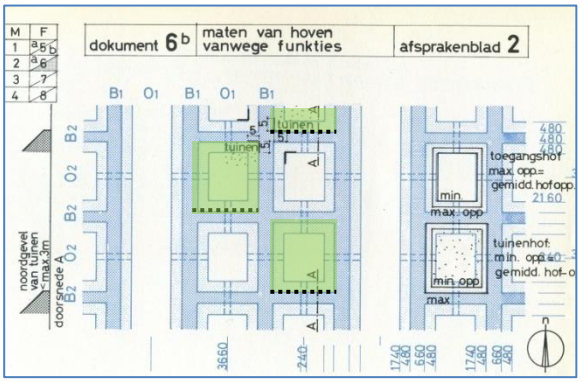
Tissue model: thematic spaces 1, 2 and 3



Entrance- and gardencourts in chessboard



Min. and max. dimensions



North facades on garden court: 3m max

In the model specific agreements can be noted, for example about non-thematic elements.

The three thematic spaces have been substantiated by the 3 following patterns.

Tissue Pattern 1. "Low rise courtyards"

Issue:

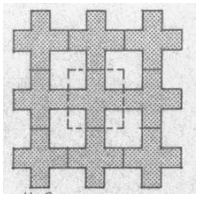
Density. In most urban development's density is an important issue. High rise solutions are alienating for most people and often too expensive to build and maintain. The accompanying greens are too public: the essential collective neighborhood life is impossible because the complete separation of indoor and outdoor life. Car parks are too massive.

Low rise. Most people need a small-scale collective environment where neighbors can meet, social contacts are easy and children can play.

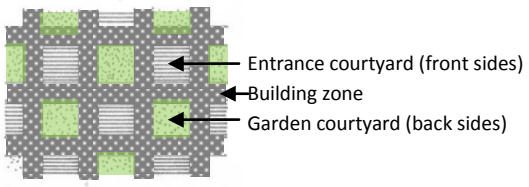
"However, moderators aside, the literature suggests that high-rises are less satisfactory than other housing forms for most people, that they are not optimal for children, that social relations are more impersonal and helping behavior is less than in other housing forms, that crime and fear of crime are greater, and that they may independently account for some suicides." (Prof. Robert Gifford, University of Victoria in Architectural Review 50(1):2-17 · March 2007).

Idea:

Courtyards have a strong effect on density.



Built/land ratio of 5 : 9.



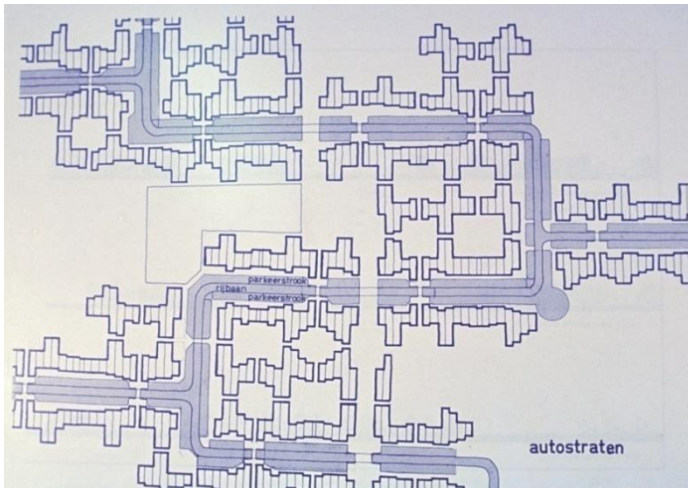
Entrance and garden courtyards in chessboard way

The overall number of floors in this typology is 3,5, still a low-rise world. An average unit size of for instance (90 m2) in 3 floors around courtyards lead up to a density of 100 units/hectare, or a FAR of 9/10. Per ha 3 floors of 3.000 m2 offer 9.000 m2 units. So 1/3 of the land will be built. 2/9 is left for courtyards and 4/9 for streets. The Molenvliet project resulted in a density of 93 units per ha of each 90 m2 on average, a floor-area ratio (FAR) of about 1, this including car-parking, staircases and storage (Kapteijns & Van Rooij & Monroy, 1978).

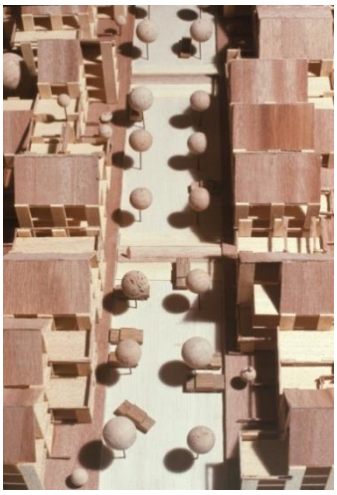
A courtyard has also a positive effect on neighborhood life. It is, uniting and collective, socializing neighbors, family and friends, a shared 'living room', a quiet setting and a safe playground for children. It is concentric and has a center, the natural place for a tree, a fountain, a statue or a special little garden. It has corners, casting shadows at different hours of the day. Each courtyard could get a specific lay-out.

Entrance- and garden courtyards are positioned in a chessboard way, so buildings have a front side and a back side, a preference in many cultures.

Tissue Pattern 2. "Looping parking streets"



Sketch of courtyards and looping parking streets.



Parking street in the model

Issue:

Well paved streets are expensive in construction and maintenance: thus dimensions have to be limited.

Fast driving cars on straight streets cause questions of pollution, noise and danger.

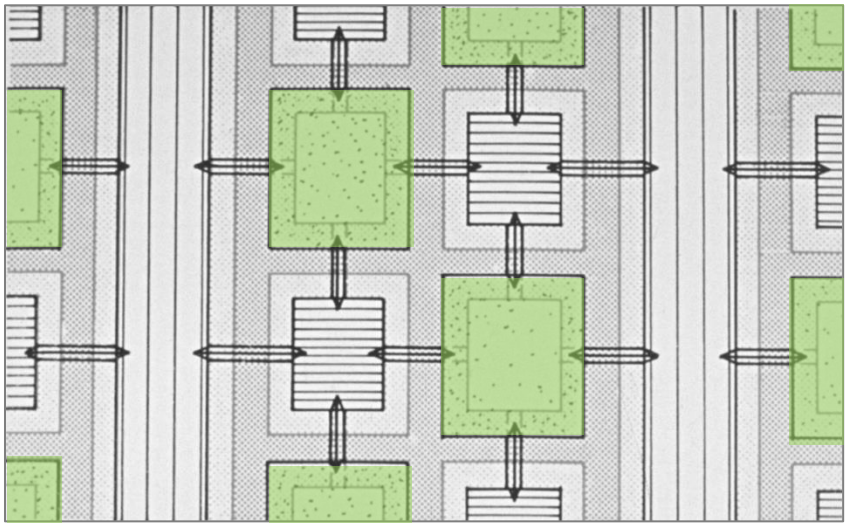
Cul-de-sacs lead to feelings of non-safety and trouble.

Idea:

The dimensions and thus cost of streets will be limited substantially when transversal parking and walkways are projected *on both sides* of the driveway.

Looping streets are safe by the limitation of speed. They don't have dead ends. By linking them to main streets congestions are prevented.

Tissue Pattern 3. "Connecting Alleys"



Connecting alleys between courtyards and streets

Alley seen from a courtyard

Issue:

All courtyards should be accessible from a street for maintenance and ambulances, but through-going car traffic should be avoided.

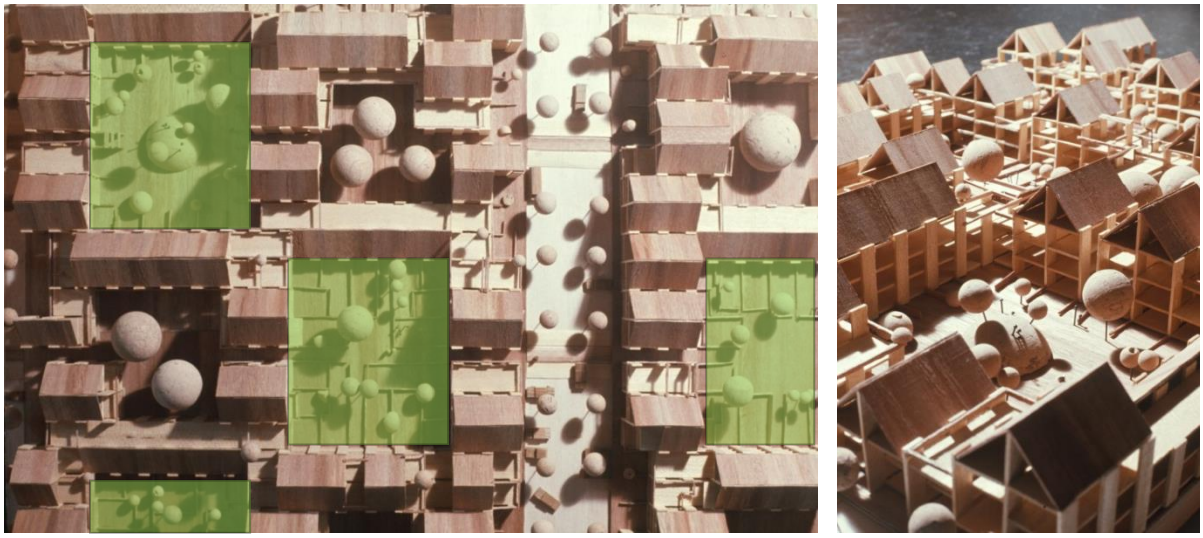
Some people want to control their courtyard, living in a small gated community. Other like a larger neighborhood with more openness, while still other cultures prefer total openness. Through times this openness might shrink or grow.

Idea:
All courtyards are linked to a street by alleys.
Courtyards are also connected to each other by alleys for pedestrians that might be open or gated. Alleys offer possibilities in different circumstances.
Alleys might be decorated to mark the border of a subculture cell (Alexander 1977), They might be covered or over-built.

SUPPORT STRUCTURE of the typology

The support structure (or base building) of this typology is made up by five thematic (regular) components: Piers, Floor Slabs (with shaft openings), Pitched Roofs, Galleries and Shafts.
It has two non-thematic (exceptional) components: Staircases and Vides.

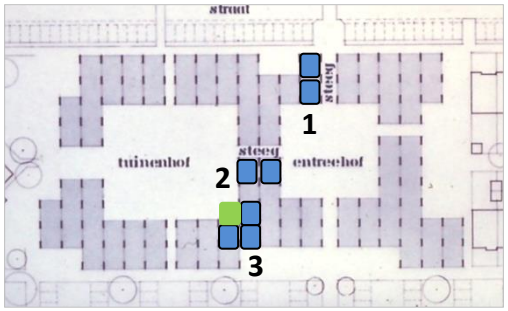
Support Pattern 1. "Simple and solid parallel, piers, floors and roofs"



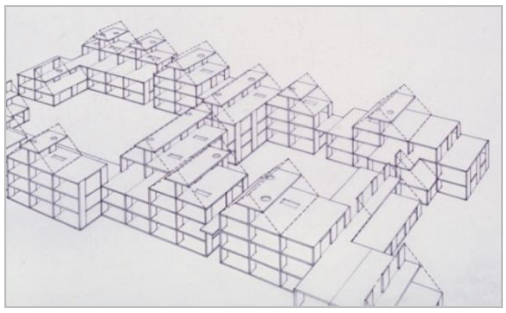
Model of the support structure.

Issue:
This support structure should be affordable, solid and of little maintenance. It should be low rise, continue and extendable. It should allow the free allocation of dwellings and other small scale functions, and free infill of each of those. The smallest units could measure about 50 m^2. 90 m^2 and larger ones should be possible. Some occupants might start small and enlarge their unit later after reallocation.

Idea:
The support structure of this typology, made up by standard piers, floor slabs and pitched roofs could be mass produced for low costs. It is continue and extendable.
The parallel piers of 20 x 140 cm follow a 480 cm square grid and combine a longitudinal and a transverse structure. The next figure shows the three typical positions of dwellings in the structure by two or more 'sectors'. A sector is an infill-able space of the structure.



1.'*Transvers'* *sectors*
2.'*Longitudinal'* sectors
3.'*Corner'* sectors with garden



The structure has standard floor slabs of 480 cm wide with openings for shafts and for staircases and vides where needed. To simplify the construction all roofs , pitched or flat, and gutters are parallel to the piers.
The parallelism of the support structure around courtyards not only reduces the building costs, it facilitates the sense the orientation while walking through the courtyards.
The free allocation of units and the free infill of the last allows a great diversity of units within a cheap support structure. Openings between piers (fontanels) can be closed by non-bearing materials, following the allocation and re-allocation of units.
The chosen distance between floor levels is 2,70 m and the pier system is based on a grid of 15ft. 4,80 m x 5,20 m allowing a living room or a master- plus a small bedroom.
The roofs of the support structure are a uniform collective facility.
The north facades of the garden courts have a maximum height of 3 m in order to receive enough sunshine in the gardens. All other building parts have a max. height of 3 floors plus attic. Garden courts could be subdivided into private gardens or kept – partly – collective.

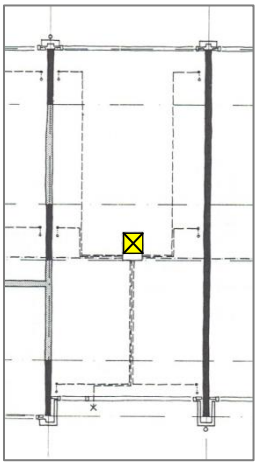
Support Pattern 2. "Access galleries"

Entrance courtyard

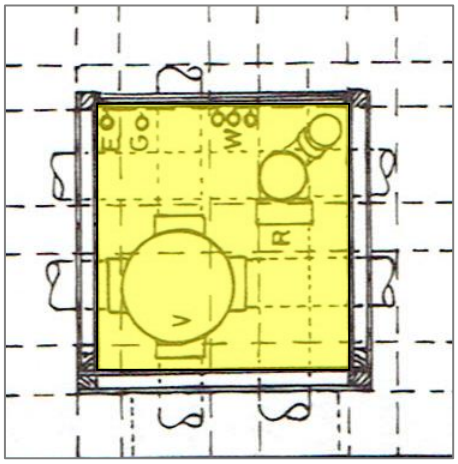
Issue:
Small as well as large units should be accessible everywhere on each floor, as the consequence of the free subdivision of units within the support structure.
Social exchanges of neighbors generally happen near the front doors of their homes. It is therefore important that private entrance doors upstairs are visible from the ground.

Ideas:
Access galleries have many advantages. Along galleries the free parcellation and re-parcellation of units is easy by adding or remove front doors. Galleries give access to a large number of units and so they need only a small number of staircases.
From the ground front doors of the upper units are visible, what facilitates the social conversations in the neighborhood.

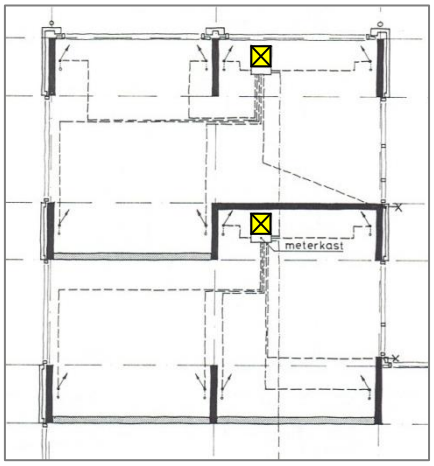
Support Pattern 3. "Central shafts for services"



A transversal unit



Shaft with main pipes in diagonal

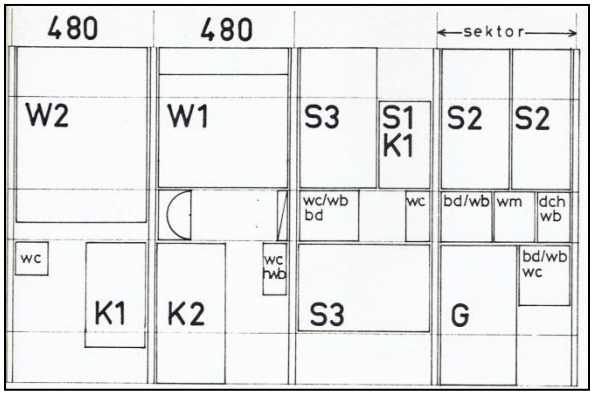


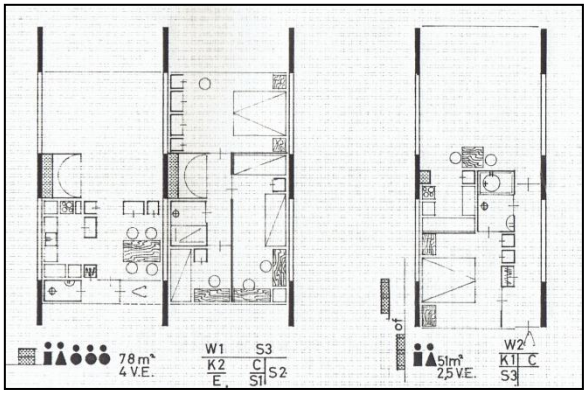
Longitudinal units

Issue: All units should have basic services: water, energy and sewage.
The support structure should offer those services through main pipes and wires in a way that individual households can safely and controlled plug in their private extensions.

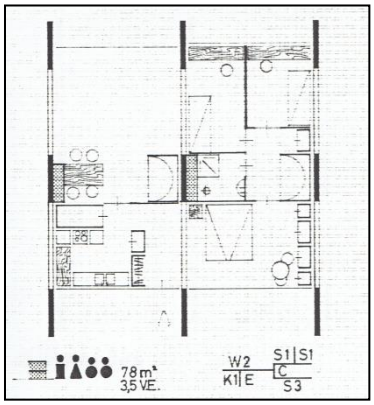
Idea: Free standing central shafts for basic pipes and wires are spread all over the support structure. The main support pipes are placed in a diagonal to allow infill connections from four directions.
In the transvers units the shafts are placed in the center. In the longitudinal units shafts are placed in the north/east part of a unit, where toilets and showers are most obvious.

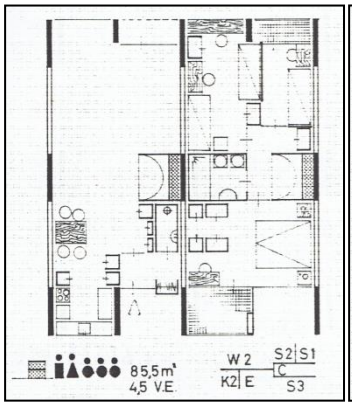
INFILL: Study of the Transvers support structure:

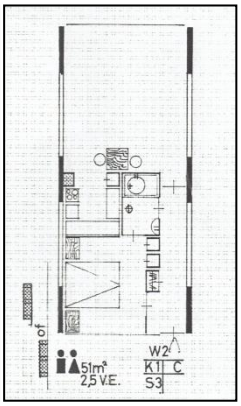


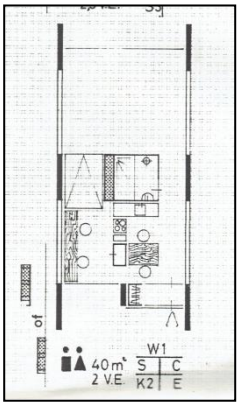


Functions of spaces within the *transvers* structure and plan exersises for different households

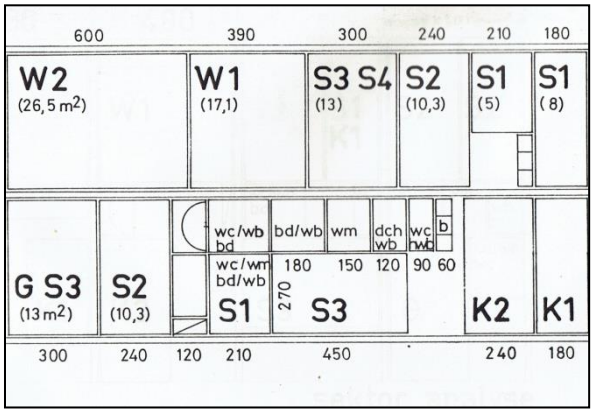


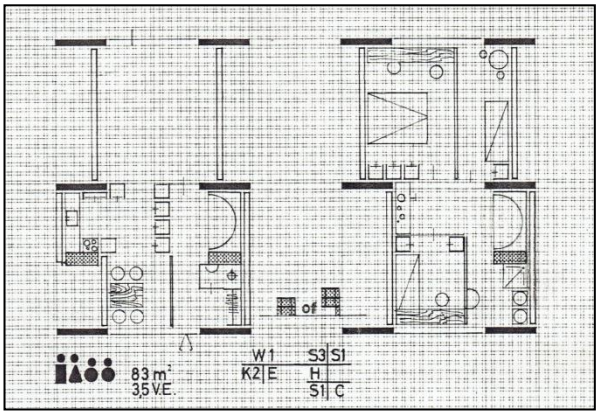




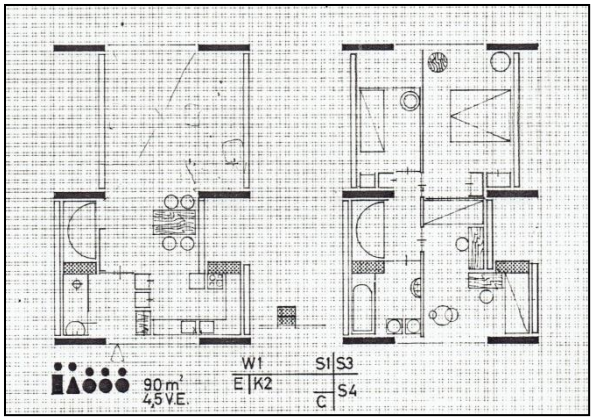


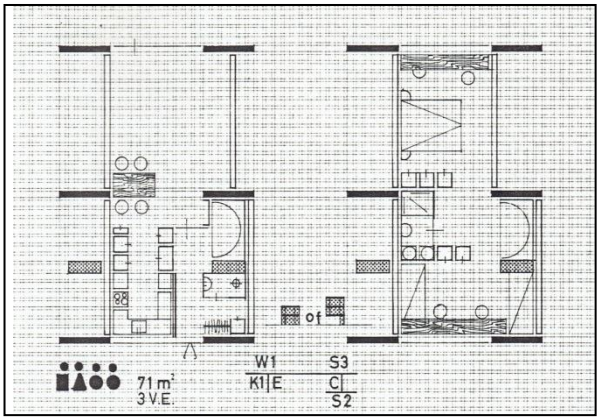
INFILL: Study of the Longgitudional support structure:





Functions of spaces within the *longtidunal* structure and plan exersises for different households





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