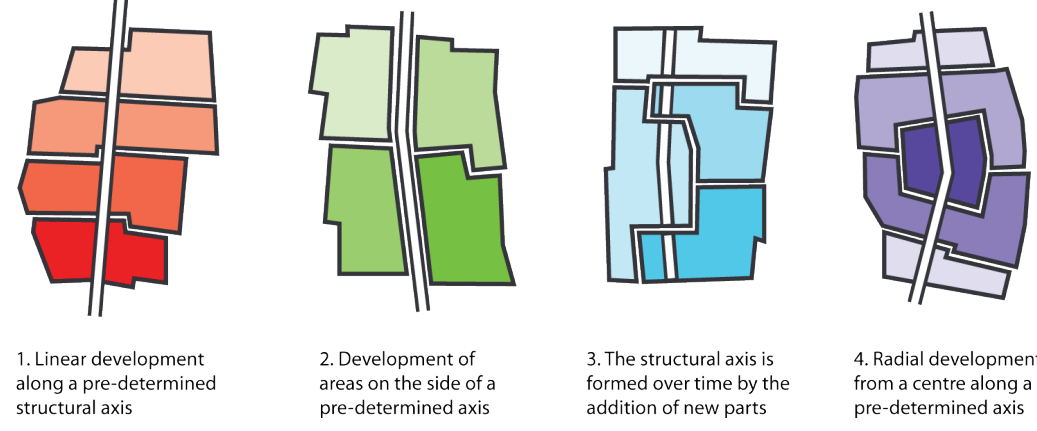


EMERGING NEIGHBOURHOODS

OR WHY PIECE-BY-PIECE URBANISM LEADS TO FLEXIBLE AND DIVERSE CITY DEVELOPMENT

How do we develop structurally flexible piece-by-piece neighbourhoods?

Develop neighbourhoods along a structural axis:



Criteria for the quality of a successful structural axis

- Commercial development must be possible along axis
- Buildings all along the axis
- Short blocks
- Suitable road profile
- Diversity of buildings

Criteria to ensure the axis' adaptability

- Space must be left for future infrastructure connecting new additions to the axis
- Space must be left to incorporate buildings from new additions on the axis
- Buildings on the axis must be able to deal with an incorporation in a future block

To ensure these criteria will be met, a design rule has been developed for each of them. We will look at them all briefly.

Commercial development must be possible along axis

This criterion is related to three main issues:

1. **Physical characteristics of buildings must support commercial use**
The physical characteristics of the buildings along the structural axis must support or allow for commercial use. This is necessary since the functions along the structural axis will change as the neighbourhood around it changes. What is residential in the beginning of development, might turn into commercial use later on. Therefore a functional flexibility should be built into all structures along the axis. Large minimum floor heights and the possibility for a display window are examples of possible rules here.
2. **The land use codes must allow the use of property for commercial use**
The land use codes and the zoning plan of the city must allow for commercial use all along the axis, and as much functions as possible should be allowed. This is necessary since it will not be clear what type of axis will develop itself at the beginning of the project.
3. **A certain amount of diversity is needed for commerciality to prosper**
As has been concluded in the analyses of older piece-by-piece neighbourhoods in Utrecht and older structural axes, diversity is needed for commerciality to prosper. Jane Jacobs also argued this view in 'The death and life of great American cities' (1961). Since diversity is already a separate criterion on the list, it will be dealt with in more detail later on.

Buildings all along the axis

If we combine this goal with the facts that there will be different buildings by different developers within one block and that not all buildings along the axis will be constructed at the same time it becomes clear that some regulation is needed here. The simple constraint that all buildings should be able to deal with neighbouring buildings on both sides, now and in the future will be sufficient to ensure the possibility of continuous buildings on both sides. An extra rule concerning the alignment of facades of buildings within the same block could also be added here.



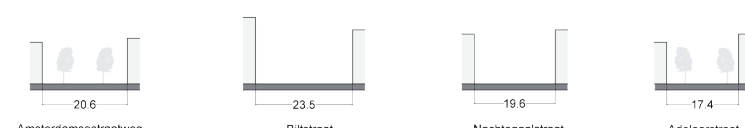
Short blocks

To achieve the desired outcome of small blocks, rules will have to be set to define what the length of blocks should be. The analysis of some structural axes in older neighbourhoods has produced some indications for this. The length of blocks in the studied areas moves around between 30m and 100m with an average of around 50-60m. The lengths of 30m and 100m can be used as minimum and maximum lengths of blocks. 50-60m can be used as a guideline number to strive for as an average. During the development of the axis imaginary blocks of 30-100m can be set after which space will be kept for a street to connect future development. The blocks could be changed as long as its allowed for by the already constructed structures. These imaginary blocks would consist out of a number (depending on the length of the block) of plots of 6 metres wide, which is the average width of buildings along the researched structural axes. The width of the actual plots could also be varied according to demand, as long as the average remains somewhere around 6 metres.



Suitable road profile

The road profile of a structural axis has to allow for interaction between both sides of the street. This requires a human scale for the profile of the axis. The functions of traffic axis and place of commerce require both space allocated for cars, as well as generous pedestrian facilities. Research into historical neighbourhoods has shown that all structural axes have a similar road profile. The distance between opposing buildings is roughly 15-25 m. Streets usually have parallel parking on both sides and the sidewalks are generally wide. These numbers and conclusions can directly be used as guidelines for design.



Diversity of buildings

Diversity of buildings is essential for the success of the axis. It is linked to the axis' main goal of binding different parts of the neighbourhood together, as well as to its ability to sustain commercial activity. Since too much diversity of buildings compromises the axis' recognisability and coherence it is essential we strive for an appropriate amount (Haken & Portugal, 2003). The different forms of diversity (linked to the research in chapter 4) we will look at are:

1. Basic building shape and height
2. Material used for facade
3. Exact building plan and facade

Basic building shape and height

The axes of researched historical neighbourhoods usually incorporates three different types of buildings: 3-storey sloped roof, 3-storey flat roof, 4-storey sloped roof. One can imagine that these sustain the human scale of the axis. Since there are always exceptions, this should be regarded mostly as a guideline.

Material used for facade

Researched axes show a use of around three different materials for the facade of buildings. More would probably reduce coherence and recognisability.

Exact building plan and facade

The research on other structural axes has shown that the amount of exact similar adjacent buildings varies between 1 and 20, with an average around 7. The numbers of 1 and 20 can be used as hard limits, whilst the average of 7 can be a guideline.

Space for future infrastructure

The construction of the structural axis is only the first phase in the development of a piece-by-piece neighbourhood. Different parts will be added over time. In order to link these future additions to the axis, it is necessary to reserve some space for future infrastructure in the development of the axis. This means that not the entire length of the axis can be used for the construction of buildings even though the space is available at that point.

The rule for this criterion is effectively the same as the one for short blocks. Because the length of blocks is already limited, afterwards there will automatically be space for future infrastructure. Only the exact amount of free space to be kept has to be established here. Considering some flexibility, since it is never sure what type of future additions will be constructed, around 3 imagined plots or 18 metres seems wide enough.

Space to incorporate future buildings

To achieve a true diversity of buildings along the axis, the structural axis itself has to be built up from additions from different times as well. Therefore, space has to be reserved on the axis for buildings to be constructed in following phases. Something that has to be considered though is the fact that the axis functions best with continuous buildings on both sides (see 'Buildings all along the axis'). Allocating to much free space in the beginning will compromise the axis' functionality. This can be solved by incorporating some semi-temporary structures on the axis that can be demolished at set points. Striving for an equal distribution in the end and counting on five construction phases the construction process could look like below.



Incorporation in a future block

When the structural axis is created, it is not yet clear what type of additions will be made in future phases. This may be the creation of urban blocks, as is not uncommon in studied historical neighbourhoods centred along a structural axis. Therefore, it is necessary that buildings created at the corners of imaginary blocks are able to deal with this kind of changes.

