MUTATIONS IN REPLICATION

Innovation in housing design through flexibility
on the individual and collective scale

Advanced Housing
AR3D100

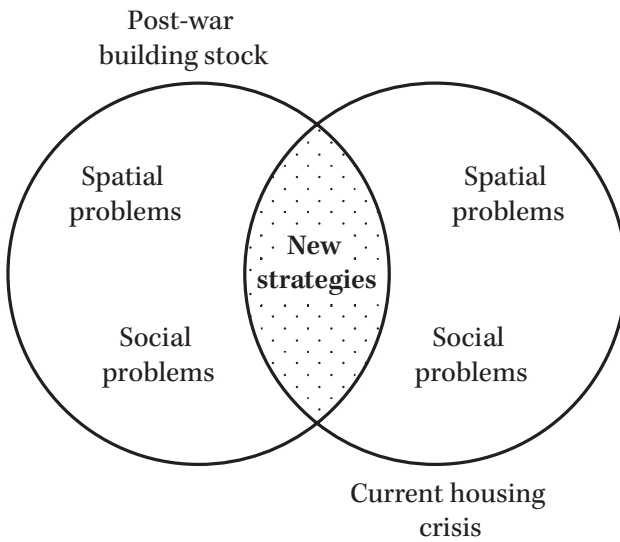**Victor Loop**
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1. INTRODUCTION

Over the course of my studies of architecture at the TU Delft I became more interested in the ways the built environment shapes our everyday lives. Buildings can facilitate the activities that are essential to our necessary of preferred daily routines. Later this interest shifted to the first category, and specifically housing design. A roof over our head is one of the essential needs in order to be in a secure place to develop yourself as a human.

Today for some people, even this basic need is under pressure due to a great variety of factors. For example the growing world population and commodification of houses causing scarcity on the housing market. This is not only a matter of a quantitive lack of housing but also a lack of housing that is affordable for people with less financial means.

For my graduation project I chose a studio that actively researches these factors, tries to understand and eventually overcome them. The Advanced Housing studio looks at the current Dutch housing crisis, through lenses of sustainability, social inclusion, affordability, gender equity and building resources. As an interrelated system these five concepts have a great influence over the living conditions of many people.

I believe the common denominator in this system, is the human perspective. By looking at the way people live, work, recreate, learn and care with each other and with the non-human environment we can start to see an interconnected web of relations. This leads to seeing our world as an ecology, or a multitude of ecologies that shape our lives.

2. PROBLEM STATEMENT

Post-war
building stock

Spatial
problems

**New
strategies**

Spatial
problems

Social
problems

Social
problems

Current housing
crisis

2.1 Contemporary housing crisis

It can be stated that we are currently facing a housing crisis in The Netherlands *(Hochstenbach, 2022; Lengkeek & Kuenzli, 2022).* The average price for a house has been steadily rising in the last decade and buying or renting a house has become a struggle for many. This problem is worsened by high cost of building resources, expensive land prices, environmental issues like the nitrogen problematic, and influx of migrants, refugees and temporary workers.

It is clear that major action is needed in order to address al these issues and ensure the fact that a house to live in is a right, not a luxury. On the one hand we have to navigate through a complex system of limitations to do so. On the other hand we want to be ambitious in regards to solving social problematics and to lessen the burden of human activities on our planet. Where should we then begin?

2.2 Post-war housing crisis

In order to make a start, I would like to reflect on a historical similar event, that of the post-war housing crisis in The Netherlands. I believe this reflection is relevant since both crises require new ways of thinking about our environment, and how we dwell. Also similarly to the post-war housing crisis there is a broadening societal awareness that action needs to be taken by a multitude of parties involved.

This reflection will look into similarities and differences in both the context and the main challenges of both crises. Reflecting on this historical event also offers the opportunity to observe how the design intentions and

solutions of the post-war housing crisis have held up over time.

In the years after the Second World War there was a big demand for homes *(Beekers, 2012; Lans et al., 2021)*. Many cities were damaged in the destruction of the war, and the babyboom caused a rapid increase in the size of the population. Resources were scarce and the challenge that laid ahead required innovations in building materials and techniques. Eventually this resulted in new buildings systems of prefabricated structures with the capability to be mass-produced, put together in repetitive configurations, or "stamps". Inspired by Ebenezer Howard's notion of the Garden City, these new neighbourhoods had to become green utopias on the outskirts of the city *(Blom et al., 2004)*.

Besides the technological innovations there was also a special interested in the future of society after the destruction of the war. After the disruptive effect of the war on families, family life became an important aspect in post-war housing design. In the new neighbourhoods housing design was combined with communal facilities such as churches, shops, schools and sport centres to facilitate the family lifestyle. However, the definition and ideas of family life were based on - currently - outdated gender roles and stereotypes.

2.3 Current state of post-war housing stock

The post-war neighbourhoods have since the 1950's and 1960's changed and evolved. In most cases not for the good however. Many post-war neighbourhoods are facing social and spatial problematics that have in some cases made them notorious and undesired places to live. The

ideological beliefs they were conceived have mostly not stood up to changes in society. Homes proved to be badly adaptable to changing compositions of families, and have overall become too small for the current housign standards. Besides that the open layout of the neighbourhoods did not become the green suburban paradise it was intended to be. The overall conclusion is that a lot of aspects of the post-war neighbourhoods didn't live up to the intentions at the time in which they were conceived. Ofcourse this is due to a combination of the specific design principles followed, and changing external conditions within society.

2.4 Flexibility
The buildings that will be designed to provide a solution for the contemporary housing crisis will probably be around for decades or maybe centuries to come. Over the course of the lifespan of the buildings the world around us and the people living in it are bound to change. If we look at the case of the post-war neighbourhoods, we can see that the spatial requirements and values in housing design can change greatly within even a single generation. If we are to boost the production of new houses again, we should learn from this example in order to ensure the quality of the building stock in the future. This research therefore aims to answer the question:

Can spatial and social flexibility on the individual and collective scale provide opportunities for innovation in housing design?

This research will focus on the aspects of social and spatial flexibility on the individual and communal scale. Simultaneously the research carried out in the design studio will focus on what a building that takes into account these degrees of freedom.

3. FRAMEWORK & METHODS

3.1 Social flexibility

To define the research, I want to start by specifying the term of "social flexibility''. This term relates to the ability for a house or other building to adapt to changes in social structures. On the scale of the individual as well as groups of individuals of different compositions such as families, friends, neighbours or strangers. An important question to ask ourselves is how change can

Change in social structures can originate in different ways. On the level of the individual, changes in the way we carry out our lives through daily routines can emerge from inaccuracies in the way they are performed, as stated by *Hale (2013)*. Hale refers to an analysis by French philosopher Maurice Merleau-Ponty on language. Merleau-Ponty describes a difference between 'speaking' and 'spoken' speech. The first one being a formal and more static expression of language, the latter a language used in daily life that is influenced by hidden meaning and personal interpretation. Small changes in interpretation and use of language builds up to changes in its meaning. In architecture this could mean that little unexpected moments in our daily habits can lead to change in these habits or eventually change in the spaces where they take place.

On the level of a group of people or community Hale applies the analogy of mutation of DNA in the body. The 'copying errors' in the process or replication of DNA result in spontaneous mutations that do or do not lead to advantages for the individual. In case a benefit arises this mutation will stay around and spread through a population. This logic can be applied on the sharing of ideas and ways of

interacting between people. Ideas start small, but when they start resonate with different people they can start growing causing initial ideas and perceptions to shift. Also noting that the transaction of information in the spread of these ideas is never totally efficient, causing new mutations as well.

3.2 A living building

The fundamental idea that people's individual habits and interactions with the world are always evolving raises a problem for architecture. The structures we build are often intended to be around much longer than the lifespan of a single human. Besides this, the buildings we make are static of nature and we shape them in rigid structures. That means that while the world and the people in it are constantly evolving, our built environment is doing so with a great inertia. When we build structures that are very explicit and specific in who or what acitivity they were designed for, there is a chance that with the passing of time they are unable to adapt to new circumstances.

To start thinking about solutions to overcome this problem, we start to see buildings in a more fluid way. Maybe it becomes an organism that is able to change and evolve over time. Consisting of cells that work together and are able to respond to external and internal change. If we think of a building like that, what could it look like, and how could it become alive?

3.3 Phenomenology

As discussed before one way to look at the origins of change is through mutations in the behaviour of people. These mutations however are not only happening under the influence of external changes, but also under internal ones. Our decisions and perception of the world are heavily influenced by the experiences that we carry within ourselves. Thus the notion of change becomes susceptible to the subjectivity of our personal experiences.

The philosophical field of phenomenology puts embodied, and therefore personal, experiences at the centre of the creation of knowledge and value. I want to look at this research through the lens of individual subjectivity. This lense as opposing to the "all-knowing" designer philosophy from which designs of post-war neighbourhoods were conceived.

3.4 Methods

The following page show the proposed research structure in order to answer the main research question. The research question is broken down into a diagram containing the four main concepts of the research: spatial, social, individual and collective flexibility. The ways these concepts influence each other raises a new series of questions that will be adressed in the research. This series of sub-questions all come with a smaller individual research that will contribute to answering the main question.

There are two different approaches to the sub-research questions. One is collecting information through case studies and literature reviews in order to establish
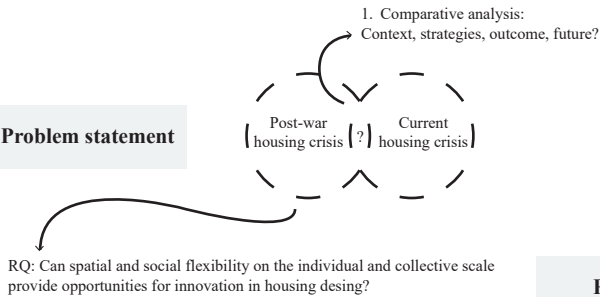
knowledge on spatial and social methods of organising the individual unit, or person into a community.

The second approach is that of a phenomenological manner of gathering information. Through collecting and analysing existing narratives, or imagining new narratives of the expression of social values in built spaces.

3.5 Results and design project

In the end the lessons learned from the research that will be carried out, should be taken into account in the MSc. 3/4 design projet. The problem statment and the context of the research have slowly formed around the research conducted in the first phase of the design studio. Therefore it will try to resolve issues that were observed in the specific context of a post-war neighbourhood in which the project will be situated.
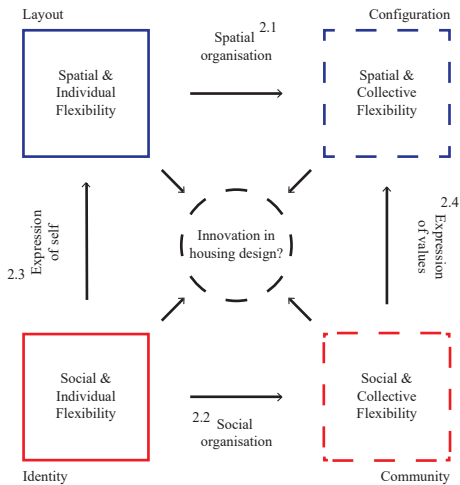
1. Comparative analysis:
Context, strategies, outcome, future?

Problem statement

Post-war housing crisis [?] Current housing crisis

RQ: Can spatial and social flexibility on the individual and collective scale provide opportunities for innovation in housing desing?

''Mutations in replication''

2. How could flexibility lead to innovation?   *Living building*

Research

Layout

Spatial organisation   2.1

Configuration

Spatial & Individual Flexibility

Spatial & Collective Flexibility

Expression of self   2.3

Innovation in housing design?

Expression of values   2.4

Social & Individual Flexibility

2.2 Social organisation

Social & Collective Flexibility

Identity

Community

2.1 -How can individual spaces be organised to facilitate a more collective lifestyle?
-> *Case study: Structuralism*

2.2 What are different ways in which individuals organise themselves to take care of a collective housing building?
-> *Case study: Housing collectives*

2.3 How can individual expression of identity become visible in architecture?
-> *Actor narratives*

2.4 -Can social values become embedded in architecture, and if so, how?
-Can a building be flexible through changing values?
-> *Actor narratives through different moments in time*

Can spatial and social flexibility on the individual and collective scale provide opportunities for innovation in housing desing?

Special attention to

Design project

Community   *Identity*

Layout   *Configuration*

15

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