Incentivising Compromise.

Participatory design practices for user driven collaborative housing to densify and revitalise Post-War suburbs in The Netherlands

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Abstract.

The Netherlands is facing a housing crisis emblematic of a global phenomena. The growing intensity of the need for housing cannot meet the development and resource availability. Mass standardised housing contributes to this irrevocable cycle of supply and demand. This project is an investigation into participatory design practices as a method for architects to revitalise communities through incentivising collaborative housing within existing urban structures. The case study chosen to exemplify this method and design results is IJsselmonde, in the south west of Rotterdam, as the suburb exemplifies the ramifications standardised housing has on the community and individual, and further, has potential to be transformed to meet current social needs. The methodology of the research has been realised in three parts; research and design experimentation for participatory design practices; analysis and transformation of existing post war buildings to future proof for a growing population; and finally, an exploration into collaborative housing solutions through case study analysis and design experimentation. The research was able to determine that the most appropriate methodology to allow uses to develop their own collaborative housing is through a gaming methodology for creative exploration and problem solving, followed by a computer based analysis tool to identify parameters. The design results showcase four collaborative housing typologies – three from the transformation of existing post-war blocks and Hordijkerveld, IJsselmonde. The project aims to show the potential of synthesis and collaboration for the development of new housing solutions.

Contents.

1. Introduction.

How can we densify in our cities to provide adequate housing to those who need it most? The Netherlands is currently facing a housing crisis in which lower socio-economic groups are highly perceptible to the short fall of a supply and demand imbalance. The Netherlands has undertaken numerous mass standardised housing projects over the past century in an attempt to meet the housing needs of a growing population. However, this methodology inevitably leads to urban sprawl, greater pressure on government resources, and lower quality living conditions. Therefore, new solutions that densify urbanities with existing resources and improve quality of life must be sought out.

In this chapter the research introduces the housing crisis in The Netherlands and core themes of research project; participation, transformation and collaboration, followed by subsequent research questions and objectives.

1.1 The Housing Crisis in The Netherlands

The Dutch Housing Action Agenda states that there is a current shortage of approximately 300,000 homes (Association of Housing Associations [AHA], 2021, p. 6). By 2030, 1 million new homes must be made to fit the needs of the growing population (AHA, 2021, p.6). However, the housing crisis is not unique to the Netherlands, but rather emblematic of a global phenomenon.

The International Monetary Fund (IMF) has identified that relative global house prices have increased approximately 70% over the past 20 years (International Monetary Fund, 2021). Although the United Nations states the right to adequate housing is a fundamental human right (2014, p.1) housing is generally the largest spending item in households (Elfayoumi et al., 2021). Financial stability and economic boom-bust cycles often lie in the hands of property prices (Ahir et al., 2021), and as "majority of households tend to hold wealth in the form of their homes rather than in financial assets" (Zhu, 2015, paras. 3) the fluctuations of the housing crisis are greatly felt by individuals. Within Europe, key contributing factors to the pressure on housing affordability include "greater urbanization, structural transformation toward high-skilled services (moving to cities), as well as higher incidence of tourism" (Elfayoumi

et.al, 2021)

These statistics are exacerbated in the Netherlands where house prices have increased 63% in the past 7 years (Statistics Netherlands [CBS], 2022). The strain on the housing market has been caused by a number of factors including a steady increase in population growth, due to high levels of immigration and an aging population (van der Heijden & Boelhouwer, 2018, p. 127). Further, there are more single households than ever before with many elderly remaining in large family homes despite living alone and young professional choosing to live alone (p. 127). These factors are only further agitated by the lack of new builds being developed and land availability (Lalor, 2021).

However, The Netherlands has a prevalent history of mass standardised housing projects developed in order to combat the intensity of the housing crisis. Mass standardised housing can be defined as housing projects developed using mass production techniques (constructkonnect, 2021). These projects are typically funded by government bodies or large construction companies with the aim of providing adequate housing at an efficient rate to a large amount of people (Hamdi, 1995, p. 28).

The method is more readily accepted and successful in countries with strong socialist values such as The Netherlands. This methodology clearly benefits the agencies too, as the government uses construction to fuel to the economy, and manufacturing companies can control nearly the whole production, and hence finances, of multiple large scale projects (p.28).

However, the model of mass standardisation is reaching its limit. Mass standardised housing models in the past have proven to only spur greater desire for more social housing. This in turn requires more financial backing by governments, further development of infrastructure, and greater resource and land use. In a dynamic economic market, higher income earners push lower socio-economic groups out of dwellings with the increased cost of living (Hamdi, 1995, p. 11). Therefore, lower socio economic groups are being pushed out of the market and new solutions that densify urbanities with existing resources and improve quality of life must be sought out

1.3 Problem Statment

1.3.1 General Problem

"There are fast disasters and there are slow disasters."
- Garret Jacobs (2018) (Keskeys, 2018)

Despite attempts to mitigate the imbalanece of supply and demand through architectural intervention, the housing crisis in The Netherlands still prevails. Dutch designer's responses have varied greatly in architectural typology and urban morphology but are unanimous in their goal to 'solve' the housing crisis with a 'one and done' solution. Each typological intervention develops upon the previous, with amendments made in order to better reflect the contextual values and 'fix' the problems of the past designs. However, residents remain in the 'outdated' designs, in which do not reflect their personal values, but also fail to reflect social and environemntal needs such as low density, outdated building technology, and staderdised living.

The model of mass standardization is inevitably flawed in the assumption that for every family unit, one home must be made. With a growing population and thinning of the family unit, the number of homes needed will always increase towards the limit of land and material resources.

"Perhaps then, it is not what we as architect design, but rather the method in which we approach architecture that has led the longevity of the housing crisis?"

John Habraken comments on the standardization of housing in The Netherlands in Supports (1961). He describes the rise of interest in standardization in 1918 as "a drastic measure to counter the post war housing shortage"(p.12) which has led to a "dreadful monotony of endless row houses" (p.13). Although the effectiveness of the system is indisputable (p.13), Habraken expresses his dissatisfaction with the strict uniformity (p.13) and more so, "why this conflict has lasted so long!" (p.13) He hence queries;

"Could the fact that a conflict exists between man and the method chosen to combat the half century old housing shortage mean that there is a connection between the two? Could it be that the housing shortage, or

rather its apparent insolubility, is caused by

the antithesis between man and method?"
(p.13)

The housing crisis has now continued on for over a century.

The development of adequate housing for lower socioeconomic groups must turn away from continuous new developments, to the redevelopment of existing resources within the housing stock and realignment of resources to users.

national shift in demographics and thinning of the family unit is highlighted in IJsselmonde where the housing stock, developed for large families, now occupies single elderly residences, creating a low density suburb and unused urban spaces.

This research will specifically look at how IJsselmonde has been affected by mass standerdisation, the ramifications on personal and public life, the contributing building technologies, and ways in which architects can transform existing stamp topologies for greater densificaiton.

1.3.2 Specific Problem

The continuous shift in typological reformation and dreary monotony of post-war mass standerdised housing can be felt in IJsselmonde, a borough in the South- West of Rotterdam with one of the lowest ranked "qualities of life" in the city. This has been attributed to the lack of public resources, high levels of petty and violent crime, and lack of maintenance and cleanliness of public space (Municipality of Rotterdam, 2020). The homogeneity and monotony of mass standardised dwelling development can be felt in the suburb where large monolithic forms have formed a sparse urban environment. The

Figure 1
Hordijkerveld, IJsselmonde

1.4   Participation in Design

If mass housing perpetuates the cycle of supply and demand, architects then must move away from designing in optimums (Hamdi, 1995, p.9).

User participation refers to the architectural design process in which users have a greater role in the decision making and design process. Where this differs from the typical, commercial design process for large scale housing developments in the 21st century, in which a client approches an architect to design a building for speculative users, with little to no contact of the target market, particpation in design aims to integrate users in order to better align material resources with user needs. In doing so users are granted more of what they desire, and resources are not being wasted.

Despite being quite prevelant in our society, speculative design can have many social and environmental ethcial concerns. Empty cities, unused blocks of land, and early degredation of buildings can be greatly attributed to a misalignment between the user and development, or fast paced design for economic benefit. The mass standerdised housing blocks seen in IJsselmonde would also be considered a speculative design, developed to address the housing crisis after the Second World War.

For as long as there has been speculative housing and mass standerdisation, there has been a counter culture of user driven participation. Gaining most noteraiety in the 1960s-70, in 2023, participation in design is becoming recently re-relevant with the growing emancipation of individuals in democratic

Figure 3
1980s developments, IJsselmonde

Figure 3
1980s developments, IJsselmonde

1.5   Transformation of Post-War Housing

societies, the rise of individualism and inclusivity prominent in western cultures.

This research aims to investigate user participation as a means of enablement – that is, to provide awareness, access and autonomy to alternative housing options. More specifically, The exploration will be conducted through historical analysis, design experimentation and interviews in order to identify and develop an architectural practice most suited to the Dutch context.

Existing Post-War housing blocks provide ample opportunity to densify within cities. Post war housing can be defined by housing created after the Second World War, a period which saw rapid housing construction due to innovation in technology and construction, to meet the needs of the housing crisis. Designed for efficient construction, the architectural and urban design of many Post War blocks have been criticized to no longer align with modern values and needs. Extreme schematism and fluid open spaces at the urban scale have been unable to stimulate communal relationships and create a marginalised and uncomfortable environments. Further, the homogenised seriality of the architectural landscape does not create a pleasant environment, and many of these buildings must be refurbished to meet current building codes. The study undertaken investigates the transformation of post-war housing through the deconstruction, analysis and reinterpretation of the Dura-Coignet Building system seen in Hordijkerveld, IJsselmonde.

1.6   Collaborative Housing Design

Collaborative Housing has the potential to mitigate the housing crisis by providing alternative solutions that increase density and liveability. Collaborative housing is a dwelling typology in which autonomous housing units are mixed with shared facilities (Fromm, 2012). Housing sharing, dormitories and cohousing housing have existed for many years but are becoming increasingly legitimised and re-relevant with government intervention. The increased popularity can be attributed to financial, ecological, and social benefits these dwellings can provide. Although research has been conducted on the benefits of collaborative housing, this typology is largely inaccessible, unexplored, and unknown to the greater public, preventing greater interest.

The research conducted explores ways in which users can develop their own collaborative housing solutions. This in turn aims to increase popularity and legitimacy of collaborative housing typologies to the general populace by providing greater awareness, availability and accessibility to alternative housing options. The research has been conducted through cases study analysis and design experimentation in order to exemplify how collaboration housing can increase density and liveability while reducing an ecological footprint.

1.7 Research Question

1.8 Research Objectives

The research question is thus,

How can a participatory design practice incentivise collaborative housing solutions to better manage existing resources?

The main research question can be elaborated in a series of sub questions;

Who gets to decide in the participatory process?

At what scale does participation take place?

At what stages of the design process does participation take place?

    The objectives of the research is then realised in two parts. Firstly, the development of a participatory design practice that allows users to develop their own collaborative housing within the existing housing stock. The practice should enable users, that is, to provide awareness, access and autonomy to alternative housing options and should be appropriate for the Dutch context. Secondly, the research is legitimised through the design exploration in IJsselmonde, Rotterdam. The design aims to show potential transformations of the Dura-Coignet system into collaborative housing designs, and how these solutions could be achieved from a technical standpoint.

The research question is thus,

How can a participatory design practice incentivise collaborative housing solutions to better manage existing resources?

Participation

Collaboration

Transformation

1.9 Methods

The following methods were undertaken in a process of analysis, exploration and finally confimration in order to answer the research question and meet the research objectives with academic rigour. ;

Theoretical research; theoretical research precludes the investigation and analysis of existing theories. This research aims to analyse the relevance of existing theorical positions to the context and objectives of the research. Useful information and insight can be gathered from theoretical positions that can enable the research to move forward efficiently.

Historical research; historical research focuses on the analysis of primary sources and fact finding. This research will help qualify the theoretical positions by substantiating the design experiments with practical data.

Design Experimentation; testing existing theories in the site through experimental model making, drawings, and visualisation. Experimentations provides visual material to address the applicability of the theory in the context before undertaking further development.

Case Study Analysis; analysis of existing projects. Case study analysis' can provide insightful information on the real world application and results of projects. Great insight can be gained by looking at the design and construction process, asking if there were any unpredicted obstacles or discoveries. Furthermore, case studies can provide information as to how designer's resolved problems, visual aid, and gather information from the experience of users.

Bricolage; a method of analysis developed by Fabio Lepratto (2018) akin to a collage. The architect deconstructs a built form, dismantling, cataloguing, and identifying objectives and potential, in order to form a new set of available materials. This process makes it easier to integrate design solutions to create. The aim is not refurbish or upholster the current condition, but rather rediscover and create new meanings.

Site and building analysis; Analysis of the site through sketches, photography, film and modelling. A site analysis is integral in the architectural profession as it is base in which the project is built from. Understand the site will allow the project to be beautifully integrated into the context

Interviews; Legitimization and clarification of research. Questions that arise from the research may not be clarified with the use of secondary sources. Therefore, experts can provide professional opinions on hypothetical scenarios to further the research.

With these methods,, the research will be conducted as thus,

Figure 20
Research Metholodogy Diagram

HOW CAN PARTICIPATORY DESIGN PRACTICE INETIVISE COLLABORATIE HOUSING SOLUTIONS TO BERTTER MANAGE EXISTING RESOURCES?

Participation

Who gets to decide?

What stages of the design process?

At what scale?

Transformation

How can Architects transform post war structures

Collaboration

How does participatory design define collaborative housing?

Theoretical positions

Contextualisaiton

Site Analysis

Ethnographic Research

Historical Research

Design Experimentaion

Bricolage

Case Studies

Interviews

Desgin Experimentation

Case Studies

Case Studies

Participatory Design Framework

Transformation of Exsiting dwellings

Collaborative Housing design senarios

Final Design

The research must first undertake an analysis of existing theoretical positions and site condition in order to estalish the position in which further development will take place, and identify attributes of past projects. Using the information from the analysis, exploration through design experimentation combing the site conditions and theorical positions can occur. And finally, interviews are conducted to validate the findings in order to develop the final design.

Although the methodology for research has been outlined, the research is allowed to be adapted to account for unexpected findings.

2. Theoretical Positioning & Historical Relevance

This chapter aims to specify the goals of the research objectives by clarifying the context and existing theoretical positions, thereupon, establishing the stance and trajectory of the research.

The analysis starts with an introduction of key theoretical positions on participatory design practices and relevant case studies. The theorical positions provide insight into new ideas, and corresponding case studies showcase their real-world application. Having established the theoretical position, the research moves towards an overview of Dutch housing and the relevance of building transformation in the European context. Finally, a site analysis and ethnographic research will clarify the local context in IJsselmonde. This information will help substantiate the theoretical position to develop a holistic project.

2.1 Participation in Design

If participation is the act of taking part in something, what defines a participatory design practice? The concept of user participation became theorised in the 1960s where architects sought to provide greater transparency into the design process (Hofmann, 2014, p. 16) The movement was developed in order to combat "the authority of elitist status of the architect" (Hofmann, 2014, p. 16). However, housing, for the most part of history, was typically developed by users. It was only after the institutionalisation of housing that architects sought to develop positions on user participation.

One of the sub-questions of the research denotes "who gets to decide?" Hoffman explains that if "participation is power" , who gets to participate is one of the key influencing factors to the project developed. In Housing without Houses (1995) Nabeel Hamdi establishes a dichotomy between providers and supporters in which to look at housing. Providers are actors who believe mechanisation is the most efficient way in which to provide quality and efficient supply of houses. Providers aim to build housing for people through large scale developments manufactured to speed production (p.28). Therefore, government agencies and large scale contractors are typically key actors in the providers paradigm. Supporters, on the other hand, believe a better approach is to assess the existing housing stock and manage resources. Supporters typically consist of community organisations, not-for-profit organisations and small contractors.

The relationship between the "infill" and "support" is also a defining feature of participatory methodologies. The support typically denotes a structure or "shell" put forth by the architect. The infill represents the elements which the users can put into the support system. Although Habraken's Improvisational Housing methodology uses the terms support and infill directly, these terms could be interpreted literally or metaphorically. Each of the participatory practices investigated develop a position on how the architect 'supports' the unpredictability of the user's input. Establishing this ditchotomy in exsiting therotical positions aims to provide insight into the most appropriate method, and oppertunities for user insput and architect's intervention, for a participatory practice in IJsselmonde.

2.1.1 Design Transparency

The Design Methods Movement (DMM), prevalent in the 1960s and 70s, sought to make the process of architecture accessible to users by removing the subjective imposition of the architect and systemising the design process. The movement received criticism due to the contradiction between the technical expertise and social reality of construction and design. (Hofmann, 2014, pp.16) In essence, revealing the design process is not akin to understanding the design process. With a lack of knowledge in technical expertise, users were not able to participate in the planning process.

2.1.2 Improvisational Housing

Improvisational Housing entails a shell or container in which space or equipment can be manipulated. Developed in response to the growing desire to design in the capacity to change, many improvisational housing projects were made in the 1960-70s. Dutch architect and theorist John Habraken developed a radical position on mass standerdised housing and user participation in Supports: An Alternative to Mass Housing (1961). Habraken

challenges the longevity of the housing crisis, pragmatically contesting the dehumanisation of standardised living (Habraken, 1965, p.12). He then proposes to use the efficiency of machine production for not the development of dwellings, but rather, parts and elements. Habraken compares the mechanisation, in which endless variables can be assembled, to the "modern kitchen", in which elements can assembled in reassembled in many ways. And indeed, Nabeel Hamdi would go onto to describe that user participation with improvisational housing methods as "much like arranging furniture" (p.74) with the development of Adelaide Road (1978).

Although Hamdi would go on to further develop his own position on participatory practice, he first designed Adelaide Road in London. The design consisted of an optimised shell with structural bays that allowed flexibility with dwelling size and internal arrangement (RIBAJ, 1971, p436). Although able to provide adequate housing, Hamdi would go on to describe the level of participation as "largely a misnomer" (p.74), having little to do with shifting power of control and politics of community. He further comments that many architects openly admitted that there was "greater satisfaction at the drawing board than in the market place"

(Hamdi, 1995, p74) as the design would pay the for indetermiacy in the form of aesthetic or enegery. Therefore, in practical application, improvisational housing lends itself more to the concept of flexibility rather than participation.

the design has been praised by users for permitting significant flexibility and adaptability, the solution is quite chaotic at an urban scale. The solution is more appropriate for autonomy rather than bringing together communities and densifying within existing urban structures

2.1.3 Self-Build Methodology

Self-build methodologies describe building instructions that allow users to build their own dwelling. One of the key figures of the self build movement is Walter Segal who developed a system for self-build housing in order to free the built form from the architect's desire to shape (Hofmann, 2014, p. 18). Users are completely liberated to form their own spatial arrangements. However, the structure, roof and foundations of the buildings have been pre-determined. This in turn lend itself to a degree of aesthetic homogeneity. In 1970, the Lewisham council in London gave permission for 4 sites to undertake experimental self-build housing projects based of Segal's methodologies (Archdaily, 2016). In 2023, two streets have been developed from this initial scheme, with growing interest for new solutions UK's shortage of affordable housing. Although

2.1.4 Participation and Community

Nabeel Hamdi's Housing without Houses (1995) puts forth his position in practice and outlines a guide for building and rebuilding communities. He shifts the architects role to have a greater focus on working with actual and future residences, working with supralocal authorities, and acting as a intermediary between local and central agencies. This can be achieved through the development of an incremental urban strategy, by gathering data from local residences, establishing priorities and connections, and finally using gaming methods to communicate architectural concepts with users.

Incremental housing design is an integral part of Housing without Houses. Hamdi structures incrementality at the urban

scale in which an urban strategy is developed as a diagram for the community to infill with their own houses in their own time (p.89). The diagrammatic approach allows for variation and flexibility within the scheme at both an architectural and urban scale, allowing for natural occurrences and spontaneity.

2.1.5 Design Reserve

Design reserve describes dwellings for which provisions are designed into the project with the anticipation of future adaption and development (Hamdi, 1995, p68, paras. 4). One of the most notable examples of design reserve is Elemental architect's Quinta Monroy housing project (2003). Combining the cost and material efficiency of row houses with the space for adaptability and growth, Quinta Monroy was designed to resettle 100 families in the Chilean desert. Rather than design smaller, low income housing, Elemental choose to provide part of a middle income home to be further developed by the users in their own time. Social housing has the tendency to decrease in value, hence, designing in the opportunity for future development allows the dwellings to increase in value (Elemental, 2008). In contrast to Hamdi's incremental ideology, Elemental

begins with an urban scheme.

2.1.6 Gamified Design

Participatory design gaming has become increasingly popular in recent years as it allows users to creatively express themselves and develop unique solutions. The architect typically provides a gamified platform, physically as in a board game, or a virtually in the form of a computer game, for which users can explore, express and create new concepts. In comparison to aforementioned practices, design gaming introduces users into the design process form the start. The architect aids the development of creative ideas to be carefully considered with their own technical expertise.

Architect and urbanist Ekim Tan explains gamified design exploits its very escapism to solve real world problems. By proividing oppertunity for users to play, the users can develop more creative solutions they may have previously not thought of. Furthermore, the act of subscribing to partake in a game reduces a power imbalance between players. For example, the client and the users are now in a more level playing feild as they are both equal in being participants in

a game. Players can earn new adventures and experiences with greater participation in the experience. Participants can also join forces to strengthen common areas and create new solutions.

Similarly, Susanne Hoffman's architectural firm Die Baubliopten has created a wide range of games that focus on the development of atmospheres. The Living and Residing with Seniors in Rurual Areas project was developed through a spatial planning board game in which users bring their desires together and rearrange them in order to define the architectural programme. Users saw that if they brought together or shared similar functions, the spaces could be larger and could spend more on these spaces, rather than when standing alone. (Hofmann, 2014, p. 134) Hofmann explains that inevitably the result is more cost efficient design with greater satisfied clients. The design process is a shared cognitive process for which users are reliant on the architect's the technical expertise and that significant architectural and construction decisions are left to the architect and building specialist (p. 18)

2.1.7   Not-for-Profit Organisations

Although Not for Profit organisations are typically key actors in the participatory design process, they can also develop designs through financial participation. This position was investigated as the main criticism of participatory design practices is in the amount of time and resources both the users and architects much provide. Although the effects of user participation have proven to be beneficial, Hamdi explains in Housing with Houses (1995) that;

"people secretly prefer providers. They like finished homes, offered under heavy subsidy, built to much higher standards than they could ever hope to achieve in any other way"

(- p 36)

Nightgale Housing is an Not for Profit Organisation based in Melbourne, Australia in which the architects are both the owners and investors of the project. (Nightingale, 2022) Nightingale developed a new financial model in response to the speculative developments

in inner city Melbourne. The company first develops a design and then creates an open priority ballot system to show vested interest before construction begins. 20% of the dwellings are allocated for community housing providers, 20% to priority users such as community contributors (teachers, nurses, social workers), and finally 60% for home buyers. If applications from any of the sectors are unfulfilled, the building is not developed. Once the residences are established, the architects and users hold a feedback session to further develop the design. The Nightgale Housing approach is unique as the restrictions put in place promote community engagement and engage new residents before the building is made.

2.1.8 Computer Based Parametric Participation

Using technology to enable participation, Pirouz Nourain developed a gamified program that describes spatial preferences. Users simply input their needs and desires, and the program develops a spatial actualisation and arrangement by planning, configuring and finally shaping the architectural form (Nourain, 2022). The programmatic approach optimises time

efficiency, often criticised within participatory practice. Computer aided parametric design is also accessible to a larger audience and has the potential to be used by the user or the architect. Similar to design gaming, the method provides more of a suggest for which architects to develop their design.

2.1.9 Conclusion

The research shows that participatory design practices have moved from systematized design decision and construction methods to a shared cognitive process. Positions from the 1960s-80s removed architects from the design process to "take on the role of the moderator (Hofman, 2014, p.22) Although the rearrangement of building materials provided innumerable options, they existed within a particular framework. More recent participatory designs find greater value in the user's local knowledge, desires and idea generation. There is a greater emphasises put on the benefits of the architect's technical expertise for user enablement.
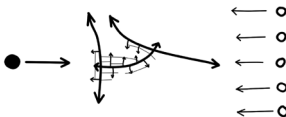
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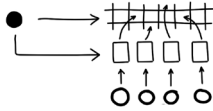
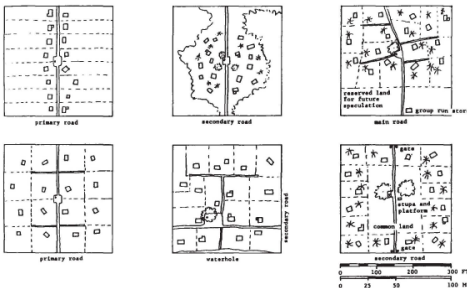*Adeliade Road*

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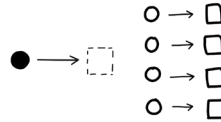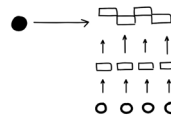

Walter's Way

Participation and Community

Housing with Houses

Design Reserve

Quinta Monroy

Gamified Design
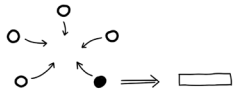
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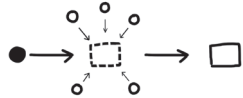
The Commons

Computer Based Parametric Participation
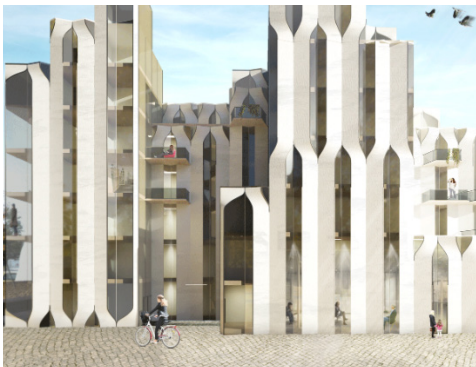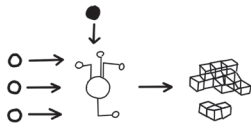
GoDesign Game

Figure 2
Participatory Design practices

Note. Table (right) displays theoretical positions and cooresponding case studies. Adelaide Road (Victoria Printing Works, 1977), Walter's Way (Crook, 2020), Housing without HOuses (1995), Quinta Monroy (Elemental 2008), Living and Residing with Seniors in Rurural Areas (Hofmann, 2014), The Commons (Luco, 2019), GoDesign Games (Nourian, 2019)

● *Architect*   ○ *User*   ▢ *Building*

2.2 History of Dutch Housing

The Netherlands has a strong history of architectural intervention supported by governmental and privatised action. As early as 1901, the first Housing Act in The Netherlands was developed in order to address health and safety concerns of overcrowded living conditions. The Housing Act has perpetuated a prevailing custom of government interventions. However, between the 1960s -90s, the Dutch government began to liberalise the housing market to reduce housing subsidies (P. Boelhouwer, 2005) Susanne Hoffman describes that how buildings are made is heavily determined by who gets to decide – the key actors in the development. Hence, a history of support from large government and cooperate bodies has lent itself to large scale mass development.

Innovation in building technology further contributed to the architectural tectonics of Dutch social housing. The Post-War period saw a heavy implementation of prefabricated construction systems that promoted buildings that were easy to construct, repetitive in form, and relied heavily on the use of concrete. Less value was placed on public life, social connection, and sustainability values, which we now promote today.

These prefabricated dwellings were typically arranged within an urban plan aligned with the values of the Garden City movement. The Garden City movement was introduced to The Netherlands in 1912 and was heavily adapted and implemented in the Netherlands from 1930 to 1970. Where previously dwellings were developed incrementally, and even urban developments were made at a local scale, the Garden City was a heavily implemented urban planning scheme that sought to organise whole cities. The urban design is distinctive in its cocircular orgnisation of community clusters, seperated by large green strips, and central spines of cirulation leading to cocirular circulation. This organisatin aims to strengthen the sense of community, by organising groups to look inards, but can also lend itself to a sense of segration by creating such distinct seperations between communities.

In essence, the past century has seen a major shift in our perception of scale, perpetuated by developments in building technologies. Government intervention in The Netherlands perpetuated a tradition or large scale, social housing projects that define much of the architectural landscape.
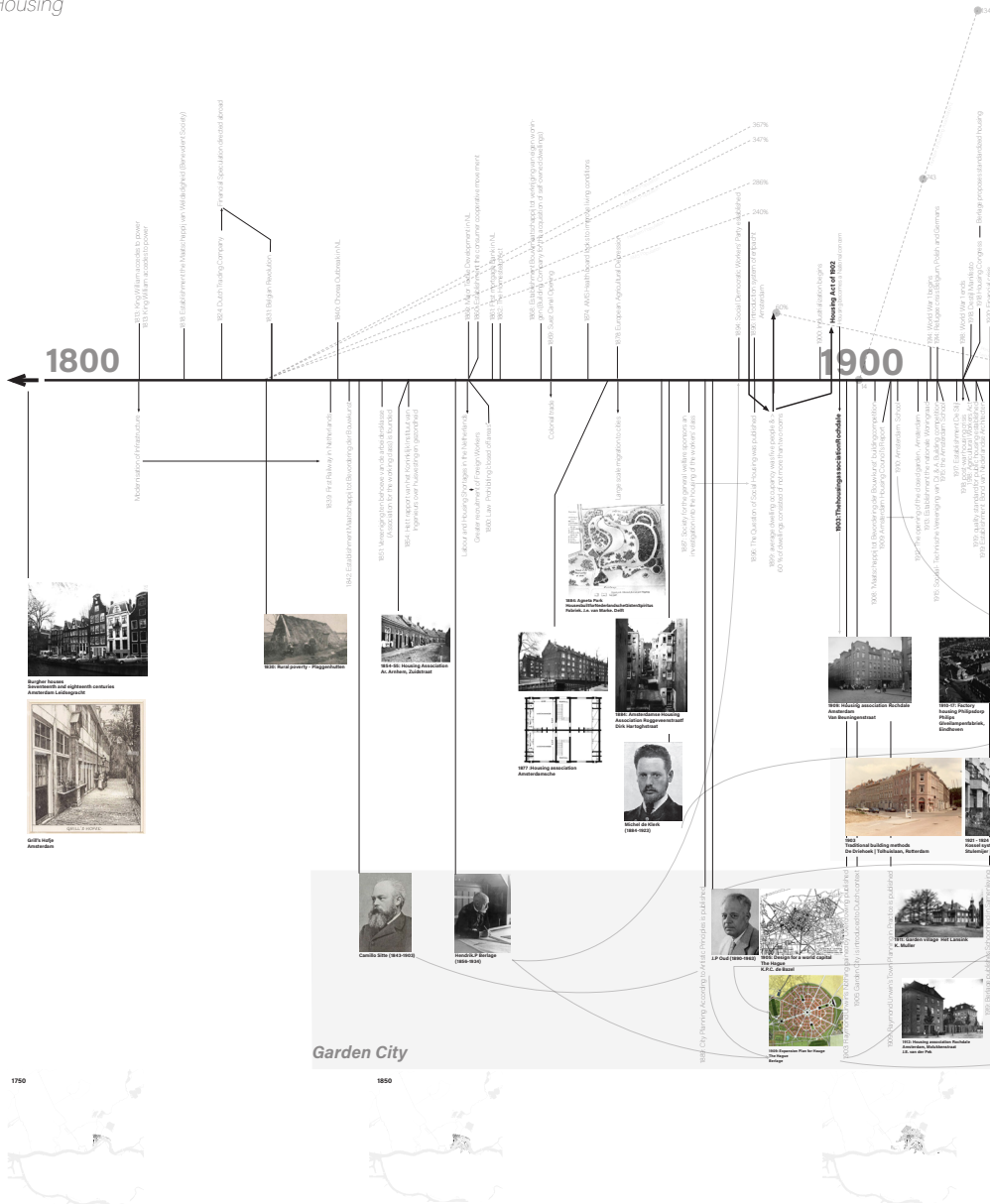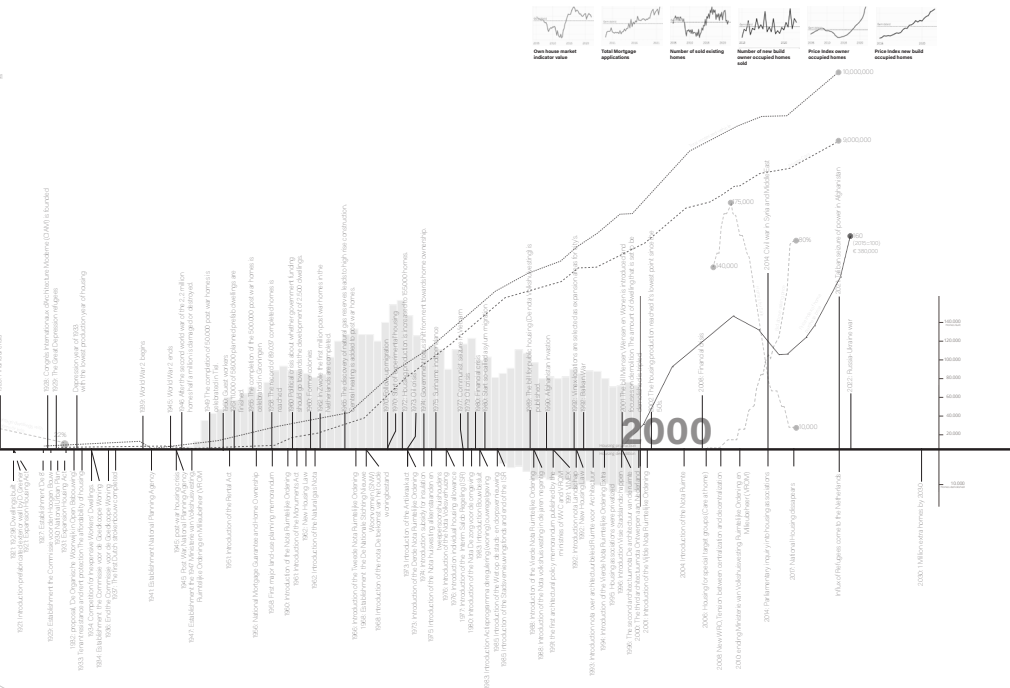
2.3 **Post-War Housing**

Adaptation of Post War mass housing is not only prevalent in The Netherlands, but across Europe. Over the past 20 years there have been many redevelopment projects, experiments and competitions at an EU level (Lepratto, 2018, p.15) that testify a desire for change. Fabio Lepratto takes an extensive look into the cause of these redevelopments and further explores way in which transformations can occur in his article Housing Bricolage (2018).

On a fundamental level, many of the buildings must be refurbished to meet current building codes and standards. Further, premature deterioration can be attributed to experimental construction techniques (p.15) in a time when efficiency was most favourable. He describes that user dissatisfaction at an urban scale can be attributed to limitations in functional zoning, vast openness and fluidity of space incapable of stimulating communal relationships, uncomfortable environments created by monumental scale of architectural form, and a strengthened sense of marginalisation due to poor connections to surrounding context. Furthermore, the "typological uniformity" restricts the building's capacity to adapt over time and lends itself to aesthetic seriality.

However, typological uniformity, although seen as depressing and monotonous in contemporary society, provides great potential for the legitmacy of transformation projects. In Housing Bricolage, Lepratto describes an 'An Extensible Abacus' which can be applied to the Post-War housing blocks, deconstructing their repetitive nature to create a range of unique solutions. In fact, legitimacy of the research and potential project development stems from the fact the development's homogenaity. Hence, it is from the identification of patterns that we can breed innovation.

Figure 3
History of Dutch Housing

1800

1900

Garden City

1750

1850

Own house market indicator value

Total Mortgage applications

Number of sold existing homes

Number of new build owner occupied homes sold

Price index owner occupied homes

Price index new build owner occupied homes

2000

IJsselmonde Development

2.4 Background of IJsselmonde

IJsselmonde is a brough in the South-West of Rotterdam, developed mainly after the Second World War under the core principles of the Garden City. The urban planner, Peter Van Drimmelen, wanted residents to feel their living environments were a relief from the intensity of the city, with an abundance of greenery and space for every stage of life, largely based on the concept of a nuclear family in the 1960s. The district was rapidly developed after the Second World War using mostly prefabricated building systems in response to the post-war housing shortage. Infills in the 1980s and 2000s densified the suburb and added new services, however, these additions have done little to transform the existing urban structure.

In 2020, the municipality of IJsselmonde was given a score of 24% for "quality of life" - "far below average for Rotterdam" and 6th lowest out of all 90 suburbs (IJsselmonde, 2020). The Municipality of Rotterdam has identified that there is a lack of adequate facilities, public spaces feel unclean and unappealing, that there is a prevalence of violent crimes and robbery, a lack of financial, health and safety self-reliance, a lack of participation and cultural, and social resources are under insufficient (IJsselmonde, 2020).

IJsselmonde predominantly consists of elderly and young families, with a small student population. Therefore, the 43% of single person homes predominantly consists of elderly, living alone. Half of the population in IJsselmonde is Dutch, while the other half comes from a wide range of nationalities with the Suriname populations being the most represented. The average income for Groot-IJsselmonde is €21,900, below both the average for Rotterdam and The Netherlands, and 51% of the housing stock is social rent.

IJsselmonde provides opportunity to speculate new possible solutions to densify and transform exsiting post-war structures due to the concerns of the existing residents and need to densify. While researching participatory practices the historical background, current condition, and municipalities' goals will be considered to substantiate the results.
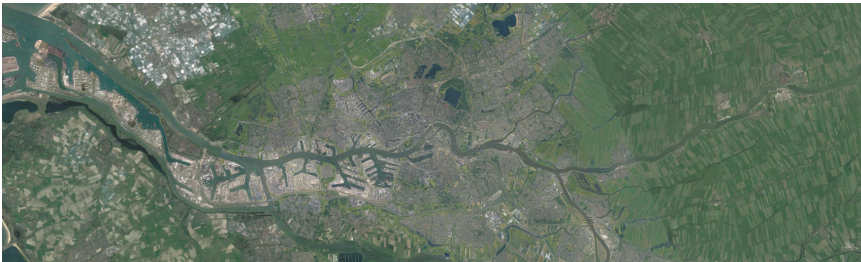
Figure 4
Rotterdam, Netherlands

Figure 4
Rotterdam, Netherlands

Figure 5
IJsselmonde, Rotterdam

Figure 6
Hordijkerveld, IJsselmonde

2.4.1 Site Analysis

The site analysis aims to provide greater insight into the site conditions from an architectural perspective. The site selected is in Hordijkerveld, the South-West suburb of Groot-IJsselmonde. The site selected for the case study is a stamp typology formed by four slab apartments enclosing a courtyard along Thamerdijk and Emielsseldijk. This site was selected due as the homogeneity of the architectural form that provides little visual enjoyment and self-expression. The area is scattered with large empty green "in-between" spaces with no function other than a buffer, creating harsh transitions and unusable spaces. Large empty streets with no opportunity for social interaction have also led to a desolate public life. These initial site observations led to the selection of the site. Further, the site was selected at it represents the uniformity of the stamp typology seen in Post-War Neighbourhoods. The stamp form is repeated to the north and south of the site. Further, Emielsseldijk, the main road, and part of Oeverloos park border the site as they are key features of the garden city structure. Therefore, the site selected is not only because it's unique features when experiencing the side but also because it is representative of a larger typology.

The site has a total area of 36500m2. 9.5% of the area is dedicated to dwellings, 13.5% is dedicated car space (ie. Roads and car parking), 70% to greenery and 7% to pedestrian paths. The number of apartments currently on the site are 160, with approximately 272 residents, if the average household size is 1.7 people (CBS, 2022). One of the core strengths of the site was the clear urban organisation. The site was easy to navigate due to the repetitive form and spinal circulation along the main roads and green strips. Further, the large green strips were frequented by both locals and bypassers as it is a visually enjoyable and public space which provided ample opportunity for multiple functions. These two core features aim to be maintained.

Key features that exemplify a potential for transformation include the internal courtyards and repetitive architectural form. The internal courtyard spaces feel claustrophobic despite being quite spacious as the configuration of the stamp prevents visual connections to outside the block. The vast spaces feel smaller, as the arrival to the space reveals its entirety, creating an a visually under stimulating environment. There is no journey or story that the user can

undertake. As Lepratto described, the dilation of public urban space lends itself to ambiguity rather than multifunctionality. The repetition of architectural typology may also lend itself to confusion for elderly residents or bypassers.

There is a strong contrast between the local and institutionalised street-art which shows greater opportunity for self-expression. Although there are street murals to brighten and differentiate the public landscape, there is also an abundance of graffiti in spray paint and chalk. Residents may not feel like their voice is heard, in the city of Rotterdam or locally, and do not value the public resources. Therefore to shift and prevent this current problem, new opportunities for street art could be provided.

Similarly the visual degradation of building materials reflects the inadequate maintenance by the social housing company, and consequential user dissatisfaction. There are clear signs of moulding, stains, and general dirt on the facades of the existing buildings. This degradation indicate that the social housing company is perhaps not maintaining the buildings to a high degree and that the current building materials are not high quality. The degradation of the built environment leads users to feel undervalued

and does not incentivise user maintenance. Therefore it is important to upgrade the current facades, choose materials that are easier to maintain for the users and create an environment in which uses want to maintain their built environment.

Another observation made when visiting the site was the abundance of flooding prevalent in the public parks. Water management is a large issue for The Netherlands and can greatly affect the usability and aesthetic of public spaces. Therefore, low cost solutions to aid water management may be undertaken to mitigate this problem.

To the East of the selected site, the Ooverloos café also shows local residence's desires for self-build, community based developments. The café is situated to the East of the Thamerdijk block in Ooverloos park. The cafe consists of a cafe and communal garden which shows a desire for more public functions and for communal

Figure 8
IJsselmonde Centre, Urban planning

Note. Sparse urban spaces, as a result of top-down urban planning, has left empty, unused spaces that are not conducive to social interactions

Figure 9
IJsselmonde Centre , Contrasting typologies

Note. New typological additions, developed with the intent of densifying IJsselmonde, greatly contrast the existing condition creating an uncomfortable environment.

Figure 12
Hordijkerveld, Overloos cafe

Note. Overloose cafe was developed by local residence and shoes a desire for greater local led initiatives

Figure 13
IJsselmonde, Row Houses

Note. Vast, empty urban condition due to urban plan being developed for higher density suburb.

Figure 10
Thamerdijk, Hordijkerveld

Note. Vast open spaces for cars and footpaths are not aligned with the current density of the site, leaving the site empty with limited to no social interaction

Figure 11
Hordijkerveld, internal courtyard for adjacent row houses

Note. View from the adjacent row house's internal courtyard shows how the large monolithic forms of the

Figure 14
Hordijkerveld, 'Grafitti"

Note. Graffiti on buildings shows greater need for self expression and lack of pride for environment.

Figure 15
Hordijkerveld, internal courtyard

Note. Large Courtayrds feel dense due to overlapping architectural forms.

2.4.1.1 Future Development

Future development undertaken by the municipality of Rotterdam should be noted as to inform the parameters in which the project will be developed. The municipality of Rotterdam has shared their aims to diversify the housing stock from 80% social housing and 20% middle income earners, to 20% social housing, 30% middle income earners, 30% of a higher segment and 20% from the 'top segment' (Municipality of Rotterdam, 2022, pp. 41) The research aims to align with these densification goals.

Further, the municipality aims to improve public facilities the "heart" of IJsselmonde (pp 48) and add more functional spaces in the green strips.. Further, public transport and mobility services aim to be enhanced in order to move the abundance of car space for more public use (pp 44). Finally, greater connections between the existing suburbs will be developed (pp. 52)

In doing so, the municipality aims to create a suburb that is both a combination of the city and the garden city. Residences agree that there is a clear appeal for the garden city model and quieter life in IJsselmonde, but could incorporate significant public

interventions. Overall, the municipality aims to strengthen the identity of IJsselmonde and what it means to be a garden city.

2.4.3 Ethnographic Research

The ethnographic research revealed the true affects the architectural landscape had on the existing residents. By following the daily lives of the local residents we were able to identify more of the wants and needs of the users.

Residents in IJsselmonde deeply respect and care for their own homes and personal space, but do not value, occupy or maintain public spaces. As the private moves to the public, the level of care seems to diminish. Many private gardens have been left unmaintained, roads and public facilities are damaged, further still, piles of rubbish have begun to build up in functionless grass spaces. The lack of function has provided opportunity for a new function. One of the residents described feeling estranged in the suburb but found comfort in the community centre. The residents value and favour their large, personal space and dislike the public spaces, in fact are typically bothered by it. The users enjoy their homes so much, they do not feel the need to go outside. Jan Gehl explains in Life Between

Buildings (2011) that when opportunity for optional activities are low, the amount of resultant social activities will also decrease (p 11). In order to increase social activities, and in doing so promote a better community, safety, and maintenance, a wider variety of optional activities should be provided.

Listening to the stories told by the residents revealed that demographics of the suburbs have also drastically changed. Both the apartments and the row houses, that used to occupy a families of 2-5 now typically have one resident. Residents described once living with their whole family in the apartment, who have now all moved out. The residents do not want to leave their family homes, but lack the density requirements of the dwellings they occupy. Similarly, children who previously played in the courtyards have now grown up and moved away from homes. Both the architectural and public scale address a different demographics to the current residents.

Additionally, There was a predominant divide between the life of the row house users and those in the flat apartment blocks. Elderly Dutch residents typically occupy the row houses, while elderly and migrants occupy the large apartment

blocks. The typological differentiation has informed community dissonance.

Residents also commented that the buildings are poorly maintained. The social housing company is slow to provide maintenance in which users are sometimes left without running water. This provides evidence that although the buildings need maintenance from an architectural perspective, residents are most likely willing to agree to refurbishment or upgraded facilities for their homes.

In summation, there is also a strong need to replenish the public landscape and introduce new means of social interaction, and also update the architectural typology to better reflect the existing residents.

Figure 16
Sketch from Ethnograhic Research Booklet: Row Houses
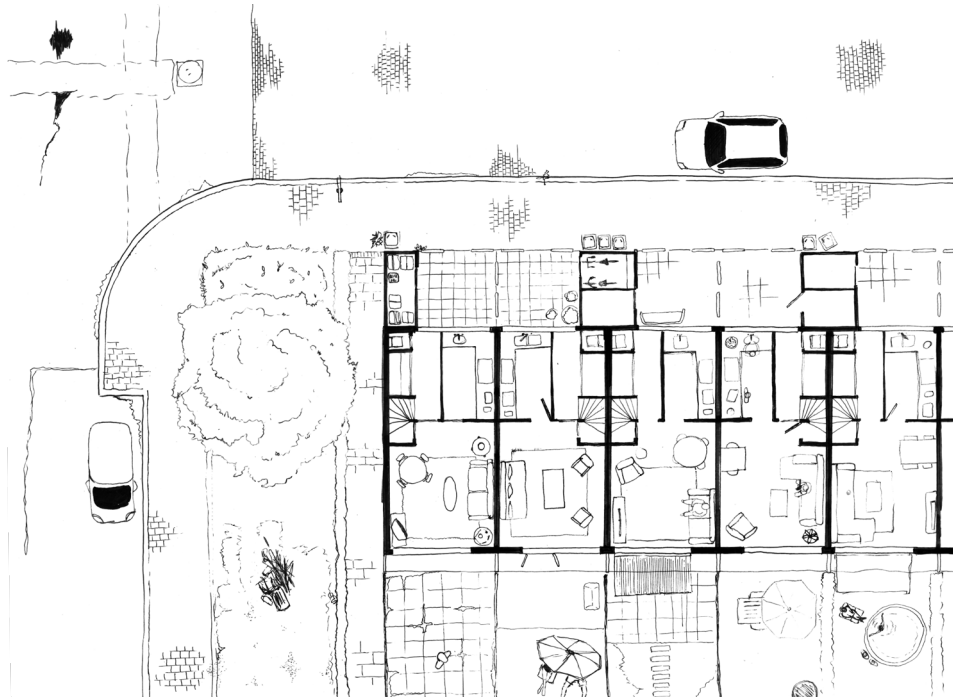
Note. Ethnographic Research revealed users greatly enjoy personal space, through decorations, maintence and care, and did not enjoy piblic spaces that were usually littered and dilapitated.

Note. Ethnographic research reealed large monolithic forms harshly contracts the vast empty urban spaces

Figure 17
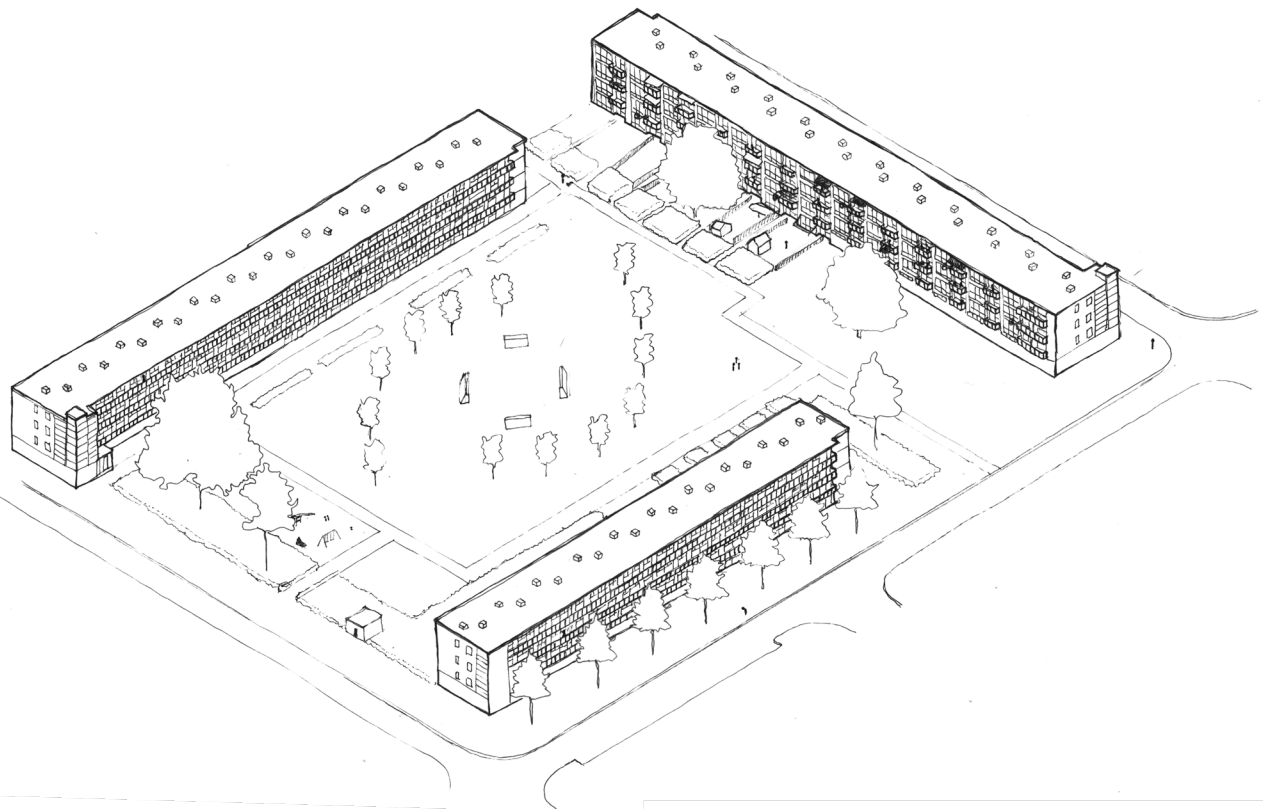*Sketch from Ethnograhic Research Booklet: Apartments*

2.4.5 Dura-Coignet Housing System

The Coignet system is a prefabricated housing system developed by Dura-Vermeer and designed by Eric Groosman in 1945 to combat the post-war housing crisis. The building system was already being implemented in France, but was readapted to fit the Dutch context by moving the load bearing members from the façade elements to the side walls. The building system is able to build four apartments in one day, and aimed to develop one thousand homes per year (Bouhulgroup, 2013, Module 3, p. 8). However, development was limited to the proximity of the factory, which was located in Rotterdam. Several contractors developed Coignet homes in The Netherlands. Dura developed 12,000 dwellings, indeco developed 10,500, and Neduco developed 8000 homes. In The Coignet system is a prefabricated housing system developed by Dura-Vermeer and designed by Eric Groosman in 1945 to combat the post-war housing crisis. The building system was already being implemented in France, but was readapted to fit the Dutch context by moving the load bearing members from the façade elements to the side walls. The building system is able

to build four apartments in one day, and aimed to develop one thousand homes per year (Bouhulgroup, 2013, Module 3, p. 8). However, development was limited to the proximity of the factory, which was located in Rotterdam. Several contractors developed Coignet homes in The Netherlands. Dura developed 12,000 dwellings, indeco developed 10,500, and Neduco developed 8000 homes. In total 31,000 Coignet dwellings were built. In Hordijkerveld, IJsselmonde, there are 3 sets of Dura-Coignet blocks. Each block has four buildings, resulting in 160 dwellings per block and 480 in total (Bouhulgroup, 2013, Module 3, p. 5).

The allotment of the blocks in the Dura Coignet system was designed to fit the tracks for a crane with as few bends as possible (Bouhulgroup, 2013, Module 3, p. 8). Although IJsselmonde was designed by Van Drimmlen as Garden Village, the urban plan has clearly been determined by the necessity to build in an efficient manner.

The dwellings are approximately 70m2 and were designed for family between 4 and 7 people, be this with the 2 bedroom or 3 bedroom design respectively. The rooms are arranged around a central hall space, adjacent to the entry hall. The entry hall is accessed by the central staircase used by 8 apartments with

street access at the ground floor. The design is characterised by its aesthetic serality due to standardisation in the industrial process. The building is made from concrete with a thin layer of polystyrene insulation on the façade (Bouhulgroup, 2013, Module 3, p. 3).

However, the successes felt by large scale construction was short lived as the factories for the Dura-Coignet system began to close down in 1972. This was due to criticism as to the uniformity of the design and innovation of new building technologies that allowed for greater variation. Groosman spoke of a flexible system that existed in a changeable framework, which can be likened to Habraken's improvisational housing concept. The Coignet homes were the first dwelling type in history to be put on demolition list with a 20 year period (Bouhulgroup, 2013, Module 3, p. 3) and in 2012, 15% of Coignet homes were demolished (p. 5). The core reasons for demolition include the strictly functional approach to living and concerns with building physics. Structurally, more is needed for to maintain a future for these homes than just a technical approach.

Figure 18
Dura Vermeer Factory in Rotterdam

Figure 19
Dura Coignet Construction Diagram
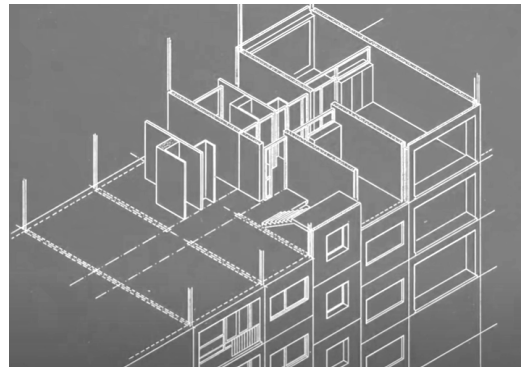
4. Participation in Practice

What are the ways in which user partcipation in the architectural design process be enacted in the Netherlands? This chapter outlines the development of a participatory design position best suited to the context in Hordijkerveld for the enablement of collaborative housing solutions. This has been achieved through design experiments, interviews and case study analysis.

4.1   Conceptual Design Experimentation

In the background section of report, theoretical positions on participatory design and relevant case studies were identified. This section outlines design experimentations conducted to identify which methods are most appropriate for the site in Hordijkerveld. This is very important stage as the research moves from theoretical to practical application, revealing new perspectives. As participation lends itself to ingenuity and improbability, applying finalised results to the site can provide significant insight into the ramifications and impact of the design. Creative solutions drawn from the concepts have been developed and analysed to hypothesis the benefits the methodology could increase density and improve liveability.

4.1.1 Improvisational Housing

Initial experimentation of the "Support-Infill" methodology showed potential at an architectural scale but lacked urban intervention. The initial concept was to develop a structural grid from the existing structure in which users could determine personal internal arrangements. The concept is comparable to Van Schagen architecten's project on Klarenstraat – Amsterdam (vanschagenarchitecten, 2014) in which users selected "modules" within an existing post-war building, to develop unique dwellings.

Developing from the existing architectural structures allows existing users to change their environments and living situation while also densifying with new residents. However, much of the core issues concerning the urban scale are left unresolved and leave room for further densification.

Participatory processes explored in the 1960s and 70s primarily focused on internal rearrangement of program within an external shell. Although able to prove a participatory design is viable in social housing, Hamdi (1995) describes that these processes do little for the community to truly combat social change. These projects are more concerned with architectural flexibility than community participation. Indeed, flexibility lends to a building's endurance, but does not provide opportunity to form new ideas, address issues the architect cannot see, or address affordability. Increased flexibility lends itself to higher costs with the development of highly specific building technologies that could be arguably used for a "conventional" conversion (Hamdi, 1995, p. 73)

Therefore, the Support Infill methodology will not be further developed

4.1.2 Self Build Methodology

The self-build methodology was experimented on the site in order to explore more extreme sides of the support paradigm. This methodology is described as extreme as it would most likely take significant government, communal and local cooperation to realise on the site. The design results demonstrate that, although there is potential for densification, the design lacks urban organisation and visual appeal. Massings that mimic the urban plan, seen in Walter Way, Lewisham, London, were arranged in open spaces. A similar arrangement and size was used as the users expressed great joy and organically developed the houses themselves. However, the harsh contrast between the standalone housing and large, monolithic forms creates an uncomfortable environment and could be arranged to provide greater densification.

Although the self build methodology asks architects and urban planners to trust the users to develop what they see best, architects such as Susanne Hoffman comments that "critical examination shows that users often struggle to cope with this extensive freedom when lacking architectural

expertise" (Hofmann, 2014, p.12). Most likely, high levels of success from these types of self -build projects can be attributed to the willingness of the individuals who develop them. However, that does correlate to success in the larger market where individuals have a wide range of interest, time and effort for such developments.

From this research, self-build practices at an urban or architectural scale will not be further investigated. However, there is still potential to explore self-build or communal projects at other scales, such as communal projects and façade ornamentation

4.1.3 Gaming Methodology

In order to visualise how a gaming methodology could be undertaken in Hordijkerveld, the data from the ethnographic research was substituted into Susanne Hofmann's Aging in the Neighbourhood process, and the finalised project was adapted to the site. The Aging in the Neighbourhood project was selected as it similarly aims to densify within an existing suburb. The method outlined in Architecture is Participation (2013) describes;

- An introductory session to help new users and existing residents get to know each other. Users introduce themselves, their interests and hobbies, exchange views on desirable development. Sharing interest also aids programmatic idea generation.
- Following the more explorative session, in the second session users set core principles. This could include how much money they would like to invest into different spaces, the value of external management and cleaning, if sustainability is an important factor.
- In the third session, users provided feedback on the conceptual architectural design developed by the architects
- In the fourth and final session there was a creative workshop. Through planning games, users are able to develop unique "dream" scenarios as a collective.

Conducting this experiment revealed potential for greater creative ingenuity and community building within the gaming methodology. However, the design results were less appealing as the design does not transform the existing buildings. Therefore, the gaming methodology is useful in allowing users to develop creative solutions – users can come

together to develop spaces that they not only desire, but that the architect could not have predicted. For these reasons, gaming as a participatory methodology will be further explored.

4.1.4 Conclusion

The design experimentation was able to provide insight into how different participatory methods would manifest in the site. Although each held viable results for densification, moving forward with further research on planning games, such as Susanne Hoffman's negotiate dream space. Gaming methodologies promote creative ingenuity and community engagement, while construction and design is reliant upon those who have the expertise, the architects and contractors. The methodology promotes a symbiotic relationship in which ideas are continuing to grow from collaboration between user and architect.

4.2 Negotiate Dream Space & Bricolage

Having established planning games as a method for further development and exploration, user group testing was conducted to explore the development of existing games. Susanne's Hoffman's 'Negotiate Dreamscapes (Hofmann, 2014, p.88)' is a planning game for users to express their desires and arrange similar vested interest. The process is also provides a platform for the users to introduce themselves and develop community bonds, which in turn aids socialisation and public maintenance – a key goal outlined in section 2.4.2; ethnographic research. In section 4.1.4, further development of the gaming methodology to incorporate the existing housing stock was expressed. Therefore, the Negotiate Dreamscapes games was developed to incorporate the pieces developed from the bricolage (section 5.1).

• Users were asked to write hobbies, interests or desires on 'activity' cards. The group then took turns to introduce themselves and place activities in spatial correspondence to similar interests. The more they felt the activity was similar, the closer the card should be placed. Key points: users get to know each other

• The card placement should reveal gatherings of similar interests, which can now be defined as 'atmospheric islands' in which both users and architects can develop ideas on how the space for the selected activities should feel. Grouping similar interests visualises potential communal activities, promotes social networking, connotates popularity, and identifies where more resources can be spent.

• Atmospheric islands are then placed on the structural system of the existing building to determine location. Pieces of the bricolage are assigned to users and rearranged to meet user's vested interests.

• Denial cards can be placed if users feel a strong disinterest in particular activities.

• The game aims to establish a spatial program for the building.

The users selected for the experiment were the tutors and peers in my master program, although further user group testing was intended to be conducted with local residents after preliminary testing. However, the user group testing quickly revealed that features that required higher level of spatial knowledge were not as readily accepted as those with a greater focus on atmospheric conditions. Users struggled to determine the location of atmospheric islands within the existing building. Furthermore, users struggled to reinterpret pieces of the

Figure 21
Pieces of Board game
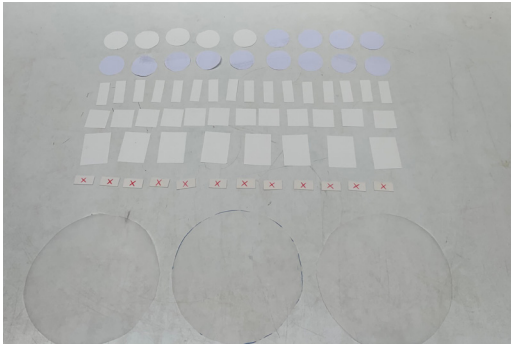
bricolage. Therefore, the gaming method should be used to identify user wants and needs, developing new creative solutions, programmatic development. Further development into the articulation of building options, and their corresponding parameters could be made accessible in another way.

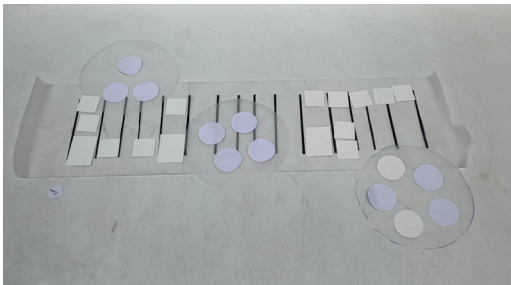**Figure 22**
Hypothesised Layout for board game

Figure 23
User Group Testing for Game

4.3 Interviews

Within the timespan of the research project, fields that required significant testing and development can be evaluated by professionals in order to validate current hypothesises, gain greater insight into design practices, and provide new insights. Architect and urbanist Ekim Tan was able to provide greater insight into the real world application and implications of user participatory design in The Netherlands. Niek Mouter, developer of the Participatory Value Evaluation Tool, provided greater insight into the research and development, new directions and applications, and clarified potential use of the method

4.3.3 Gaming Methodologies and Participation in The Netherlands

In this section the paper will overview the core themes of the discussion with Ekim Tan. Tan explained that she felt more valuable changes can be made using participatory design practices at an urban scale in which community actors can share their knowledge, roles, paths and perspectives. She further elaborated that more research concerning design gaming at an architectural scale in highly developed cities such as The Netherlands must be explored.

Tan went on to highlight the benefits of a design gaming approach for highly developed countries such as The Netherlands, compared to incremental or improvisational housing design. She described the development of a project in which a city block was developed as a 'support' system. Users were asked to selected the desirable amount of units they wanted for their home, moving around the block until it had been filled. The idea was to let users infill the block over time, and provide key infrastructural resources at the initial stages. However, the development was quickly prevented as government urban planners needed exact numbers of residents in the block in order to select the size of the pipes to be used for underground plumbing. Nabeel Hamdi (1995) similarly describes that in the development of Adelaide Road greater efficiency would have been achieved it if the building was developed as a whole rather than by different contractors over time. When working within a city that already exists as a complex, multi-level system, there are many factors to consider. Some of these factors, are not able to be changed,

Although these provisions may come as a set back, participation implies the involvement of all players. Participatory design processes, within the supporters paradigm, aim to assess the existing housing stock,

resources, and voices, to develop innovative solutions. Therefore, for projects within a developed city, in order to create minimal impact and changes to existing infrastructure, incrementality is not favorable. Therefore, in countries such as The Netherlands, incrementality is less favorable and participatory design practices should place greater focus on user engagement in the early stages of the design process.

A final point of dicussion was concerning the role of the architect in contemporary Dutch society. Tan described how architects have been pushed to sell their service to the "highest bidder". She alluded to particiaption as a means of mitigating this trend by taking greater control as to who we are designing for.

4.3.4 Participatory Value Evaluation Tool (PVET)

The Participatory Value Evaluation tool is an algorithm based survey that shows restrictions to a number of policy options and their effects. Developed by Niek Mouter, the method aims to provide an accessible manner in which large groups can provide advice on strategic government action by developing a clear overview of the advantages,

disadvantages and limitations of certain restrictions (Mouter, 2022).

The interface can be divided into three parts, the situation, the avalible options, and the respective ramifications. An experimental survey was conducted by Mouter in which users were asked to provide input which government policies should be put in place in response to the Covid-19 pandemic. The header describes a situation, for this case, "few people need care for Covid-19". Below there are a number of policy actions that could be taken. Users can allocate points to the policy options. The right hand diagram shows the restriction, in this case, the impact the policies would have on health care provisions (Mouter, Jara, et.al, 2019). In the feedback stages, users expressed that they believed PVE was a good methodology to be more involved in a "low-threshold but nuanced" way. They felt they were given a "clear picture of their preferences and considerations."

With this knowledge, an interview with Niek Mouter was conducted in order to gain insight into alternative uses of the PVET and further clarification of the methodology. He explained that Maptable in Utrecht is a

Figure 24
Extract from Participatory Value Evaluation Tool
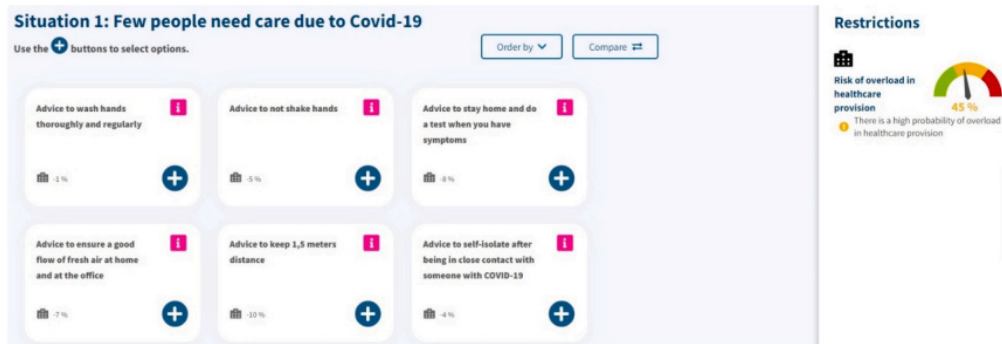
Note. The image above shows an extract from a PVET survey concerning restrictions put in place for the Covid-19 crisis. The title describes the situation, the white boxes display potential measures that could be put in place, and on the right there is a baraometer describing the impact on health care industry.

company that similarly uses the PVET to promote participatory planning at an urban scale. However, through the conversation it became evident a more beneficial use of the PVET tool was in determining parameters. This is because the user interface is highly accessible and creates a clear visualisation of cause and effect. In the previous section it was outlined that new ways in which to showcase building parameters were required. Not only because users find it difficult to understand technical knowledge, but also because it aligns with the core objectives to provide autonomy, accessibility and availability to options.

Mouter emphasised that the tool should be used to provide insights into user's perspectives, but does not have be a definitive. In fact, the survey should be conducted in one of three parts; idea generation with the user, complete PVE in private, and finally reflect with users. The goal is then not to focus on the average but rather a range of arguments and diversity in values.

For future application, the PVET should be used to determine group sizes and resources through the allocation of resources. After a creative idea generation workshop, users can complete a PVE survey

in the privacy of their own home. Users are shown a situation, followed by a number of potential options, followed by subsequent parameters affected. Situations are defined as functional programmatic requirements or features. A situation could be a functional zone such as the kitchen, determining resources such as furniture, or core principles such as sustainability. Users then indicate their readiness. Readiness is defined as the willingness to participate. Examples include group sizes for communal activities, defining individuals routines, allocating popularity for additional functions, or determining financial resources spent on core principles. The affected parameters are displayed adjacently. Parameters could include costs, room size, and resources. The goal then is to illustrate to users the cause and effect of different options in doing so providing awareness to alternative housing options.

The results should be used to gain insight, but not necessarily determine, the programmatic requirements of the collective housing unit and cluster likeminded individuals that share values in order to optimise the functions and capacity of the building. Results should be discussed in a feedback session.

Figure 25
Participatory Value Evaluation Tool Protot

Note. Prototype of PVET for collaborative situation, the grey boxes provide options, parameters. In this example, the situation parameters describe the size and resouce

Figure 27
Participatory Value Evaluation Tool Prototyp
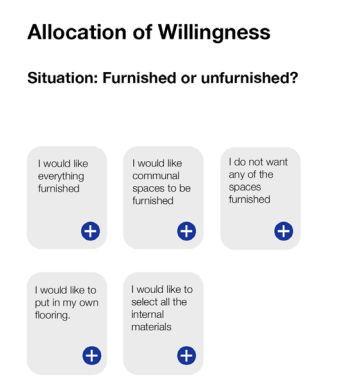
Note. The PVET can potentially explore reso

Figure 26
Participatory Value Evaluation Tool Prototype

ype

Allocation of Willingness

Situation: How much private space do you need?

I would like my own private residence

Private Bedroom

Private Bathroom

Private Bedroom with Partner

Private bedrooms for family

Kitchen size: x sqm
Additional facilities: Multiple ovens, multiple stove tops, high quality services
Communal Group sizes: x people per home, x people per kitchen, x people per bathroom
Rental cost: x per month

Private Bedroom size: x
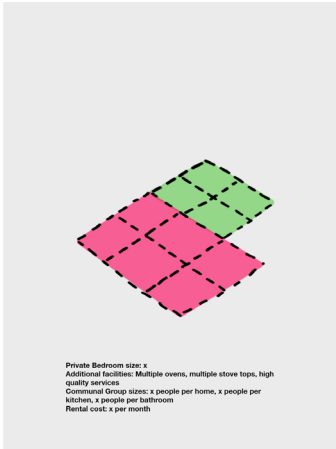Additional facilities: Multiple ovens, multiple stove tops, high quality services
Communal Group sizes: x people per home, x people per kitchen, x people per bathroom
Rental cost: x per month

housing project. The left hand title describes the
and the right hand display shows the affected
is the kitchen group size, and the affected
es affected.

Note. The image shows an option in which the PVET explores private dwellings and individual routines

Figure 28
Participatory Value Evaluation Tool Prototype

e

Allocation of Willingness

Situation: Additional sustainable features?

I would not like any additional features

Communal Garden with multiple households

Communal garden with my household

Compost and recyling system

Thermosiphon water system

Furnished areas: x
Additional facilities: Multiple ovens, multiple stove tops, high quality services
Communal Group sizes: x people per home, x people per kitchen, x people per bathroom
Rental cost: x per month

Updated facilites: x
Additional facilities: Multiple ovens, multiple stove tops, high quality services
Communal Group sizes: x people per home, x people per kitchen, x people per bathroom
Rental cost: x per month

urce avalibility such as furshings

Note. The PVET has the added value of being able to explore values, helping align users with similar interests and design coherent collaborative housing solutions.

4.4 Role of the Architect

If the research aims to define the role of the user in participatory design practices, the role of the architect must also be defined. In the previous sections it has been made clear that the architects and the user should work in a collaborative manner in which the user draws on the architect's technical expertise, and the architect draws upon the user's unique knowledge of the site and personal needs for the accurate management of resources.

The research sub-questions challenge, when users will participate, who gets to participate, and at what stages of the design will users participate? These sub-question connote where, when and how we can afford to remove or change the role of the architect in the design process. This line of questioning leads to the theoretical query, what if we completely removed the architect from the design process? Hence, what is the role of the architect?

Architect and urbanist Christian-de-Portzamparc reflects on mass-standerdised development in 1960s, commenting that if "houses would be assembled in factories, people would buy what they like, and sociologists would assemble them" (Portzamparc, 2017). He hypothesised that the "city of the future" would be developed by "sociologists and computers." However, as mass development led to over crowded and uncomfortable neighbourhoods he remarked that the problems of a contemporary city can only be solved by the architect who is the designer of spatial relationships.

From this theoretical position it then clear that the architect should carve out the spaces of the city first, and then address the needs of the user within buildings. The architect must design the quality and function of different spaces in order to address the concerns of the contemporary society.

4.5 Urban Strategy Development

Having established design gaming and a participatory value evaluation tool as methods for which to integrate users into the design process, the parameters of the built form need to be articulated. The more pragmatic and indicative user participatory processes lend itself to stronger urban and architectural articulation from the designer. In Housing without Houses (1995), Nabeel Hamdi suggest the development of an urban strategy from which incremental housing can be built. The urban strategy should act as a diagram, allowing room for adaptation depending on site specific problems and features.

The goal of the urban strategy is then to densify within the existing inner courtyards and create a new spatial quality and identity for the space. In the site analysis (section 2.4.1), one of the main points of contention was inner courtyards that felt both claustrophobic and yet dilated and barren. This was attributed to the ambiguity of the public space, lack of clear circulation, journey or narrative for the user, and lack of discovery and visual intrigue.

Urban strategy should; articulate paths of circulation for pedestrians, cars, and public transport, distinguishing public and private circulation, articulate a new

spatial quality for both public and private use, provide a variety of optional social activities (as identified in the ethnographic research in section 2.4.2), incorporate features from the IJsselmonde master plan, and transform the existing housing stock.

4.5.1 Case Study: Deep3 by Atelier Lai

Deep3 by Atelier Lai architects reinterprets the traditional Chinese courtyard to create a greater sense of retreat and discovery. Rather than a traditional Chinese courtyard that reveals the itself in one moment, the architect extends the longitudinal scale of the circulation by developing an interlocking systems of courtyards. A model was developed to explore the transition between spaces revealing a pattern of intrigue and discovery. A feature wall or void prompts the user to walk down a narrow space to discover a courtyard. The courtyard form asks users to move around, which in turn reveals a new element of intrigue, leading the users deeper into the site. The narrow circulation spaces become less relevant as the user is focused on the feature of intrigue, and the smaller courtyards feel larger and more significant as they come as a pause and rest after movement. Extending the site

Figure 29
Deep3 by Atelier Lai

circulation makes the site as a whole feel larger as there is a longer circulation timeline, more scenic views, and more to discover. The urban strategy has been developed using the interlocking pattern of intrigue and discovery identified in Atelier Lai's Deep3 Courtyard house, as it similarly aims to reinterpret the traditional, large, central courtyard space to create a greater spatial quality.

Figure 30
Model of Atelier Lai Deep3 Courtyard House
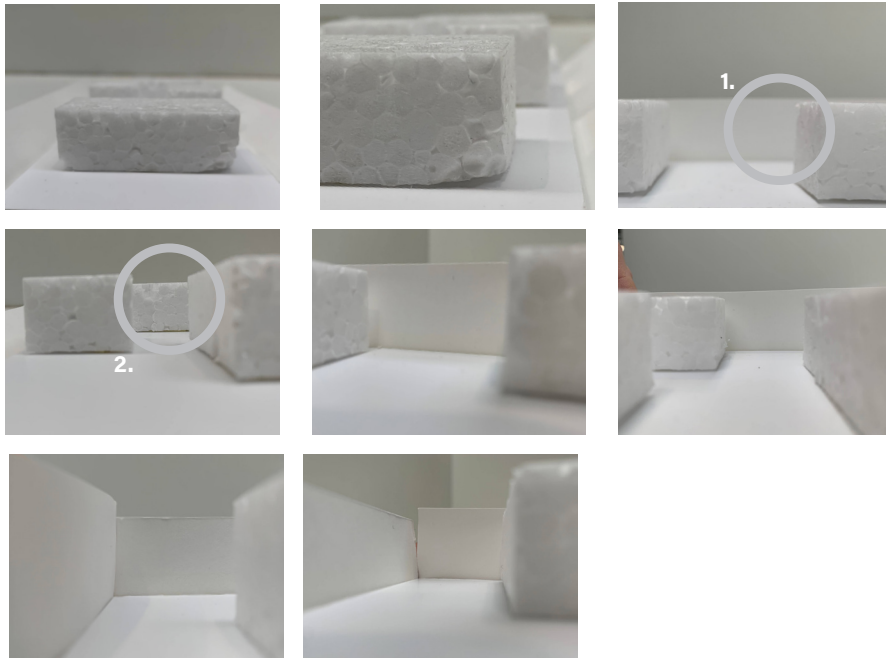
Note. Model explores the experience walking through the courtyards and the pattern of intrigue and discovery created through an interlocking pattern of linear and rectangular void forms. A sense of intrigue is created by the promise of an open space (1) or by a characteristic feature wall (2).

However, as the program in Deep3 is designed for a private residence, the urban strategy for Hordijkerveld must be strengthened with clear circulation paths for non-local residents. The of urban plan for DarLamane in Morrocoo has a unique interlocking system of public and private courtyards adjacent to a central pedestrian circulation spine. A courtyard for cars can be entered from the main road at the back of the site, communal courtyards can be accessed from the pedestrian spine, and a meandering paths leads users through the site. DarLamne mah balances the opportunity for exploration with clear access routes. Hence, the urban strategy has been developed from Lai's strategy and strengthened with Darlamane.
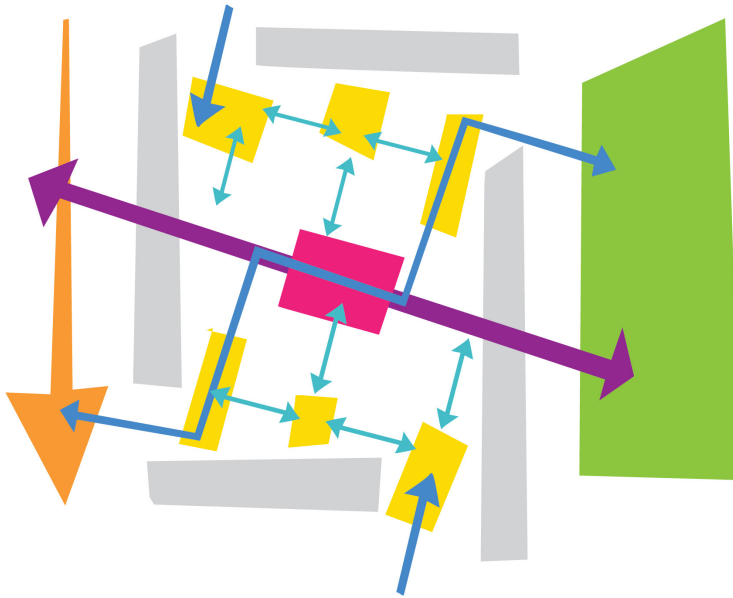

Figure 30
Urban Plan Diagram for Thamerdijk, Hordijkerveld.

Legend: Orange: Main Street, Grey: Existing Buildings, Purple: Pedestrian circulation, Magenta: commercial plaza, Yellow; courtyards, Dark Blue; Secondary circulation, Light blue, tertriary connections. Green; Existing Green Strips

4.6 Overview of Participatory Design Framework

The participatory design framework should be undertaken in four parts:

1.   After a site analysis, architects should develop an urban strategy from which buildings can be developed. The urban strategy should create a new spatial quality to the site, relate to the goals put forth in the master plan, distinguish access for cars, pedestrians and local residents, and create new functional zones.

2.   The users, architect and client should come together in a face-to-face creative gaming workshop in order to introduce themselves, create new social networks, generate new ideas, and share local knowledge. New residents will be selected through a ballot system (see section 2.1.6: Not for profit organisations). The game should promote "winning" new experiences through collaboration.

3.   Subsequently, users complete a Participatory value evaluation survey within the privacy of their own homes. This allows opportunity for users to reflect on the needs and wants, provides insight and access to housing options available, and highlights the effect of different options.

4.   In the final stage, user architect and client come together to provide feedback.

5. Transformation of Post-War Structures

The transformation of existing structures
pertains to the assessment and
redevelopment of the existing housing stock.
The study focuses on the redevelopment
of the Dura-Coignet system, as seen in
Hordijkerveld, IJsselmonde. The homogeneity
of these designs lends itself to creative
redevelopment and experimentation. In this
chapter, an architectural and urban scale
bricolage is conducted to assess the available
materials in the site, assessment of the current
building technology, and potential solutions
as which to transform the buildings.

1.

2.

3.

4.
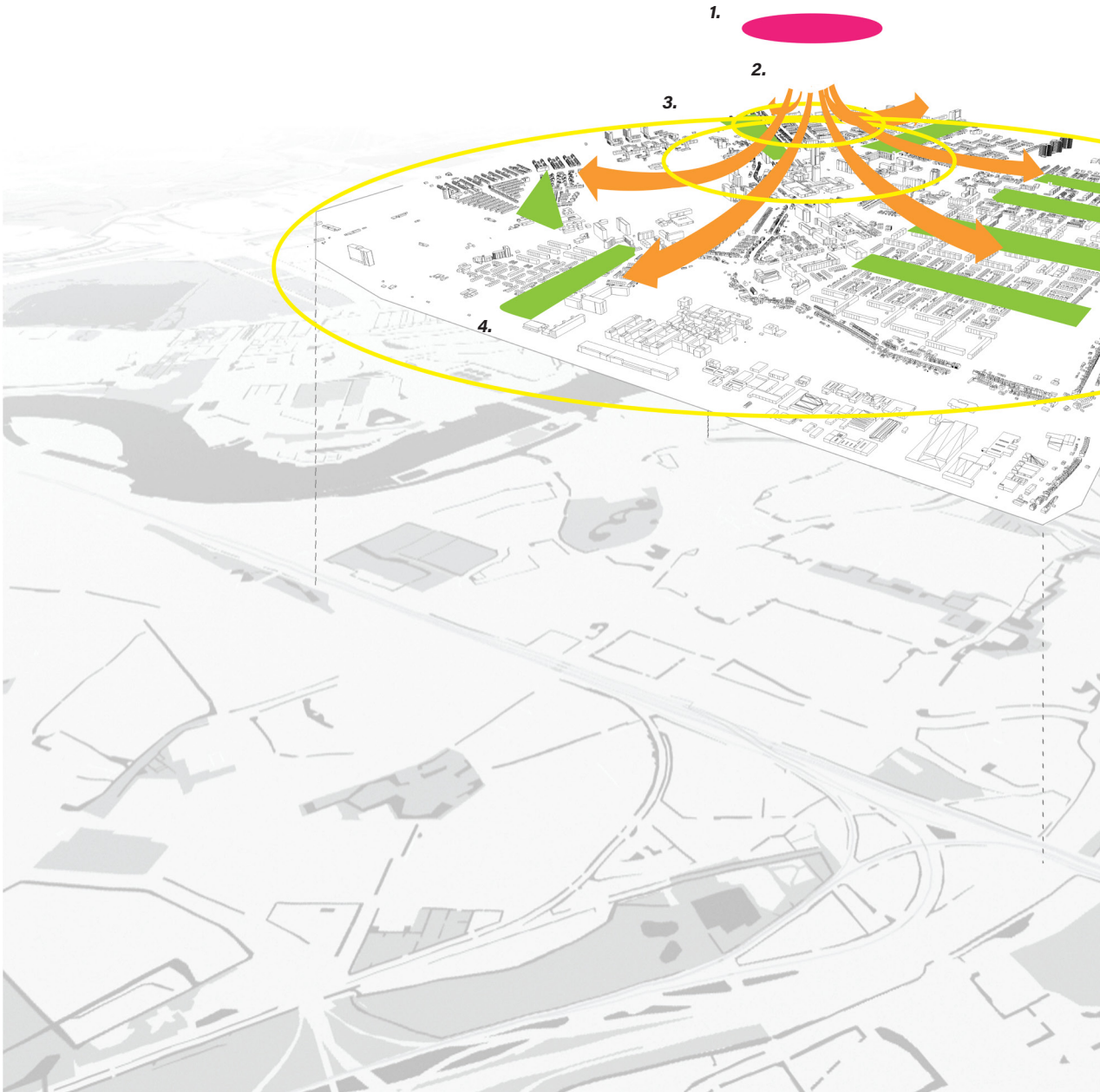
5.1. Urban Bricolage

The urban bricolage aims to identify key features in the garden city structure that can be enhanced or transformed to use in IJsselmonde, and similar garden city models in the south of Rotterdam. The goal is not to make the garden city redundant but rather to enhance existing strengths and reinterpret the undesirable qualities to fit a new social values.

The 'parts' of the urban plan identified include the urban center and distinctive suburbs, the concentric main roads and access spine, and the green strips separating each suburb with a green 'core'. These core features aim to be maintained and enhanced in the case study as they are currently successful in the design.

Figure 31
Master Plan for IJsselmonde

1. Maintain and strengthen urban centre
2. Strengthen spinal circulation with public transport
3. Strengthen co-circular circulation with public transport
4. Maintain Green Strips
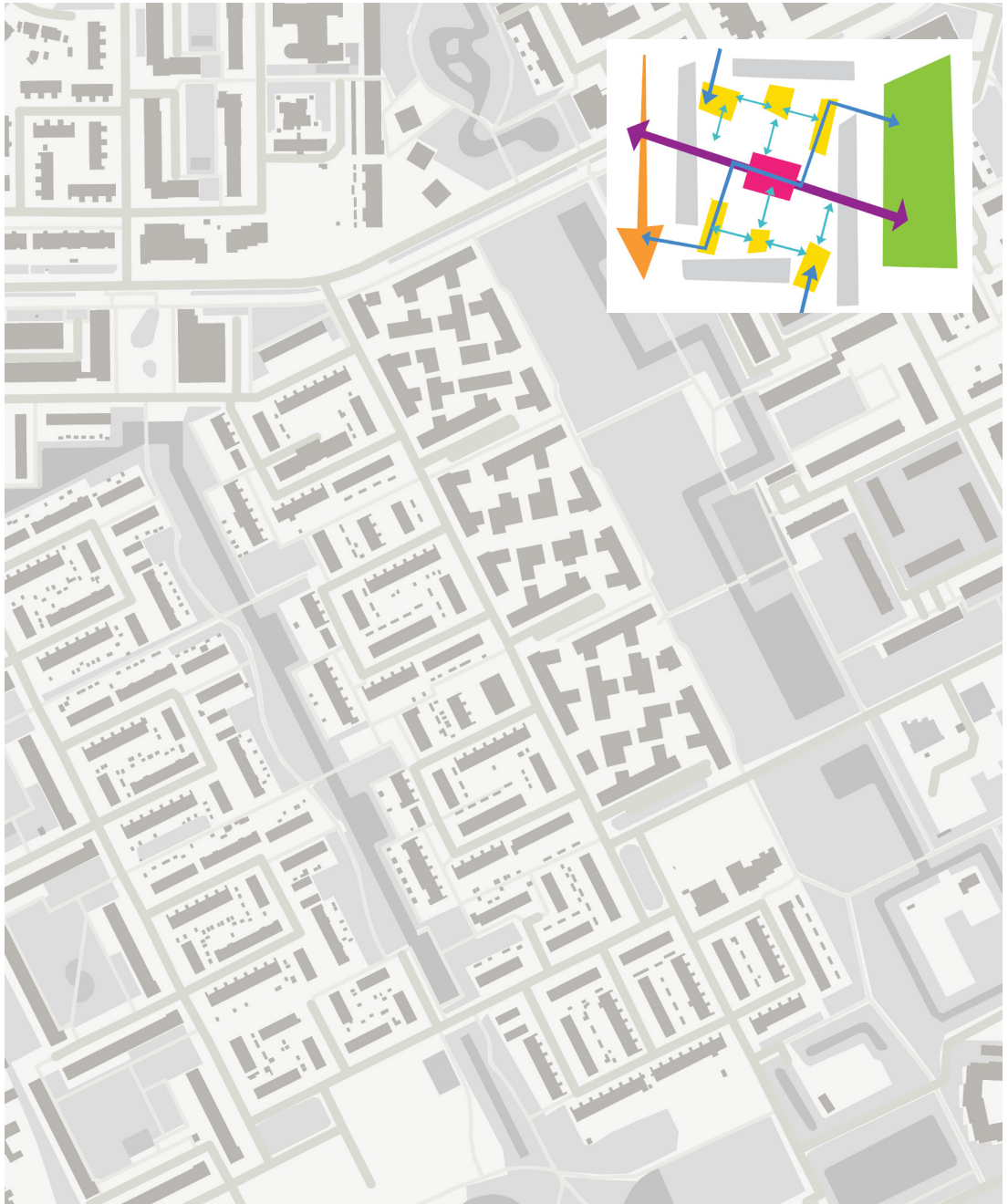
Figure 31
Exsiting Urban Plan

Figure 31
Updated Urban Plan. Note: Each of the blocks has a unique configuration to show potential options

5.2 Housing Bricolage

The deconstructive analysis of the Dura-Coignet housing system aims to provide greater insight to opportunities of redevelopment. The bricolage analysis is more useful in a housing system in which the results can be easily applied to a multiple buildings. In this section the paper will outline the distinctive pieces or patterns in the design.

The buildings in Hordijkerveld are made up of 4-6 Coignet blocks. The repetition of the blocks creates a pattern in the façade for the building as a whole. The deconstructed parts show that there is a clear pattern of solid and void in the façade due to the internal arrangement. On the south side the façade is articulated by each room, while on the north side, the is a large solid panel where the bathrooms and stairs lie. The north and south facades act in a tessellation of solid and void.

Deconstruction of the structure revealed a strong longitudinal pattern articulating the rooms. The side walls of the housing block must be kept intact as they brace the buildings together. Further, the existing internal walls should be maintained as much as possible as the floor slabs above lie on the vertical axis walls.

The block has a repetitive pattern of two and three bedroom apartments around a central staircase and entrance. The stair case is used by all of the apartments.

Therefore, the deconstructive analysis informs the development of the collaborative housing strategies as the groups should be organised within the existing block to optimise the existing structure and design. Furthermore, the 'solid' parts of the façade provide opportunity for redevelopment as there are dead space behind them, and are attached to the vertical circulation.

Through deconstructing the building and recognising patterns in the construction, the bricolage is able to identify oppertunities to apply unique design solutions.

Figure 31
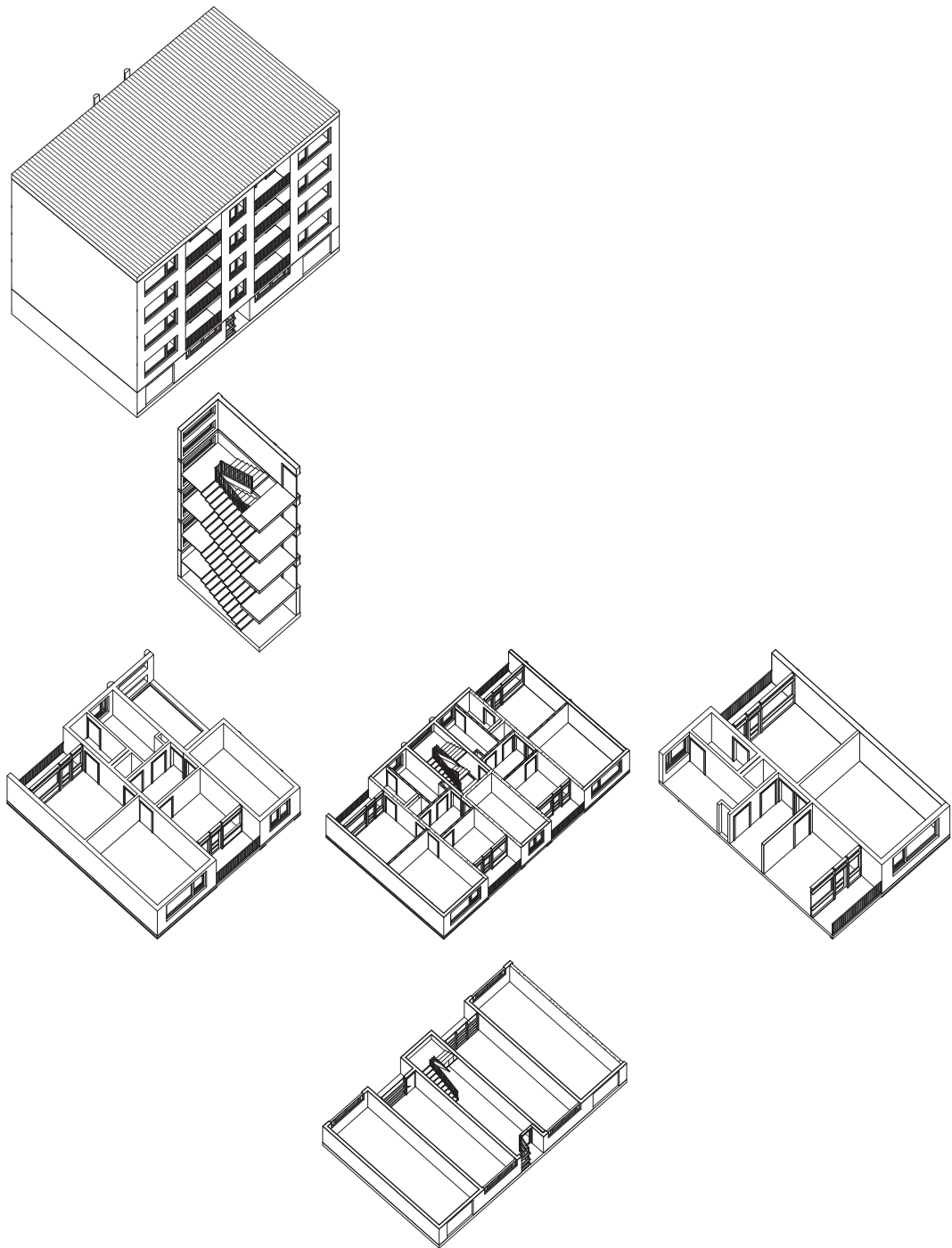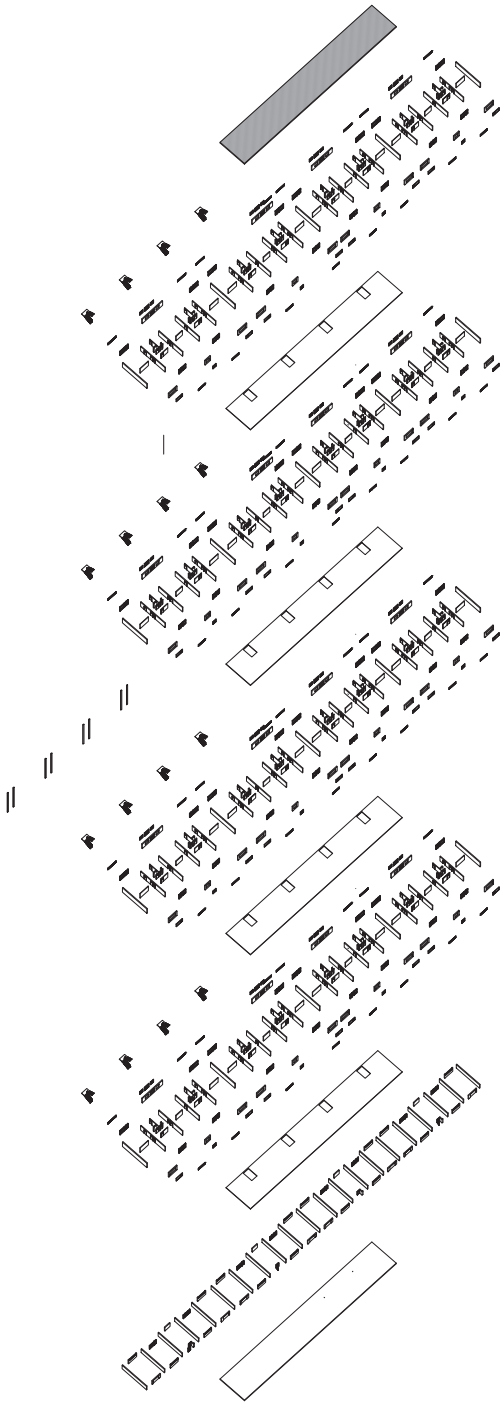*Deconstruction of Dura Coignet Apartments*

Figure 32
Deconstruction of Dura Coignet

5.3 An Exstensible Abucus

Lepratto's Housing Bricolage (2018) identifies and analyses a wide range of options for redevelopment. He defines five points from which transformation can occur; the ground level, the façade, the roof, the typological articulation and the building morphology. Transformations to the ground levels typically connote creating new points of access into the building or new paths of circulation through the built form. Façade transformations typically include extending or improving existing dwellings. Roof transformations typically 'top-up' or add new dwellings or functions from the roof. Typological transformations include the readjustment of internal floor plans and space. Finally, morphological transformations typically involve readjustments to the building's volume. Lepratto further describes changes to the urban morphology including redefining city blocks and patterns, and development of networks such as circulation routes.

Through design experimentation, the 37 parts of the abacus were applied to the Coignet buildings using the catalogue of material parts identified in section 5.2: Housing Bricolage. The interventions that promised the most significant potential include, readjusting the internal arrangement, incorporating the building, extending the façade, readjusting the building volume, and creating open city blocks.

The Dura Coignet Apartments in Hordijkerveld have been developed for families of four to seven people. However, currently 1 – 2 people typically reside in an apartment. Therefore, the internal arrangement could be updated in order to better accommodate alternative housing solutions. As enablement has been defined as the autonomy, awareness, and access to options, contributing new typologies from the existing stock aims to bring new typologies to the housing market as whole. As there is an over abundance of 2-3 bedroom homes in The Netherlands, redesigning the internal arrangement promotes diversity. In order to readjust the internal arrangement, steel beams must be fitted to stabilise any incisions made in the walls.

Incorporating the existing built forms provide opportunity to densify closer to existing structures, and use existing resources. New dwellings and communal spaces can be added to the existing buildings by creating an extension from the existing stair cases. For this design, Cross-laminated timber has been selected as the structural material as it sustainable and renewable, but also because it address the research objective of creating a "new identity". The existing structure is completely

concrete, hence, contrasting the cold and brutal structural material with a warm toned material, that is also a symbol for contemporary values, address the objective.

Extending the current façade can improve existing internal spaces. It is important to note that the goal of the research is densification through the management of resources. Therefore, smaller changes to the building that require low resource thresholds, and greatly improve quality of life are significantly beneficial. These extensions can create more room for more residents to comfortably use the building without the need for significant intervention.

Furthermore, the current ground plinth is quite bare, hosting storage spaces within, and occasionally adorned with pictures. These decorative pictures could be viewed as dirivative, and the plinth typically has grafitti on it. In response, the plinth has been articulated by adding a brick veneer to introduce a more human scale to the ground plane, and creating dynamic forms extending from the exsting structure. It was important to explore ways to transform the exising ground floor plinth without simply added commercial functions or new dwellings, especially since the ceiling height of the Dura-coignet

Apartments sits at 2500mm. Hence, there will be many other examples of the prefabrcated Post-War housing blocks that simialrly have ground planes with an uncomfortable ceiling height. The dynamic forms aim to create a more appealing experience while walking by the plinth that corresponds to the human scale. Further, high quality and textured materials aim to prevent futher degradation and grafitti.

Although the goal of the research is to identify means in which to densify the existing post-war urban structures, removing selected housing blocks can improve the urban circulation and deconstructs the monumental scale. In this example, two of the Coignet housing blocks have been removed from the East and West building strips in order to create a path of circulation through the block. This in turn reduces the scale of the apartment strip for a more comfortable urban environment and welcomes users into the inner courtyards to strengthen connections to the surrounding context.

Finally, new buildings connecting the extensions to form an open block have been added to densify the courtyards and create a new spatial quality to the block. The new buildings include public facilities and new collaborative housing dwellings.
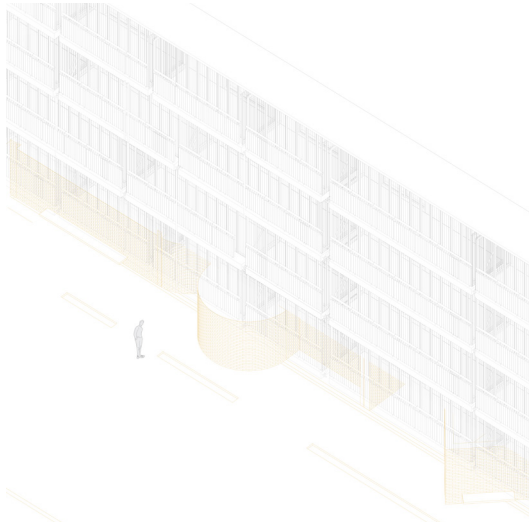
Figure 32
Articulation of Groiund FLoor Plinth

5.2.1 Case Study: Transformation d'un immeuble de logements, Saint-Nazaire, La Chesnaie Housing transformation , Saint-Nazaire, La Chesnaie by Lacaton and Vassal

The transformations in Saint Nazaire by Lacaton and Vassal were analysed in order to identify and visualise the potential for transformations. (Lacaton & Vassal, 2016) Prior to redevelopment in 2014, the apartment block consisted of four, three bedroom apartments. Extensions were made to the existing apartments in the form of winter gardens and balconies. The winter garden is an intermediate spaces that acts as a greenhouse and requires less heating than an internal space. This indeterminacy permits a wide range of uses both applicable to indoor and outdoor spaces. New extensions were developed from two corners of the apartment blocks, orientated in opposite directions. The extensions completely reinterpret the form of the existing building. Further, the materiality of the façade creates a more modern aesthetic.

The transformations in Saint Nazaire exemplify the potential and real world applicability of the transformation of existing structures.

6. Collaborative Housing

Having clarified the position in practice and creating an appropriate apparatus for which to transform the existing buildings, we can now create a variety of collaborative housing models. As participation lends itself to ingenuity and unpredictability, four typologies have been developed in order to showcase the potential for collaboration within the existing structures. The four designs are based on the allocation of resources identified in section 4.3.4: Participatory Value Evaluation Tool. As the participatory practice heavily relies on identification of parameters, likeminded individuals with shared vested interests should be grouped to form collaborative housing solutions in order to optimise the functionality of the building 'block' identified in

section 5.2: Housing Bricolage. The following section describe the four typologies. The four typologies draw from existing case studies which will be further described in the chapter.

6.1 Typology A

6.2 Typology B

The first typology developed is intended for individuals who have allocated a high desire to share resources. High levels of sharing has permitted larger and more social communal spaces, and also reduced rental costs. The target group includes individuals who desire more social interaction and a short length of stay. University students, young workers and frequent travellers are likely residents.
The degree of collaboration design has been inspired by the Share House LT Josai by Naruse Inokuma Architects (Griffiths, 2013) in which 13 residents share a single, collaborative house. The design has been made to feel like a home with interspersed bedrooms and living spaces. Living spaces are connected visually by incisions in the floor to create a dynamic floor plan and enhance social connections. The design emphasises that cohousing does not require all the spaces to be equal but formed from a mix of unique personalities to create a more organic design.'

The typology rearranges the internal layout and extends from the north façade to create new dwellings and communal spaces. The dwelling consists of 32 dwellings with approximately 32- residents. Larger communal areas of the ground floor are shared by all the residents, with smaller communal and kitchen spaces at each level shared by 9-18 residents.

Typology B explores a more private co-housing solution with smaller communal functions. This design is best suited for existing residents or elderly who wish to live in more private residencies with the benefit of social interaction and decreased prices. There is less opportunity for unique optional spaces as in typology A. The typology consist of 3 studio apartments adjacent to a communal space and organised by each floor with access from the internal stair case.

Coop Housing at River Spreefeild designed by Carpaneto Architekten, Fatkoehl Architekten and BARarchitekten is a cohousing facility in Berlin. (BARarchitekten et al., 2015) Large apartment blocks with a central vertical circulation house studio apartments with adjacent communal spaces on each floor. With the communal spaces at the side, acts of collectiveness are not mandatory, but can be undertaken when desired. The Coop design highlights a lower impact and participation design for collaborative housing.

6.3 Typology C

6.4 Typology D

The third typology transforms the existing structures by extending from the south façade to create new dwellings and communal spaces. Minor changes have been made to the internal layout of the existing buildings. In doing so, families or small groups are arranged around a smaller communal space. These users wish to partake in acts of collectiveness, but exist as small collective groups already. The internal layout of the existing dwelling have been reorientated so living spaces face the park.

The degree of cohousing has been inspired by Kraftwerk1 (2013) , a similar cohousing development transformed from existing structures. Smaller apartments are organised around a larger communal space in doing so promoting use of the communal activities while housing larger family groups. The design lends itself to residents who want a longer term stay.

The final typology consists of smaller apartments with adjacent communal spaces. As the typology is a new development, higher levels of collaboration have been explored. The dwellings are designed along a relatively adjustable grid system to allow for different dwelling scenarios and sizes to the built form. The existing dwellings in the Coignet housing system have a ground floor height of 2500mm. Although this height can be used for living spaces, it is not comfortable and will be kept as storage spaces. Therefore, public facilities such as a community centre, small cafes and shops have been added to the ground floor of the new built forms as the design can accommodate more comfortable ground floor spaces. Further, as the typology is located in the centre of the inner courtyard, with a central pedestrian access, public functions invite users into the block to create greater urban connections, and a more integrated environment.

7 Discussion
& Reflection

My goal in undertaking the Master of Architecture graduation project was to strengthen my position as an architect. During my academic experience, I came to understand the architectural design process as a method of collecting information, and developing response to a local situation or problem. However, I felt that I had never questioned the framework in which architects design, and further, who is the architect in architecture?

I believe that my graduation project was successful in meeting my personal goals and the research objectives outlined to address the problem statement. I believe that I have defined my position as an architect,

and developed a framework in which participatory design practice can take place in order to incentivise collaborative housing solutions using post-war structures. However, there are some areas in which both the design and research could have been further explored or improved.

In the initial stages of the research, a dichotomy between a providers and supporters paradigm was established. Providers is the position in which mass standardised housing must be developed in order to provide an adequate standard of housing to the masses. It's ubiquity gives rise to quality as components of the dwelling can be mass produced to a high standard

by larger agents, such as governments and cooperations, with more money. Supporters believe that the best means to provide adequate housing to the masses is through the assessment of the existing housing stock and management of resources. If mass standardised housing is more aligned with the values of providers, the research outlines how the intensity of the supply and demand imbalance in the Dutch housing crisis can be mitigated through the support paradigm.

The research outlines an architectural position in practice that highlights the time, cost and ecological benefits of enablement through user participation. A process of enablement is beneficial as it directly aligns the appropriate resources with users in a situation heavily impacted by supply and demand. There is a lower risk for future redevelopment due to dissatisfied users as the user's needs are directly met. Where mass standardised housing mismatches a micro demand for local and personal solutions with a macro, unilateral supply, the process of participation reduces costs through specificity.

Enablement has been defined as the autonomy, awareness and access to options. User's autonomy is strengthened in the design gaming process in which users can share interests and local knowledge, develop new ideas and strengthen their experiences by connecting with other users. The game, as a self-governing experience, alludes to the city as a pluralistic self-organising system, with a diverse range of perspectives. Awareness,

perhaps one of the most important aspects of the design process, is articulated through the participatory value evaluation tool in which users can clearly visualise and make conclusions to the cause and effect of their choices. The online survey provides a set of options to a given function, and then displays how the parameters are affected adjacently. This intends to provide a clear view of user's choices and also see how different choices could benefit their living situation. Access is ascribed in the methods chosen. The gaming method capitalises on its very escapism to provide creative solutions. The PVET survey is conducted in an online environment such that a wide range of users can access it. Finally, the method of participation defined alludes to a number of options. In the design case study, the options available are self-governed cohousing solutions with differing degrees of 'intensity' – that is, how much, many, what, who and where users would like to share.

The design case study in Hordijkerld, IJsselmonde, rearticulates the current Dura-Coignet Housing blocks into cohousing solutions in order to densify, promote social inclusion, and reduce user's ecological foot print. By assessing the existing housing stock, and creating a new 'set' of resources from the existing buildings through a deconstructive

analysis, architects can provide a more circular, cost, and labour efficient housing solutions. Four typologies were explored in order to showcase a diverse range of housing options. Three solutions focus on the existing dwellings, and one typology for the new buildings. The buildings are organised to create a distinct urban plan that contrasts the existing condition. The urban plan aims to carve out smaller courtyards and create a circulation that promotes exploration. Therefore, both the architectural and urban 'structures' have been transformed to better fit contemporary societal values, using the existing housing stock to develop new housing solutions.

New, self determined, collaborative housing solutions have been developed through the participatory process in order to provide awareness, availability and accessibility to alternative housing solutions. The participatory design process allows users to see which collaborative housing solution would fit their needs best, in order to develop accurate designs for better resource management. Furthermore, shared resources reduce the user's ecological footprint while also aiming to provide personal benefits such as socialisation, larger facilities than an individual could afford, and an abundance of resources. In providing a range of collaborative

housing solutions, the design mitigates the imbalance of supply and demand in the housing crisis by better sharing and managing functional resources.

The ethical concerns for a participatory practice would be political polirisation, morality and underrepresentation. A game like senario intends to make the experience fun and use escapism to develop solutions by winning new experiences. The act of subscribing to the game reduces the power imbalence. Further, users are able to provide opinions rather than make distinctive changes, allowing the architect to be the mediator of different perspectives. Finally, the PVET was introduced as it is an easily accessible online format, where other participatory practices invite participants.

Issues could arise from the transformation of existing post-war blocks as they were built so swiftly, it has been suggested that adhok construction techniques were undertaken. Greater investigation of each individual building would need to be taken, undermining the argument that variations could be easily acheived because of the building's ubiquity.

The ethical concern with collaborative housing is also the safety of the residences when grouping strangers. Introductory sessions aim to bring likeminded individuals together to mitigate this problem.

I personally believe I also met my goal in developing my position as an architect. Through the research of participatory practices, and the greater of the integration of the user, the role and strengths of the architect in the design process was revealed. Early theoretical research and user group testing revealed that users struggle with spatial conception and lack knowledge in technical expertise. Further, the architect should provide a framework in which participation occurs in order to achieve more global goals. The more the support paradigm encourages indeterminacy and variety, the more the architect is needed to define and articulate solutions. This is also why the Advanced Housing studio is the most appropriate context to explore partcipation and position as the indetermiacy of the user strengthens the architect's position. Therefore, if participatory practices of the 1960s sought to remove the entailment of the architect from the design process, I believe contemporary participatory practices seek to strengthen the role of the architect and their ability to provide creative spatial solutions to a range of different users. It is through the user that the position of the architect is strengthened.

7.1 Further Development

Although there are many ways in which the project has achieved the research objectives, there are areas which could be further developed.

The research methodology did not account for the extensive research and planning needed to fully develop a participatory design approach. Both Ekim Tan and Niek Mouter spent over 4 years developing their approaches and both reccomended that further exploration would require an extensive amount of time. Although diverting from the original methodology, which placed a greater emphasis on user testing, the results of the research were instead validated through the interview process. Professionals in the field provided opinions on the validity of the methods used - drawing from their knowledge to validate the research results.

Having answered the research questions, the areas which provide greatest opportunity for future development is the application PVET method for architectural design. As previously stated, the PVET currently focuses on the evaluation of government policies. There are currently no architectural application of the PVET. In discussion with Mouter, it was evident that this tool has great potential to

easily visual options and their parameters. One of core issues with participatory design practices is the lack of user knowledge on design expertise. Therefore, the PVET tool has further potential to promote alternative housing solutions.

Firstly, the design could lend itself to greater typological variation. Within the current urban plan, there are certain restrictions to variations that is not conducive to a participatory scheme. An example of this would include the dimensions of the built form. However, as aforementioned, the position developed must describe a way in which the architect's goals at an urban scale meet the needs of the users at a personal level.

Further, greater user input into the participatory methods from the local residences could have yielded significantly different design results. During the course of the project, significant issues concerning a user group session prevalent further user development due to a language barrier and lack of public interest. Perhaps local residents would have been more eager to be involved if the user group sessions came from a different source. From the position of the project, a representation of the diversity available within

7.2 Mentor Guidance

the project was favoured over site specific solutions. This is because the project aims to not only address the local issue and concerns, but testify to the legitimacy of collaborative housing redevelopment of post-war structures.

In the design case study, collaborative housing solutions grouped like-minded individuals with similar interests. This was done with the intention of maximising the services and spaces available. However, there is opportunity to explore collaborative housing designs in which residents of different character and nature live together such that the user's routines interlock rather than overlap. To elaborate, this could look like, an construction worker waking up early and using the kitchen from 5-6, a family using the kitchen space from 6-7 and a student from 7-8. The design would prioritise spatial efficiency through timing shared resources but would not promote communal activities. This is because grouping likeminded individuals would lead users to use communal spaces at the same time and promote social interaction. Albeit, 'interlocking timelines' as a form of collaborative housing could be further explored.

The graduation project was strongly guided by the research, design, and building technology mentors. There were many ways in which the tutors provided suggestions for development and direction. The following section describes key relevant moments.

During the initial research stages of the project, I was directed to look into alternative and upcoming participatory practices such as the participatory value evaluation tool. Although there were many suggested practices, I felt that the PVET held a lot of potential in the Dutch context in which awareness and access to a range of housing options must be addressed. Further, the PVET is already being explored in a Dutch context, which alludes to the sociocratic zeitgeist. I believe this suggestion made the research project more unique and provided a new perspective that has not been researched as the PVET is currently not used in an architectural setting.

If participation were to be actualised through awareness in the early stages of the design, a greater emphasis was placed on the framework and structures in which options were placed in the local context. This led to the development of a distinct urban strategy, in order to achieve densification needs. I was

recommended by my mentors to strengthen the new identity of the site through the urban strategy. In doing so, the urban design aims to contrast the existing structure to highlight the difference between the old and the new. I feel this has made the project quite unique as there are few projects that change the local identity through urban intervention. I believe that reshaping the local identity was important for local moral.

Furthermore, I was recommended to look into Fabio Lepratto's Housing Bricolage which greatly helped define the parameters for the design solution. Lepratto's position truly helped connect the idea of the 'supporter' as a manager of resources with the transformation of the existing buildings. The paper also helped highlight the benefit of post-war housing is in their ubiquity, providing greater opportunity for a range of variations.

During the final stages of the design, there was a greater emphasis placed on the transformation of the existing post-war structures. I was able to gain greater knowledge of the construction methodologies and structural integrity through interviews and research with help from my mentor. This knowledge informed my design decisions and has made the project more realistic.

In the course of the Masters of Architecture Advanced Housing graduation studio I believe I have truly strengthen my position as an architect. With the intention of gaining a greater insight into the practice and positions in architecture, I feel I not only have a greater understanding of how I would like to approach design in the future, but also a much greater understanding of our current context.

The topic of architectural participation greatly focuses on who, how and why we design. In the early research stages of the project, the historical analysis provided me a much greater understanding as to the development of European, and specifically Dutch cities. I was able to gain a greater understanding of how key actors in building development affect the typology and method of construction, and further, the ways in which these designs were successful compared to how we see them now.

I also held a strong desire to explore the transformation of existing buildings, as described in the stuido's brief, as I believe the densification of cities and reevaluation of existing resources will only continue to grow in prevelance. This is because our social values are shifting, with more people

7.3 Personal Findings

moving to cities, a stronger desire to reduce our ecological footprint, and a greater desire for individualism in our homes. Therefore, I desired to achieve a position in which to enact transformations. I believe that I will continue to use concepts from Lepratto's Housing bricolage in the transformation of existing structures for the development of a pluralistic city.

Finally, I believe that I have not only strengthen my position as an architect, but understand the ways in which I can enact participatory practices in the field. As a result of researching a range of participatory practices, I believe I will able to draw on many different perspectives in the architectural practice to better integrate the user in the design process. I believe I could draw on more user integrated responses such as Walter Segal's Self build methodologies, and less intensive solutions such as Susanne Hoffman's design gaming. Although not all these methods have been integrated into the final design response, I believe that understanding different methods of user participation, the key actors in development, and how their role affects the design, has been very insightful as a Masters Graduation Project. Before I move into the professional field, I believe that understanding why and who the architect is, is a fundamental turning point between student and practice.

8 Conclusions

The growing aggravation of the increasing imbalance between the supply of houses and demand from the Dutch population begs architects to question the ways in which we develop housing. Although The Netherlands has a prevalent history of mass standardised housing solutions, the research reassesses the validity of this strategy and calls into question the benefit of designing in universal optimums. A participatory design framework that invites creative solutions and enables users can densify within the existing housing stock through the incentivisation of alternative collaborative housing solutions. Further, many unique design solutions can occur from the homogeneity of post-war housing structures, which breeds an opportunity for creative solutions for the betterment of new residents, existing residents and the surrounding community.

In the introduction of the report a series of sub questions were identified.

Who gets to decide in the participatory process?

Users and architects collaborate in the participatory process in order to develop new ideas, create collaborations and share expertise. Design planning gaming and participatory value evaluation tool act as a tool for the architect to use in the development of design. Further, the architect themselves act as a guide for the users to develop a design. The architect then acts as a liberator of the user's desires. It is recommended that participatory practices are better integrated into the architectural design practice in order to clearly identify users wants and needs, in doing so, developing a greater management of time, money and physical resources. The methods aim to enhance efficiency and create new design opportunities for architects.

At what scale does participation take place?

User participation develops programmatic requirements for the architectural design. The urban plan is developed as a design strategy by the architect in order to develop a framework in which participation and densification can occur. More refined design decisions such as materiality, form, and details are also the architect's

responsibility as to not promise design decision to the users that the client cannot afford or cannot be developed.

At what stages of the design process does participation take place?

Participation takes place in the pre-design stages of the design process. The research identified that users held greater potential in the development of alternative solutions and local knowledge. Design, building technology and construction should be left to the architect and contractors who can use their technical expertise. Further, participation in the early design stages is more accessible to a larger audience as many users lack not only the time, but also the desire, to contribute great efforts into the design.

What is the role of the architect?

The architect acts as a liberator of the user's desires and needs and a designer of city spaces. The research implies that participation should not be seen as a means to end architects, but rather the opposite. The modernist's desire for a 'universal design' has ultimately led to capital-intensive solutions and stifled opportunity for architectural creativity. Through the management and appropriate application of resources, architects can develop more time, cost and resource efficient solutions, implying greater opportunities and responsibilities for the architect. Therefore, user participation

lends itself to greater creative freedom for the architect.

How can architects transform existing post war structures?

Architects can transform existing Post-War structures by assessing and developing new resources through deconstruction. The support paradigm aims to provide adequate housing through the management of resources. Through the deconstruction of Post-War monolithic forms architects can create a catalogue of existing material parts. The 'parts' of the building can then be combined with a series of design interventions to create new densification strategies.

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Figure 1: Author's image

Figure 2: Adelaide Road (Victoria Printing Works, 1977), Walter's Way (Crook, 2020), Housing without HOuses (1995), Quinta Monroy (Elemental 2008), Living and Residing with Seniors in Rurual Areas (Hofmann, 2014), The Commons (Luco, 2019), GoDesign Games (Nourian, 2019)

Figure 3

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Figure 20: Author's Image

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Figure 24: Mouter, N., Jara, K. T., Hernandez, J. I., Kroesen, M., de Vries, M., Geijsen, T., Kroese, F., Uiters, E., & de Bruin, M. (2022). Stepping into the shoes of the policy maker: Results of a participatory value evaluation for the Dutch long term covid-19 strategy. Social Science & Medicine, 314, 115430. https://doi.org/10.1016/j.socscimed.2022.115430

Figure 25: Author's image

Figure 26: Ibid

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Figure 29: Atelier Lai. (2017, January 27). Deep 3 courtyard / atelier lai. ArchDaily. Retrieved September 2022, from https://www.archdaily.com/803799/deep3-courtyard-su-architects?ad source=search&ad medium=projects tab

Figure 30: Author's image

Figure 31: Author's image

Figure 32: Ibid

Figure 33:

9. Definitions

Collaborative Housing: a dwelling typology in which autonomous housing units are mixed with shared facilities. (Fromm, 2012, p. 364)

User Participation: Users taking part in the architectural design and planning process

Practice: practice refers to architectural practice, that is, the profession and way of doing things.

Providers: A paradigm of thought in which actors believe mechanisation is the most efficient way in which to provide quality and efficient supply of houses (Hamdi, 1995, p.29)

Supporters: A paradigm of thought in which actrors believe the most appropriate way to provide mass housing is through assessing the existing housing stock and managing resources. (Hamdi, 1995, p.29)

Enablement: Awareness, Accessibility and Autonomy to Options.

Mass Standardised Housing: A dwelling typology resulting from the mass development of houses. Housing projects developed using mass production techniques. (constructkonnect, 2021)

User: Residents and locals in the dwellings.

Architect: Person responsible for desinging the building.

Support: The strucuture, physical or conceptually, that the architects puts in place to enable user participation and organise indeterminacy. (Habraken, 1965)

In-fill: the various unique options users contribute to the support structure. The 'infill' may be predetermined by the architect or decided by the user. (Habraken, 1965)

Incremental: a gradular increase.