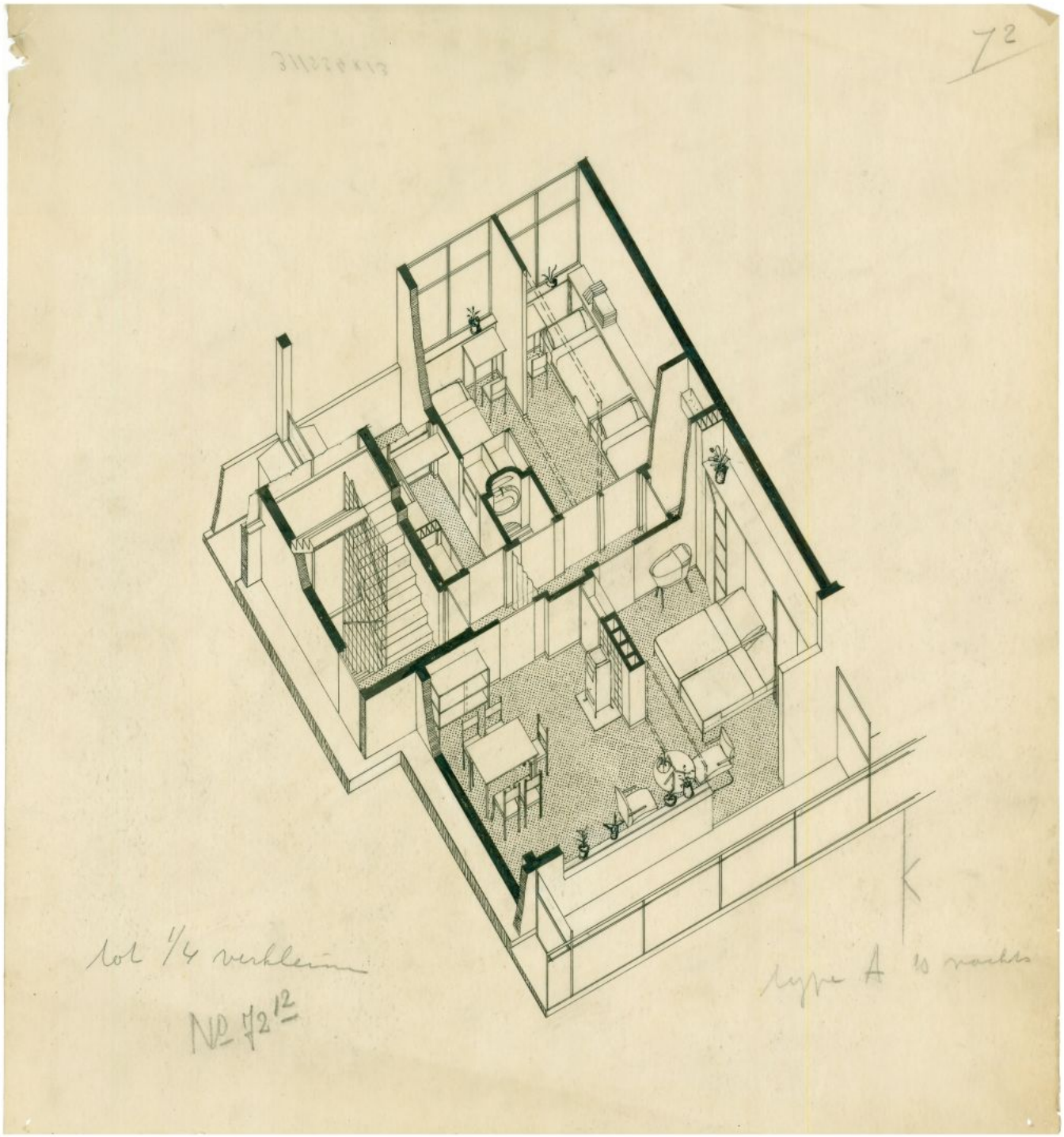
A New HAT

Exploring the potential of contemporary, sustainable minimum homes.



J.H. van den Broek, Prijsvraag goedkope woningen / Ontwerp Optimum, Amsterdam, 1934. Collectie Het Nieuwe Instituut, archief J.H. van den Broek.

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INTRODUCTION

‘The need for housing in the Netherlands has not been this high since the Second World War.’ (NOS, 2021), that’s the statement the Woonprotest movement gave to the press before their march in Amsterdam on September 12th 2021. The solution seems simple: to just build more homes. However, the solution is of course not that simple, multiple solutions can lead to a better situation: we could build 1.000.000 new homes, or make better use of the existing building stock. We could also change the interest rate on mortgages or make more subsidies for building available through the government. Or we could change the system altogether and seek new models for housing in the Netherlands. Which one of the solutions is correct? Or are they all correct?

In the past, the housing crisis of the Interbellum era inspired the ‘Existenzminimum’ movement of architects. This movement aimed to improve the living conditions of the lower class and solve the housing shortage. They did this by designing a home that provided an adequate amount of daylight, access to green space, fresh air, access to transit and other such issues with minimal acceptable floorspace. An example of a building from this movement is the Hufeisensiedlung, designed by Bruno Taut and Martin Wagner in 1925.

Another type of minimum dwelling was subsidized by the Dutch government in the past. As a response to news that most welfare workers found that their clients’ issues stemmed mostly from their housing situation, the sitting State Secretary of Public Housing, Marcel van Dam, launched the ‘Nota Huisvesting Alleenstaanden en Tweepersoonshuishoudens’. This was a direct subsidy for housing corporations to realize smaller units, called HAT-units, fitting for households consisting of 1 or 2 people. This enabled the building of 77.000 homes between 1975 and 1985 (Boelhouwer, 1984).

Logically, it seems that the housing shortage in 2021 can also be solved by designing and building small homes. Of course the definition of the minimum home in 2021 is drastically different from the definitions of 1925 or 1975. For example, mothers bear less children and households are smaller (Van Nimwegen et al., 2008), but perhaps most importantly, humanity has become aware of its impact on the global climate. Therefore the new minimum dwelling is also to be environmentally sustainable. In her book Doughnut Economy, Kate Raworth (2018) describes a new way of thinking about the global climate. She envisions a new measure of economic success beyond growth of the Gross Domestic Product: a doughnut-shaped economy that operates between a social floor and an ecological ceiling. The idea of a social floor can serve as an allegory for the minimum dwelling of old: a set of conditions that define the minimum acceptable conditions. However what is then the ecological ceiling for a home? Is it to be built with minimal carbon footprint? Is it to consume minimal energy during operation? Or can an ecological budget be defined with which the home as to be realized?

This research plan defines the research that is intended to define the contemporary, sustainable minimum home, as a fitting solution for both the housing crisis in the Netherlands and the global climate crisis. The research will define a contemporary, sustainable, minimum home in both spatial and technical aspects. This research plan will continue with a problem statement and corresponding research questions. Afterwards, the methodology and frame of reference sections will elaborate on envisioned design and research actions and will expand on the existing research, also mentioned in this introduction. Finally, the relevance section will indicate the scientific and societal relevance of the planned research.

PROBLEM STATEMENT

A solution for the current housing crisis could be to design the contemporary minimum home. Historical definitions of the minimum home exist, but differ vastly among themselves. Some achieve the minimum by simply building small, however some achieve it by sharing commons or by designing space to be multifunctional. In addition, historical examples of a minimum home design do not explicitly take in mind the impact of the home on the global climate. Therefore, a contemporary minimum home design cannot be only based on historical examples, but has to also implement contemporary concepts regarding the impact on the global climate.

The doughnut economy model, (Raworth, 2018) is a model that defines conditions for the economy between a social floor and an ecological ceiling. By adapting a chosen example of a minimum home to contemporary spatial requirements and applying conditions similar to the doughnut model a contemporary, sustainable minimum home design can be found. The potential of this design can be studied by implementing it in a design, the case study for which is supplied by the graduation studio Heritage & Architecture.

RESEARCH QUESTIONS

The main question of the research is the following: *What is the potential of contemporary, sustainable minimum homes in an urban renovation project?*

A set of subquestions are to be answered to find a satisfying answer to the main research question. The first subquestion is as follows: *What is the contemporary definition of a minimum dwelling (in the doughnut economics concept)?*

The second subquestion is: *What are the design requirements for a renovation of case study Bijlmerplein?*

The third subquestion is: *How can the new contemporary minimum dwelling be implemented in the case study of Bijlmerplein?*

The fourth and final subquestion is: *Does a scenario with implementation of these dwellings result in a higher score in Kamari's model of values than a scenario with demolition and new construction or a scenario with only renovation in case study Bijlmerplein?*

METHODOLOGY

This research plan describes an applied research design that strives to find the potential of contemporary, sustainable minimum homes. It does so by answering four subquestions.

The first question will be answered through a combination of historical research into the concept of a minimum home and contemporary literary research into the concept of 'Doughnut Economics' as defined by Kate Raworth. In addition, examples of contemporary minimum homes will be studied as found through online research. The contemporary, sustainable minimum home can then be defined spatially, technically and socially. To answer this question the following sources are envisioned:

- *The minimum dwelling – Karel Teige*
- *Ir. JH van den Broek: Projekten uit de periode 1928-1948 – Rudy Stroink*
- *Maak een stad: Rotterdam en de architectuur van J.H. van den Broek - Wout Vanstiphout*

- *Het niet gerealiseerde woonrecht van jongeren – P.J. Boelhouwer*
- *Dougnut Economics – Kate Raworth*
- *Archdaily, Dezeen, Designboom – keywords: 'minimum dwelling', 'minimum home', 'tiny house', 'existenzminimum', 'subsistence minimum'*

The second question will be answered through conducting historical, technical and architectural analysis of the Bijlmerplein case study. This will be done in collaboration with co-students in the Heritage & Architecture graduation studio. This analysis will results in a SWOT analysis pertaining to each aspect of the design (historic, technical & architectural) and a value score using a model based on one by Kamari (2017). In accordance with these analyses and evaluation, design requirements can be formed. In addition to the sources used during the historical and architectural research, the following source will be used:

- *Sustainability focused decision-making in building renovation – Aliakbar Kamari*

The third subquestion will be answered with a design of the case study Bijlmerplein with implementation of the contemporary, sustainable minimum home throughout. The design is completed in accordance with the design requirements defined in the second question.

The fourth and final subquestion will be answered by designing two additional scenarios for the renovation of case study Bijlmerplein: one with demolition and rebuilding and one only renovation of the existing. These scenarios are completed in accordance with the same design requirements. The three designs for case study Bijlmerplein can be compared using the same evaluation system as defined by Kamari (2017). This way the magnitude of the impact can be measured and compared in a multitude of building characteristics. The same source will be used.

- *Sustainability focused decision-making in building renovation – Aliakbar Kamari*

FRAME OF REFERENCE

The envisioned research is positioned in its context as a means to find a solution to the housing shortage in the Netherlands in 2021. In this crisis, national and municipal political actions lead to contradictory actions on the housing market. Perhaps this is best made clear in the Tweebosbuurt in Rotterdam. Here, housing corporation Vestia is set to receive 25.000 per home (BN De Stem, 2021) in subsidies from the national government for the demolishing of 535 social housing units and rebuilding 374 dwellings. This causes three major problems: First, people will be forcibly displaced from their home. Second, this destroys a tremendous amount of embodied energy. And third, it also destroys the collective memory and all heritage values, listed or otherwise, embodied in the existing housing stock. This strategy is one of the alternatives posed for comparison in the fourth research question.

In regards to the awareness of the impact humanity has on the global climate crisis the prevailing context is for this research remains the model as defined by Raworth (2018). This model is most relevant because it is both recent and aspects of it bear resemblance to the idea of minimum dwelling. The inner ring of social floor is easily adapted to a floor of minimum acceptable building characteristics. The outer ring of an ecological ceiling however is poorly defined for housing. Different definitions of an ecological ceiling for housing will need to be tested.

The historic examples of minimum homes that were chosen to be used as sources each achieve the minimum in different ways. Teige (2002) proposes a concept in which the living is done in shared spaces and the sleeping area is as small as possible. Alternatively, J.H. van den Broek

envisioned homes with flexible spaces (Stronk, 1981). This way, a space could be used in one way during the day and another during the night, therefore maximizing the use and minimizing the costs. As a final example, the HAT-units, built in the 1970's and 1980's are examples of homes that were simply built as small as possible for an intended target group that did not need more space (Boelhouwer, 1984). Many contemporary examples, implicit or explicit, can also be found. For instance, the Tiny House trend seems to be from the J.H. van den Broek school of the minimum. Similar research to the envisioned research has been conducted by Brysch in 2019. They also attempted to define a contemporary definition of the minimum dwelling, predominantly based on the work by Teige. They came to a definition of the minimum home focused on sharing, as Teige did aswell.

The value model that will be used in the final stages of the envisioned research is an adapted version of the model defined by Kamari (2017). The model was adapted with co-students in the Heritage & Architecture graduation studio to be more fitting to designated case studies. The original model uses a ring of 18 aspects in three categories: Accountability, Functionality and Feasibility. Each aspect can be scored a 1 through 5, indicting quality of the building characteristics that impact that aspect. The adapted model fits better to the assigned case studies by changing several of the outer ring aspects.

RELEVANCE

The envisioned research is societally relevant because its conclusion will show potential for contemporary, sustainable minimum homes to aid in solving both the housing shortage and the global climate crisis. Scientifically the envisioned research expands on previous research by Brysch (2019) that also attempted to form a definition of the contemporary minimum dwelling. Additionally, the envisioned research will enrich the concept of the Doughnut Economy with a fitting application of the doughnut concept on minimum homes. This could be expanded to form a fitting application on housing in general.

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