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Making temporary homes

Why meanings and activities matter

Overtoom, M.E.

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Making temporary homes

Why meanings and activities matter

Marjolein Overtoom

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Making temporary homes

Why meanings and activities matter

Dissertation

for the purpose of obtaining the degree of doctor
at Delft University of Technology
by the authority of the Rector Magnificus, prof.dr.ir. T.H.J.J. van der Hagen
chair of the Board for Doctorates
to be defended publicly on
Monday 24th of June 2024 at 10:00 o'clock

by

Marjolein Euwkje OVERTOOM
Master of Science in Environmental Psychology,
University of Surrey, Guildford, United Kingdom
&
Master of Science in Architecture, Urbanism, and Building Sciences,
Delft University of Technology, The Netherlands
born in Heesch, The Netherlands

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This dissertation has been approved by the promotors.

Composition of the doctoral committee:

Rector Magnificus,	chairperson
Prof. dr. ir. P.M. Bluyssen	Delft University of Technology, promotor
Prof. dr. ir. M.G. Elsinga	Delft University of Technology, promotor

Independent members:

Prof.dr. M. Sunikka-Blank	University of Cambridge, UK
Prof.dr.ir. J.D.M. van Hal	Nyenrode Business University
Prof.dr.ir. M.J. van Dorst	Delft University of Technology
Prof.dr. K.A. Steemers	University of Cambridge, UK
Prof.dr.ir. V.H. Gruis	Delft University of Technology

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Pikerje net,
it komt dochs oars

Foreword

I start writing this foreword at the beginning of the end. With a few months to go until my PhD project officially ends, I am also ending my relationship with the home I have lived in during this project. I bought my house, or rather upstairs apartment, just before I started my PhD, and it has been sold just now, right before completing my PhD (or so I thought at the time… turns out life had other plans, and now, three years after writing the first draft of this foreword, I am actually finishing my PhD).

I had previously been living with my brother in a social housing project, because he had had difficulty finding a house for himself and I had felt like I wanted to live in a 'normal' house, rather than a student flat. We were supposed to be there for only a year or so, but it ended up being three. He found himself a house of his own and I found this apartment, for which I could get a mortgage only via a mortgage advisor because I was working two temporary part-time jobs (rather than one full-time, permanent job). However, the monthly payments were still lower than what I would have had to pay to remain in the social housing project, and even better, I was now allowed to do with the space whatever I wanted. It gave me a sense of responsibility, ownership, and perspective.

For as long as I can remember, I have been prone to changing the places where I live. Ask my family or my friends*, whenever they come over it is always a surprise to see how the furniture happens to be arranged that day (though the annual number of design changes has decreased over time). So, after obtaining a mortgage, it was finally up to me, and me alone, to decide what my new upstairs apartment should look like. The result was that on my first official day as a PhD student, I was forced to prepare my meals using a type of electric table grill (I used what in Dutch is called a 'gourmetplaat') and a kettle, both situated in the room above the kitchen, because I had taken out the kitchen itself in its entirety. The new one was not ready until half a year later, and I was surprised how quickly you can get used to not having a kitchen and then suddenly having one. Next I remodelled the living room, then the upper floor, which included splitting one room into two, and finally I turned the walk-in shower-closet into a full-size bathroom (for which we hired someone).

* "Truth", as my friend Sandra commented, when proofreading this document: Thank you for that (and for being my friend, no matter how long it's been and how different our room- and house-changing habits are).

Indeed, somewhere along the way ‘I’ had turned into ‘we’. Once the bathroom renovations were complete, I could finally do laundry without having to sit on the washing machine and it was at last possible to get undressed for a shower inside the bathroom itself. When my daughter was born, her room was still in use for storing building supplies and furniture that could not go to their final place yet. Time and again we adjusted our life, our house, and every time we did, we would feel like our lives improved a little bit. My partner switched jobs and needed a home office. The pet birds found new owners. The living room was made to be ‘childproof’, we added a toddler fence at the top of the stairs. New windows, Covid, a son. And then we arrived at the realisation that we had, quite simply, run out of room. A home is fluent, a home is created and malleable, but it has its limits too. And when you come up against them, the time has come to move on.

We were lucky that we were actually able to do so, with the help of parents and family, and on the crest of past financial decisions that had turned out to be right. Not everyone is fortunate enough to have these opportunities, this luck, even though everyone deserves to. My PhD has given me the opportunity to research one of my life-long greatest interests and to find ways to help others build a home for themselves, too. A home they can continue to work on until its limits are reached, and then move on to whatever comes next.

I want to thank my new family (Sölvi, Vala, Thomas, and Karólína), which was supported by this upstairs apartment, and my other (old and new) family (Tom, Oenke, Bas, Wietske, Gerður, Karl, Chaline, and Bram) who helped create my current life and home. I also want to thank them for listening to me, giving me time to write, and trusting me (most of the time) whenever I proposed a new idea for ‘home’, both physical and theoretical. I want to pay special thanks to my parents, Tom and Oenke, for being the parents that you are and seeing what is behind my crazy ideas. Lastly, I want to thank Sölvi for tidying up, even though I then complain about my traces being removed; it is proof that home is not constant, but always in flux.

I want to thank my promotors from Delft University of Technology (Philomena Bluyssen, Marja Elsinga) as well as my daily supervisor for the first two research years from the Hanze University of Applied Sciences in Groningen (Mieke Oostra), for aligning my ideas with existing science, and the Dutch Ministries of Internal Affairs (Karl Kupka) and Security and Justice (Tycho Walaardt Sacré van Lummel), for aligning my ideas with every-day practices. Lastly, I want to thank the band ‘Faithless’, which helped me remain focused and able to keep working, whenever I needed to concentrate and get things done.

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'We can't put anything on the wall'

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Summary

A housing shortage has been slowly building up in the Netherlands in the last 30 years. Since 2015 more attention has been paid to how the influx of refugees increases the housing shortage and how difficult it is for urgent home seekers, including refugees, to find a place to live. Decreasing the housing shortage by building new houses takes time, while people need to find a space to live now. Temporarily transforming vacant buildings into housing could reduce this need for a brief moment, so that the housing market has time to catch up. However, these vacant buildings do not look like typical living spaces and might be located in places that would otherwise not be considered for housing. Plans for refurbishing vacant buildings need to be made quickly and there is no time to consult any future residents on what they might need. Thus, designs are made equally quickly, optimising building efficiency and reducing costs, and the user perspective is not a priority. Could there not be a way to integrate the user-perspective into the design of these temporary transformations, so that these dwellings can also become homes?

A review of literature on temporary building transformations for urgent home seekers from housing studies, indoor environmental quality, architectural design and environmental psychology was conducted and eight case studies were visited. The main finding was that the concept of home could benefit housing design. Current building guidelines do not include the user-perspective, which is of importance to residents. It is clear that people's attachment to the neighbourhood, their ability to change things in the dwelling, and having sufficient control over the indoor environmental quality, can influence their well-being. For urgent home seekers, the status and possibilities of their dwelling at the start of residency might matter even more so, because they have less control over the design of their environment. What is unclear, however, is how the concept of home can be integrated into the design process. Thus, the research question is as following:

How can meanings of home and what people do at home contribute to better temporary home design?

Existing qualitative research on the concept of home was used to quantify the meanings of home and compare them between students, starters on the housing market, and refugees accepted for permanent residency. A questionnaire was developed with statements on meanings of home, what activities people engaged in, and which indoor environmental preferences they had for those activities. Six factors were found (with a factor analysis): *Appropriation, Representation, Privacy, Sociability, Rootedness, and Future*. These were then related to the activities within the home and preferences for the indoor environmental quality with multiple regression analyses. It turned out that Representation was related to cleanliness, while Rootedness was related to receiving guests and cooking. Privacy was connected to a reduction in receiving guests and Sociability with an increase. Future was related to a clean and light place to take a shower. Appropriation was connected to placing the activity of sleeping close to that of studying and/or working. Which meanings of home someone values most, seems related to how the home is used and what preferences someone has. As such, understanding the meanings of home and how they relate to what someone does, can be a way to improve housing design. But what do people do to make a home and how exactly do they do these things?

Semi-structured interviews with students, starters on the housing market and refugees accepted for permanent residency were conducted to increase our understanding of what people do to make a space into a home. The interviews were analysed with Interpretative Phenomenological Analysis, and the visual data (photos made by the interviewees and sometimes the researcher, and drawings made by the researcher) was used to place the content of the interviews in a physical context. Three main themes were found: *Familiarising, Organising, and Managing*. For the interviewees, home was a place that should reflect their identity and it should have the possibility to improve it. The themes reflect the ways in which that is done, and how objects, decorations, and other people can be a part of making a house into a home.

To find out how meanings of home related to what people do to make a home, a workshop was set up to associate those meanings to statements which had been derived from the interviews. The interviewees' quotes were sorted by their similarities, after which groups of quotes were combined into a general statement. The participants of the workshop went through this list of statements, organised per theme, and related them to none, one, or more meanings. The results indicated that the meanings of home might be organised on three axes: Appropriation and Representation, Privacy and Sociability, and Rootedness and Future. The results also indicated that the themes of Familiarising, Organising, and Managing operate on different time frames (continuous, long-term, and short-term, respectively). This means that small actions, too, can contribute to creating a home, such as putting away the dishes and turning on the lights, but that the distinction of which specific actions help someone and which do not, depend on the individual.

The results from these studies could be used by designers, if the results are communicated in the right way. The three axes with meanings and their association with what people do at home, in relation to the time frames, can help designers of temporary housing understand how different users might interact with their housing designs. For example, combining them into an infographic, guide book, or serious game could work, depending on the context. What exactly would be the best way to communicate the results to architects in practice, should be explored in cooperation with them.

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Samenvatting

In de laatste 30 jaar is er langzaamaan een woningtekort ontstaan. Sinds 2015 is er meer aandacht gekomen voor het effect dat de toename van vluchtelingen heeft op het woningtekort en hoe moeilijk het is voor spoedzoekers, inclusief vluchtelingen, om een plek te vinden om te wonen. Om het woningtekort te verminderen door het bouwen van nieuwe huizen is er tijd nodig, tijd die niet iedereen heeft. Het tijdelijk transformeren van leegstaande gebouwen naar woningen zou dit tekort tijdelijk kunnen verminderen, zodat de woningmarkt de tijd krijgt om bij te komen.

Echter, deze leegstaande gebouwen zien er niet uit als woningen en staan soms op plekken die normaal gesproken niet gebruikt worden voor woningen. Plannen voor het transformeren van leegstaande gebouwen moeten snel worden gemaakt en er is geen tijd om toekomstig bewoners te vragen wat ze willen of nodig hebben. Dus, ontwerpen worden snel gemaakt, op een kosten- en tijdsefficiënte manier, en het gebruikersperspectief is geen prioriteit. Is er een manier om het gebruikersperspectief te integreren in het ontwerpproces van deze tijdelijke transformaties, zodat deze woningen ook een thuis kunnen worden?

Er is een overzicht gemaakt van wetenschappelijke literatuur over tijdelijke gebouwtransformaties voor spoedzoekers in ‘housing studies’, binnenklimaat, architectuur, en omgevingspsychologie, en acht voorbeelden zijn bezocht.
De belangrijkste bevinding was dat het concept thuis bij kan dragen aan woningontwerpen. De huidige regels bevatten geen informatie over het gebruikersperspectief, wat wel belangrijk is voor bewoners. Het is duidelijk dat de emotionele verbinding van mensen met hun buurt, de mogelijkheid om dingen in hun woning te kunnen veranderen, en voldoende controle te hebben over het binnenklimaat, een effect hebben op hun welzijn. Voor spoedzoekers kunnen de beginstaat en mogelijkheden van hun woning juist voor hen belangrijker zijn omdat zij minder controle hebben op het ontwerp van hun omgeving. Wat onduidelijk is, is hoe het concept thuis geïntegreerd kan worden in het ontwerpproces. Dus, de onderzoeksvraag is als volgt:

Hoe kan de betekenis van thuis en wat mensen thuis doen iets toevoegen aan het ontwerp van tijdelijke woningen?

Bestaand kwalitatief onderzoek over de betekenis van thuis is gebruikt om de betekenissen van thuis te kwantificeren en vergelijken tussen studenten, starters, en immigranten met een verblijfsvergunning. Een vragenlijst is ontwikkeld met stellingen over de betekenis van thuis, welke activiteiten iemand thuis doet, en welke voorkeuren voor het binnenklimaat bij die activiteiten horen. Zes factoren zijn gevonden (met aan factor-analyse): *Aanpasbaarheid, Representatie, Privacy, Samen zijn, Aarding, en Toekomst*. Deze zijn vervolgens gerelateerd aan activiteiten in de woning en voorkeuren voor het binnenklimaat met meervoudige regressieanalyses. Een van de uitkomsten was dat Representatie verbonden is met netheid, terwijl Aarding verbonden was met het ontvangen van gasten en koken. Privacy was negatief verbonden met het ontvangen van gasten, maar Samen zijn was wel weer positief verbonden aan het ontvangen van gasten. Toekomst was verbonden aan een nette en lichte plek om te douchen. Aanpasbaarheid was verbonden met het hebben van een combinatie plek om te slapen en te studeren en werken. Hoe de woning wordt gebruikt en welke voorkeuren iemand heeft voor het binnenklimaat lijkt dus verbonden met welke betekenissen van thuis iemand het belangrijkst vindt. Het kan dus een manier zijn om een woningontwerp te verbeteren door de betekenissen die thuis kan hebben voor iemand te begrijpen en hoe deze zijn verbonden aan wat iemand thuis doet. Maar wat doen mensen om van een woning een thuis te maken, en op welke manieren doen ze dat?

Er zijn semi-gestructureerde interviews met studenten, starters, en vluchtelingen met een verblijfsvergunning zijn gehouden om beter te begrijpen wat mensen doen om van een plek een thuis te maken. De interviews zijn geanalyseerd met de IPA-methode (interpretative phenomenological analysis), en de visuele data (foto's gemaakt door de geïnterviewden en soms de onderzoeker, en tekeningen gemaakt door de onderzoeker) zijn gebruikt om de inhoud van de interviews in een fysieke context te kunnen plaatsen. Drie hoofdthema's zijn gevonden: V*ertrouwd maken, Organiseren, en Beheren*. Voor de geïnterviewden, was thuis een plek die hun identiteit moest reflecteren en het moest de mogelijkheid hebben om verbeterd te worden. Deze thema's geven weer op wat voor manier dat gebeurt en hoe voorwerpen, decoraties, en andere mensen, een deel kunnen zijn van hoe een woning in een thuis veranderd.

Om erachter te komen hoe verschillende betekenissen van thuis verbonden zijn aan wat iemand doet om van een woning een thuis te maken, is een workshop gehouden met professionals om stellingen die ontleend zijn aan de interviews over wat mensen doen om van een woning een thuis te maken te verbinden aan de verschillende betekenissen van thuis. De citaten van de geïnterviewden zijn eerst gesorteerd op gelijkenis, waarna de citaten in groepen zijn gesorteerd met als resultaat een samenvattende stelling. De deelnemers aan de workshop zijn door deze

lijst van stellingen gegaan, georganiseerd per thema, en hebben deze gerelateerd aan geen, een, of meerdere betekenissen van thuis. De resultaten geven aan dat de betekenissen op drie assen georganiseerd kunnen worden: Aanpasbaarheid en Representatie, Privacy en Samen zijn, en Aarding en Toekomst. De resultaten gaven ook aan dat de thema's Vertrouwd maken, Organiseren, en Beheren, op verschillende tijdsschalen plaatsvinden (respectievelijk continu, langdurig, kortdurend).
Dit betekent dat kleine activiteiten of gedragingen óók kunnen bijdragen aan het maken van een thuis, zoals bijvoorbeeld het wegzetten (of niet) van de afwas en lampen aandoen, maar ook dat het van het individu afhangt welke activiteiten precies helpen bij het maken van een thuis.

De resultaten van deze studies kunnen gebruikt worden door ontwerpers, als de resultaten op de juiste manier worden gecommuniceerd. De drie assen met betekenissen en de verbinding met wat mensen doen om van een woning een thuis te maken, in combinatie met de tijdsschalen, kan ontwerpers van tijdelijke woningen helpen met het begrijpen en voorspellen hoe verschillende bewoners omgaan met hun woningontwerpen. De resultaten kunnen bijvoorbeeld gecombineerd worden in een infographic, een woninggebruikersgids, of een serious game, afhankelijk van de context. Een punt van onderzoek is hoe deze resultaten het beste vertaald kunnen worden naar de praktijk; dit moet in samenwerking met architecten uitgezocht worden.

TOC

1 Introduction

1.1 Background

Everyone needs a place they can call home, whether this is a villa or a van. Although most people would prefer the villa, this is often not a realistic option. In the Netherlands there has been a huge need for affordable and social housing, in particular for immigrants, students, and starters on the housing market for over ten years (Boelhouwer, 1999, 2020; Scanlon et al., 2015), but there is not enough space, time, or money to build new housing for all of them.

The housing shortage may mean that people need to move to a place that is too expensive, too small, or bad for their health; that they need to move (back) in with their parents or friends, or ultimately, that they will become homeless.

One solution the Dutch government proposed was to temporarily transform existing vacant buildings into housing, so that the housing market will have time to catch up. These vacant buildings could be, for example, former offices, schools, or churches. As a follow-up, the government created working groups to assist municipalities with the laws and regulations concerning the potential transformation projects (expert team 'transformatie', see for example (Rijksoverheid, 2017a; RVO, 2015)). One of the advantages of using existing vacant buildings for housing is that such living spaces can be built more quickly and cheaper than comparable new housing (H. Remøy & T. van der Voordt, 2014; Remøy et al., 2007). Another advantage is that building transformation, if done well, can reduce the need for housing because more buildings can henceforth be used as such (Jonkman et al., 2020).

Building regulations are more lenient for existing buildings than new buildings (Ton et al., 2014) which means that transformed buildings can be built to a lower standard, technically speaking. Whether this is acceptable, is not within the scope of this thesis. However, even if a building would technically be of a lower quality, this does not necessarily mean that the house is a worse home.

The housing shortage in the Netherlands has increased since 2018 (Gopal et al., 2023). Policies to improve the housing market are mostly aimed at motivating people to move to more 'appropriate' housing, i.e., when residents have a higher income they should move to more expensive housing. The Dutch government has moved away from easing the rules for temporary rental contracts except for some specific user groups, which include students and refugees with a permit to stay (Rijksoverheid, 2024). This change in legislation might reduce the incentive to temporarily transform buildings. However, the vacancy rate of buildings has reduced only slightly (CBS, 2023), the number of transformations per year has not really changed (Hesen et al., 2023), and the housing shortage is expected to increase the coming years (Gopal et al., 2023). Moreover, the projected growth of the population is expected to be for a large part from migrants and/or refugees, and the number of (young) adults (18 to 40 years old) living with their parents has increased in recent years. (Gopal et al., 2023). Consequently, the need for affordable housing for students, starters, and refugees with a permit to stay remains high, and buildings that could be used temporarily for housing could still reduce the immediate need for housing for this group.

How exactly a place becomes a home and what requirements there might be for people with a lower income who live in temporary housing, is unknown. Because these groups of people usually have less control over where they live (due to social housing regulations, income limitations, or other problems), it is even more important that the 'basis' of that dwelling place is proper. This basis should make it easier to adapt the dwelling to their needs with only small investments; they can then focus on other parts of their life knowing that they have a safe place to return to.

1.1.1 Home through the eyes of the housing professionals

Nowadays, most housing is provided by someone other than then the residents, after which they (attempt to) make it their own. Making a house into a home is the easiest for home owners who own their properties. For tenants who rent from a landlord or social housing corporation there are more limitations regarding what the residents are allowed to change or adjust in the dwelling (for example, hanging objects on the wall, using tiles or wood on the floors, painting walls, or redesigning the kitchen or bathroom). When renting temporarily, there could be even more limitations. Not being allowed to make changes and a lack of (perceived) control over the duration of the stay, could make it very difficult to feel at home somewhere. But what adjustments really matter to someone, and do these matter to everyone?

Designing for someone else can be difficult and designers of social housing have had trouble identifying with the user groups they are designing for. For example, households in social housing were thought to mostly consist of two parents and two children (Darke, 1984), though this was, and is, often not the case. Furthermore, different households may have different preferences for a house, which would then not be taken into consideration by the designer. Another example is that for architects, sometimes, the ideal floorplan is different from what lay-persons prefer; one study found that architects preferred a floorplan for a simple flat to be more open and with a bathroom connected to the bedroom (optimising spaciousness), while lay-people preferred the option where the bathroom had a separate entry from the main hallway (optimising privacy) (Boumová & Zdráhalová, 2016). Differences between architects and lay-persons have also been found for other design features, for example for façade preferences (Ilbeigi et al., 2019) and the perception of indoor environmental quality (Altomonte et al., 2020; Liu et al., 2021).

Knowing why people prefer something and what they prefer can help with designing housing that fits the users better, even in times of housing shortage. Some ideas about housing quality might not be as widely shared by the users as the designers and planners had thought. This could be a way in for less standard building transformation solutions that are quicker, easier, and cheaper to build, while still offering good quality for the residents. For example, a person might prefer to put in kitchen cabinets by themselves or to have a window that can open (instead of mechanical ventilation). Both of these options could be quicker and cheaper depending on the building and, at the same time, may make this person a happier dweller.

Satisfying residents of temporary housing may not need large investments, if we know what matters to them. Therefore, common conceptions about what a temporary home should look like, need to be revisited. For example, rooms with furniture or studios which are copy-pasted like hotel rooms with private facilities, might not be easily turned into a home (Barratt & Green, 2017; Lewinson, 2010). Consequently, building owners might not need to invest in furniture or install tiny kitchens in every unit; and maybe residents might want to make some changes themselves. The effort put in by the designer and/or building owner can then be focussed on things that make the difference between a house and a home, whatever they might be.

But how do we know what meanings home has for someone and how it is used? And how do we know what users want without needing to ask everyone individually?

What different user groups want from a house is usually investigated with questionnaires (in the context of housing research) and focusses on preferences, personal values, and/ or lifestyles (Jansen, 2011, 2014; Jansen et al., 2011; Michelson, 1977; Ouwehand & Doff, 2011). Sometimes there are, for example, questions about the style of the façade or the 'style' of the interior, which however does not say anything about how the house is used as a home (called 'woonstijlen'). Other times, the research into housing needs only asks about the preferred housing typology (rented or owned, in apartment building or not), with more questions about whether the residents have some attachment to the neighbourhood than there are questions about attachment to the dwelling itself (Stuart-Fox et al., 2022). The difference between house and home can be important when asking about housing preferences because for the residents both choices and time are limited; therefore, it matters how easy it is to make the dwelling into a home.

Designing a temporary house for urgent home seekers based on preferences for an ideal house may not result in the residents being able to make it a home. The most common ideal house is a free-standing one with a garden around it, but for many people this is not a realistic option. Moreover, a free-standing house is not automatically a home: a 'house' is meaningfully different from a 'home' (Ellsworth-Krebs et al., 2015; Graham et al., 2015; Lawrence, 1987; Webb et al., 2016).

When providing new housing for users who cannot be personally consulted, it is still necessary to know what they would do to make a temporary house into a home. What does home mean, and what activities do people engage in to make a house into a home? Can some of these things be designed? And what if this house is available only temporarily? To answer these questions, research is needed on what exactly makes a house into a home. More specifically, investigating which meanings are relevant and to whom, and how these meanings are expressed through behaviours in the home, would be informative for housing design. Furthermore, it could shed some light on what effect time might have on what people do to make a home in temporary housing.

1.1.2 Home through the eyes of the user

Qualitative research has resulted in a list of meanings that the concept of home entails: Attachment and identity, social rules, affordances, happiness, belonging, responsibility, self-expression, critical experiences, permanence, privacy, time, meaningful places, knowledge, the desire to return, (quality of) relationships, friends and entertainment, emotional environment, being with others, personal privacy and freedom, development of the self-identity, security, continuity, ownership, personal space, aspirations and goals, personal values, domestic spaces and objects, personal preferences, appropriation, affluence, secrecy, control, reflection of one's ideas and values, acting upon and modifying one's dwelling, centre of activities, a refuge from the outside world, and lastly, an indicator of personal status (Altman et al., 1985; Barrett, 2023; Cardinali et al., 2022; Despres, 1991; Korosec-Serfaty, 1984; Lawrence, 1987; Sixsmith, 1986; Smith, 1994).

Making a home, or home making, are the activities undertaken by the residents to make their living space more 'home'-like and improve its fitness from all perspectives: not just the looks, but also how the house enables preferred activities of the residents, across different cultures (Zharani & Selim, 2023). Brun and Fábos (2015) write about home making that it "represents the process through which people try to gain control over their lives and involves negotiating specific understandings of home, particular regimes of control and assistance, and specific locations and material structures" (p.14), and Feldman (1990) notes that home is "a place in which the personal meanings of home become tied to the individual's conception of self" (p.184); home is related to one's identity, and they interact. Thus, a house can be provided by someone other than the resident, while a home is made by the resident (See Figure 1.1).

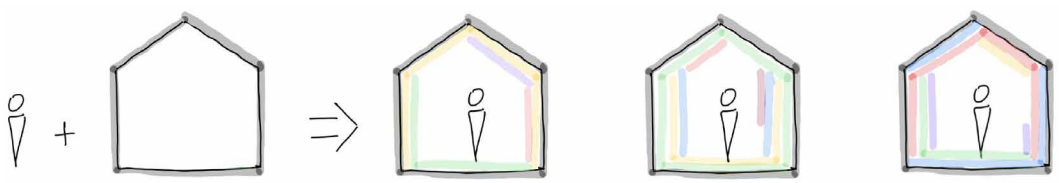

FIG. 1.1 Each person adds their own layers whenever possible.

1.2 Research plan

The aim of this study is to understand what home means for temporary dwellers with a low-income who have an urgent need for housing. The main research question is the following:

How can meanings of home and what people do at home contribute to better temporary home design?

The main question is divided into sub-questions, which are answered in Chapters 2-6.

1.2.1 Literature review (Chapter 2)

A1 **What can be learned from the literature that can benefit the design of temporary housing?** (from the perspective of housing studies, indoor environment, and environmental psychology)

A2 **How does the transformation of vacant buildings work in practice in the Netherlands?** (a preliminary exploration of some cases)

To find out wat makes a temporary dwelling a home to the users of transformed buildings (in particular, students, starters on the housing market, and refugees accepted for permanent residency), it is necessary to explore their experiences and meanings of (temporary) home. In turn, these experiences and meanings can be used to inform building owners and designers of the user-perspective, so that they can then design better temporary homes without needing to engage in timely and costly user-research (see Figure 1.2 for an overview).

Literature from the research fields of housing, architecture, indoor environmental quality and psychology was reviewed to provide a broad overview, focused on the transformation of buildings into temporary housing for students, starters on the housing market and refugees accepted for permanent residency in the Netherlands.

Additionally, eight transformed buildings were visited to compare practice with the literature.

1.2.2 Questionnaire (Chapter 3)

B How do meanings of home relate to home activities and preferred IEQ?
B1 How can meanings of home be operationalised?
B2 What recommendations can improve the design of temporary dwellings for students, refugees with a permit to stay, and starters on the housing market?

Firstly, we need a measurement instrument for the meaning of home and how meanings might be related to activities (e.g., cooking, relaxing, receiving guests, etc.), and preferred indoor environmental qualities in the home (e.g., opening or closing windows for fresh air or sound control, opening or closing curtains for light or privacy, etc.). Because there is no existing measure for the meaning of home and how this concept may vary between people, existing qualitative research on the meaning of home (see paragraph 1.1.2) was used to develop statements describing the full width of the concept. The answers to these statements were analysed before activities, indoor environmental qualities, and preferences were added.

To understand how meanings of Home and preferences for the indoor environment vary between people depending on activities, a questionnaire was developed. This questionnaire, and in particular the statements on the meanings of home, was first tested on a group of students. Then after some adjustments it was sent out to the user group; students (online), starters on the housing market (online), and refugees accepted for permanent residency (on paper). The responses were analysed statistically, specifically with factor analyses and multiple regression analyses.

1.2.3 Semi-structured interviews (Chapter 4)

C1 How do young temporary dwellers experience their temporary home?
C2 How do they interact with the physical qualities of the home?

Secondly, to find out what students, starters, and refugees accepted for permanent residency do to make a space intended for temporary stay into a home, more information was needed on how urgent home seekers currently use their dwelling place and how it facilitates them to make it into a home (or not).

To investigate more in-depth how people interact with their dwelling and how this interaction relates to meanings attributed to home, 12 participants from the questionnaire were interviewed. In this interview, which lasted approximately 45 minutes each, the participants were asked about what they do at home, what changes they

had made, and other related issues if they happened to come up. The interviews were transcribed and consequently analysed using an interpretative phenomenological approach. That is to say, each interview was first analysed separately. It was only after the completion of this initial analysis that the interviews were compared and contrasted to discover similarities and differences in the participants' experiences. Additionally, the participants' floorplans were analysed using their descriptions of how they used their home environments and the one or two photos they had taken of relevant perspectives inside their home. With this visual data, the participants' described experiences were connected to the effect these had on their home environments.

1.2.4 Associative workshop (Chapter 5)

D How are (meaningful) activities in the dwelling associated with meanings of home?

The themes of the questionnaires and the interviews were interconnected through an associative workshop with professionals. A table containing the six meanings of home (Appropriation, Representation, Sociability, Privacy, Rootedness, and Future) was linked to three categories of activities (Familiarising, Organising, and Managing). The participants indicated which categories of activities they felt related to which meanings of home and were given the ability to discuss these connections. This provided an overview of which activities contribute to creating a meaningful home, even though such activities vary from one person to the next.

1.2.5 Tools (Chapter 6)

E How can the results be communicated to architects?

Tools should help designers and building owners to create living spaces in buildings that are transformed, for a limited period of time, which can be made more easily into homes by their users. As such, the known data concerning the ways in which a home is used by different people, needs to be described and organised in such a way that the information can be readily used by designers and building owners. One way to do just that, without being obligated to ask each user individually, is to create a tool. Three different tools are proposed that can usefully describe the range of interactions that take place within a temporary dwelling, as offered up by the sample of students, starters on the housing market, and refugees accepted for permanent residency (Chapter 6).

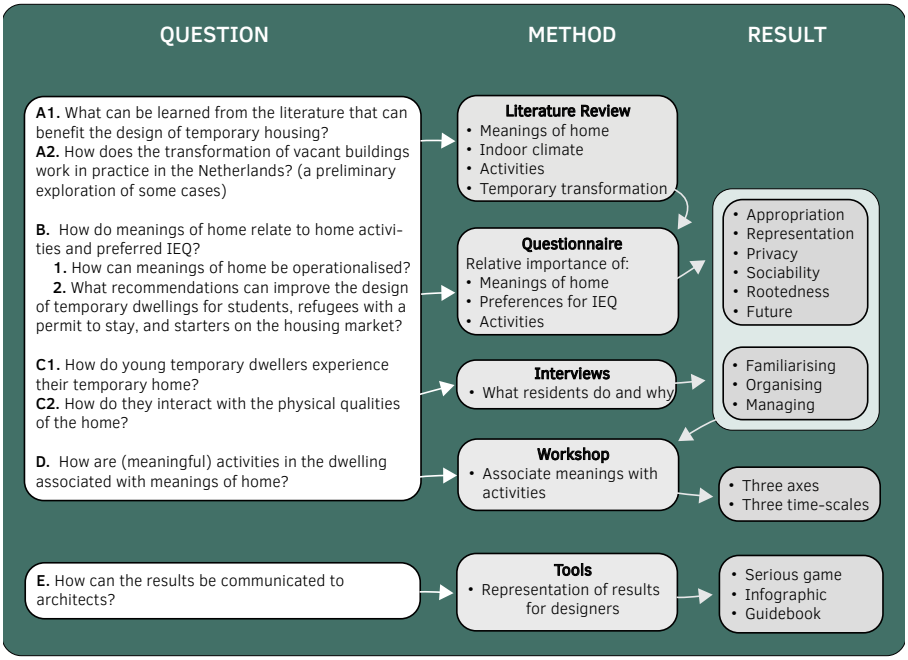

FIG. 1.2 Research overview.

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1.3 Societal and scientific relevance

With the ongoing and increasing housing need in the Netherlands, quickly creating more housing can help a significant number of households. However, merely putting down a refurbished and removable container in an industrialised area that will be redeveloped in a few years, might not give these households what they need. Although, of course, there is always the off-chance that such a dwelling might turn out to be a household's dream home – even if only for now. The problem is that there is no way for us to say with certainty what is what for every individual. So, to decrease the housing need, it is necessary to know what makes a dwelling place a good home, and for whom. Housing is an essential part of someone's life because it provides, among other things, a base, a future, and a sense of security. The right to safe, adequate, and affordable housing is one of the UN development goals (*Goal 11 Make cities and human settlements inclusive, safe, resilient and sustainable*, 2023).

The difficulty is that it is impossible to ask every single person who is in need of a dwelling place about their individual housing needs and then design something accordingly. Architects want to design good housing, but do not have sufficient and/or appropriate information to design more personalised, temporary housing, for people with a low income. Rather than mass producing a fixed-type, single-style dwelling that developers think will be a one-size-fits-all, it might be better for architects to invest in the creation of a base design that can be adjusted and made to adapt to the needs of a whole range of households. Once it has become known what the possible variations are in what home means to different people and how these variations relate to how the inhabitants interact with their dwelling, it will be easier for designers to imagine how different users might respond to their designs. Already existing methods for finding information about future residents' needs and preferences are based on getting to know said residents, for example by letting them co-design their living space or by entering into other forms of collaboration with them. Questionnaires like the 'woonstijlen' research only provide us with idealised images of home, almost as if a home were nothing more than a ready-to-wear fashion item intended to make every single person look the exact same, regardless of their body shape or size. Without understanding why some designs might work and some will not, each new design can be seen as an experiment in which the only available hypothetical answers are yes and no, and the ultimate results teach us nothing about the underlying reasonings; before finding the right setup, many variations will have to be tried and even then we might not fully grasp why that particular setup works best. Looking into meanings of home and what people do to make a home for themselves should help us find those explanations.

As a result, there will no longer be a need to run through superfluous variations when time is in short supply. Architects will become better able to understand the users and consequently design better-fitting homes; likewise, the users have an easier time feeling at home, increasing their well-being and attachment to their dwelling place and neighbourhood. It could also qualify more vacant buildings for transformation and the transformation in question might even be realised using fewer (new) resources, which will in turn reduce the need to free up extra space for the construction of new housing.

The research presented in this thesis is multi-disciplinary, connecting (environmental) psychology to (architectural) design, with the purpose of creating practical knowledge. Meanings of home are a topic rooted in the field of psychology, intended to help us understand how specific groups make sense of home and how this is relevant to their lives. However, while it is an important first step to come to understand people better, by neglecting to turn this understanding into practical recommendations, researchers are shirking their responsibility to society. Likewise, architects may feel they are genuinely doing everything they can to design good housing, but when they do not ask or consult users or research professionals about home, on the grounds of such work being too time-consuming, they are being similarly neglectful. Environmental psychology researchers as well as architects need to step out of their comfort zone and cooperate to improve the design of everyday housing. Connecting the meanings of home to behaviours that make a home could be a first area of interdisciplinary cooperation, especially given that the drawn conclusions could be translated into practical designs. In a way, the research presented in this thesis is a test of the waters, to see if results from psychological research can be applied to (and accepted by) the design profession, combining research methods from both disciplines.

Additionally, if a connection can be found between the meanings of home and categories of activities to make a place a home, motivations for such activities will become better understood – which should make it easier to predict how someone wants to use their dwelling place. Also, motivations for housing preferences, adjustments made to the dwelling, moving behaviours, and sustainable behaviours in the home might become easier to predict. This, in turn, can help designers imagine and design more fitting housing for diverse user groups.

1.4 Thesis outline

This thesis consists of an introductory chapter, (this chapter), which is followed by four chapters which were published as articles in scientific journals and are reprinted here with a different layout (Chapter 2, 3, 4, and 5, which is at the time of writing under review). In Chapter 2 some additional changes were made to increase readability. Chapter 6 outlines some possibilities for tools and Chapter 7 is the concluding chapter.

In **Chapter 2**, I review the literature on the current practice regarding temporary and transformed housing as well as the various factors considered while putting together a good dwelling. The focus of the review is on how the meaning of home, activities in the home, and indoor environmental quality are part of temporary housing design, consulting literature from the fields of housing studies, architecture, building physics, and psychology. It concludes with identifying which factors should be considered and what methods are currently used to gather information when designing housing for a certain user group.

In **Chapter 3**, I describe the development of a measuring tool for the meaning of home based on earlier qualitative research (see paragraph 1.1.2). I used this measuring tool in a questionnaire to explore the relationships between the meaning of home, activities in the home, and essential qualities for the indoor environment. Relaxing, receiving guests, and showering or bathing are activities that show variation in how they are carried out, depending on which meanings of home are important to someone. This indicates that for home interiors, the areas in the home reserved for those activities should be able to accommodate different ways of going about those activities.

In **Chapter 4**, I investigate with follow-up interviews how meanings of home, activities, and the indoor environment are reflected and managed in home interiors. The interviews are analysed using interpretative phenomenological analysis, while the accompanying photos and floorplan drawings are analysed architecturally and imposed with the meanings from the interviews. Together, the interviews and visual analyses of the photos and floorplans led to categories of behaviour (Familiarising, Organising, and Managing) that describe the interactions with and experiences within the home of students, starters, and refugees accepted for permanent stay.

In **Chapter 5**, the information divulged in Chapters 3 and 4 serves as input to connect meanings and actions which could be used by designers to better understand the variety existing among people and their ways of making a home. The meanings of home (Representation, Personalisation, Rootedness, Future, Privacy, and Sociability) from Chapter 3 are linked to the activities people do at home, as listed in Chapter 4, by means of an associative workshop for professionals. For each category of activities (Familiarising, Organising, and Managing), the participants discussed all statements on what people do around the home and what meanings they might relate to, even if sometimes only briefly. What resulted was the conclusion that the meanings can be organised around three axes: Appropriation and Representation, Privacy and Sociability, and Rootedness and Future. Moreover, the things that people do at home can each be related to different time-frames; Familiarising is seen as limitless, Organising as a long-term undertaking, and Managing as a short-term activity.

Chapter 6 reflects on possible tools and how they could be useful for designers and building owners, taking into consideration the context, limitations, and development of these proposed tools. Three options are discussed; a serious game, an infographic, and a guidebook.

Chapter 7 summarises the answers to the research questions and discusses meanings of home and what people do at home. The chapter then describes the most important findings and the scientific and societal relevance and how understanding housing from the perspective of meanings of home linked to activities could help architects with designing temporary homes for urgent home seekers

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2 Making a home out of a temporary dwelling

A literature review and building transformation case studies

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Chapter 1 discussed why it is necessary to investigate the meaning of home in the context of housing shortages. Inevitably, it is then also necessary to look at indoor environmental quality, housing preferences, and what people do at home. These topics draw from different disciplines, namely architecture, housing, psychology, and building technology, and are not often investigated together. This chapter is based on an article published in 2019, in which information from the different disciplines (up to 2018) was reviewed with the aim to explore opportunities by combining information from those different disciplines, and subsequently, how this might inform housing design from a user-perspective. This chapter starts with a description of social housing and its problems now and in the past, related to building guidelines. Then literature on building transformation, the meaning of home, activities in the home, indoor environmental quality, and housing preferences is reviewed. The focus is on urgent home seekers, and specifically on students, starters on the housing market, and refugees accepted for permanent residency. Case studies illustrate the points from the review. Urgent home seekers had already been housed in buildings that were transformed temporarily, and there was already a focus on these groups regarding rental contract legislation. In a way, the case-studies were examples how this legislation worked out in reality and what

could be learned to improve future transformation projects in combination with the target group (students, starters on the housing market, and refugees accepted for permanent residency) has worked out in reality. A description of the case-studies (in Dutch) is added to the appendix of this PhD which is more elaborate than what was published in the appendix of the original article (due to journal regulations).

More studies on this topic have been published since 2018, of which a small selection is briefly discussed below. Consequently, below there is also an updated addition to the conclusion to the published article.

A study on mental health and accommodation of students in the UK indicated that a lower level of comfort and belonging was associated with an increased risk on depression, anxiety, and loneliness, and that the relationship between shared and private spaces was a factor here (Worsley et al., 2023). A review of 219 papers by Schweiker et al. (2020) concluded that there still is a gap in the knowledge on how behaviour and perception interact with indoor environmental quality, partly because it is difficult to measure these factors. Additionally, Altomonte et al. (2020) propose a new framework which integrates the physical, physiological, and psychological needs of users of buildings, and stress the importance of seeing the user as an active and unique agent within the environment, but also that research should be translatable to the design practice.

Recent research on tools for designers to personalise dwellings sometimes focuses on parametric design, and choice-based modelling (Weber et al., 2022). Still, the input in these software programs and models is based on research on housing preferences, not on how people use dwellings and what home means to them. Therefore, the design is unlikely to reflect actual use and meanings, but more importantly, designers prefer a tool they understand and where they still have creative freedom to implement the solution (Choi & Kim, 2021). Other times frameworks are proposed, for example, by Lee et al. (2022) to aid design decisions on the personalisation of indoor spaces, based on a review of 124 papers of which a significant amount is about behavioural and affective components. However, more research on how these components vary between people is recommended before this framework could be helpful for design decision making (Lee et al., 2022).

Based on these additional studies, the conclusion of the article presented in this chapter is adapted into:

Concluding, there is valuable information available for designers that could assist them in designing dwellings that can be more easily turned into a home, but the information is spread out over different disciplines and not (yet) directly usable.

As such, there is opportunity to combine this information and make it usable for designers. According to Van der Linden et al. (2018) and Tvedebrink and Jelic (2018), architects would like to have more information on everyday activities, presented in a designedly way of knowing. The information, presented in some sort of tool, should include not only the physical requirements of a specific action (for example how much space is necessary to place a dinner table for four persons (Neufert (Neufert et al., 2012)), but also an explanation, which helps designers think of the variations and motivations of such an action. In turn, this could also help identify how behaviours relate to indoor environmental quality and housing design (including temporarily transformed buildings). The literature review below provides a general background, and concludes with opportunities, among which is to investigate the meaning of home and how this information might be useful for designers of housing.

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ABSTRACT Temporary transformations of vacant buildings could alleviate the shortage of housing for urgent home seekers. However, not much is known about the transformation of buildings into temporary, adequate, and affordable housing. A multidisciplinary literature review covering design, indoor environmental quality, housing, and environmental psychology, was performed to determine if such an integrative approach could shed light on a new perspective to provide housing for 'urgent home seekers'. Subsequently, building transformation case studies were compared with the literature review findings. It is concluded that there is a gap in knowledge on how the concept of 'home' can be added to existing regulations in order to design and realise temporary housing that fits the needs of urgent home seekers.

2.1 Introduction

In the last decade, on the one hand the need for affordable housing for urgent home seekers is increasingly problematic, while on the other hand the number of vacant offices, and industrial and other public buildings, like schools and churches, is increasing. These vacant buildings could serve as a short-term housing solution before transformations for the long-term are realised, which could reduce the pressure on the market in the near future for the ones most in need.

Currently, in the Netherlands, the group of 'urgent seekers' consists mostly of refugees, students, starter-home seekers, and people leaving care institutions. Policymakers more and more consider temporary housing in transformed buildings as a solution for this urgent need. The knowledge about the needs of the different groups of urgent seekers is limited. Students probably have other needs than refugees and people leaving care institutions.

Living in their dwelling is for people not only a purely functional thing that is being optimised, but also something meaningful (Ellsworth-Krebs et al., 2015). The fact that the notion of 'home' involves emotions and hence meaning to the occupant, makes the difference between the word 'home' and 'house'. Temporary homes are often unsuitable to be personalised because of their temporary nature (Brun & Fábos, 2015).

It is necessary to better understand if and how those temporarily transformed buildings can function as a home. Therefore, the aim of this paper is to answer the following two questions:

- *What can be learned from the literature that can benefit the design of temporary housing? (From the perspective of architectural design, housing studies, indoor environmental quality, and environmental psychology)*
- *How does the transformation of vacant buildings work in practice in the Netherlands? (a preliminary exploration of some cases)*

2.2 Methods

2.2.1 Literature review

A literature review of studies was performed in four disciplines (housing, architecture, indoor environ- mental quality, and environmental psychology). Governmental and non-profit strategic policy documents were reviewed for policies, demographic projections, and statistics about the housing market. Books were also included, when found relevant. For peer reviewed journal articles, Google scholar, Web of science, and Scopus were used. Keywords applied to the different disciplines are presented in Figure 2.1.

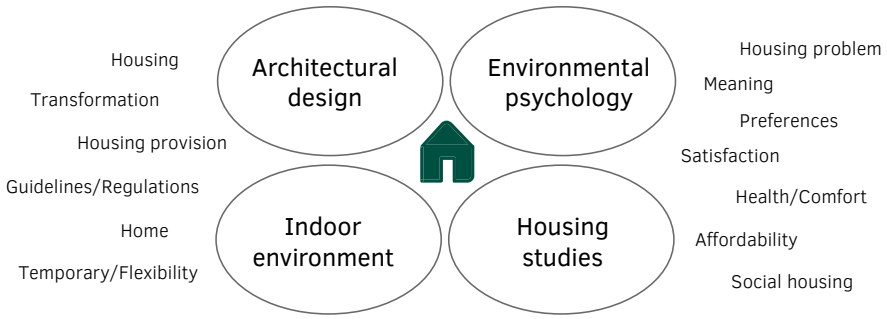

FIG. 2.1 Keywords for the different disciplines.

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2.2.2 Case studies

In addition to the literature review, case studies were conducted for better understanding today's building transformation practice in the Netherlands of vacant buildings into temporary dwellings. A total of eight buildings was selected from a governmental website on transformation projects and an Internet search. The buildings varied in user type, length of stay, original function of the building, and location. All visits were guided by an expert in transformation or the daily manager of the visited building.

Before each visit, information about the building was gathered (floorplans, design intention, financing, etc.) and three topics from the building transformation literature were further investigated during the tour:

1. *Bringing together the stakeholders before the start of the project;*
2. *Determining the function of the building and the direct environment in relation to the intended users;*
3. *Situation-specific factors and design requirements.*

After each visit, the main points from the tour were written down and documented with pictures of the building.

2.3 Literature review

2.3.1 Policy and population for affordable housing

2.3.1.1 Brief history of affordable housing

A common theme in the literature since 1893 is that housing for disadvantaged groups tends to be below standards or unavailable, and tends to be in need of improvements (Aronovici, 1914; Ball, 2016; Cooper Marcus et al., 1986; Jacobs et al., 2010; Marshall, 1893; Wood, 1934). Due to a low-quality living environment, health effects have changed for residents in the last century from tuberculosis, diphtheria, typhoid, and scarlet fever in the early twentieth century (Gould, 1900) to respiratory infections, cardiovascular diseases, and mental health problems in the early twenty-first century (Bluyssen, 2009).

Before governments became responsible for providing affordable housing, the responsibility was on non-profit organisations with charity-raised funds, as well as employers who were concerned about the living conditions of their employees (Gould, 1900; Wood, 1934). Aronovici (1914) proposed that the affordable housing problem lied in economic aspects and that limiting the rent would lead to less investment and thus to a lower quality of dwellings. The reason governments became involved in housing provision was because of health concerns for the population: better housing conditions improved the health of its residents and hence created more productive employees (Beekers, 2012).

In the United States and Europe, to provide better quality housing, the slums were demolished and housing units were built in areas away from the demolition site elsewhere, to comply with the regulations of that time (Reynolds, 1893). The effectiveness of such slum removal was calculated in profit from selling land and the replacement of housing, and in decreasing numbers of death and people with diseases (Reynolds, 1893).

After World War II, social housing played a key role in solving housing shortages in many European countries. Gradually, social housing developed into a part of welfare states and played a key role in the provision of affordable housing for vulnerable groups. Since the nineteen-nineties, social housing became more marketised and privatised (Scanlon et al., 2015).

2.3.1.2 The housing market in the Netherlands

The housing market in the Netherlands can be divided into an owner-occupied and rental market. The rental market can be divided into social and private renting. The Netherlands stands out with a large social rental sector available for lower, middle, and even higher income groups. The Housing Act 2015 was created to have stricter rules for housing allocation, investment, and supervision for housing associations (Rijksoverheid, 2015). With the Housing Act, housing associations are obliged to allocate at least 90% of their total stock to people with an income of below € 40,349; as of 2017 (Haffner et al., 2014; Rijksoverheid, 2017b). Similarly, there exists a tax to be paid by housing associations owning more than ten housing units. To stimulate the housing provision, the tax is reduced when associations invest in building transformations or demolition of poor quality housing in areas with a declining population (Rijksoverheid, 2016b).

In 2008, after successful lobbying, an addition to the law was accepted which specifies that students can be offered a temporary rental contract, and vacant buildings can be rented out for a maximum of ten years (this was originally 5 years) (Andrews et al., 2011; Haffner et al., 2014). The recently approved form of temporary rental contracts is expected to open a flexible rental market and decrease the pressure on the housing market.

Nevertheless, for owners, possibilities of changing the function of the building are limited and often considered financially unattractive, discouraging them from making the building temporarily available (Harmsen, 2008; van der Velden et al., 2016)

2.3.2 Need for new solutions

For people who are starting on the housing market (students, graduates, settled asylum seekers, young single people, couples, divorcees, and people who lived previously in assisted living or institutions, or who experienced a change in household composition) the need for housing is usually more urgent. This group, called the 'urgent home seekers' (spoedzoekers), has the most difficulty finding an adequate place to live because of the high demand on the Dutch housing market.

Several factors have been identified that hinder the access of vulnerable and immigrant groups to adequate housing: a lack of temporary and permanent housing in appealing areas, empty unprosperous areas, difficulties to maintain and improve building standards, vulnerable people on waiting lists, discrimination and anti-immigrant sentiment, an information gap, a lack of administrative capacity to allocate housing, budgetary issues, and political issues (Europe, 2015).

Types of temporary housing solutions for the influx of refugees in 2014–2015 were tent camps, empty churches, schools, prisons, hotels, and vacation homes, transformed containers, or other prefab structures. However, this was intended to be short-term: for a maximum of a few months, until better and permanent housing could be found (IFHP, 2015).

The temporary transformation of buildings in the Netherlands for a maximum of ten years was originally meant to solve the shortage of housing exclusively for legal refugees, however, other types of urgent house seekers were allowed to be housed (Rijksoverheid, 2016a).

In the previous paragraphs, it has been presented how the housing market evolved to a market with less governmental intervention and more free market policies. However, currently, the market and social housing providers do not provide enough adequate housing for all seekers. Transforming vacant buildings into temporary housing is presented as a type of solution for the current housing problem.

2.3.3 Building transformation and indoor environmental regulations

2.3.3.1 Housing regulations in practice

Standards and regulations have been updated regularly, specifying characteristics such as the minimum amount of surface area, to ventilation rates, or daylight access percentages (Coad, 2006; Neufert et al., 2012; Reynolds, 1893; Ton et al., 2014).

An example of social housing meeting the new quality standards is Pruitt-Igoe in St. Louis, Missouri, U.S.A. This project represented 'modernism' and consisted of 33 buildings of single loaded corridor apartments. The construction ended in 1955 to replace the inner-city slums of St. Louis. Because the buildings were in a bad state and criminality rose, demolition of the entire project started only 18 years after construction. Because of its size, the project received a lot of attention as to why it failed, and was named the 'Death of Modernism' (Jencks, 1977). Examples similar to Pruitt-Igoe are common: for example, 'De Bijlmer' in the Netherlands was demolished prematurely for similar reasons (Bijlmermuseum, 2016). One of the reasons for the failure of such buildings is assumed to be the displacement of families breaking the existing social cohesion and the lack of maintenance of the new building (Newman, 1973; Sommer, 1974). Therefore, the social and psychological effects of housing and neighbourhood lay-out seem to be more easily overlooked when affordable housing is urgently needed.

2.3.3.2 Housing quality and knowledge on indoor environmental quality

From a design point of view, several guidelines are available for adequate quality housing, such as minimum sizes for spaces (Neufert et al., 2012), the 'Pattern Language' (Alexander et al., 1977), and site design guidelines for medium density housing (Cooper Marcus et al., 1986). These guidelines generally do not take into account indoor environmental quality aspects.

Over the years, building regulations have been created in response to low-quality housing, and along with such regulations, research has been carried out on the effects of indoor environmental quality on health and wellbeing, frequently in combination with the type of housing (Appold & Yuen, 2007; Lee et al., 2011). In this research, usually four IEQ factors are investigated that influence health: air, lighting, acoustical, and thermal quality (Bluyssen, 2009). Besides the IEQ factors, other factors that influence health and wellbeing are (Bluyssen, 2014): personal factors (family status, education, habits, etc.), physical factors of the environment (lay-out), physiological and psychological factors (mood, crowding) (Evans & Schroeder, 1996), and privacy (Altman, 1976). Such a variety of factors makes the development of guidelines for the indoor environmental quality complex.

Additionally, occupants generally do not realise that certain health symptoms have a relationship with exposure to certain conditions (Bluyssen, 2009). Poor indoor air quality can influence health: depending on sources of air pollution (e.g., people and activities, materials, appliances, and outdoor sources), exposure can result in respiratory problems, dizziness, headaches, tiredness, or an increased risk of cancer (Bluyssen et al., 2016; Vardoulakis et al., 2015). Appropriate lighting is said to reduce stress, to improve mood and quality of sleep, and to increase productivity and alertness at work when there is enough light at the right moment (van Bommel, 2006). A constant exposure to 'unwanted' sounds has proven to increase stress levels and thus the risk of cardiovascular diseases, obesity, and depression (Evans et al., 1995). Finally, thermal comfort is influenced by the design of a building, the use of construction materials, heating, ventilation, and cooling possibilities, the people, and the activities they perform (Nicol & Humphreys, 2002).

2.3.4 Considerations for building transformations

Transforming existing vacant buildings into housing can be faster than building new dwellings – without considering factors such as permits that need to be requested – and more sustainable because the materials are used for a longer time. Transformation can be temporary, where the 'old' function is changed into housing for a maximum of ten years (Haffner et al., 2014). Regulations and safety standards are not the same for buildings that are transformed in temporary housing as they are for newly built buildings or for buildings that are permanently transformed (Ton et al., 2014). Buildings meant for temporary housing require a different business model than other types of transformations because profits are calculated based on transformation costs, future occupancy, and type of dwelling (Geraedts & Van der Voort, 2003; Harmsen, 2008; van Dijk et al., 2010). With changing occupancy levels and demands for types of dwellings, it is more difficult to predict profits; thus, it represents a high risk investment.

Most of the knowledge available on building transformation comes from the transformation of vacant offices, representing the majority of the transformed buildings into housing. For a successful conversion of office buildings, the most important building characteristics that have been put forward are: depth and height; size; structure; envelope and cladding; internal space; lay-out and access; services; acoustical separation; and fire safety and means of escape.

Depth and height determine the total surface of the building but also the amount of daylight that penetrates the building and options for natural ventilation. Total size is important because buildings that are larger than 10,000 m^2 usually create density problems in the neighbourhood, for parking but also other amenities. The number of floors attracts different users where higher buildings often do not have appropriate internal access routes for the elderly or families with young children.

Other important features are location, site, character (city, safety, and greenery), the distance to and quality of services in the area (such as shops, supermarkets, and leisure), and accessibility to public transport, cars, and parking seem important (Gann & Barlow, 1996; Geraedts & Van der Voort, 2003; H. T. Remøy & T. van der Voordt, 2014). Such considerations are technology oriented; however, it seems unclear based on the literature how existing buildings can be transformed while taking into account both the technology and the subjective perspective of the resident.

2.4 Meaning and effect of the home environment on the users

2.4.1 Meanings of home

Qualitative research on the meaning of home has resulted in a list of meanings that are attributed to the dwelling, beyond the idea that the purpose of the house lies in providing its residents shelter and access to resources (Bachelard, 1994; Rapoport, 1969). These meanings are among others: Attachment and identity, social rules, affordances, happiness, belonging, responsibility, self-expression, critical experiences, permanence, privacy, time, meaningful places, knowledge, the desire to return, quality of relationships, friends and entertainment, emotional environment, development of self-identity, security, continuity, ownership, personal space, aspirations and goals, personal values, domestic spaces and objects, personal preferences, appropriation, affluence, secrecy, control, centre of activities, and an indicator of personal status (Altman et al., 1985; Despres, 1991; Korosec-Serfaty, 1984; Lawrence, 1987; Sixsmith, 1986; Smith, 1994).

Dovey (1985) has suggested that to improve housing quality and the feeling of home, temporal processes should be included in design guidelines. He also suggests to better include the meanings of home in housing design.

2.4.2 Effects on the home environment on the users

Poor building quality, caused by deteriorated materials and construction, could lead to a poor indoor environmental quality and contribute to ill-health, social stigma, and difficulties in social mobility (Cattaneo et al., 2009; Evans et al., 2003; Jackson, 2003).

It has been found that the quality of the living environment is correlated to happiness, and happiness in turn strengthens the immune system (Veenhoven, 2007). Another study found that in a deprived neighbourhood, people experience poorer health, which could not be fully explained by socio-economic status or housing quality (Poortinga et al., 2008). This shows that there is more to the house than the quality of the building alone.

As far as location is concerned, greenery with walking and cycling paths is appreciated by the residents. This allows more physical activity among people in the neighbourhood, which in turn improves health (Jackson, 2003). Another effect of visible green areas is its stress-reducing properties (Kaplan, 1995). The presence of favourite places in the vicinity has a similar stress-reducing effect (Korpela & Hartig, 1996). Being further away from playing areas for households with children and the presence of more noise in dense areas is considered to be less satisfactory (Evans et al., 2003).

Smaller houses encourage the feeling of security. Regulating privacy is easier in a house with more rooms, and social interaction is more likely to happen in spaces with curved walls (Keeley & Edney, 1983). For earthquake evacuees, houses that looked like a 'house' reduced levels of stress and depression more than houses that looked like containers (Caia et al., 2010). In a study among first-year students, their decorating behaviours were related to their commitment to stay (Hansen & Altman, 2016).

Having control over one's environment contributes to a sense of home (Sixsmith, 1986) but also to wellbeing (Evans et al., 2003), and a lack of control has been found to be one of the causes of the Sick Building Syndrome (Burge, 2004). Owning a dwelling instead of renting one also makes residents more satisfied with their housing situation, regardless of housing quality, costs, or household type (Elsinga & Hoekstra, 2005); thus, home ownership is generally the ideal situation for health and wellbeing (Elsinga & Hoekstra, 2005; Hegedus et al., 2015; Michelson, 1977).

2.4.3 Assessing the housing needs of occupants

Currently, there are two ways of figuring out housing needs: housing needs research, where respondents are usually asked in a survey to indicate preferences for various options (known in the Netherlands as 'woonwensen onderzoek') and inspection of the databases of real estate agents and social housing providers. Depending on the research focus, research into housing needs can shed light on people's choices or preferences.

In housing needs research, combinations of data from values, behaviour, socioeconomics, and socio-demographics are used because they have been found to be effective in predicting preferred housing type. Demographics are useful because different types of households generally require different spaces and locations, while income determines the available options (Jansen et al., 2011). However, the available options that are based on household type and income do not predict what the preferences of end-users are. Choices depend not only on what is possible, but also on what is preferred by end-users (Jansen, 2011). Preferences relate to trade-offs

and features of the house, like size, price, location, and style. Housing preferences are usually measured with a survey or by looking at patterns of people moving house (Jansen et al., 2011; Michelson, 1977; Ouwehand & Doff, 2011; Williamson, 1981).

Current research on housing needs focuses on physical features of the dwelling and household characteristics. The two types of existing research, the research into meanings attributed to the home and the research into effects of the home environment on the occupants' health, are available but not always used to support each other. Combining the two types of knowledge could simplify the process of matching housing with user groups.

2.5 Case studies of transformed buildings

To better understand the transformation of vacant buildings into temporary housing, a variety of cases was explored. Figure 2.2 demonstrates the variation in the type of users and type of building.

2.5.1 Descriptions of the case studies

In total eight case studies were visited:

- **Strijp S:** The transformation process was initiated by the owner of the area, who made the final plan in cooperation with the municipality of Eindhoven. Because the municipality was involved, the transformation of the area was part of a larger urban plan for the city, which was very flexible in nature and made it possible to adjust the plan to the current market situation (smaller dwellings, slower development).

- **ACTA – Go West:** The former dental science building from Amsterdam University was bought by an association that wanted to demolish the building as part of a larger redevelopment project. Because the demolition was postponed, the building was partly transformed into workplaces (ground and first floor) and affordable housing units for students. The creative use of the two lowest floors is supposed to integrate the building into the existing social context, creating a livelier atmosphere in the neighbourhood and providing an affordable platform for artists.

- **BLUE-Gray:** This building was used as a temporary office building for a bank. Its proximity to the medical centres of two educational institutions, while being situated in a zone planned for redevelopment, combined with high demand for medical student housing, made it relatively simple to acquire the building from the bank and the necessary permit needed by the owner.

- **SHS aan 't Verlaat:** Students from Delft University of Technology, the Netherlands, started the initiative after experiencing the urgent need for student housing in Delft and the high vacancy rates of mostly office buildings. The students were searching for a vacant property and contacted the owner of the building that used to function as housing for nurses. The owner was open to the idea of temporary transformation for a maximum of 10 years. Before the transformation, the building had been empty for 10 years.

- **Aan 't Verlaat pavilions:** A building right next to the previous one, 'the pavilions' were transformed shortly after the transformation of the first building was finished, because it proved to be successful.

- **Mixx-Inn:** The owner and housing association decided to transform the building because it did not function adequately as an elderly people's home. After changing the user group to young adults and starters, it took some time to find stakeholders. After transformation, the housing market had collapsed. The user group today is different from the intended one, but the building was transformed in such a way that the apartments can be combined with each other and are suitable for different user groups.

- **Junoblok:** This office building was owned by the municipality. Because of the low demand for office spaces, a plan was made to redevelop it. The building would only be transformed into apartments intended for ownership. Transformation and sales occurred faster than planned. The business model was intended for tenants to buy units and combine them according to their needs by finishing the interior, which would save time and costs for the project developer.

- **Riekerhaven:** This residential complex consists of containers that were first used elsewhere in Amsterdam, but had to be relocated because the original area would be permanently redeveloped. With the municipality, the complex's current location was decided to be around the sports fields, while it was also decided that 50% of its future residents would have to be students, and the other 50% had to be male settled asylum seekers aged between 18 and 27 years old. The tenants are residing alternately between students and asylum seekers. The rental contracts all have a maximum of five years.

  More information on the case studies is presented in Appendix A.

FIG. 2.2 Summary of case studies.

2.5.2 Some findings of the eight cases

The eight cases demonstrate similarities. Firstly, the decision to transform the building: all eight transformations took place in buildings that had been empty for more than two years. Moreover, the decision-makers had to be in influential positions in the organisation to overcome the obstacles.

Secondly, there are similarities in the technical requirements for the transformations: all eight buildings needed replacement of piping and installations to achieve the required quality level, and to make the spaces appropriate for living instead of working; every living space needed its own heat and ventilation controls, which previously only existed per floor.

There were also differences: the quality level of the transformation appeared to depend on the amount of time the building was planned to function as housing: the longer, the higher the quality. Moreover, the location was a key factor: the more attractive the location, the higher the expectations for return on investment were, and the higher the ambitions.

The perceived risks where seen not only in the magnitude of the transformation but also in the prospective user groups. Students tend to be seen as unconcerned about their dwelling. This view was an argument used by decision-makers to use cheap and low-quality furniture and materials, and to prohibit users from making certain changes in the rooms. Factors that were taken into account for the decision about the degree to which the future tenants could make changes were the quality of the building after the transformation and the period of use.

TOC

2.6 Conclusions and future directions

Since the crisis in 2008, transformation projects started to appear more regularly because of the large number of vacant buildings. As of 2018, the real estate market is recovering, however, it is not known if the previously seen increase in vacant buildings will continue. The demand for housing for starters, students, and settled refugees is not likely to decline, while the Housing Act reduces the supply of affordable social rental dwellings. To summarise, the transformation of vacant buildings into temporary housing for urgent home seekers is proposed as a solution by policy makers; however, this solution is outside the scope of classic regulation of adequate housing in the Netherlands.

Historically, indoor environmental quality has been based on measurable parameters, but a healthy and comfortable indoor environment is more than such parameters. Including the concept of 'home' in regulations or guidelines for building quality and services is necessary. 'Home' guidelines for temporary housing in transformed buildings could provide similar quality levels as for 'standard' housing. In psychology research, general meanings of home have been tried to be identified without concrete results. Objective connections between specific dwelling elements that contribute to the attribution of the meaning of 'home', and whether such 'meanings of home' are related to the indoor environment, have not been found.

There are examples of housing designs of people living in poverty and refugees having been offered a supported self-built house instead of a prefabricated one. The problem in such cases is that the residents had no influence on the design of these houses. The home-making process tends to be overlooked and designers usually do not base their design solution on the users' needs.

There are differences between people and in what they hope to benefit from their home. However, even though meanings are attributed to the home, the relative importance of these meanings for different people has not been researched. Guidelines or regulations on how to design 'good' homes do not address this issue beyond differences related to household composition. The need to continually interact with, engage with, and adjust the home while living in it, is not taken into account by the regulations nor by the design of the transformed buildings. It is essential to know what type of design is most suitable for whom and how to realise this in transformed buildings, to fulfil the needs of the urgent home seekers.

This review focused on the possibility of transforming vacant buildings into housing, and what regulations and information exists to provide affordable and adequate temporary housing. To trans- form vacant buildings into housing, one of the main factors is the location, where a better location means a better chance for return on investment. Consequently, this influences the affordability of housing in central locations. Guidelines for transformation are based mostly on physical factors and assume that the transformation is permanent. Projects that are transformed for longer periods have a different quality level, and buildings that are in better locations and in a better state are more suitable to be sold. The type of transformation sets limits for the type of user and if it is advisable for the building owner and future user to invest in the building, whether it be financially, socially, or psychologically.

Having control and being able to adjust one's home environment is import for the wellbeing of urgent home seekers. Control not only affects the psychological attachment of a resident to the place, but also his or her health, his or her appreciation to the dwelling, and the possibility to invest and move forward in society.

To transform buildings from a user perspective, combining the disciplines of environmental psychology, indoor environment, housing and architectural design can be helpful. Looking at the inter- actions between user and building instead of cost efficiency could result in new perspectives on what would function for the user. What designers and building owners think is necessary for the future resident, may not be. Synchronising the different expectations and needs from owners, designers, and users could result in other options that are not only ideal for all parties but also more cost-efficient.

One way to include the meanings of home in building guidelines, and specify them for different users, is with the use of a questionnaire on the relative importance of the meanings of home. The outcome can be compared with demographic variables and preferences for the indoor environment, which could make it possible to categorise the dwellers based on which meanings of home are important for them. This information can be used to identify which physical and non-physical elements contribute to those meanings, and how they could be included to design guidelines in addition to the current regulations. Homes that are designed from a user perspective have the potential of improving the residents' psychological and physical wellbeing, which can allow them to have an improved quality of life in other aspects of their lives (Figure 2.3).

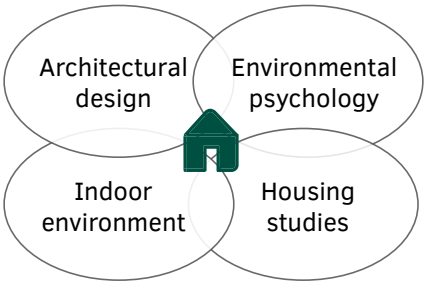

FIG. 2.3 Combining the four disciplines to improve 'home' for urgent home seekers in (temporary) housing in transformed buildings. Housing market: how is adequate housing embedded in policies? Indoor environment: what is healthy housing? Environmental psychology: what makes a house a home? Architectural design: how can design support these requirements?

Combining the disciplines of architectural design, indoor environment, environmental psychology, and housing enables identifying the housing needs of urgent home seekers. The next step is then to translate this knowledge into new design perspectives to solve housing shortages for urgent home seekers without the loss of quality or affordability for the users.

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3 Towards better home design for people in temporary accommodation

Exploring relationships between meanings of home, activities, and indoor environmental quality

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The previous chapter concluded that the meaning of home, and how this might be related to regulating indoor environmental quality and behaviours in the home, is under-researched by designers. This chapter explores how the meaning of home might differ between people and how it relates to a set of activities in the home, indoor environmental quality, and housing preferences. To do so, we created a list of statements on different aspects of the meaning of home, based on qualitative research on home from others. With this list, we were able to see differences in what meanings of home can be important for different people, and more specifically, for urgent home seekers. The urgent home seekers in this case were students, starters on the housing market, and refugees accepted for permanent residency. Furthermore, we related differences in how important certain

aspects of home were to which activities the residents did and where, and which indoor environmental qualities mattered the most for that activity. The chapter concludes with a division of the meaning of home in six factors (representation, privacy, sociability, appropriation, future, and ownership) and that the strongest relationships were found with the activities of receiving guests and relaxing.

ABSTRACT People living in short-term rental housing, henceforth temporary housing, are rarely consulted by professionals involved in the design process, whether regarding new or refurbished buildings. Knowing what is required for temporary dwellers to feel at home and how their meanings of home relate to household characteristics, activities, and indoor environmental quality, might result in better designs for these commonly small dwellings. To explore the views of temporary occupants about their home environment, we designed and conducted a survey directed to young people in the Netherlands, likely to be familiar with living in temporary accommodation (141 university students, 58 refugees who have received a permit to stay; henceforth named permit holders), 23 persons who were working 4 days and studying 1 day; henceforth named starters). Through factor analysis, six meanings of home were found to be statistically significant: Representation, privacy, sociability, rootedness, future, and appropriation. Multiple regression analyses and analyses of variance indicated that meanings of home were related to some household characteristics and the presence of light and cleanliness. Our study showed that measuring meanings of home might help understand not only how dwellings are used but also how to improve the design of small temporary dwellings. For instance, more possibilities for good or natural light, storage, and the display of personal possessions should be incorporated into the design of these small dwellings.

3.1 Introduction

Everyone should be able to call a place home, though unfortunately, not everyone can. In the Netherlands, households with a low income have been struggling to find affordable housing for over two decades (Boelhouwer, 1999; Scanlon et al., 2015). Students and permit holders mostly depend on social housing associations. However, waiting lists are long and it can take up to ten years until someone signs a rental contract. There is a shortcut if someone receives the 'urgent' status: In this case the person must accept the first dwelling available, without any choice. People who have finished their education are forced to move out of their student housing and would need to subscribe to the waiting list. In the absence of a decent job or family support, one could not afford to rent or buy from the private market given the exorbitant increase of housing prices (CBS, 2022).

The Dutch government proposed to temporarily transform existing vacant buildings (e.g., offices, schools, etc.) into housing to reduce the shortage. In practice, this means that the building is made into an apartment building with a minimum investment for a maximum of ten to twenty years, before it is restored to its previous function. Building transformation can be faster, cheaper , and more sustainable, than building anew (Remøy et al., 2007; H. T. Remøy & T. van der Voordt, 2014). There are however potential downsides to this approach. In particular, less opportunities for personalisation, less homely environments, and more lenient building regulations, including those on indoor environmental quality (IEQ) (for example, thermal and sound insulation and daylight admittance (Ton et al., 2014)).

In addition to the shortage of affordable housing in the Netherlands, there is also a shortage of knowledge about their use of homes. Specifically, for people living in temporary accommodation, like students, refugees with a permit to stay (henceforth named 'permit holders' and other people who are wishing but unable to enter the housing market (henceforth named 'starters'), the available information on their housing needs, wants, and meanings, is limited. To minimise building complexity, time, and costs, dwelling units in these transformed buildings tend to be very similar despite the diversity in the socio-demographic profile of temporary dwellers. Given that these temporary dwellers often must accept the first dwelling available, it is even more important that the dwelling can be adjusted as much as possible to fit their needs. While basic housing quality is ensured through building regulations, there are none to ensure that the dwelling can be a home. For instance, renters are less likely to personalise their dwelling when they feel insecure, which negatively impacts their well-being (Easthope, 2014). For temporary rental contracts the negative impact on wellbeing might be even stronger.

Herewith, the overall aim of the paper is to make recommendations for improving the design of temporary dwellings for students, permit holders, and starters, by examining how meanings of home relate to home activities and preferred IEQ. To our knowledge, the relationships between these three topics have not been so far systematically explored. To achieve our aim, we created a new questionnaire to measure variations in people's meanings of home and the ways in which such meanings can relate to activities in the home and IEQ, through factor analysis and multiple regression analyses. The paper will proceed with a brief literature review in which we discuss in turn the topics of IEQ and user preferences; behaviour and building design; and meanings of home, trying to relate them to temporary dwellers. In the following method section, we present others' and our operationalisation of meanings of home, and give full details on how we tested the questionnaire. We then move to discuss the results, and make some recommendations for the design of temporary dwellings.

3.2 Literature review

3.2.1 IEQ and user preferences

Part of the building regulations concern IEQ, such as the requirement of daylight access or ventilation. Studies have shown that perception of IEQ varies, and that it relates to differences in for instance, preferences, the built environment, climate, gender, age, and satisfaction (Baird et al., 2018; Bluyssen 2020; Kraus & Novakova, 2019; Zalejska-Jonsson & Wilhelmsson, 2013). Additionally, residents manage and improve their indoor environment in different ways (Andersen et al., 2009; Lee et al., 2011; Zalejska-Jonsson & Wilhelmsson, 2013). Therefore, it is conceivable that although the quality standards of transformed buildings may be lower than for new buildings, dwellers could still be satisfied from the perspective of it being a home.

These differences and how they are controlled might be related to how residents use their dwelling and what meanings home has for them. For example, a ventilation system where the controls are unclear may prohibit someone from cooking odorous foods in a studio apartment even though cooking a specific type of food may be part of someone's identity. Having big openable windows instead of the newest ventilation system might then be a quality.

Designing for unknown dwellers requires designers to make assumptions which are not always correct. For instance, which types of households will use the dwelling (Darke, 1984) or which façade materials (Cooper Marcus et al., 1986) and floor plan lay-outs are preferred (Boumová & Zdráhalová, 2016). Energy use and control of ventilation systems (Guerra Santin et al., 2009) are also sometimes different than expected. Knowing how these differences relate to dwellers would make it easier to design fitting temporary housing.

Preferences, personal values, and lifestyles have been studied in housing research to identify what different user groups want from a dwelling (Ergan et al., 2018; Jansen, 2011, 2013; Jansen et al., 2011; Michelson, 1977; Ouwehand & Doff, 2011). Preferences are often about the 'ideal' home (Michelson, 1977; Sirgy et al., 2005), rarely about other types of housing, such as student accommodation (Oppewal et al., 2005). However, the results from such research are not always informative for designers. For instance, students preferred private studio flats over co-housing (Verhetsel et al., 2017). This finding informs us on the preferred housing type but not on the interior or floor plan. Another example is preferences of resettled refugees relating to proximity of relatives, location, and connectedness with the place of residence (van Liempt & Miellet, 2020). These factors cannot be addressed by the design of the building. Therefore, recommendations for design should be at the level of the home interior.

3.2.2 Behaviour and home design

There is some research about interiors and how people use a temporary dwelling. Lewinson (2010) found that people living in extended stay hotels positively emphasised options that made it possible to use the room more like a home; for instance, having a kitchenette in the room increased homeliness. Kellett and Moore (2003) discovered that the same hotel room resulted in different behaviours and attributed meanings by the occupants; meanings of home related more to social dimensions for some, while for others it related more to comfort and physical features. Thus, dwelling design could be improved when relationships between the physical environment and different meanings of home are better understood.

Dwelling design is based on how much and what type (level of privacy) of space is necessary around objects that are needed for certain activities. (Leupen & Mooij, 2011). Consequently, in housing, the size, shape, and organisation of rooms partly depends on which activities (e.g., sitting, cooking, reading, sleeping, etc.) are expected to take place in them. Guidebooks for the design of space assume people perform an activity in the most space-efficient way. For example, two people sitting

at a table need six square meters to place the necessary furniture and physically do the activity (Neufert et al., 2012). This approach, unfortunately, does not address meanings or related activities. Rapoport (1982) argued that activities consist of four parts: the activity itself, how it is performed, what it means, and what other activities are related. Furthermore, there could be benefits to designing unassigned space. The number of possible home activities in buildings that were not designed as homes (e.g., office, school, church, etc.) increased when a space seemed more undefined (Tagg, 1974). Research on the connection between 'home' and activities in research is rare (Clapham, 2011), even though connecting the physical to the psychological could provide new insights in healthy lifestyles and behaviours at home (L. T. Graham et al., 2015). Thus, considering meanings and relationships might result in healthier and better dwelling design.

3.2.3 Reviewing meanings of home

Meanings of home have been researched for decades and from different perspectives, which is why we give only a brief overview (see for example Despres (1991); Mallett (2017); Marcus (2006); Moore (2000) for more detailed overviews). We focus on differences between people and how they are part of the process of creating a home.

Home has been researched as a process (Brun & Fábos, 2015; Marcus, 2006), something that becomes (Feldman, 2016), something that grows (Dovey, 1985), or something that is assembled only temporary (Soaita & McKee, 2019). Ideally, it becomes a central and fixed space in the world (Dovey, 1985) that offers a sense of control over one's life (Brun & Fábos, 2015) and helps constructing an identity (Feldman, 2016). This process is strengthened by emotional or economic investment (Brun & Fábos, 2015; Porteous, 1976). Research has shown that residents also invest in temporary homes (Brun & Fábos, 2015; Kellett & Moore, 2003), indicating that personalisation is also considered valuable when it concerns temporary housing.

Others focused on disentangling the different aspects of the meaning of home. We present six models below which were particularly relevant in grounding our own operationalisation (in random order).

The first model divides the meaning of home in three major themes, namely 'people/ psychological processes', 'environmental properties' and 'temporal qualities' (Altman et al., 1985). Sub-themes are appropriation, attachment and identity, social rules and relationships, and affordances. Specific for this model is that the three major categories connect to multiple sub-themes.

The second model is based on an analysis of the meanings of home for students (Sixsmith, 1986). She found the three major themes of 'personal', 'social' and 'physical'. The first theme of the 'personal', comprised the sub-themes of happiness, belonging, responsibility, self- expression, critical experiences, permanence, privacy, time, meaningful places, knowledge and lastly the desire to return. The 'social'-theme regards type of relationships, quality of relationships, friends and entertainment, emotional environment and being with others. The last theme 'physical' consists of structure, services, architecture, work environment and spatiality.

The third model found seven general themes (Smith, 1994). These are 'physical environment', 'presence of good social relationships', 'personal privacy and freedom', 'self-expression and development of the self-identity', 'security', 'continuity' and 'ownership'.

The fourth found two dimensions (Lawrence, 1987), a psychological dimension (self-esteem, personal identity, personal space and privacy, aspirations and goals, personal values; domestic spaces and objects, and personal preferences; house form and construction) and a social dimension (age and gender of residents, demographic structure and composition of the household, household income, employment status; social class, impact of domestic technology and socio-economic values; spaces and objects).

The fifth study focussed on meanings of attics and cellars in houses (Korosec-Serfaty, 1984) and identified five different meanings, namely appropriation, affluence and security, secrecy, remembering and forgetting, and continuity of generations.

Lastly, the sixth study named ten features of the home (Despres, 1991); security and control, a reflection of one's ideas and values, acting upon and modifying one's dwelling, permanence and continuity, relationships with family and friends, centre of activities, a refuge from the outside world, an indicator of personal status, material structure, and lastly, a place to own.

As demonstrated in the above discussion, most meanings appear more than once, though sometimes differently named, and all studies find that home consists of multiple meanings (Altman et al., 1985; Aziz & Ahmad, 2012; Despres, 1991; Dovey, 1985; Korosec-Serfaty, 1984; Lawrence, 1987; Sixsmith, 1986; Smith, 1994). The studies are all qualitative however, and therefore comparing and combining them is difficult but not impossible, as we will show in the method section.

Other studies focus on differences in specific user groups. For example, Tanner et al. (2008) found that the elderly people they interviewed sometimes valued the social aspects more than comfort or functionality in their home, and that they were less happy with dwelling modifications when these interfered with their routines. Woodhall-Melnik et al. (2017) found that for women who were victims of domestic abuse meanings of home included permanence, safety, routine, and comfort, in addition to satisfying material needs. Home could also have a negative connotation, for example for people who are displaced, old, or live in institutions (Brun & Fábos, 2015; Kellett & Moore, 2003; van der Horst, 2004). Therefore, which concepts of home are deemed most important and whether they are positive or negative seems to vary between people. Additionally, some concepts of home (e.g., appropriation, comfort) appear to be related to the physical properties of the dwelling.

3.3 Method

Building on the literature review, we developed a questionnaire (see Appendix B) to answer how meanings of home relate to temporary housing, activities in the home, and preferences for indoor environmental quality. The questionnaire was piloted with students which led to some changes in the questions before using it for this research.

The questionnaire consisted of three parts (meanings of home, activities, IEQ) and was distributed among students, permit holders (without this permit refugees are housed in asylum centres), and starters. These groups often have a temporary rental contract and/or do not have plans to stay long-term in the same dwelling (for more than five years). Moreover, in the Netherlands they are usually living in social or subsidised housing without having had any choice at all. The questionnaire contained more questions than we analysed for this article because it was part of a larger project.

3.3.1 Meanings of home

Operationalising meanings of home has been done before. Groves (1996) categorised meanings of home with a survey (with 48 items) using predetermined categories (based on qualitative research) and confirmed six of them with a principal component analysis (continuity, privacy, identity, social, attachment, expression). Two additional categories were difficult to interpret but added to the model anyway ('context' and 'change'). The focus of this research was on employee mobility in Australia, asking the respondents to rate how characteristic the items were for their current and ideal home. Comparing renters and home-owners, Groves (1996) concluded that renters rated their current home significantly lower, indicating tenant status had an effect on meanings of home. Kearns et al. (2010) created a scale that consists of nine items and focusses on psycho-social benefits of home, in particular the elements of haven, autonomy, and status. However, meanings such as personalisation (Barratt & Green, 2017) or permanence (Nieto, 2020) are not specifically covered in their scale. Because we attempt to operationalise meanings of home with the purpose of informing designers, the scale from Kearns et al. (2010) was not sufficient. Therefore, we created a new scale with meanings of home that might be used to improve dwelling design, based on qualitative research on meanings of home (see Table 3.1) (Altman et al., 1985; Aziz & Ahmad, 2012; Despres, 1991; Dovey, 1985; Korosec-Serfaty, 1984; Lawrence, 1987; Moore, 2000; Seamon, 1979; Sixsmith, 1986; Smith, 1994).

TABLE 3.1 The items created and the meanings of 'home' from the literature review

		(Altman et al., 1985)	(Sixsmith, 1986)	(Smith, 1994)	
1	**Building something for the future**	temporal qualities	time, permanence	continuity	
2	**Taking care of the dwelling**		responsibility		
3	**Feeling that I belong with the dwelling**	attachment	belonging		
4	**Having the desire to return**		the desire to return		
5	**Adjusting the dwelling to suit my wishes**	appropriation		appropriation	
6	**Marking it as my dwelling**				
7	**Having power over what happens**				
8	**Showing who I am**	identity		development of the self-identity	
9	**Giving me personal space**				
10	**Providing privacy**		privacy	personal privacy and freedom	
11	**Feeling safe**			security	
12	**Knowing everything about the dwelling**		knowledge		
13	**Having and creating memories**		critical experiences, meaningful places		
14	**Having a hiding or storing place for things**				
15	**Maintaining good social relationships**	social rules and relationships	quality of relationships	presence of good social relationships	
16	**Having my own place to sleep and eat**		structure	physical environment	
17	**Entertaining guests/ friends at the dwelling**		friends and entertainment		
18	**Showing my aspirations and goals**		self-expression	self-expression	
19	**Representing the values I have**				
20	**Indicating my position in society**				
21	**Being with family**	type of relationships	being with others		

	(Lawrence, 1987)	(Korosec-Serfaty, 1984)	(Dovey, 1985)	(Despres, 1991)
		continuity of generations	continuity	permanence and continuity
	domestic spaces and objects			
			rootedness	
	house form and construction	appropriation		acting upon and modifying one's dwelling
		affluence and security		a place to own
			power	control
	personal identity		identity	
	personal space			
	privacy			
				a refuge from the outside world, security
		remembering and forgetting	memory	
	spaces and objects	secrecy		
				centre of activities
				relationships with friends
	aspirations and goals			
	personal values			a reflection of one's ideas and values
	social class		social order	an indicator of personal status
	demographic structure and composition of the household			relationships with family

The meanings were aggregated in categories: Identity, regeneration, attachment, appropriation, physical, and values (using the categories from the review from Aziz and Ahmad (2012)). The concepts were transformed into statements (apart from duplicates), to make them easier to understand and rate in a questionnaire. Categories with more than five statements were reduced to a maximum of five to limit the length of the questionnaire. Statements that made the least sense on their own or were very similar to others, were eliminated, resulting in 21 statements. The question was to 'indicate how important the following items are to you, to make a dwelling feel like home' (8-point Likert scale). The scale is similar to the one for personal values as developed by Schwartz (Schwartz, 1992), because for a psychological construct it can find differences in relative importance within and between subjects.

The objective was to find factors for meanings of home and relate them to the other variables (household characteristics, activities, and preferences for IEQ). Therefore, a factor analysis with principal component extraction was used (Meyers et al., 2006). The outcome of the analysis can also be used for following analyses (Tabachnick & Fidell, 2013). An oblique rotation method was chosen, because the factors were expected to correlate (Tabachnick & Fidell, 2013). This is similar to the method used by Groves (1996) to find meanings of home.

Different methods are available to determine the number of factors: The Kaiser criterion, inspecting the reproduced correlation matrix (Yong & Pearce, 2013), inspecting where the graph bends in the scree plot, if the factors make sense (Meyers et al., 2006), and when the factors have loadings above 0.32 (Tabachnick & Fidell, 2013; Yong & Pearce, 2013) or 0.40 [(Meyers et al., 2006)Before the final number of factors was determined, all abovementioned criteria were checked because some had ambiguous outcomes.

The factor scores were computed in SPSS using the Anderson-Rubin procedure, which creates uncorrelated factor scores even when the factors are correlated, and can be used for further analyses (Tabachnick & Fidell, 2013).

The sample size for the factor analysis was 220, which is low, but can be sufficient (Tabachnick & Fidell, 2013; Yong & Pearce, 2013). Therefore, the outcome was investigated carefully. The calculation of the communalities gave an average of 0.58, which is acceptable (Tabachnick & Fidell, 2013). The values of the non-redundant residuals were all above 0.40 in the structure matrix. In the pattern matrix, there was only one value below 0.32, at 0.314. Additionally, there was a bend in the scree plot at 6 factors, and the items in the factors made sense. There were three items that did not have inter-item correlations above 0.3 and below 0.9 ('taking care of the dwelling', 'having the desire to return to my dwelling', and 'being with family') and could therefore have been deleted (Yong & Pearce, 2013). However, they were kept because other measures were good (determinant score = 0.003, Bartlett's test of sphericity < 0.00, KMO = 0.858, anti-image matrix diagonal numbers > 0.5, to reproduce distinct factors) (Meyers et al., 2006; Yong & Pearce, 2013).

Consequently, the six factors were named (see Table 3.2 for the factor loadings): Representation, privacy, sociability, appropriation, future, and rootedness.

Some factors had more items loading on them than others (representation and privacy had respectively 5 and 6, sociability, future, and appropriation only had 2 or 4). One item in appropriation scored negatively ('feeling that I belong with the dwelling'). This could be related to the sample considering that many respondents lived in temporary housing. The items in future, appropriation, and rootedness may not have been as relevant for this group as for, for example, an older, home-owning, group. The factors future, rootedness and appropriation were not as reliable as expected. Considering the items in each factor, the categories appear to be intertwined. Items in representation, privacy, appropriation, and rootedness, all indicate an interaction with the physical environment. For example, for appropriation, 'Adjusting the dwelling to suit my wishes' is not possible without moving objects, and, from rootedness, 'Having a hiding or storing place for things' requires space. 'Having and creating memories' related to both rootedness and sociability in the factor analysis, which could indicate that social events are often part of valuable memories.

TABLE 3.2 Factor analysis (pattern matrix) of the meaning of home items and their factor names

	Representation	Privacy	Sociability	Future	Appropriation	Rootedness
Cronbach's Alpha	0.84	0.71	0.54	0.37	0.19	0.60
Indicating my position in society	0.81					
Showing my aspirations and goals	0.76					
Representing the values I have	0.74					
Showing who I am	0.71					
Marking it as my dwelling	0.65					
Providing privacy		0.76				
Feeling safe		0.71				
Having my own place to sleep and eat		0.63				
Having power over what happens		0.58				
Giving me personal space		0.56				
Adjusting the dwelling to suit my wishes		0.33				
Entertaining guests/friends at the dwelling			0.78			
Maintaining good social relationships			0.77			
Building something for the future				0.68		
Being with family				0.64		
Taking care of the dwelling					0.72	
Feeling that I belong with the dwelling					-0.43	
Having the desire to return to my dwelling						0.79
Having and creating memories			0.34			0.54
Knowing everything about the dwelling	0.30					0.52
Having a hiding or storing place for things						0.31

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

TOC

3.3.2 Regression analyses of household characteristics

Household characteristics were entered as independent variables, with each meaning of home factor score as a dependent variable. Household type and sample group were coded with dummy variables (friends/flatmates, TU-students). Respondents living with a partner, a partner and children, or children only, were combined in one group: 'family'. Respondents who ticked 'other' and indicated they were living with siblings were grouped with 'living with parent(s)' into 'family'.

3.3.3 Regression analyses of activities & IEQ

The activities used were derived from Oseland and Donald (1993) and Tagg (Tagg, 1974), who developed a list for frequently carried out activities in the home. There were 15 activities in the list from Oseland and Donald (1993), categorised in 'peace and quiet', 'household chores' and 'relaxing'. The list from Tagg (1974) contains 30 activities, where some are more gender dependent (shaving, doing make-up), outdated (listening to records, combing hair), and have varying lengths of time (undressing, thinking). To limit the number of options in the questionnaire, only activities that were relatively general and related to a function of a room were included. Thus, for example cleaning, talking, and washing clothes and dishes were left out, while others were combined: Playing games, watching television, listening to music, and entertaining, would be 'relaxing' and 'receiving guests'. The question was which activities the respondents associated with sleeping, and with cooking. Additionally, there was a question on how often per week on average they perform the activities (eat, cook, study/work, relax, shower/bathe, receive guests). There was an open question on what they do to relax.

To measure preferences for IEQ, statements for office buildings (Bluyssen, 2014) were adapted to fit the home environment. Because indoor environmental building guidelines differ per function (e.g. the kitchen and bathroom require more ventilation, while rooms to stay require daylight access) (Ton et al., 2014), but not all dwellings have each of these functions in a separate room, the questions referred to the individual areas in the dwelling. The answer choices were 'not needed', 'would be nice', and 'essential'. The statements refer to the activities that are performed more than zero times a week.

The meanings of home factor scores were entered as independent variables, with the IEQ (fresh air, natural/sunlight, no sounds, clean surfaces, being warm) as dependent variables, per activity (eating, cooking, receiving guests, studying/working, relaxing, sleeping, taking a shower or bath). The answers to what people do to relax (the open-ended question) were first categorised and then coded as yes or no (watch something, read, music, hobby, social, dwelling maintenance, games). These were entered as dependent variables, and the meanings of home factors were entered as independent variables.

Subsequently, what IEQ were preferred for each of the activities (cooking, eating, studying/working, relaxing, receiving guests, sleeping, and showering/bathing) was explored with multiple regression analyses.

3.3.4 Sample

The link to the questionnaire was sent via e-mail to the following groups (only respondents who answered more than 80% were used for the analysis, which resulted in N = 222): University students (N = 141), permit holders) (N = 58), and starters (N = 23). For the subsequent analyses, only respondents who answered the relevant questions were included. Thus, the number of respondents varied slightly between questions and analyses.

The students were on average younger (m = 20.8) than the starters (m = 27.0) and permit holders (m = 26.6). Additionally, students lived on average with more people (m = 4.1) than starters (m = 2.4) and permit holders (m = 2.8). Gender was evenly distributed. Most of the respondents either lived with flatmates or friends (36%), alone (24%), or with their parents (23%).

Only 7% (N = 12) lived in owned housing, while others were renting from the private market (32%), social housing market (22%), or were in student housing (39%) (total N = 177). About 37% had a temporary rental contract. From the other 63%, 58% had the intention of moving in about a year, and 68% thought that their household might change within a year. From the twelve respondents who indicated they owned their dwelling, three lived with friends or flatmates and were still studying. Only five indicated they wanted to live there for more than a year, of whom two were living with flatmates and studying. Thus, the sample mostly consisted of people who were living in temporary dwelling situations.

3.4 Results

3.4.1 Regression analyses

First, how household characteristics contributed to which meanings of home were valued was investigated with regression analyses. Included characteristics were household type, sample group, gender, age, and whether they lived in shared housing (see Table 3.3).

TABLE 3.3 Regression coefficients for household characteristics and meanings of home

	Representation		Privacy		Sociability		Future		Appropriation		Rootedness	
	R^2	0.12*	R^2	0.16*	R^2	0.05	R^2	0.14*	R^2	0.07*	R^2	0.07
	ß	p	ß	p	ß	p	ß	p	ß	p	ß	p
Sample group**												
Starters	0.05	0.52	0.08	0.26	-0.01	0.92	0.06	0.42	-0.12	0.12	0.14	0.07
Refugees with a permit to stay	0.34	0.00*	0.08	0.32	-0.03	0.71	0.22	0.01*	0.04	0.60	0.16	0.05
Gender ***												
Male	0.00	0.98	-0.28	0.00*	-0.04	0.59	-0.03	0.71	0.09	0.20	-0.09	0.20
Household type****												
Living alone	0.02	0.84	0.27	0.00*	-0.20	0.02	0.11	0.19	0.09	0.28	0.08	0.36
Living with parents/siblings	-0.16	0.05	0.13	0.10	-0.10	0.24	0.22	0.01*	-0.14	0.09	0.00	0.99
Living with partner/children	-0.09	0.30	0.14	0.09	-0.13	0.16	0.04	0.64	0.04	0.68	0.03	0.75
Age												
	-0.14	0.11	-0.14	0.09	-0.04	0.65	0.10	0.23	0.00	0.97	-0.23	0.01*

* $p < 0.05$
** reference category is students
*** reference category is women
**** reference category is friends/flat mates

3.4.1.1 Relationships household characteristics with meanings of home

The permit holders were more likely to rate representation and future as important than the other respondents (see Table 3.3).

An additional analysis of variance (ANOVA) showed that for both 'Future' scale items, 'building something for the future language course students scored significantly higher than the university students. Regarding 'Representation', the respondents from the language course scored higher than the other groups for the items 'Showing my aspirations and goals', 'Representing the values I have', and 'Indicating my position in society' (see Table 3.4).

Women were more likely to rate privacy as important than men (see Table 3.3). Investigating the differences in items with an independent t-test, women scored significantly higher on 'Having power over what happens', 'Giving me personal space', 'Providing privacy', and 'Feeling safe' (see Table 3.4).

TABLE 3.4 Significant differences for individual items of meanings of home factors

Future	df	F	p	M	SD
Sample group					
Building something for the future	(3, 234)	3.14	0.03		
Starters				3,74	1.07
Students				3.26	1.11
Being with family	(3, 233)	8.38	0.00		
Refugees with a permit to stay				4.07	1.10
Students				3.30	1.11
Household type					
Being with family	(3, 230)	9.21	0.00		
Living with friends/flat mates				3.04	1.11
Living parents/siblings				3.95	0.91
Living with partner/children				3.89	1.12
Living alone				3.46	1.31

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TABLE 3.4 Significant differences for individual items of meanings of home factors

Representation	df	F	p	M	SD
Sample group					
Showing my aspirations and goals	(3, 232)	14.92	0.00		
Refugees with a permit to stay				3.82	1.05
Students				2.88	1.12
Starters				2.62	1.07
Other				2.32	1.00
Representing the values I have	(3, 232)	4.39	0.00		
Refugees with a permit to stay				3.66	1.33
Students				3.21	1.08
Starters				2.86	0.96
Other				2.91	1.07
Indicating my position in society	(3,232)	14.77	0.00		
Refugees with a permit to stay				3.46	1.28
Students				2.47	1.09
Starters				2.33	1.11
Other				1.91	0.92
Privacy	**df**	**t**	**p**	**M**	**SD**
Gender					
Having power over what happens	236	2.27	0.02		
Women				3.93	0.87
Men				3.66	0.97
Giving me personal space	235	2.39	0.02		
Women				4.44	0.66
Men				4.22	0.72
Providing privacy	236	2.15	0.03		
Women				4.34	0.71
Men				4.12	0.84
Feeling safe	235	3.87	0.00		
Women				4.52	0.59
Men				4.18	0.75
Household type	**df**	**F**	**p**	**M**	**SD**
Providing privacy	(3, 231)	2.68	0.05		
Living alone				4.44	0.73
Living with friends/flat mates				4.07	0.84
Feeling safe	(3, 230)	1.34	0.04		
Living alone				4.54	0.60
Living with friends/flat mates				4.21	0.79

Respondents who lived alone valued privacy more, and respondents living with parents and/or siblings valued future less (see Table 3.3). Specifically, respondents living alone scored the items 'Providing privacy' and 'Feeling safe' significantly higher than respondents who lived with friends and/or flatmates. Respondents who lived with parents and/or siblings valued future more (see Table 3.3), and an ANOVA indicated that specifically for the item 'Being with family' respondents who lives with friends and/or flatmates scored significantly lower than all the other groups (see Table 3.4). It is likely that their ideas about privacy influenced their decision to live alone, rather than the other way around. Reasons for moving (an open question in the questionnaire) that were given were: wanting to live with flatmates, being more independent, or wanting to live with a partner. This illustrates that who one wants to live with, is part of what the home means to someone.

The other household characteristics did not show any significant relationships for the overall regression analyses (see Table 3.3).

Summarising, there were some differences found in what meanings were valued most for gender, household type, and sample group (see Figure 3.1). The permit holders, who were following a Dutch language course, rated representation and future as more valuable than university and building academy students. Even though they were also in their twenties and enrolled at a higher education institution, they did show a different pattern for meanings of home.

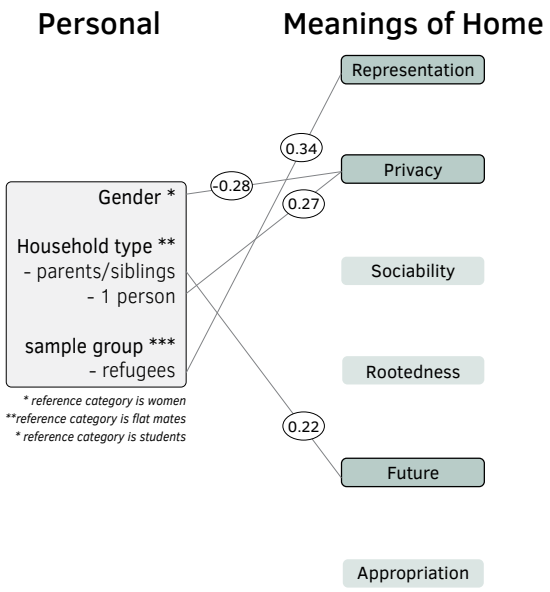

FIG. 3.1 Diagram of the relationships between factors.

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3.4.1.2 Relationships between meanings of home and activities

The second step explored how the meanings of home related to activities in the home. Seven activities in the home were investigated with multinomial regression analysis, considering frequency, what other activities were associated with an activity, and what people do to relax (see Table 3.5).

TABLE 3.5 Regression coefficients for meanings of home and frequency, adjacency, and type of relaxing for activities

		Representation		Privacy		Sociability		Future		Appropriation		Rootedness	
	R^2	ß	p	ß	p	ß	p	ß	p	ß	p	ß	p
Frequency													
Cooking	0.03	0.02	0.79	0.09	0.26	-0.10	0.14	0.02	0.74	0.08	0.27	0.09	0.23
Eating	0.04	-0.13	0.09	0.15	0.04*	-0.12	0.10	0.01	0.92	-0.02	0.76	0.01	0.93
Studying/ working	0.03	0.07	0.39	0.04	0.60	-0.10	0.15	0.05	0.52	0.03	0.66	0.11	0.16
Relaxing	0.05	-0.19	0.01*	-0.02	0.82	0.05	0.46	-0.06	0.39	-0.07	0.32	0.05	0.54
Receiving guests	0.15*	0.15	0.04*	-0.19	0.01*	0.27	0.00*	-0.02	0.73	-0.01	0.93	0.16	0.03*
Sleeping	0.04	-0.06	0.42	-0.04	0.57	-0.13	0.07	0.11	0.12	0.05	0.52	0.07	0.37
Showering	0.02	-0.09	0.24	0.00	1.00	0.06	0.42	0.08	0.28	0.01	0.93	0.09	0.21
Adjacency													
Cooking & receiving guests	0.10*	-0.06	0.38	-0.13	0.07	0.29	0.00*	-0.03	0.63	-0.01	0.91	0.05	0.52
Cooking & relaxing	0.06*	-0.08	0.27	0.07	0.32	0.02	0.72	-0.10	0.16	-0.03	0.68	0.20	0.01*
Sleeping & studying	0.07*	0.02	0.80	-0.13	0.08	-0.08	0.26	0.11	0.12	0.20	0.00*	0.09	0.21
Sleeping & showering	0.03	-0.01	0.88	0.031	0.67	-0.01	0.94	-0.13	0.06	-0.05	0.43	0.09	0.21
Type of relaxing													
Watch	0.06	-0.26	0.00*	0.03	0.71	0.06	0.36	0.06	0.39	0.03	0.69	0.06	0.42
Read	0.11*	-0.16	0.03*	-0.04	0.54	0.05	0.51	-0.21	0.00*	-0.15	0.03*	0.09	0.21
Music	0.02	0.08	0.32	0.02	0.78	-0.04	0.58	0.00	0.98	0.04	0.57	0.07	0.38
Games	0.03	-0.12	0.12	0.00	0.97	0.05	0.45	-0.09	0.19	-0.01	0.88	0.09	0.22
Social	0.06	0.12	0.12	-0.05	0.54	0.14	0.05*	-0.04	0.55	-0.08	0.24	0.08	0.28
Hobby	0.05*	0.02	0.82	0.17	0.03*	-0.09	0.19	-0.05	0.44	-0.12	0.08	-0.09	0.23
Activity	0.03	0.08	0.31	0.01	0.88	0.00	1.00	0.07	0.34	0.05	0.44	-0.12	0.10

*$p < 0.05$

From the activities performed at home, only frequency of receiving guests was significantly influenced by meanings of home. Respondents who valued representation, sociability, and rootedness received guests more often, while those who valued privacy received guests less often.

An inspection of which activities were associated with each other shows that respondents who valued sociability associated cooking with receiving guests more often, while those who valued rootedness associated cooking with relaxing more often. Furthermore, respondents who valued appropriation associated sleeping with working/ studying more often.

Considering what the respondents did to relax, the ones who valued representation, future, or appropriation read less often. On the other hand, respondents who valued privacy reported doing more hobby activities in the home. Therefore, valuing different meanings of home could mean that activities are performed in different ways, partly because of the meanings they are given.

3.4.1.3 Relationships of meanings of home and IEQ per activity

Examining IEQ and activities (see Table 3.6), no significant results were found for preferences of sound or warmth. For air quality there was one significant result of the regressions analysis for showering/bathing, but none of the *ß*-weights were significant. Regarding the investigated preferences for IEQ, only cleanliness and light appeared to vary based on how respondents scored on representation and sociability.

Of the activities investigated, cooking, eating, working/studying, and sleeping, did not show any significant variation in which IEQ factors were rated as essential, based on which meanings of home were valued. However, receiving guests, taking a shower/bath, sleeping, and relaxing, did show differences (see Figure 3.2). Considering that the factors appropriation, future, and rootedness were less reliable than representation, privacy, and sociability, it makes sense that in these regression analyses fewer significant results were found for appropriation, future, and rootedness.

TABLE 3.6 Regression coefficients for meanings of home and IEQ per activity

		Representation		Privacy		Sociability		Future		Appropriation		Rootedness	
	R^2	ß	p	ß	p	ß	p	ß	p	ß	p	ß	p
Light													
Cooking	0.04	-0.01	0.92	-0.04	0.64	0.10	0.15	0.05	0.50	-0.07	0.36	0.12	0.10
Eating	0.01	0.07	0.34	0.02	0.82	0.06	0.44	-0.04	0.54	0.04	0.60	-0.04	0.59
Studying/ working	0.02	0.06	0.47	0.01	0.86	0.10	0.16	-0.06	0.38	-0.02	0.77	-0.01	0.87
Relaxing	0.01	-0.02	0.79	-0.01	0.89	0.03	0.72	-0.05	0.45	-0.05	0.48	0.03	0.73
Receiving guests	0.10*	-0.18	0.02*	0.11	0.16	0.23	0.00*	-0.07	0.36	-0.14	0.06	-0.03	0.74
Sleeping	0.03	0.11	0.15	-0.07	0.32	0.06	0.42	0.06	0.41	0.09	0.17	0.03	0.68
Showering	0.11*	0.20	.01*	-0.04	0.55	0.00	1.00	0.23	0.00*	0.05	0.41	0.05	0.46
Sound													
Cooking	0.03	0.11	0.17	-0.06	0.47	-0.07	0.35	0.09	0.21	-0.06	0.44	0.00	0.97
Eating	0.03	0.11	0.15	0.00	0.97	-0.10	0.16	0.01	0.87	-0.11	0.12	0.02	0.83
Studying/ working	0.04	0.03	0.72	0.08	0.31	-0.11	0.12	0.10	0.16	-0.10	0.17	0.04	0.57
Relaxing	0.05	0.05	0.47	0.16	0.03*	-0.09	0.19	0.02	0.79	-0.12	0.09	0.03	0.71
Receiving guests	0.04	-0.04	0.59	-0.03	0.69	-0.09	0.24	0.04	0.56	-0.12	0.11	0.11	0.15
Sleeping	0.04	-0.02	0.75	0.08	0.30	-0.08	0.26	0.08	0.28	0.09	0.20	-0.11	0.14
Showering	0.03	-0.04	0.57	0.09	0.21	-0.07	0.36	0.12	0.10	0.01	0.93	0.05	0.53
Cleanliness													
Cooking	0.03	-0.14	0.07	0.09	0.23	0.05	0.47	0.06	0.43	0.01	0.90	0.05	0.49
Eating	0.03	0.05	0.52	0.06	0.39	0.03	0.69	0.05	0.48	0.09	0.19	0.06	0.38
Studying/ working	0.04	-0.10	0.22	0.13	0.10	-0.06	0.41	-0.09	0.21	-0.01	0.88	0.08	0.31
Relaxing	0.08*	0.25	0.00*	0.06	0.43	-0.07	0.32	0.02	0.75	0.05	0.44	-0.02	0.80
Receiving guests	0.03	-0.06	0.47	0.06	0.44	-0.02	0.82	-0.02	0.78	-0.05	0.52	0.14	0.07
Sleeping	0.09*	0.26	0.00*	0.01	0.89	-0.07	0.31	0.10	0.14	0.07	0.32	-0.05	0.47
Showering	0.11*	0.22	0.00*	0.05	0.47	0.00	0.95	0.16	0.02*	0.05	0.49	0.03	0.72
Air													
Cooking	0.02	-0.04	0.59	0.08	0.30	-0.08	0.29	0.04	0.62	0.09	0.20	0.04	0.58
Eating	0.04	0.07	0.38	0.14	0.07	-0.12	0.08	-0.01	0.86	0.03	0.67	0.04	0.58
Studying/ working	0.01	0.04	0.66	-0.02	0.84	0.03	0.71	-0.05	0.54	0.04	0.62	0.02	0.77
Relaxing	0.05	0.12	0.12	0.15	0.05*	-0.06	0.43	0.01	0.94	0.02	0.76	0.03	0.71
Receiving guests	0.03	-0.04	0.59	0.16	0.04*	0.02	0.78	-0.01	0.91	-0.03	0.71	0.02	0.80
Sleeping	0.04	0.05	0.54	0.14	0.07	-0.01	0.85	0.06	0.38	0.06	0.38	0.04	0.56
Showering	0.07*	0.15	0.05	0.07	0.36	-0.05	0.47	0.11	0.10	0.10	0.14	0.01	0.91

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TABLE 3.6 Regression coefficients for meanings of home and IEQ per activity

		Representation		Privacy		Sociability		Future		Appropriation		Rootedness	
	R^2	ß	p	ß	p	ß	p	ß	p	ß	p	ß	p
Warm													
Cooking	0.01	-0.03	0.72	0.11	0.14	-0.01	0.85	-0.03	0.72	0.04	0.55	-0.02	0.80
Eating	0.01	-0.09	0.24	0.01	0.85	-0.04	0.57	0.00	0.98	-0.01	0.95	0.06	0.39
Studying/ working	0.01	-0.10	0.19	0.04	0.57	-0.06	0.40	0.02	0.77	0.00	0.98	0.03	0.74
Relaxing	0.04	-0.16	0.03*	-0.01	0.86	0.03	0.71	-0.04	0.59	-0.06	0.40	0.08	0.26
Receiving guests	0.05	-0.20	0.01*	0.13	0.10	0.06	0.44	0.02	0.77	-0.06	0.44	0.01	0.88
Sleeping	0.01	0.04	0.56	0.02	0.75	-0.08	0.25	-0.01	0.93	-0.01	0.90	0.00	0.97
Showering	0.03	0.08	0.30	0.07	0.35	-0.04	0.56	0.03	0.64	-0.10	0.15	-0.12	0.10

*$p < 0.05$

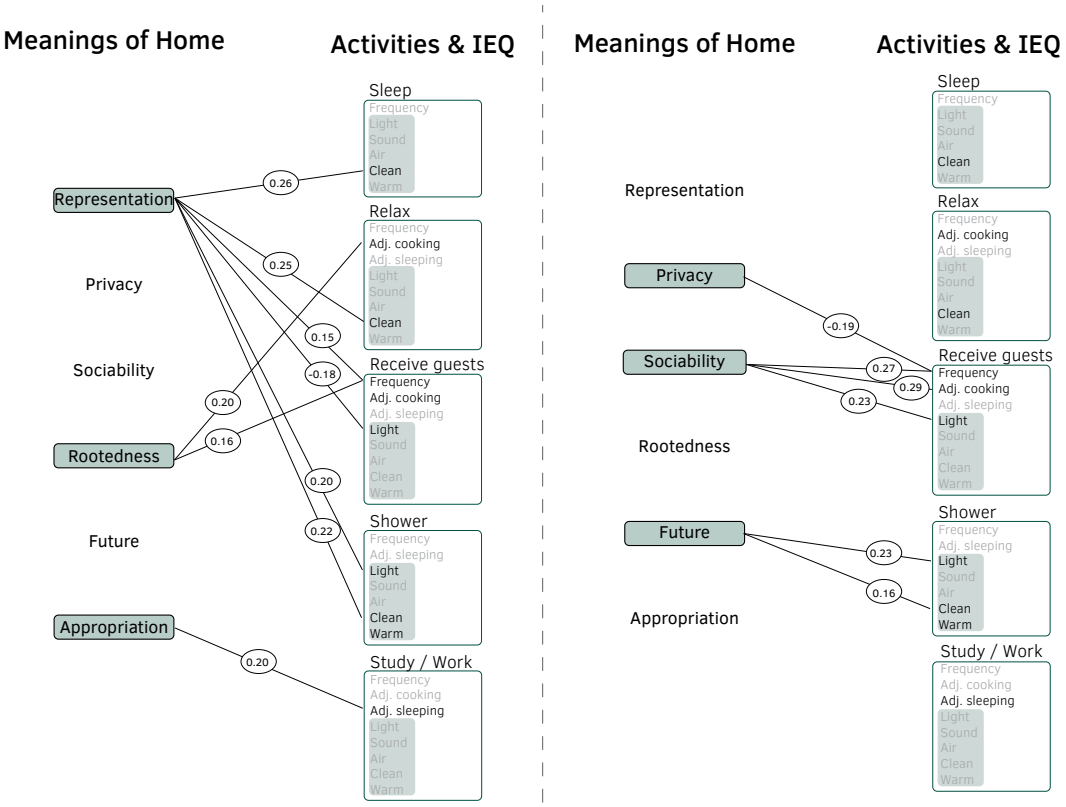

FIG. 3.2 Diagram of the relationships between factors.

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3.5 Discussion

This paper investigated whether different meanings of home can influence how homes are used, focussing on activities and preferences for IEQ. To start, a measurement for meanings of home had to be developed. Thereafter, meanings of home were related to household characteristics, activities, and preferences for IEQ.

3.5.1 Comparing meanings of home

Six factors were found for our sample with students, permit holders, and starters: Representation, privacy, sociability, future, appropriation, and rootedness. The distribution of the items in each of the factors was in line with the literature: Representation included items such as status and values; Csikszentmihalyi and Rochberg-Halton (1981) described that objects in a dwelling can be regarded as representative of the owner's goals, where objects signal status and social hierarchy. Privacy related to items that indicate control (Altman, 1976). Rootedness related more to the perspective of time passing, and links to the body of research on place attachment, where familiarity with the environment plays a role (Twigger-Ross & Uzzell, 1996). On the other hand, 'Future' was a separate factor, indicating that it might be necessary to separate temporal qualities into the past and future.

With a scale for meanings of home it becomes possible to compare groups, such as renters and home-owners (Groves, 1996; Kearns et al., 2010), but also students and permit holders, or simply individuals independent of which group they are. Not all meanings of home might be equally important, also within a group. Being able make comparisons between dwellers helps with understanding how someone's current situation affects their meanings of home. Knowing how meanings are transferred to the dwelling could be informative when existing housing is assigned or when new housing is designed, either new-built or transformed. This would likely increase satisfaction with the dwelling. Furthermore, this might help identify what could be done to improve temporary housing for students, permit holders, and starters.

3.5.2 Sample group

The permit holders valued representation more than the students or starters, although they were also in their twenties and enrolled at a higher education institution. This could be because they have different cultural backgrounds and past experiences. They might feel a stronger wish for their home to show that they are like everyone else, have expectations of the future, and at the same time are trying to distance themselves from their atypical journey to the Netherlands. Caia et al. (2010) found that post-disaster dwellers were more satisfied with their temporary dwelling when it looked like a house rather than a refurbished container. Considering that the permit holders valued representation, they might regard their dwelling more like a home if it looked more like a house.

3.5.2.1 Gender

The women in the sample valued privacy in the home more than men. This could be a result of today's society where women are still treated differently than men and that women retreat to their home to feel safe and in control, either due to specific personal experiences or a more general feeling. Women who were victims of domestic abused tended to value security and stability in a home (Woodhall-Melnik et al., 2017). This raises the question whether the difference found in this research is due to some women in the sample who experienced domestic abuse or if it is indeed a more general tendency. Considering domestic violence statistics, in high-income countries the prevalence of having experienced some type of domestic violence as a woman, is almost one in four (Javier & Herron, 2018). It is unlikely however, because of its universality, that the design of a home directly contributes to this number. Nonetheless, the changing position of women in society has led to housing designs with more open spaces (Ozaki, 2003). Still, it is unclear if women use their dwelling differently from men and more research is necessary to understand why these differences in meanings of home appear before design recommendations can be made.

3.5.2.2 Age

Age was not associated with rootedness, which seems counterintuitive. Most of the respondents were aged between 20 and 30, had left their parents' home and found their own place, perhaps placing less importance on rootedness than either younger or older people. Research shows that this age group is focussing on their future life, at least concerning house buying (Feijten et al., 2003), which could explain why rootedness and future are not important; most of them are not rooted nor know where they will be in a few years. Another explanation could be that rootedness is less important when you are aware that housing is temporary; length of residence has been found to predict levels of place attachment (Lewicka, 2011). Dwellings and rental contracts could be designed in such manner that it is not necessary to move out when someone's situation changes, which might make it easier to invest financially, emotionally, or physically, in a dwelling place.

3.5.3 Meanings of home, activities, and IEQ

3.5.3.1 Activities

How the respondents received guests depended on what home meant to someone. Rapoport (1982) theorised based on his and other research that there is more to an activity than the activity itself. This supports the findings from the analyses that sociability and rootedness influenced receiving guests and that preferences for a space varied when different meanings of home were valued. Likewise, it is consistent with research from Rechavi (2009) on the use of living rooms who found that activities that take place there vary in spatial requirements. Additionally, a study on a temporary changeable home for students showed that engaging in social activities can increase a feeling of attachment to the dwelling, even when the stay is temporary (Thomsen & Tjora, 2006). This supports the finding that sociability influences receiving guests, and that the requirements for a space might be different when sociability is important for someone.

Lindberg et al. (1987) found that dwellings were valued more positively if they had attributes that facilitated everyday activities of that person. Increasing the size of a room for example was found to be related to a higher instance of relaxing, inviting friends, and giving parties, leading to happiness, freedom, and togetherness. A space may derive its quality more from how flexible a space is than purely the amount of it.

This corresponds with the concept of affordances (as defined by Gibson (2014)), where each person can see different ways of using something depending on who they are, including personality, experiences, and physical characteristics.

Designers could think about how spaces can be arranged so that there is space for different types of activities, especially receiving guests, without interference. This might make dwelling spaces more flexible and thus suitable for more different people.

3.5.3.2 IEQ

Some activities in the home, such as cooking, affect the indoor environmental quality more than others. Depending on how these activities are ideally carried out, the ideal indoor environmental qualities can vary. However, our research did not find significant differences for eating and cooking, although these were expected (Daniels et al., 2012; Wolfson et al., 2016). Further research with more detailed questions on IEQ for cooking and eating or a more varied sample might explain these findings.

Key differences for this sample in what a home means for someone and how he or she would use it, were found for both cleanliness and light, for receiving guests, sleeping, relaxing, and taking a shower or bath, and the factor of representation. Sound and thermal aspects may not be as noticeable as cleanliness and light and, therefore, might not have shown any significant differences in preferences for an activity, depending on the meaning of home. For which activities this was the case seemed to depend on what residents want others to see, also in spaces not usually visited by guests. Another possibility is that differences in preferences for sound, air and thermal aspects were influenced by other factors (Bluyssen 2020) that we did not ask about.

Harris and Sachau (2016) found that cleanliness was linked to the personality trait ‘openness’ and is used to form an impression of a person. This raises the question whether people living in ‘cleaner’ dwellings are more open, or if they are only perceived that way. Perhaps the visitor feels more welcome when there are fewer personal traces in the dwelling. More options for how to light spaces and to store or display possessions could be considered to improve the design of temporary dwellings.

3.5.4 Strengths and limitations

This study was the first that measured differences in meanings of home and related these to home-activities and IEQ preferences. There were significant but limited relationships found between meanings of home, household characteristics, activities, and preferences for IEQ. Practical improvements would be to have a larger sample and more similar group sizes, and to test all relationships at the same time with Structural Equation Modelling. Additionally, the number of items in the factors future, appropriation, and rootedness could be increased to improve internal validity, because they only consisted of two or four items (Tabachnick & Fidell, 2013). Another improvement would be to include more personal factors, for instance current and past experiences of a home environment, because they can affect one's meaning of home (Darrah & DeLuca, 2014) and what is preferred (Wolbring, 2016).

Using vacant buildings for (temporary) housing in Europe could decrease housing provision problems such as available land, neighbours opposing new developments, and the speed of building. Whether this can be a long-term solution might depend on the quality of the housing and on if there are any consequences for the temporary residents, for example the feeling of being in between dwelling places, less opportunities to invest, or less attachment to the neighbourhood. Additionally, this research only included residents in the Netherlands and there could be differences between countries, especially considering culture and preferred IEQ.

Summarising, the scale developed in this study to measure meanings of home should be tested with a wider age range and other housing situations to further explore the scale and its consistency.

3.6 Conclusions

Currently, designers and planners of housing in transformed buildings are unaware of how meanings of home affect how students, permit holders, and starters on the housing market, want to use that dwelling. This study investigated how students', permit holders', and starters' meanings of home are related to which activities are performed and what preferences they have for IEQ.

For our sample, meanings of home were categorised into six factors: Representation, privacy, sociability, future, appropriation, and rootedness. Household characteristics slightly influenced how much each of these factors was valued; representation was valued more by refugees, privacy more by women and respondents who lived alone, and future more by respondents who lived with parents/siblings and by permit holders. The factors also influenced how much light and cleanliness the respondents preferred for relaxing, receiving guests, and taking a bath or shower. Differences between the sample groups were significant, but minimal. Therefore, thinking of designing an apartment for one group, such as students or refugees, might not be the best approach. Home could mean different things within that group and thus require different designs; it could be a shelter, a space to socialise or be alone, or a representation of one's identity and ideas about the future. Specifically, relaxing and receiving guests were affected by meanings of home, and these deserve more attention in the design and policy process. For example, in a studio apartment, space that could function as either storage or additional seating would be recommended to accommodate multiple and flexible uses as admittedly, not all students, all permit holders, or all starters, will have the same needs and desires. The measurement of meanings of home we created could be useful to formulate design recommendations for different user groups than the ones we investigated, and further testing on all groups could make it more universally applicable. However, despite our limited sample of 220 participants we were able to specify which aspects of home design need more attention to make a temporary dwelling more like home.

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4 Experiencing temporary home design for young urban dwellers

‘We can’t put anything on the wall’

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The previous chapter found that meanings of home are related to activities, indoor environmental qualities, and housing preferences. However, to provide architects and building owners with information to help them design better housing, this is insufficient. The current chapter explores the issue from a qualitative perspective and focuses on the “how and why” rather than the “what”, regarding meanings of home. Fourteen participants of the questionnaire participated in in-depth interviews, and provided both verbal and visual data on how they engaged with their (temporary) home. The interviews were analysed using Interpretative Phenomenological Analysis, which focusses on the experiences of people. Together with an analysis of photos the participants made and drawings and photos of the floorplans of their homes made by the researcher, we found three ways in which people appropriate their homes: they do this by familiarising, organising, and managing the place.

ABSTRACT A significant number of young people live in temporary homes, which are designed to fulfil basic needs and provide space for normal activities. However, it is unclear what those basic activities are. Moreover, the indoor environmental quality is often left out of the meaning of home, although activities and objects can affect its experienced quality. We therefore verbally and visually explored how young temporary dwellers appropriate and experience their homes, including the indoor environmental quality. Fourteen young adults took part in semi-structured interviews and photographed their most used as well as their favourite place. The interviews were transcribed and analysed following an interpretative phenomenological analysis. The experiences of appropriation in the home were connected to the physical environment through an analysis of the photos and floor plans (sketched by the researcher) using an architectural analysis from the user perspective. The outcome showed that the young adults appropriated their home in three ways: by familiarising the place with objects and "normal" activities, organising where things are and when they happen, and managing the indoor environmental quality through activities and objects. It is concluded that qualitative and visual analyses can assist with making recommendations to improve the design of temporary housing.

KEYWORDS indoor environmental quality; home; activities; appropriation; temporary housing

4.1 Introduction

People under 35 in the Netherlands move on average within five years, while people of 45 and over stay for more than 15 years (Blijie et al., 2013). The intention to move within two years is also stronger for younger people, with more than one third of people younger than 35 having the intention to move compared to less than one fifth for people of 35 and over (de Groot et al., 2011). The likelihood of moving increases when the move is part of where someone expects to be at a certain point in life (de Groot et al., 2011). Thus, for people under 35, living somewhere for less than five years seems to be the norm. At the same time, the majority of this age group, when living as a couple, is looking for a family house to buy (Lijzenga et al., 2019). Unfortunately, it is difficult to find appropriate and affordable housing due to supply and policy issues (Boelhouwer, 2020). Another difficulty is that this shortage of supply leads to waiting lists for social housing, and some people did not have the time to advance on the waiting list but are in direct need of housing. These could be for example new students, starters on the housing market, and refugees who received a permit to stay. Consequently, traumatised and tired refugees are housed in temporary tents so they do not need to sleep on chairs (*Asielzoekers in Ter Apel brengen nacht door in tenten*, 2022).

It is unclear to what extent this temporary housing can provide permanence and appropriation which are two of the most often found meanings of home (Benjamin et al., 1995; Despres, 1991; Mallett, 2017; Moore, 2000; Sixsmith, 1986).

From the perspective of post-disaster programmes, temporary housing, compared to temporary shelter, should "allow the return to normal activities, i.e. work, school, cooking at home, shopping, etc." and provide this for up to a few years (Abulnour, 2019, p. 12). The problem is, however, that many temporary housing solutions are designed without knowing what 'normal activities' are or how residents want to appropriate their temporary home (Félix et al., 2013). Moreover, theories on home and its meanings do not address how these meanings interact with the physical aspects of a dwelling, despite the emphasis contributed to appropriation of the home environment. The indoor quality of a home depends on multiple factors, one of them being the environmental quality: the thermal, acoustical, air, and lighting quality inside the home. Together, these factors affect the residents' comfort and health. Unfortunately, research looking at the relationships between IEQ and home meanings simultaneously is uncommon as it becomes either too complex to measure all contributing factors and how they respond to each other, or the factors cannot be measured properly (for example, the spatial lay-out of a building, private/public

connections, and building occupancy) (Mujan et al., 2019). Therefore, models of IEQ lack data and research approaches to include more abstract concepts, such as residents' interaction with their dwelling (Schweiker et al., 2020).

Bluyssen (2020) proposes the environment model (Figure 4.1), which includes a direct relationship with occupant behaviour to better match occupants with buildings. An example is given of actions of school teachers to improve IEQ in classrooms through questionnaires (Zhang & Bluyssen, 2021), which is a start of understanding the complex relationship between meanings and IEQ.

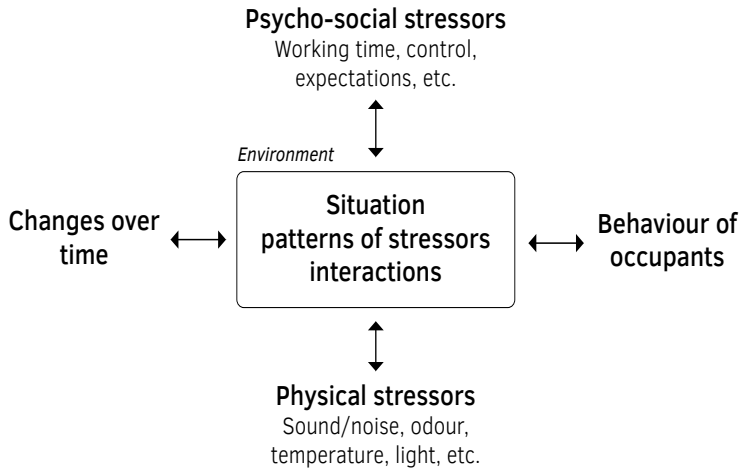

FIG. 4.1 The Environment model (From Bluyssen, 2020)

Theories of home as well as indoor environmental quality could benefit from including the interaction with the dwelling to improve the design of temporary dwellings. Considering that many people are on the move due to war, climate change, or other uncertainties, without enough affordable and permanent housing available, it is important that housing has a positive effect on physical and mental health.

In this paper we use qualitative and visual analysis to explore how young dwellers in the Netherlands interact with their temporary dwelling and how this relates to their meaning of home. For this paper, we focus on indoor environmental quality, and semi-fixed and flexible features in the dwelling as part of the interaction with the physical home. As such, we make a first step in linking indoor environmental quality and meanings of home, contributing to our current understanding of both concepts.

We will briefly describe what research exists on (temporary) home and indoor environmental quality before moving on to the method where we outline how and why we used a combination of qualitative and visual analysis. In the results and discussion, we provide excerpts of the interviews outlining contributions to the existing theories, and discuss how the results from this research could inform dwelling design.

4.1.1 Appropriating the (temporary) home

Appropriation is the act of changing the home, which in turn has an effect on the person who changed it (Korosec-Serfaty, 1985). This occurs, for example, through control, displaying objects, regulating use by others, and caring for the place (Altman et al., 1985). Frequent moving as a result of temporary living is described as 'temporary stabilisation' in qualitative research on young people in temporary homes (Rampazi, 2016). The interviewees went through two steps after they moved in: personalising (adding personal items to make the room more like them), and organising (finding places, moments, and participants for daily practices). If their 'new' identity could not be accommodated, they would find a new home. Sometimes the intention to move was a response to differences in preferences between residents in how the home was organised, for example, setting up and following cleaning schedules with flatmates, and sometimes it was a feeling that the home did not fit with their own perceived identity (Rampazi, 2016). The process of home-making is described as attachment and detachment happening at the same time(Cai & Su, 2020).

The temporary home is part of a 'journey to the next destination for adventure and something new' (Cai & Su, 2020, p. 16). Even though the home is temporary, its meaning is important for daily practices and shaping someone's identity. Marcus (2006) describes the home as a mirror of the self, where the home reflects someone's identity. The home can be changed by adding and removing objects, and by rearranging already owned objects. This would not change how someone perceives him or herself to be, but it would afford newness and a shifted focus without financial costs (Garvey, 2001). The meaning of home is not the same for everyone (Overtoom et al., 2022), but there are common denominators. These are based on the ideal notion of home, but nonetheless worth mentioning (Barrett, 2023; Mallett, 2017): Security, permanence, identity, and control (in these or different wordings) (Despres, 1991; Marcus, 2006; Moore, 2000). Consequently, being able to appropriate the home, as an indicator of identity, is an integral part of its meaning (Altman et al., 1985; Feldman & Stall, 1994; Korosec-Serfaty, 1984; Smith, 1994).

4.1.2 IEQ and appropriation behaviour in the home

Adjusting the indoor environmental quality (sound, light, air, and temperature) is not part of the definition of appropriation. This is remarkable, because many objects have an effect on it, for example, curtains and lights. Preferences for indoor environmental quality may vary for different people and situations (Bluyssen 2020), and to what extent preferences can be realised depends on physical characteristics of the home environment. In a study in Korea it was found that residents moved big furniture against walls to reduce sounds from neighbouring apartments, and that curtains were used more often to control heat than privacy (Lee et al., 2011). Another result was that residents were less satisfied with their apartment if they experienced less control over the indoor environmental quality (Lee et al., 2011). Factors such as type of building unit and ethnicity (Dosumu & Aigbavboa, 2019), and personal control (Sarran et al., 2020) have contributed to reported overall comfort in homes, indicating that the design of a housing unit and how residents interact with it is worth looking at. There is limited research available that looks at how residents interact with their home to adjust IEQ. User behaviour is sometimes a rather minimal concept, for example, it is defined as smoking or not, number of occupants, CO_2 generation, and a ventilation rate (Pereira et al., 2020), what actions residents take to control a ventilation system and what windows and doors they open (Lițiu et al., 2019), and what actions residents take to regulate the indoor temperature (Stopps & Touchie, 2020). When only actions are investigated, the reasons for doing so are missed. The Theory of Planned Behaviour (because the actions in this case are planned) includes attitudes, subjective norms, and perceived behavioural control (Ajzen, 1991). This information might be very valuable to design better homes and could explain differences in residents' behaviours, otherwise not found.

4.1.3 Linking IEQ and meanings of home methodologically

The perception of indoor environmental quality is usually measured with objective comfort parameters. However, if we want to know about the experience, we should look at the conscious processing of what is perceived, and objective parameters would not suffice. Therefore, we used Interpretative Phenomenological Analysis (IPA) to understand how the home, including the indoor environment, is experienced and shaped by starters on the housing market, students, and refugees with a permit to stay. IPA investigates how something is experienced by someone, and focuses on process and meaning usually by means of semi-structured interviews (Lyons & Coyle, 2007; Smith et al., 2009).

Because we investigate the experience of indoor environmental quality, we developed new approaches (Schweiker et al., 2020), and as such made a first attempt at qualitatively documenting the home environment and how residents interact with it. For architects it can be difficult to identify with users and translate user experiences into design solutions (Van der Linden et al., 2019), as they typically analyse floorplans to understand how designs are used (Lewis et al., 2018). Thus, to increase the usefulness of the research for designers, photos and floor plans were analysed to connect experiences and appropriation to the design of the dwellings.

Summarising, the research questions are the following:

- **How do young temporary dwellers experience their temporary home?**
- **How do they interact with the physical qualities of the home?**

4.2 Materials and methods

4.2.1 Participant recruitment

This study was part of a PhD project investigating how temporary homes for urgent home seekers can be improved. The participants were recruited after participating in the first part of the project, which was a questionnaire on IEQ, home activities, meanings of home, and preferences. They were contacted via e-mail for an interview date if they had indicated an interest at the end of the questionnaire. Sixteen (out of 266) were interested, but two of them did not reply to the email for an interview date, leading to a total of 14 participants. Saturation was reached after three or four interviews in each group (students, starters, and refugees with a permit to stay) and therefore we did not contact more people. IPA does not require a large sample, but rather a more detailed analysis, which is why we deemed the total of 14 sufficient for our investigation. The interviewees were told beforehand that the goal was to gather information on how they use their home and what it looks like.

All participants received a 10-euro voucher to compensate for effort and time. The refugees with a permit to stay were told beforehand that they would receive one as a thank you, for the starters and students this was unexpected.

4.2.2 Study participants

At the time of the interviews, the students Peter, Mark, Noelle, and John were second year BSc architecture students at Delft University of Technology, Frida had unenrolled before the interview took place. None of them lived in Delft previous to their studies, but Mark and Noelle had lived in student housing before. Frida and Mark lived in a studio apartment. Peter, Noelle, and John, lived in student housing, sharing the kitchen, bathroom, and sometimes living room.

Tim was a MSc student at the University of Utrecht and had worked between the BSc and MSc. He had lived in different student housing. He was planning to move out of his current student housing next year and find something more ‘grown-up’ to live with his partner. The other starters were enrolled at a MSc architecture in Groningen, working four days and studying one day a week, for four years. Richard and Marie

had bought their first house, Adam and Fabio lived in private rental housing. Marie, Richard, and Adam lived with a partner at the time of the interview, Fabio was planning to move in with his partner in the near future.

The refugees with a permit to stay were all enrolled at a language school in Delft or The Hague. They had different nationalities (Syria, Afghanistan, Palestine, and Iran). Yashar, Ali, and Zaid lived in social housing with a sibling. Tannaz lived with her partner, in housing provided by his employer. The interview with Zaid was in English, the others were in Dutch.

4.2.3 Data collection

The interviews were held in the interviewee's living spaces and recorded with a voice recorder (Delft, The Hague, Utrecht, Schiedam, and Groningen) from October 2018 to February 2019. The photos were made with a digital photo camera. Afterwards, floorplans were sketched on paper to get an overview of the space. Participants were visited only once, and, apart from one interview where the voice recorder stopped recording, not contacted afterwards. The interview time was 35 to 50 minutes, with an average of 45 minutes. The total time of a visit was between 45 minutes and 1.5 hours.

4.2.4 Interview procedure

After entry, both would sit down in the living area. The researcher would explain what would happen during the interview, including the use of the voice-recorder and photo camera.

The interview was semi-structured with questions on how the home was appropriated, what activities are done, and how the indoor environmental quality was experienced. The interviews started with an easy question ('how long have you been living here?') and ended with 'what makes this house a home for you', before advancing to the photos. Depending on the content and the conversation, questions were rephrased, skipped, added, or changed order. Not everyone automatically talked about what home meant for them. Therefore, this specific question was added to the interview schedule. Some wanted to give a tour of the house, while others only showed the common/living room.

After answering all the questions, the interviewees made two photos (one of the place most used, and one of something he or she was most proud of). If necessary, the researcher made an overview photo. Originally, 'overview' photos were not planned, but after the first interviews it became clear that the photos did not always provide an overview. Lastly, a short checklist on building type was filled in. Only the researcher and the participant would be present, not counting the occasional visit of a partner or flatmate.

4.2.5 Analysis

The semi-structured interviews were manually transcribed and analysed following IPA. The floor plans were sketched on paper using the photos and from memory.

4.2.5.1 Interviews

The interviews were analysed following the IPA approach, which focusses on the experience of the individual (Smith et al., 2009). Consequently, each transcript was fully analysed before the next, and each had its own themes. When all transcripts were analysed, overarching themes that recurred were explored. The transcripts and themes were subsequently used to analyse the photos and floor plans. The transcripts of the interviews with the starters on the housing market were analysed first, followed by the students, and lastly the refugees with a permit to stay.

The analysis was done as follows: Comments and remarks that stood out to the researcher were written down next to that part of the transcript, using mostly the interviewee's words. These could be, for example, reasons for doing something, moods, opinions, or recurring words. Once the entire transcript was analysed, the researcher went over it again to relate notes to each other and write down questions that arose. When all the interviews were analysed, the notes were entered in an excel sheet, which was printed, and per interviewee cut into cards with on each card one note. The cards were sorted on common themes, which were then summarised on new cards. For example, people, phase, proximity, agreements, noise, adjustments, ignored, and clothes (John). For each transcript a schema with relations between themes was made, which were compared conceptually within and between the groups. The original line numbers from the interview transcripts that formed the basis for the remarks were included up to the cards to be able to retrace the steps if necessary (see Figure 4.2).

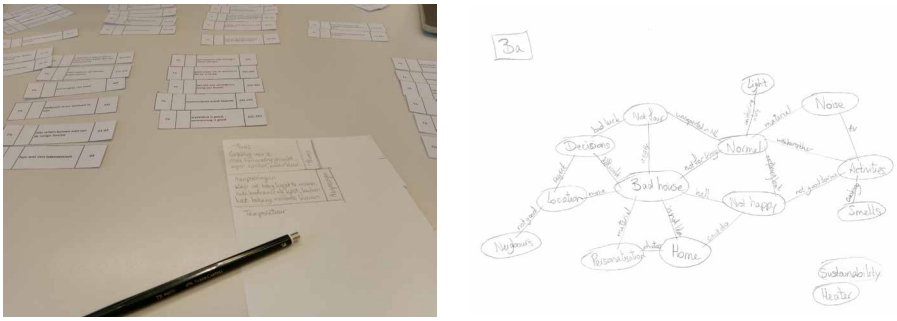

FIG. 4.2 On the left, the cards with notes are sorted for an interview, creating the themes. On the right, a schema with the relationships between the themes is shown.

The themes (summarised at this stage as home, social, cleanliness, indoor environment, personalisation, lay-out, other) emerged during the analysis, though the researcher was familiar with the topic and may have unconsciously drawn from previous knowledge. A second coder, who did not have previous knowledge of the topic but was familiar with analysing interviews, checked the analysis. A few note cards were added, and some themes from the interviews were related in different ways. Overall, though, there was consensus.

4.2.5.2 Drawings

When the analysis of the transcripts was finished, the photos and floorplans were analysed. The themes from the interviews that were used were places to sit or put things down, objects added to the room (books, clothes, decoration, etc.), indoor environmental management, direction of view when sitting, and conceptual zones in the home. For each set of photos and floorplan, the same drawings were made. The photo(s) that gave the best overview of the space were traced by hand on transparent sketch paper, after which the topics were coloured with a marker on separate drawings. Copying the photos by hand made the drawings more similar, so it would be easier to compare the interiors between the interviewees. This is a method often used in architecture to analyse the design of buildings and environments from an architect's perspective (Leupen, 1997). Analysis drawings can highlight different aspects that increase the conceptual understanding of a building and provide a way to compare buildings (if analysed in a similar way). Here it will be used to analyse the user-perspective. When all drawings were finished, the things that stood out were documented in an excel sheet (see appendix C for all the photos, drawings, floorplans, and comments).

4.3 Results

The results are described following the overarching themes that were found: familiarising (home, sharing activities, personalisation, owned objects), organising (filled space, plants, favourite activities, dinner table), and managing (cleanliness, indoor environment, comfort).

4.3.1 Familiarising

4.3.1.1 Home

The living space is adjusted in a way that was compatible with how one perceives themselves:

In a way it is part of student life of course, that you live somewhere with flat mates, and do fun things with them. (Noelle)

If the living space is not compatible with ideas about where one should live, adjusting it is pointless and creates a feeling of powerlessness and being outside of society (see also Figure 4.3):

FIG. 4.3 Yashar's photo of where he is the most shows a small, impersonal living room. He was unable to take a photo of something in the house he was proud of.

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When you are not happy, you will, you will do not anything. Because you are not happy. (Yashar)

Sometimes the living space is both compatible and incompatible when the space conforms with ideas on where one should live but the participant does not consider themselves to be that person yet (see Figure 4.4 and 4.5):

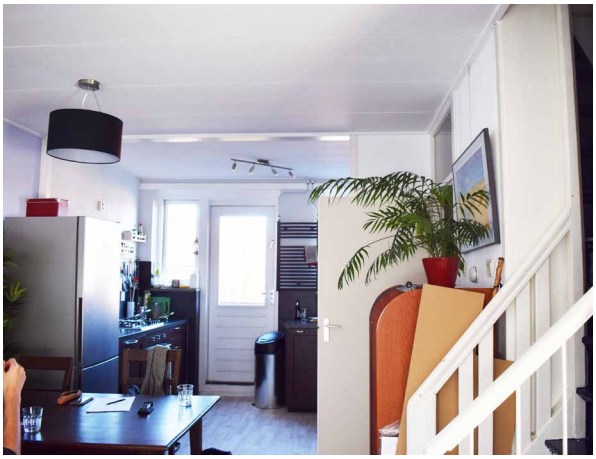

FIG. 4.4 Richard replaced the kitchen, painted the walls, and brought all his furniture. When his girlfriend moved in, they rearranged the furniture and added more shelves. He explained that looking back, he should have thought about an overall design scheme for the room.

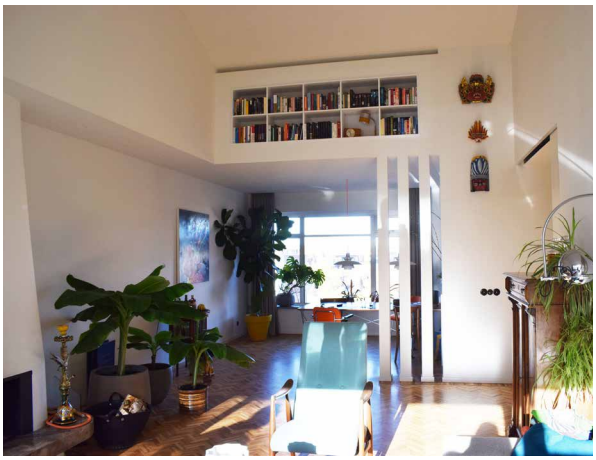

FIG. 4.5 Marie and her husband renovated the apartment completely and had a clear idea beforehand of what it should be like and how it should function.

Well, I must admit that I find it easier to invite friends here than family, because with family I sort of feel that it should all be a bit neater, or homelier, and here it is, well, it still feels a bit student-like. (Richard)
That is, well, then I think that this house really is a house for adults. (Marie)

Another factor associated with compatibility was the idea that each move should be incremental in some way, always seeking an improvement from the current situation:

Back then the reference was just a student room, and then this is an improvement in many ways, and after, so now I live here, when I move to a new house, then this is my reference point, and I can try to improve on this. (Richard)

4.3.1.2 Sharing activities

In addition to being a place of how one perceives themselves, the home is also very much a social place, which can be controlled:

I don't need to run into other people, and also what I like about my own apartment, is that I can do what I want, and I can decorate it myself, and, yeah, it gives a sense of freedom in my mind. (Frida)

For most students, it is a place where "normal" social activities take place, where every social activity does not need to be planned in detail, but things happen spontaneously (see Figure 4.6):

FIG. 4.6 Peter's shared living room where people sit, play games, work, eat, and chat.

Yeah, that you do a lot of things together. And ehm, because of that I felt more at ease. Because it is nice to have people around that you can be with and do things with, just sit, play games, and those types of things. (Peter)

The older interviewees emphasised the social function less, possibly because they lived with a partner or planned to do so in the near future. Living with a partner might provide certainty that there will always be someone to share daily life with, which is not guaranteed for people living without a partner. A large part of the social place the home can be is not about receiving guests, but about being with familiar others who have equal access to the home place. Nonetheless, being able to receive guests is valued. Not having enough space or space for furniture to facilitate this can lead to feelings of being limited or lonely and can play a part in how much a place feels like home:

This [not having a dinner table] is not an issue for us, but when we have guests over, it is a bit of an issue, because there is not enough space. (Tannaz)

4.3.1.3 Personalisation

For some interviewees, home seemed to be incompatible with traces from earlier, nonrelated residents. These traces could be removed by painting the walls, adding wall decorations, lights, curtains, or furniture. Home is created, and continues to be created, with every adjustment:

The moment that you will clean and paint a new apartment, or house, or any place, then it becomes your own place. It is very strange. But then you really get the feeling of 'this is my layer, that I put over it, so now it is mine'. (Fabio)

How long someone expects to live somewhere has an impact on how much effort is put into personalising the dwelling and how structural the changes were (also considering ownership):

It feels a bit like a waste to do that [paint a mural] in a student room that you will leave behind. (Richard)
I doubted for a long time to paint the walls or not and, … it just didn't happen. It is not my personality. (Tim)

Noelle explained that if she had a place to stay for a longer period, it would make more sense to move her things:

And then maybe also move more things from my room in my parents' house to Delft, because there are a lot of things there, but they weren't useful to bring because I did not know how long I would stay here, because I know now that I would be here for only two months, it feels a bit like a waste. (Noelle)

John describes that the outlook of moving to another room made him decide not to change the carpet in the room:

At first, I already thought I would not have this room for long, because they [other flatmates] were saying that people would move on to other rooms, but they enjoyed their time, so they stayed a bit longer. Ehm, but yes, I could have done something about it, but I didn't. (John)

4.3.1.4 Owned objects

When an interviewee moves into a new living space, he or she brings objects he or she already owns, which can be functional, decorative, or difficult to further specify. These objects afford the owner recognisability, without necessarily having a conscious emotional connection with them:

And ehm, as long as it is good, there is the possibility that next time it is also taken along. So yeah, it is mostly about you have, and that, I find it a waste to get rid of it, because, well, it could be different. That would be a big step. (Adam)
That used to be my wardrobe. We all received an antique cupboard, and well, yeah, I have always had it. Now it is not a wardrobe anymore, but I would have never bought it myself, I just always took it along or something. (Marie)

4.3.2 Organising

4.3.2.1 Meaningful objects

Objects which are important emotionally are also displayed consciously (see also Figure 4.7).

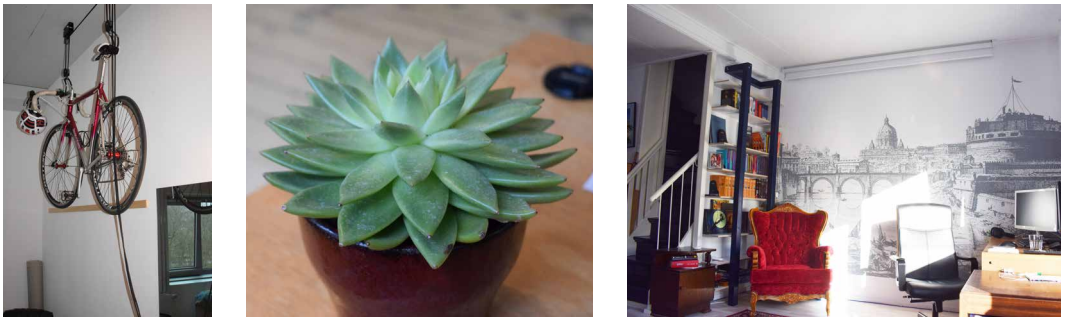

FIG. 4.7 Photos of what Mark, Noelle, and Richard are proud of.

That bike is part of that, and eh, yes, from around when I was fourteen, I have been busy with my sports, so that bike actually means quite a lot. (Mark)

Plants were often mentioned as being an essential part of the home interior. Only Yashar and Tim, who seemed less invested in their homes, did not have any plants on display:

It is also really the case that when I would invite someone, that I would say, look at my cool plant, or something. (Noelle)
At the moment it is mostly the plants that make it cosier. Without plants this is space is very empty, not a place that is lived in. (Adam)

4.3.2.2 Filled space

In addition to bringing already owned furniture and objects to a new living space, other furniture and objects are bought to fill it in a way deemed suitable, especially when the new space is larger than the previous one (see Figure 4.8):

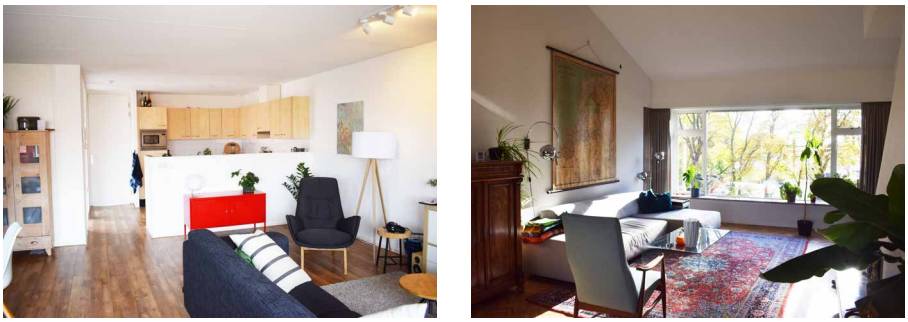

FIG. 4.8 The living rooms of Adam (left) and Marie (right).

Our previous house was very small, so we really had to, ehm, it was about a third of this place, so we had to buy really different furniture. And still people say, oh, your house is quite empty. (Marie)

Zaid, Ali, Tannaz, and Yashar were unable to bring any objects and acquired everything. Instead of bringing the exact objects or furniture to remind them of their previous living places, they made the space more recognisable in terms of how the home is used, where possible:

Yes, I think it is, ehm, the space of the living rooms. It is a difference actually. When I live alone it is enough, but it is ehm, in my culture I take care of my family, so your living space needs to be a bit bigger than one person. (Ali) (See also Figure 4.9)

Ehm, actually, yes, that floor covering, the carpet, we had thought of that before, that we would put down carpet, because that is normal for Afghan people, they just want something soft… (Zaid) (see also Figure 4.10)

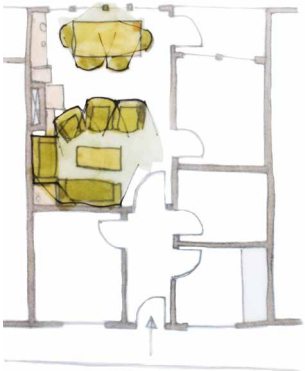

FIG. 4.9 Ali's living room shows the need to have enough space to sit and chat.

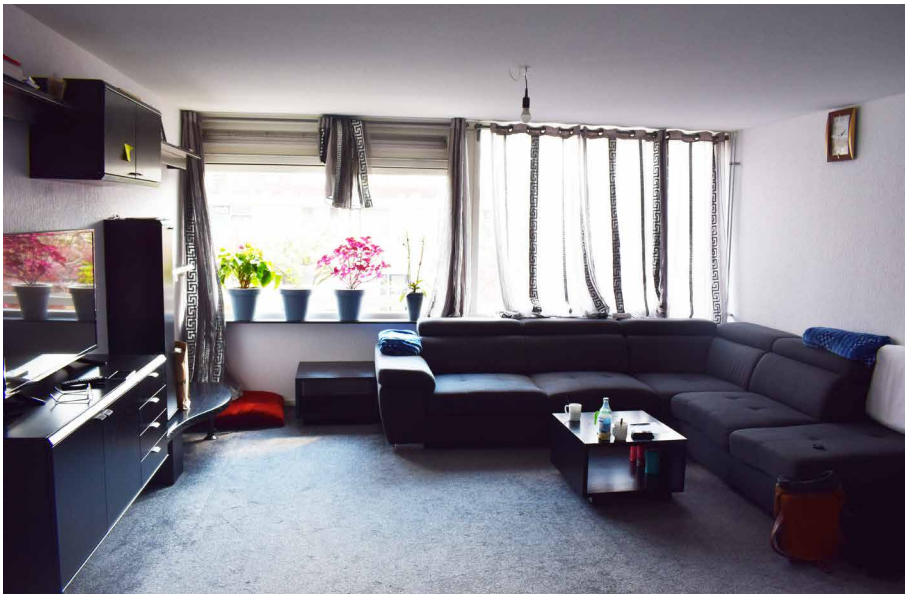

FIG. 4.10 Zaid's living room with carpet on the floor.

4.3.2.3 Favourite activities

The spaces the interviewees lived in were often conceptually divided into zones of where activities happen, even when the space consisted of just one room (see Figure 4.11):

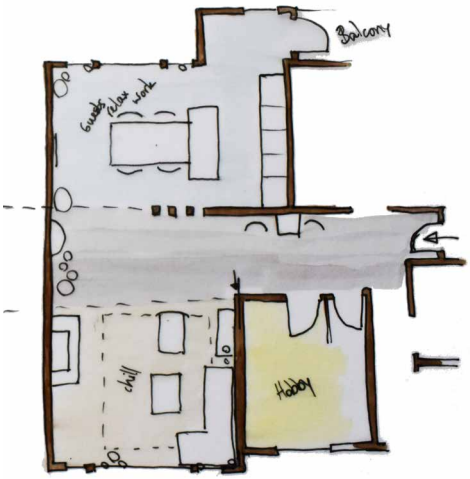

FIG. 4.11 Marie's apartment, where the kitchen (on the right) is the central space of the home.

When people are a bit tired, but actually only rarely, and also a bit the rest of the house. We are actually always sitting in the kitchen. Also because of the way of sitting, it is a bit more active. (Marie)

Sometimes, an interviewee stated that they could not do a desired activity because the space is unsuitable, which leads to the feeling of being limited and unable to solve the problem. These limitations are expected to play a role when looking for the next living space:

I play the violin, but I actually stopped doing that since I have been living here because every time I feel, well, a bit bad when I do that. (Marie)
It's a small place, they can't sleep here. If they sleep here, maybe one or two of them will sleep here and eh the rest will go back to their house, of course it is so small, and eh, yeah, my friends, yeah, something like that. And I live with my brother, I can't do, I can't do all that. (Yashar)

The bed is perceived as a private place, and by some, it is also used as a place to relax, while awake. For the interviewees who lived in a studio or had one private room, it was desirable to have some sort of separation between the bed and the rest of the room (see also Figure 4.12 and 4.13):

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FIG. 4.12 Mark's studio, where a higher bed could provide more living space.

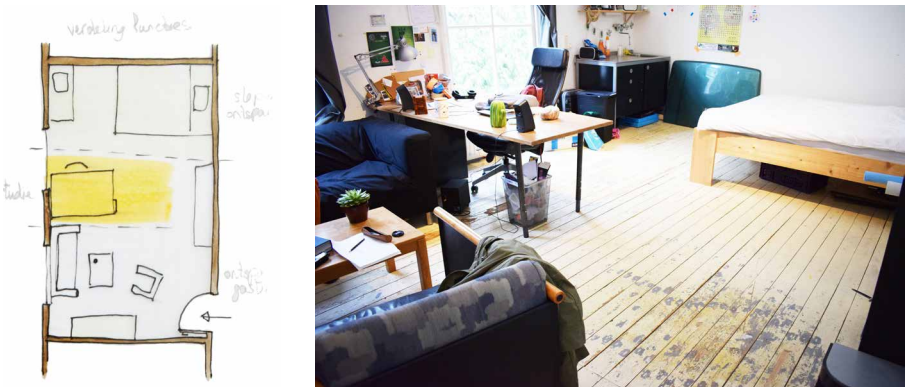

FIG. 4.13 Noelle's room, which shows separation between the sleeping and living area because of the distance.

It is just a thing meant for sleeping in. (Mark)
Because your bed is not only a place to sleep, but also watch series, and relax. (Tim)
That when I am here with my friends, then that sort of stays the sleeping area. That is really nice. (Noelle)

4.3.2.4 The dinner table

The dinner table is one of the most versatile objects, as it facilitates eating, working or studying, and receiving guests. Not having space for a dinner table seems to limit the feeling of functionality of the living space (see Figure 4.14).

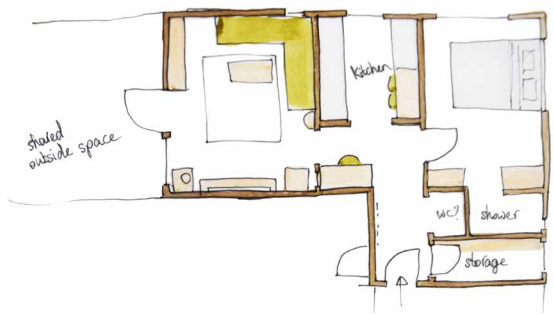

FIG. 4.14 Tannaz's apartment, which does not have space for a dinner table.

At this dinner table we are sitting not very often. Is has sort of become more of a work table sometimes. But at least you have the freedom to invite people over and have the option to eat normally from a table. (Richard)

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4.3.3 Managing

4.3.3.1 Cleanliness

Cleanliness was mentioned in the interviews with students, either as agreements that were made or as dissatisfying and a reason to find another place to live (see also Figure 4.15). Living in a place with people who have different ideas about cleanliness makes a place feel unhomely:

I wanted to have space, for example in the kitchen, and that I can clean it myself, because the bathroom was always very dirty, and for a short time that is okay, but only sometimes and not too long. (Frida)
I didn't really like being there then, so that was difficult for me, purely because of things not being clean. (Mark)

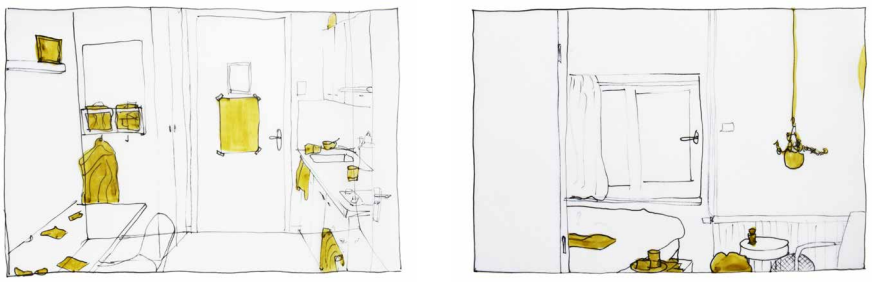

FIG. 4.15 Mark's studio shows relatively few items lying around on surfaces (the objects on the table were mostly from the interviewer).

4.3.3.2 Indoor environment

The indoor environmental quality is in itself not a determining factor in whether a house feels like a home:

At some point you learn to live with that. And I don't know if ehm, look if it really, if it really hinders you, then it becomes a hostile environment to put it bluntly and of course that goes against your 'home'-feeling. But then it has to be really bad before it reaches that point. (Fabio)

All interviewees mentioned problems with the indoor environmental quality, arrangement of spaces, building quality, or differences in preferences. They mentioned quick and simple solutions to improve a situation (blanket, draw curtains for warmth or against sunlight, open or close windows or doors, go to a different space) (see Figure 4.16). If there is no such solution, the situation is often endured:

FIG. 4.16 Tim's favourite spot—sitting on the windowsill, looking outside into the street. This window is, at the same time, a problem and solution to the indoor environmental quality.

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You quickly forget it. But then you would just put on a sweater and you would have blankets lying everywhere but a gas heater also has something cosy. I always like gas heaters, so that helps. And then a small carpet in front, that's nice. (Fabio)
When the window is open it is nice. Then it is okay. (Tim)

Not knowing whether neighbours are bothered by noise from some activities causes worry for most of the interviewees:

Because I do not know if I am too…, if my music is too loud or not, so then I am too careful, and then I feel like I am walking on my toes, afraid that people in my apartment would be talking too loudly. (Frida)
Then you are in each other's way with just about everything. So ehm, a bit more space is, well, then he doesn't sleep between the building models and I can at the same time do what I need to do. And that helps with that. That is why we moved here. (Adam) (see also Figure 4.17)

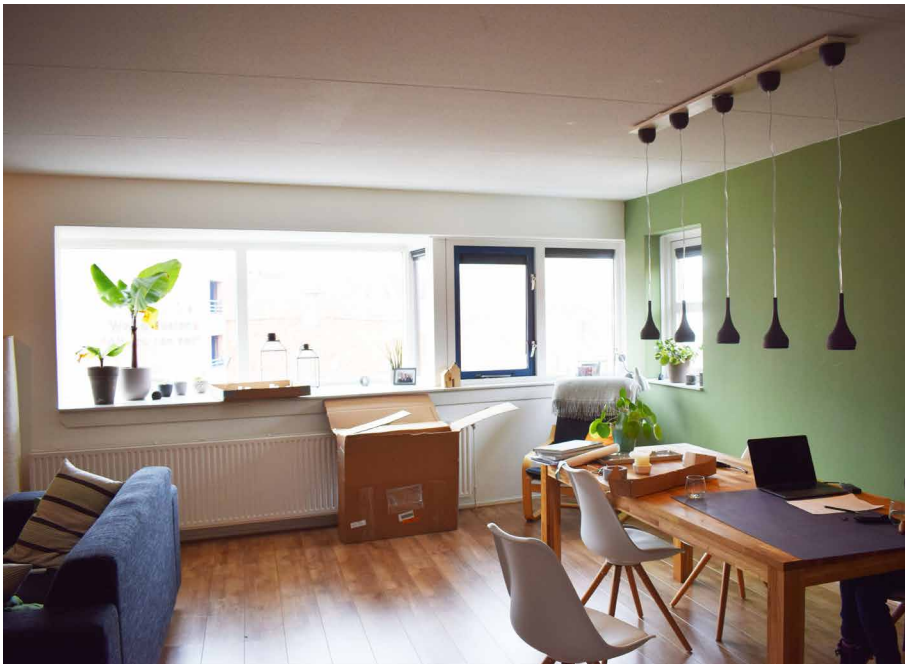

FIG. 4.17 Adam's living room, where despite having more space than in the previous place, model making tools and materials are still lying on the table but can be easily put to the side.

Standard lighting, if present, is perceived as unhomely, and if possible, had been replaced by the interviewees. Appropriate lighting then adds to the experience of home:

Because of smell, and. The right light, I can really make it mine. Yes. (Frida)
The first thing we did here, or what I just did, is say, no, go away with those lights, we buy other lights. I never turn on the ceiling lights. And that also creates a homely feel. (Fabio) (see also Figure 4.18)

FIG. 4.18 The chair that Fabio is most proud of, with added lighting.

Smells from cooking can be a problem when the space is also used for other activities and can lead to discomfort and conflict over what should be prioritised—food or smell:

You shouldn't cook things with a strong smell, no. (Fabio)
Well, I do have a hood, but I do open my windows often when I cook, to get some fresh air in. (Frida)

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4.3.3.3 Comfort

Energy use seems to be secondary to the function of home, though trade-offs are made. The interviewees did acknowledge that warmth costs energy. When heating behaviours seem to get "out of hand", rules are set up to decrease energy use. Additionally, energy use for heating is often part of a negotiation with flatmates between comfort, costs, and what is deemed a "normal" setting:

We have a deal now that you are allowed to keep the radiation on 1 when you leave for the TU, when you go away for the weekend you turn it off, and otherwise you need to pay 5 euro when someone finds out. And there is someone who actually checks that, who also checks if your lights are turned off, and other things like that. He keeps track of that with a list. (John)

To what extent it is possible to live sustainably is often linked with how the house environment is designed or organised:

I also don't know how energy-efficient this building is, and since the building is quite old, which are usually quite, eh, bad. (Noelle)
It's actually quite stupid, because I always thought in the beginning, I can't really do much, but actually we can do quite a lot, we just have to, eh, talk with the VvE (owners' association). (Marie)

4.3.4 Overarching themes

For the interviewees, the home is a place that both reflects one's identity and should improve through time. It is a place where one can do "normal" activities (watching TV, eating, cleaning up, etc.) with familiar others without the need to make an appointment. Additionally, the experience of home includes what it literally feels like to be inside: the light, the smells, the temperature, and how these can be managed. Curtains, lights, and blankets are not only objects to look at but can also change the indoor environmental quality and what the space feels like. Making a home is done in several ways, which can be roughly divided in familiarising, organising, and managing the space.

Familiarisation with the space occurs when residents remove unwanted traces from previous residents and add their own layer. The colours and materials of walls and floors should be compatible with one's identity, which can be more difficult if traces of previous residents are visible. This identification layer consists of new wall and/or floor coverings, lighting, cleaning, and/or owned furniture and other objects. Home is also a place that actively and passively changes throughout one's life to support one's goals. The development of home can be marked by a life stage, for example, going to university or living with a partner. Development can also be marked by a discovery about oneself, for example, how much time alone or cleanliness is valued. With changes in identity, the home environment and its perception changes. Objects are taken along, not because they are emotionally significant, but because they are part of one's history; not taking them would require a conscious decision that they are no longer part of that identity. Consequently, the home is constantly changing, similar to one's identity.

Organising the space entails the assignment of spaces for everyday and favourite activities, placing a dinner table, and filling the space with objects such as furniture and plants. The objects in the home are organised to create space for activities. For some, this means cooking while entertaining guests, while for others, it means cooking in a separate space to reduce smells. The interviewees wanted a dinner table to receive guests, eat, work, and do other activities. When there is no space for a dinner table, residents sometimes find it more difficult to organise their activities. If favourite activities require space that is not available, the participants perceive this as being held back. For example, when sound insulation is not sufficient to play an instrument without neighbours complaining or when an activity is deemed too dirty (for example, bike repairs). Objects help to organise and assign activities to a space. Therefore, a space that feels empty can make it harder to feel like home.

Managing the space entails making the environment suitable for the activities one wants to do through keeping the space clean and making it comfortable (including temperature, light, sounds, smells, and touch). Rearranging furniture is also part of controlling the indoor environmental quality. For example, the temperature is managed by changing the thermostat on radiators but also with clothes, cooking, opening or closing windows and curtains, and sitting under a blanket away from windows. Changing one of these affects the others too. Therefore, the decision on how to reach an acceptable temperature depends on multiple factors. One can choose to sit on the sofa with a blanket in the evening because it feels cosy, while in the morning, one takes a hot shower. Both increase the body temperature but feel very different psychologically. Being able to choose how to manage the indoor environment adds to the feeling of home.

The refugees with a permit to stay placed more emphasis on the temporariness of the house and how it is a place to start, but not live, their “new” lives. Additionally, they focussed more on finishing their education and getting their family life in order so that they can move on to the next chapter. This might be because they could not choose where to live but had to accept whatever was available at that time. Focussing on their studies could have been a way to manage the opportunities for the home they might choose later.

4.4 Discussion

4.4.1 Contributions to the understanding of home

One of the recurring meanings in research on home is permanence (Altman et al., 1985; Despres, 1991; Korosec-Serfaty, 1984). Exploring temporary residents' experiences suggests that permanence can also be transferred to homes via owned objects. These objects can be ordinary and become relevant only because they are familiar. This is in line with research from Swan et al. (2008), where clutter and its organisation was found to be part of home. Other research on housing with multiple occupation similarly described the abundance of use objects, rather than display objects, where the researchers, maybe falsely, concluded that this was due to the lack of storage space and nature of the housing setup (Barratt & Green, 2017). Especially for refugees with a permit to stay space for use objects may be important because it is all they have.

Lighting behaviour of residents has already been linked to individual characteristics and preferences, the social situation, activities performed, the physical setting, and time (Gerhardsson et al., 2019). Our research suggests this might also be the case for behaviours related to sound, temperature, and smell in the home. If the home is to be a mirror of the self (Marcus, 2006), 'home' should be understood not as static, but as constantly changing because home needs to adjust to the current moment.

Research on home and how it is used can sometimes be supported with photos (Barratt & Green, 2017) or floor plans (Lewis et al., 2018). It might be beneficial to use both (if time permits), because the photos made by the residents and the floor plans made by the researcher provided a better understanding of what home is and how it is appropriated. Additionally, the analysis drawings were used to compare living spaces and identify design features that facilitated appropriation and certain home activities, which might be useful to translate research results into design recommendations.

Regarding research methods for IEQ, qualitative approaches can help with understanding residents' motivations for controlling the indoor environment and how satisfied they might be with their home. The interviews help explain the context of perceived quality, which would be lost with qualitative methods. For example, their previous home and expectations of their future home played an important role in how satisfied the interviewees were in their current home. This understanding would have been lost had the focus been on the typical IEQ parameters.

4.4.2 Limitations

Three different groups were part of the research (students (5), starters (5), and refugees with a permit to stay (4)). The number of interviews per group could have been larger, but time constraints made this difficult, and for IPA the depth of analysis can make up for smaller numbers (Smith et al., 2009).

Eight of the students and starters were students of architecture, which may have made them more aware of the design of their home environment. One master's student described how he would have done things differently had he looked at it professionally. The refugees with a permit to stay did not have the possibility to place things they already owned, since they had to leave everything behind. Talking about home can be difficult, especially if it is not in your first language. For the refugees with a permit to stay, it may have been especially difficult to express nuances in their feelings and experiences. Additionally, houses in the Netherlands are different from where they came from, which may have required more adjusting behaviours to make the living spacefit with their identity

The interviews and photos were made of the space where the interview took place. It is possible that the interviewees tidied up their home before the visit, so that the photos are not fully representative of everyday life. Sometimes this was a (shared) living room, other times it was a bedroom or studio apartment. The interviewee's shared spaces were appropriated less than the non-shared spaces. Not having seen the whole apartment may have affected the findings. Similarly, not having visited all the spaces in a home had an impact on the completeness of the floor plans. For example, it was impossible to analyse the photos and floor plans for John because of the lack of appropriation and not having seen other parts of the house (he lived in a house owned by a student society).

4.4.3 Future directions

This research found that living spaces are made into a home when there is an opportunity to familiarise, organise, and manage the indoor environment. These three aspects can be used to inform designers. For example, the need to provide spaces for already owned objects and pastime activities, and options to manage the indoor environment could make a place easier to make into a home. Future research on (temporary) homes and how they are used should therefore include everyday objects and adjustments to the indoor environment. When analysis drawings of photos and floorplans are used in research on home, this could help with translating

the research results into a more useful format for designers. Which specific analysis topics are most useful may depend on the design question and requires more research, particularly on how the results could be translated into generalised design recommendations. Using a method of analysis that is understood by design professionals might make the results more accessible for them, and hence, research findings more used.

4.5 Conclusions

This paper explored how temporary homes are experienced by students, starters on the housing market, and refugees with a permit to stay, with a focus on appropriation and indoor environmental quality. The research elaborated on the meaning of home and IEQ by specifically including the appropriation of the indoor environment.

We found that objects, decorations, and the people the home is shared with are used to familiarise, organise, and manage the home as part of someone's changing identity. When this is not possible, the living space feels less like a home. Moreover, objects and activities interact with indoor environmental quality and thus seem to be part of the concept of home. Most objects in the home are there because they simply are, not because they have a salient emotional meaning.

Analysis drawings of photos and floor plans can support interviews. Including such images could make it easier to translate experiences of home to the physical environment and make the research more accessible for building design professionals. However, this research was just a first step, and more research is necessary to generalise the outcome.

Supplementary materials

The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/buildings13051318/s1, Booklet S1: Floor plans, Photos & Analysis drawings.

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5 Understanding ‘home’ for unknown dwellers of temporary low-income housing

Exploring connections between meanings and activities

Under review at the Journal of Environmental Psychology.

This chapter describes how the research on meanings of home, activities, and preferences for IEQ (Chapter 3) and how students, starters, and refugees accepted for permanent residency appropriate their (temporary) home (Chapter 4) is combined. The six different meanings of home (appropriation, representation, rootedness, future, privacy, and sociability) and the ways in which homes are appropriated (familiarising, organising, and managing) formed the input for a workshop with professionals. Linking meanings and activities forms the basis of a framework to know more about the users architects are designing for and as such could create better temporary housing designs.

ABSTRACT Due to a shortage of housing in the Netherlands, vacant buildings are transformed temporarily to provide extra living places for people with a low income. For them it can be difficult to turn their dwelling into a home because they lack time and resources. These groups are different from the architects and are also hard to reach for user input. Knowing more about how meanings of home relate to what these people do to make their dwelling a home, could lead to better designed housing. Previous quantitative and qualitative research formed the basis for an associative workshop for professionals. The data from the workshop was visually represented. Even though people might engage in the same activities, how and why they do varies depending on the meanings the activity relates to. For example, people who value appropriation would make changes to their home to reflect their personality, while people who value representation aim to reflect a public image of themselves. Furthermore, the type of activities people engage in to make a home can be linked to different time frames. These results might help architects understand the differences in user needs and thus have an effect on their designs for temporary low-income housing.

KEYWORDS Activities in the home, meanings of home, interaction with home environment

5.1 Introduction

Building new housing in urban areas can be problematic because of the limited space available, while at the same time, existing buildings are sometimes vacant for many years. In the Netherlands, there are regulations in place to guarantee building quality, from the perspective of for example, materials used, amount of daylight, air quality, and size (Ton et al., 2014). However, it is unclear how these temporarily transformed dwellings can be meaningful and positive homes, from both the occupant and the designer perspective. Meanings of home are studied in environmental psychology and other social sciences (Barrett, 2023; Lewis et al., 2018; Mallett, 2017), but not with direct useful results for architects. Steigemann and Misselwitz (2020) for example, investigated the spatial practices of Syrian asylum seekers in reception centres. They found that people would change what little furniture was there to fit their ideas of daily life, and they would add furniture and furnishings to make the place more like home. They were following a framework of home developed by Brun and Fábos (2015) differentiating between home as 1) day-to-day practices, 2) values, traditions, memories, and subjective feelings of home,

and 3) an institutionalised set of norms and regulations. However, these frames are not very helpful for design, as for example 'values, traditions, memories' can consist of very different values, traditions, and memories; they are centred around the type rather than the difference within the frame.

Decision makers follow specific steps when deciding to transform a building (Geraedts et al., 2017). The user-perspective is not specifically included in any of these steps, which complicates matching user wants and needs with the design of transformed buildings. Residents could benefit mentally if meanings of home and how they intend to use their home are taken into account in the design (Brown et al., 2014; Tester & Wingfield, 2013; Worsley et al., 2023). There is some information available on what users prefer in a home from an architectural perspective (Verhetsel et al., 2017), but user's preferences can be contradictory and undetermined which makes it difficult to implement in the design of temporary buildings. For example, residents of temporary housing in Zurich, Switzerland, appreciated the central location but disliked the quality and temporality of the place (Debrunner & Gerber, 2021) while in other research the residents indicated that being able to invest and personalise the dwelling is important (Brun, 2016).

Users are sometimes consulted via participatory design, which ranges from only informing people to actually making the design (Sanoff, 2006). However, these processes take time and often only make sense when the prospective residents are the ones involved (Sanoff, 2006). In many projects the prospective residents are not known, and for temporary housing solutions it would only be possible to involve the first residents. Value-oriented design can mitigate some of the needs of prospective users, through an evaluation of user needs and connecting those to design aspects, in a so-called Indirect User Participation Design Process (Moghimi et al., 2017). However, this tool assumes that every person values each quality equally.

There are differences between people and consequently, in their preferences and what they do to make a place their home (Barratt & Green, 2017; Cai & Su, 2020; Easthope, 2014; Swan et al., 2008). Likewise, there are differences in what home means for someone. Meanings that are considered important by someone affect what this person does in and with a home, in addition to context. For example, when a person knows the stay will be short, this person is less likely to invest financially, emotionally, or physically in the space (Cai & Su, 2020; Caia et al., 2010; Rampazi, 2016). For a house to become a home it is important for most people that they can invest in some way. A good basic design may make it easier to do this without needing to increase the personal (and/or financial) investment too much.

Home can be part of someone's identity and help with organising life. Therefore, it is important that a house can be a home. Nonetheless, developers and designers currently create building transformations for people they do not know or identify with. Research on user needs rarely translates into specific design solutions which are used by designers (Pirinen & Tervo, 2020; Van der Linden et al., 2019). For example, bathrooms and kitchens are often changed by the residents when moving in to a new place (Femenias & Geromel, 2019), though in the Netherlands new housing often comes with standard new kitchens and bathrooms. Users can attach meanings to a home by interacting with it (Clapham, 2011; Swan et al., 2008; Tanner et al., 2008). Serious games have been used as a virtual communication tool between users and architects to bridge this gap (Lo et al., 2017; Pirinen & Tervo, 2020), but again, in this case, the users are known.

Architects prefer information that is practical, visual, non-determining, and provides some background information, and they would like to have additional tools to engage with users (Van der Linden et al., 2019). Furthermore, architects sometimes think that engaging with users has limited results, although information on everyday activities and a less general image of the user would be appreciated (Van der Linden et al., 2018). Even when there is knowledge available, communicating this to designers in a way that makes it useful for them can be problematic because it cannot be integrated in the 'designerly way of knowing' (Tvedebrink & Jelić, 2018). Consequently, there is a need for architects of temporary housing to better understand the users, and specifically the differences between people in what home means to them and what they do at home.

In two previous studies we investigated 1) quantitatively how people differ in what meanings of home they find important and 2) qualitatively what people do to make a home. The first, quantitative, study included a questionnaire with 21 items (Table 5.1) on the meaning of home, which were extracted from other qualitative research on the meaning of home (Altman et al., 1985; Aziz & Ahmad, 2012; Despres, 1991; Dovey, 1985; Korosec-Serfaty, 1984; Lawrence, 1987; Moore, 2000; Seamon, 1979; Sixsmith, 1986; Smith, 1994). Additionally, there were questions on activities in the home and preferences for indoor environmental qualities. The total sample was 220, among which were students, starters on the housing market, and refugees with a permit to stay, all residing in the Netherlands. A factor analysis of the 21 statements identified six meanings (First column in Table 5.1) of home which varied between respondents. These were representation, appropriation, rootedness, future, privacy, and sociability (Overtoom et al., 2022).

TABLE 5.1 Statements to identify differences in importance for meanings of home.

Meaning	Nr.	Statement
Representation	1	Indicating my position in society
	2	Showing my aspirations and goals
	3	Representing the values I have
	4	Showing who I am
	5	Marking it as my dwelling
Privacy	6	Providing privacy
	7	Feeling safe
	8	Having my own place to sleep and eat
	9	Having power over what happens
	10	Giving me personal space
	11	Adjusting the dwelling to suit my wishes
Sociability	12	Entertaining guests/friends at the dwelling
	13	Maintaining good social relationships
Future	14	Building something for the future
	15	Being with family
Appropriation	16	Taking care of the dwelling
	17	Feeling that I belong with the dwelling
Rootedness	18	Having the desire to return to my dwelling
	19	Having and creating memories
	20	Knowing everything about the dwelling
	21	Having a hiding or storing place for things

The second, qualitative study, included fourteen interviews with students, starters on the housing market and refugees with a permit to stay, which were analysed using Interpretative Phenomenological Analysis. The interviewees were asked about the objects they brought, if and why they made any changes to the environment, what behaviours and activities they do at home, and if these related to indoor environmental quality. From this data, we created a table with quotes from the interviews and organised these in what the interviewees did to make it home. There are multiple actions people take to make a temporary house into a home. For example, one of the interviewees talked about not liking traces of previous residents on the walls, and that he had painted the wall. Others indicated that when they moved in the walls were freshly painted which was “nice”, another interviewee mentioned that she did not like white walls and wanted to paint her walls yellow but was not allowed to do so. All of these quotes relate to familiarising oneself with the home and personalising it, but they elicited different actions and feelings from the residents. The quotes were analysed bottom-up, in that the quotes were ordered on similarity, after which the groups of quotes were named in statements, sub-themes, and themes.

The main themes are familiarising, organising, and managing (subsequently named FOM-behaviours, see Table 5.2 for further details) (Overtoom et al., 2023).

TABLE 5.2 Categorisation of what people do to make a home.

Familiarising	Organising	Managing
Home	Meaningful objects	Cleanliness
Sharing activities	Filled space	Indoor environment
Personalisation	Favourite activities	Comfort
Owned objects	Dinner table	

In the current study we intend to link the meanings of home with what people do at home to increase our understanding of how home is used, depending on its meanings. This should make it easier for others, including architects, to imagine how homes are used by unknown residents and subsequently create better fitting temporary home designs without needing to contact the future residents. The research question we asked ourselves was the following:

How are (meaningful) activities in the dwelling associated with meanings of home?

5.2 Methodology

5.2.1 Study design

A workshop was held to link what people do at home with meanings of home, based on previous studies with students, starters on the housing market, and refugees with a permit to stay, in temporary housing (Overtoom et al., 2023; Overtoom et al., 2022). The participants of the workshop were colleagues of the authors and had previous experience of thinking about the design of houses and/or their indoor environmental quality. There were six participants with different cultural backgrounds. No personal data or individual answers was recorded to the extent that it would be traceable, not even for the researcher. There was no risk whatsoever for the participants in taking part in this workshop. The participants agreed to the informed consent, and at the end of the workshop they received a voucher as a thank you for their time.

5.2.2 Materials

5.2.2.1 Sensitising questionnaire

Before the workshop, the participants were asked to rate 21 statements on meanings of home (Overtoom et al., 2022), after which they could see their own score on each of the six meanings of home. The purpose of answering the short questionnaire was to make the participants more familiar with the topic and more aware of their own feelings towards their home. Lastly, they were asked if the result reflected their feelings. The results of the questionnaire were not further analysed as the goal of the questionnaire was to make the participants familiar with the meanings of home. The goal of the workshop was to connect meanings and actions regarding home in general, not for what the participants did personally.

5.2.2.2 The workshop sheets

A table with what people do to make a home and meanings of home was created (using Table 5.3, without the number of quotes included that were used to construct the statements, and columns with the meanings of home were added). The statements for the workshop were actively phrased to make it easier for the participants to see them as a behaviour rather than as wishes or desires. The statements could be based on just one quote, though often there would be more. When there was only one quote, it was considered important enough to include if it was different from other quotes and depending on the context it came up in during the interview. Some quotes could not be categorised and were left out. For each of the statements included in the table the participants pointed out which meanings of home the statement might relate to. The final table for the workshop was spread over three horizontally oriented A3-sheets, with one main-theme per page.

TABLE 5.3 Statements within the FOM-behaviours and association with meanings of home (Appropriation, Representation, Sociability, Privacy, Rootedness, and Future).

Main theme	Sub theme		Statements	Nr. of quotes incl.
Familiarising	home	1	living with familiar people in good spirits	6
		2	having no control over environment and activities makes a bad home	5
		3	knowing where things are and how things work	10
		4	(re)placing familiar things and furniture	6
		5	feeling that a house is good when the location is good	3
		6	doing normal activities at home	3
		7	feeling free to be	7
		8	adding your own layer by changing things	5
		9	connecting home to position in life	14
		10	experiencing insecurity due to uncertainty	2
	sharing activities	1	having effortless access to people	9
		2	balancing people's needs and wishes	14
		3	sharing effort(s)	3
		4	benefitting from other people	4
	personalisation	1	increasing effort to make it your own as you expect to live there longer	12
		2	removing traces of previous residents	3
		3	adding lights, fabrics, and furniture for homeliness	14
		4	making your own changes	21
		5	not allowed to make changes feels limiting	13
		6	lacking money influences available decisions	7
		7	learning and dreaming of future changes	11
		8	figuring out what needs adjusting and how	12
		9	finding agreement on changes is a process	3
		10	having expectations of living environment	10
	Owned objects	1	feeling less connected as a result of having fewer things	4
		2	seeing furniture as a part of the person	10
		3	meaning and/or relevance of objects declines over time	6
		4	re-using gives satisfaction	2
		5	putting things on walls	3
		6	buying new things in bulk	3

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TOC

TABLE 5.3 Statements within the FOM-behaviours and association with meanings of home (Appropriation, Representation, Sociability, Privacy, Rootedness, and Future).

Main theme	Sub theme		Statements	Nr. of quotes incl.
Organising	**Meaningful objects**	1	connection to meaningful activity	3
		2	objects which social interactions	2
		3	being an individual	1
		4	objects which are connected to memories and stories	6
		5	having a connection to family (history)	7
		6	meaning brought through collections of things	5
	filled space	1	having a secluded space	6
		2	adjusting furniture to the space	3
		3	having a lay-out with related functions in proximity	19
		4	existing lay-out reduces connection	5
		5	work is not at home	4
		6	more space provides more freedom	11
		7	filling the space according to size	13
		8	everything happens here	4
	guests/dinner table	1	using the dinner table for work and/or guests	6
		2	not having guests in the bedroom	3
		3	needing to have space to receive guests	9
		4	cooking for guests	3
		5	being with friends outside the home	1
	(favourite) activities	1	having specific spaces for activities	4
		2	changes in being alone or together	3
		3	having privacy in bed	4
		4	having a place to relax	4
		5	being close to activities outside the home	6
		6	needing a space for 'various' activities	5
		7	cooking has a set of requirements	6

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TABLE 5.3 Statements within the FOM-behaviours and association with meanings of home (Appropriation, Representation, Sociability, Privacy, Rootedness, and Future).

Main theme	Sub theme		Statements	Nr. of quotes incl.
Managing	**cleanliness**	1	cleaning behaviour is affected by the environment	4
		2	cleaning provides fulfilment	2
		3	getting comfort and rest through clean spaces	8
		4	hiding things from view	4
		5	activities influence cleaning behaviour	3
		6	cooperating to keep things clean is difficult	9
	indoor environment	1	regulating sound, temperature, and air with windows	12
		2	being unable to escape from outside noise	11
		3	lighting type matters for feeling at home	1
		4	sunlight and views create happiness	7
		5	noise disturbs functioning normally	5
		6	being cold creates an unhomely feeling but is easily forgotten	11
		7	sounds from outside make you feel connected	4
		8	worrying about being too noisy	4
		9	air is too humid for the room	2
		10	needing to control smells from kitchen	4
		11	view is important but can limit the feeling of privacy	9
		12	being aware of energy costs	4
		13	frustrating when indoor environment is difficult to control	7
		14	it feels comfortable when it is warm enough	7
	creating comfort	1	changing habits to reduce noise	11
		2	reducing energy use as something you do or for money	7
		3	using clothes, curtains, blankets, and windows to create warmth	18
		4	checking each other's energy use	6
		5	opening windows for fresh air	12
		6	light and view control privacy and sense of space	8
		7	sorting waste as sustainable behaviour	2

5.2.3 Workshop

At the start of the workshop the participants were asked to briefly introduce themselves, and answer what they liked about their home. Next, the goal of the workshop was explained as validating the connections between meanings of home and what people do at home. This would help to better understand how people differ in what home is to them, and to use that information to support housing design (see also Figure 5.1, which was drawn up with this explanation during the introduction of the workshop).

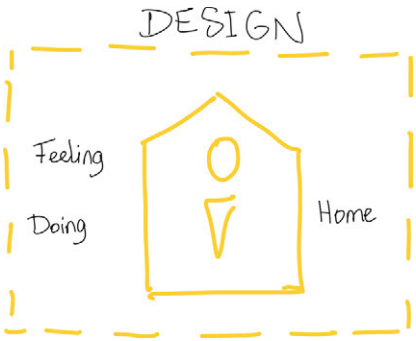

FIG. 5.1 In the workshop the head (feeling) and the body (doing) are connected to the house (what makes a home for someone), on a paper (to support design).

The meanings of home were succinctly described before the work started:

- **Representation:** Showing how a home is shaped to someone's identity;
- **Privacy:** Having control over what happens and feeling safe;
- **Future:** Investing in the future and being with family;
- **Rootedness:** Wanting to return, have memories and knowledge of the place;
- **Sociability:** Inviting people over and maintaining relationships;
- **Appropriation:** Maintaining the home and making it fit with someone's habits.

The printed table with the main themes, sub-themes, statements (the rows), and meanings (the columns) were handed out to the participants to read along and keep track of the process. The leader of the workshop read the statement aloud, after which the participants were asked to name the meanings of home the statement related to the most. If the *response* was unclear, questions like 'in what way' or 'can you explain how' were asked. If the *statement* was unclear, the leader of the workshop gave examples from the interviews that the statements related to, providing more background information and/or context. All statements were treated in this manner.

After the first theme ‘Familiarising’ there was a small break, then the workshop continued with the ‘Organising’ and ‘Managing’ themes until all statements were linked to meanings. The workshop took two hours and fifteen minutes in total. The participants named the meanings that were related to the statements according to them, and were asked to explain their choice if it was unclear. The researcher ticked the appropriate boxes in the table and sometimes wrote down an additional keyword mentioned by the participants, either relating to a meaning of home or the statement itself.

5.2.4 Analysis

The completed table was manually copied to excel including the comments, after which the results were displayed more graphically. For each of the themes familiarising, organising, and managing, results are presented in a figure (Figures 5.2 to 5.4 in Paragraphs 5.3.1, to 5.3.3, respectively), with on each side of the square or triangle the subthemes with the accompanying statements, separated with lines. Then on each side, there are six ‘lanes’; each for one meaning. When a statement relates to a meaning, the box where the ‘lane’ from the meaning and the lines from the statement meet, is coloured with the colour from that meaning. We visually compared the patterns that are made out of the meanings and statements and interpreted these, taking into account the outcomes of the previous quantitative and qualitative research on meanings of home (what people do at home, and how this relates to how the indoor environment is managed).

The meanings are arranged following the outcome of the workshop, because the participants reflected at the end that the meanings could be arranged on three axes: appropriation with representation, rootedness with future, and privacy with sociability. Using that order makes it easier to see the patterns in the data.

5.3 Results

5.3.1 Familiarising

Familiarising consisted of four subgroups of how people make their home their own; integrating meanings of home, sharing activities, personalisation, and owned objects (Figure 5.2).

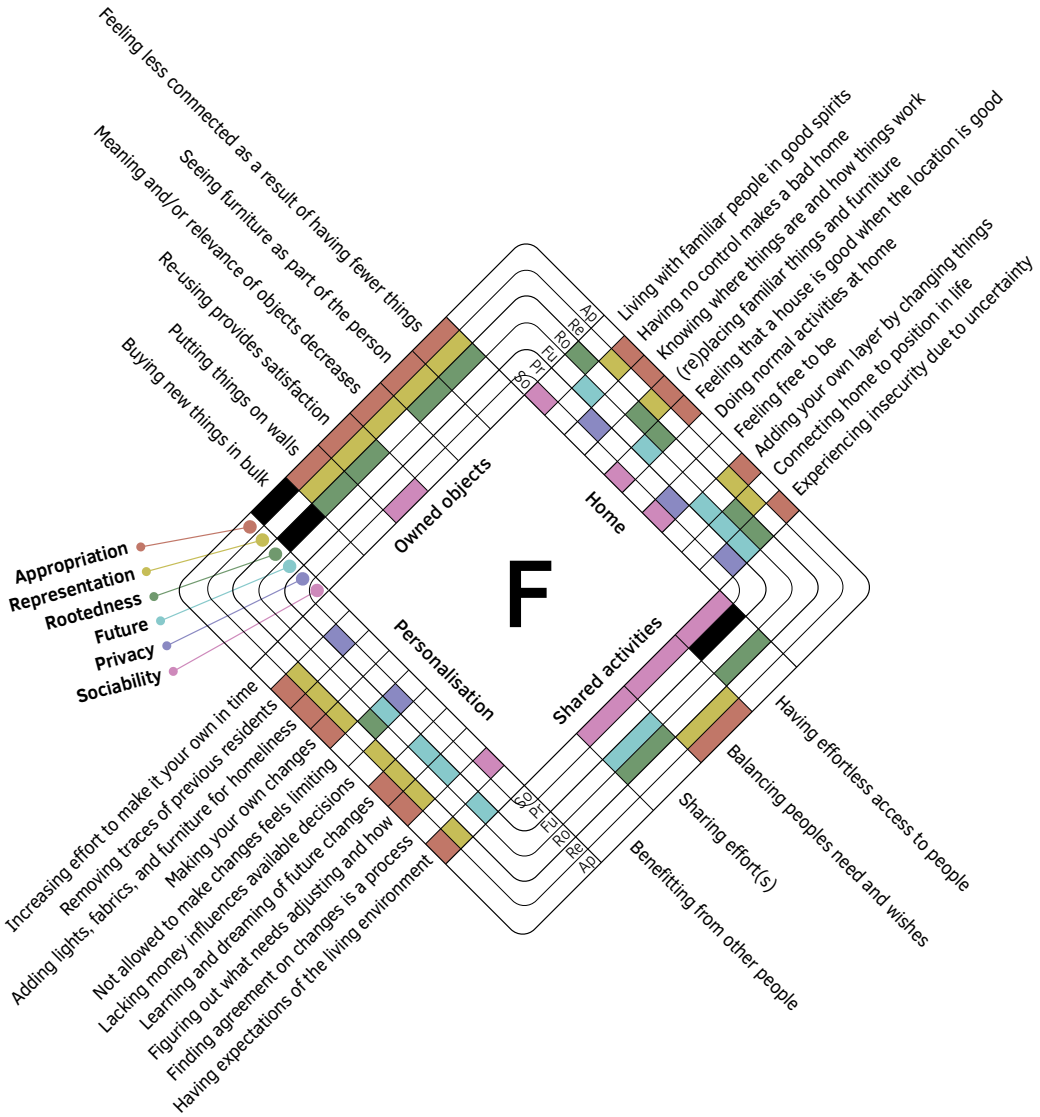

FIG. 5.2 Overview of associations for 'Familiarising'.

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5.3.1.1 Home

The subtheme ‘home’ consisted of 10 statements, deduced from the interviews, that related specifically to home. Appropriation was associated with statements that related to making changes and putting things in place. Privacy was associated with being able to be who you are, and being able to hide or show things according to one’s needs. Rootedness was associated mostly with statements on familiarity and being in a place that makes sense personally. Future related to what options the place affords; what a person perceives he or she can do there, in the sense of making changes and how it fits with someone’s ideas of where one wants to go in the future. Sociability was associated with social connections and feeling good about that. Lastly, representation related to preserving one’s image, by making changes and being able to display one’s personality and status.

5.3.1.2 Sharing activities

Sharing activities is a sub-theme with a social focus. This is recognisable from the results of the workshop. Sociability related to being able to connect with people easily, and doing things together in agreement. For privacy, this was not the case. Appropriation was associated with balancing people’s needs, as this implies some sort of give and take approach which is adjustable. For rootedness there was an emphasis on how social relations are built and form a foundation, while for future there was an emphasis on doing things together as a personal investment. Representation was associated with how needs and wishes are balanced, and that this might affect someone negatively if there is no match with the other residents.

5.3.1.3 Personalisation

The personalisation sub-theme is in essence a theme that is about appropriation, so we would expect most associations there, which is the case. Representation was associated with the same statement, but with an explanation that emphasised having the ability to choose what to display, rather than only being able to do so. Privacy specifically related to removing traces from previous residents, and that being able to control the environment is important. Rootedness related to being allowed to make changes, whether they are actually made is not the point. Future was associated with statements about changes and planning changes, indeed with an eye to the future. Sociability linked to the need to find an agreement for changes.

5.3.1.4 Owned objects

Owned objects as a sub-theme relates to the things and furniture people have gathered through the years. For appropriation, being able to put all these things somewhere is important because they are part of the person. For representation, it is important that they can be put somewhere because it indicates where they stand in society. There is no association with privacy. For rootedness, it helps someone to feel rooted, and make a connection with their personal history that connect to the place where they live. Sociability comes into play when owned objects can be re-used by someone else, strengthening social connections. Sometimes, when people move they need a significant amount of new things and they buy that, but later find that those things are not necessarily meaningful to them, or they have found out that those items do not match with how they identify now.

5.3.2 Organising

Organising consists of the sub-groups meaningful objects, filled space, guests/ dinner table, and favourite activities (Figure 5.3).

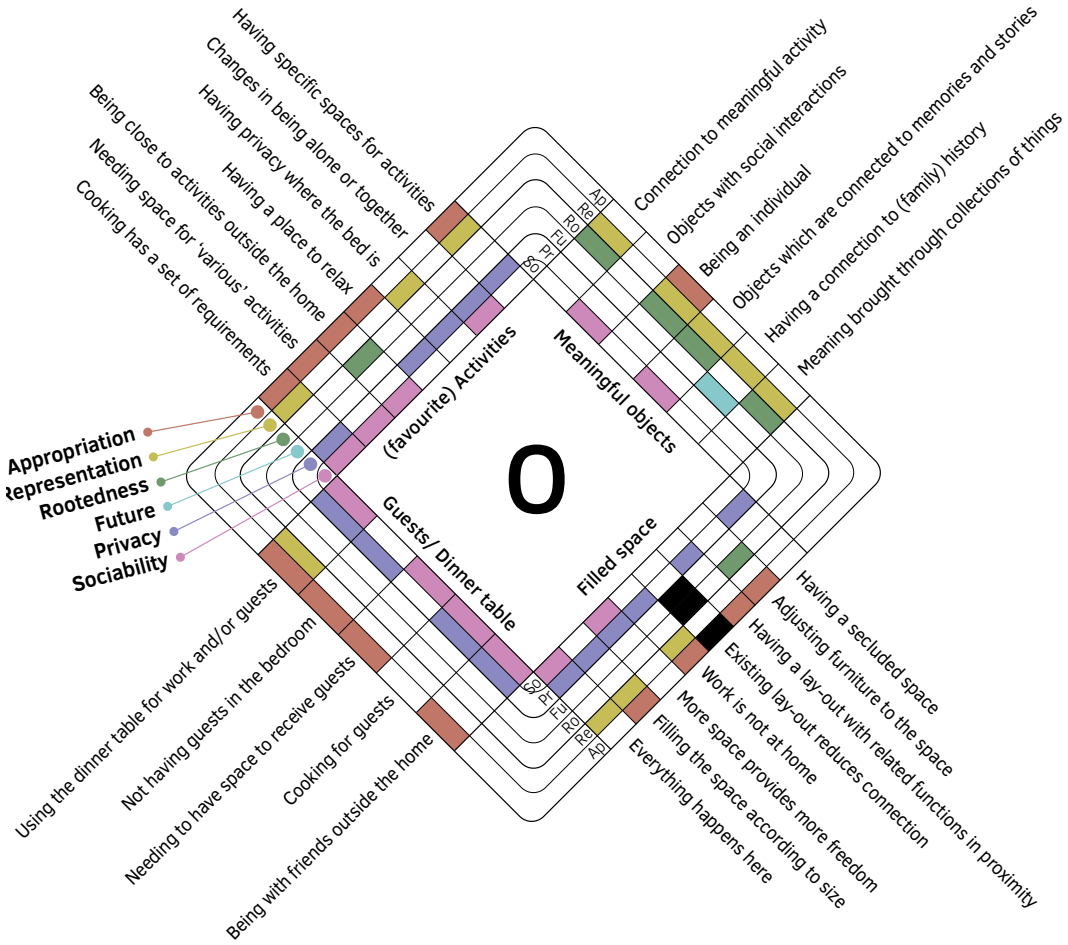

FIG. 5.3 Overview of associations for 'Organising'.

5.3.2.1 Meaningful objects

Meaningful objects are associated mostly with representation, as these might be specific items that people want to display as they say something about the person. Appropriation on the other hand linked only to the idea of being an individual, which could be understood as needing the opportunity to show that the person is an individual. Privacy did not specifically relate to meaningful objects. Rootedness related to statements that are about memories, stories, and activities, while for future there was a connection specifically to (family) histories. Sociability related to indeed the social interactions and memories and stories.

Which objects are meaningful and how they relate to a person seems to depend on what meanings of home are valued.

5.3.2.2 Filled space

'Filled space' is a theme about how the spaces that someone has available is filled; how is the furniture arranged and divided in zones; what is the size of the objects present; how are things made to fit. This becomes an issue when people have just moved and are taking their belongings, but is also relevant for day to day practices as to where things take place.

For privacy, what mattered was to have a secluded space, a bathroom close by, and in general being able to decide where things go. What might play a role here is that the home is usually a private place with control over things like placing furniture, and deciding what a person does when at home. Appropriation again had a focus on being able to adjust where things are. Sociability related more to having enough space to have more people in the space and having the ability to do many things at home. Representation linked to creating a space that is not for work and has appropriately sized furniture, so that it is possible to have activities take place there. Future had no links, and rootedness only to the extent that already owned objects could be placed.

5.3.2.3 Guests/dinner table

This theme is about how a dinner table functions, often in smaller spaces. There might not be space for both a dinner table and a desk, or there is only space for a desk and not for a dinner table. How is its use negotiated between different people and different needs?

Appropriation has an emphasis on whether it is possible to have a dinner and/or guests, and if it can be separated from the sleeping area. For privacy, the emphasis on being able to separate the public area (where guests are received and work is done) from the private area (the bedroom). Sociability has a focus on providing for guests, when there is a need for enough space, including space for a dinner table with the purpose to connect with people. Representation requires a dinner table because that gives a certain status. Rootedness and future however, have no association with receiving guests and/or a dinner table.

5.3.2.4 (Favourite) activities

This theme relates to having the space that is necessary for activities a person deems essential. This could range from cooking spicy food, to drawing, fixing a bike, and having potted plants on a windowsill.

Representation was associated mostly with statements indicating a spatial separation of activities. Having many rooms was seen as an indicator of higher status. Future, on the other hand, was not associated with any statements in this theme. Rootedness related to the location rather than inside the home, indicating that ‘home’ has a physical location. Sociability linked with options to do activities with others, inside or close to the home. Again, appropriation linked to having options to adjust. Privacy related mostly to having control over what happens in a space and being able to close him/herself from others.

5.3.3 Managing

Managing consists of the sub-groups ‘cleanliness’, ‘indoor environment’, and ‘creating comfort’ (Figure 5.4).

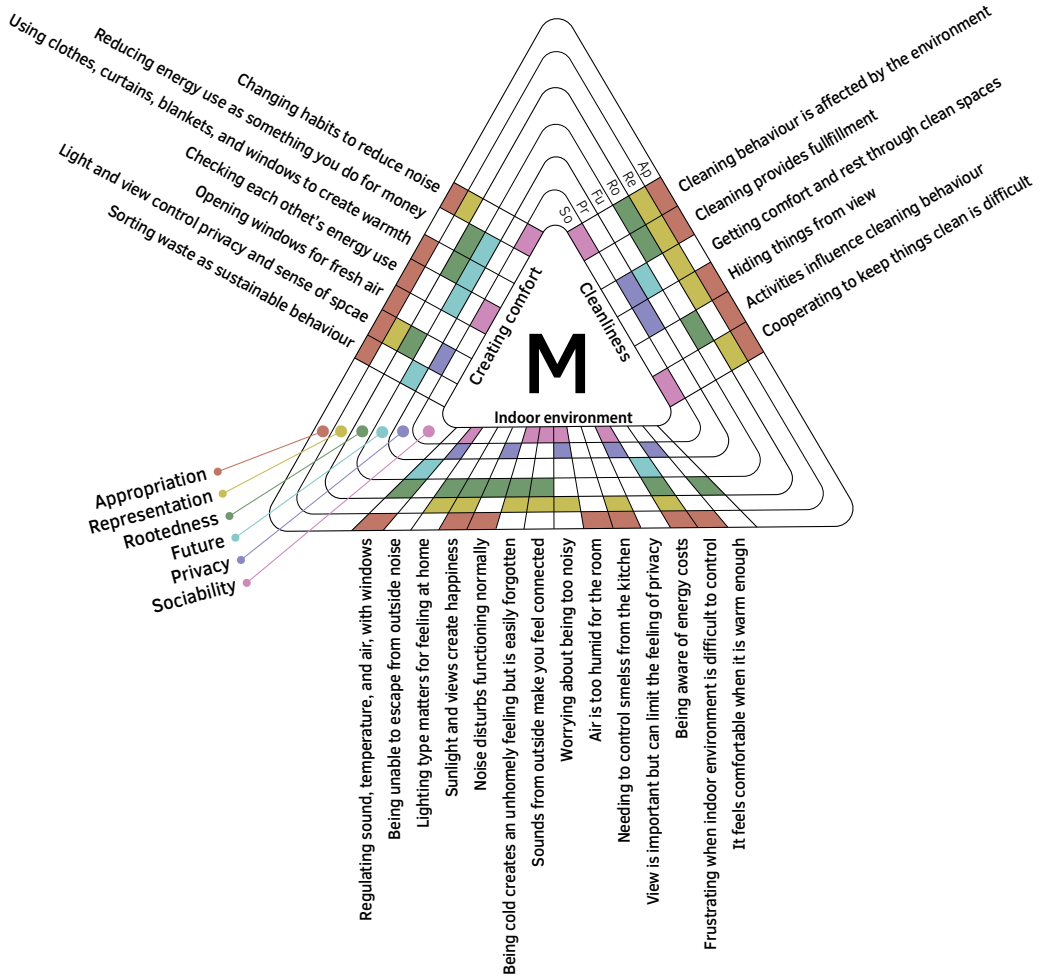

FIG. 5.4 Overview of associations for ‘Managing’.

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5.3.3.1 Cleanliness

Cleanliness concerns both hygiene and whether things are put in their place. It can have an effect on what the place smells like and what it looks like (including if things are broken), but also on sounds (for example hearing mice in the ceiling).

Appropriation and representation both connected to many statements. For appropriation 'getting comfort and rest by clean spaces' was not a purpose, while for representation it was; it does not matter what kind of activities are done in the home, it should always be neat and cleanliness reflects on someone's identity.

Privacy focussed on providing a nice environment that feels safe, while for future the main goal was to get some rest and peace by being in clean spaces. Rootedness related to cleaning habits someone has or is used to doing from growing up, and that it can provide fulfilment when things are cleaned in a certain way. Sociability had an emphasis on how to clean in cooperation with others and how others affect the cleanliness of a space. In a way, sociability was more focussed on conflict and how to prevent conflict.

5.3.3.2 Indoor environment

The theme indoor environment deals specifically with how people control sound/ noise, air quality, temperature, and light, to make their place a comfortable home.

Privacy related to statements about noise from outside and about making too much noise themselves. Views into the home also reduce the feeling of privacy. Sociability on the other hand was more okay with sounds from the outside coming in, while also being worried about making too much noise. In this case the type of home discussed was a student house. Future related to sustainable behaviour and how the home environment can be managed to reduce environmental impact, but also costs. Rootedness was linked to habits, and to making a place feel more like home through lighting, warmth, views, and sounds as a connection to the outside. Appropriation linked to being able to make adjustments, in addition to not being hindered by the environment for what someone wants to do. Representation focussed on lighting and smells in addition to sound.

5.3.3.3 Creating comfort

'Creating comfort' concerns the actions people take to improve the indoor environmental quality.

Appropriation linked to all statements which concern taking any action, except for reducing energy use as a motivator for doing something. Privacy linked to controlling light and view. Sociability to reducing noise and checking each other's energy use. Representation connected most to reducing noise and to controlling light and view. Future related to things that could be done to reduce energy use and waste, while rootedness related to similar items without as much emphasis on reducing energy and more on creating warmth and cosiness.

5.3.4 General remarks

Most statements related to at least one meaning, and usually to more than one. When a statement did relate to more meanings, the way in which it did varied depending on the meaning. As could be expected, appropriation was associated most to statements about being able to change things, privacy to being able to close things off and control, sociability to maintaining and building social relationships, future to securing (mental and physical) investments, rootedness to connecting to place and someone's past, and representation to how the self should be displayed to oneself and others. What is new however, is that these meanings are now associated with how people interact with their physical environment to make it a home.

Furthermore, the participants remarked that the six meanings of home could be divided in three axes: appropriation – representation (AR), privacy – sociability (PS), and rootedness – future (RF). The meanings on those axes are not necessarily opposites, but they are in some way more related to one specific meaning than to others. The AR-axis has most associations in the familiarising theme, while the PS-axis has very few, and the RF-axis has very few associations in the organising theme. The PS-axis does connect with the sub-theme 'guests/dinner table' in the organising theme. The AR-axis also has quite some associations for the managing theme.

Another remark from the participants was that some of the statements did not relate to a specific meaning, but happened because of convenience or out of necessity. "Buying new things in bulk" was one of the statements that was considered necessary or forced behaviour.

Considering the explanations from the participants for how appropriation was connected to any of the statements, and that appropriations was understood as having the option to change things in one's home environment, it could be the case that this meanings was more about the physical possibilities to be able to change things rather than the need to make those changes. Having the option to change the environment allows someone to imbue any of the other meanings of home, which complicates the position of appropriation compared to the other meanings. In other words, if someone can appropriate one's home, any of the other meanings can be more easily attributed to the home, whereas if there are less options for making changes, the home will fit less with any meanings considered important by the resident. Consequently, the meaning of appropriation, as understood in this research, might function differently from the other five meanings. Another explanation could be that appropriation and representation are the most related to what people can do to their dwelling place to make it a home; to integrate the other meanings into the dwelling place other types of actions, less related to engaging with physical environment, may be necessary. These actions may not have come to the surface sufficiently in this research.

5.4 Discussion

5.4.1 Associations of activities in the home and meanings of home

The outcome of the workshop showed that there is no simple direct relationship between what people do to make a house a home and what home means to them. Because the meaning of home is multi-faceted, this was to be expected. What we did find is that there are patterns in which meanings of home relate more or less to specific actions people engage in at home, to make it a home. These patterns can provide designers with a starting point to integrate them into housing design when users are not known.

When looking at the individual statements, it becomes clear that when more meanings are related, the interpretation of the statements varies based on the meaning. For example, the first statement in 'home' – living with familiar people in good spirits- related to rootedness if the familiar people is family, while it related to sociability when the familiar people are flatmates. Similarly, the statement – having no control over the environment and activities makes a bad home – relate to both appropriation and representation, and specifically preservation of one's image for the latter meaning.

People use their home differently because they pursue different outcomes, although sometimes similar behaviours relate to different meanings. Having curtains could be appreciated by someone valuing privacy (controlling the view), appropriation (adjusting the house), rootedness (following convention), or representation (showing a certain style). Being aware of these uses is important when designing a house because it informs the designer of the necessary flexibility of the space around the window.

Looking at the bigger picture of meanings of home and what people do, they could be better understood if they are connected to time. Familiarising consists of activities that make a dwelling into a home on a larger time-scale; as something that should be, without a clear beginning or end. Organising consists of activities that gives objects and activities a place and time, it orders what happens, through the day, week, or longer. Managing consists of activities that make the dwelling a better place 'now', it is about being able to take immediate action, for short-term moments that each have their own specifics, but also related to the current context inside and outside the dwelling (for example the weather, body-temperature, or events). To make a dwelling into a home then, it is important to pay attention to both the short-term activities and the longer-term activities.

Thus, the actions undertaken should be interpreted from multiple perspectives when thinking of future dwellers. Meanings of home could be used to make an estimate of behaviours that are relevant and will be pursued by the residents. Using the familiarising, organising, and managing themes could provide answers for designers on how and why people interact with their home, and to what residents might want and need to make their dwelling a meaningful home.

5.4.2 Previous research

In our research we looked at specific actions that make a home, and how those relate to specific meanings of home. Meanings of home have been linked to other, more specific, behaviours in the home, but not to behaviours of what makes a house a home. For example, Wang et al. (2020) explored how energy-consuming practices are influenced by meanings of home. They used a framework that consisted of 1) home as a continuous project (also related to (family) activities), 2) home as a safe and comfort haven (also includes security), 3) home as a place for hospitality or house exchange (also including relationships and family activities), and 4) home as a place for family activities along the life course. Values are spread over all four categories. How their respondents prioritised meanings of home informed the type of energy-consuming behaviours they would engage in. Elrayies (2022) reviewed literature and consulted architects and experts to provide a design framework for future homes in times of lock-down to improve mental health and wellbeing. The requirements might seem clear for designers (for example; adaptable lay-out, private workplace, windows with no obstruction, and natural ventilation) but how exactly these requirements interact with people's preferences and doings and their contribution to mental health and well-being, remains unanswered. This can be problematic, as the requirements cannot be met for the typical (temporary) low-income dwelling. What then? How to choose which requirements are not met?

When the why is unknown there is no basis for making design trade-offs or prioritising for an imagined other. Especially for temporary and lower-income housing it is then important to provide opportunities in design to prioritise the meanings of home that are important to the dweller. Previous research by (2022) on differences in meanings of home highlighted six meanings which were used in this research. However, sociability, rootedness, appropriation, and future consisted of only two statements. It could be that some facets of meanings of home are less connected to the physical environment than others, and are not expressed as much; this does not make them less important but it does show that meanings of home should not be studied solely as a mental construct.

5.4.3 Limitations

The workshop consisted of six participants with different cultural backgrounds, their educational level was above average, and they were all working at Delft university of technology, at the same faculty (architecture and the built environment). The group of participants was therefore not fully representative of the dwellers, or the designers. The results of the workshop could be extended by conducting this workshop with designers and prospective users, and analysing any differences in results. Additionally, taking a look at the specific statements withing meanings of home could explain why some actions relate to multiple meanings. Subsequent research could include designers of housing to elaborate on meanings of home and what people do with a focus on how the results can be the most useful in the design process. Last, It might be interesting to single out specific statements which are related to many meanings and have a more elaborate and in-depth discussion on those.

5.4.4 Recommendations

The outcome of the workshop on how behaviours and meanings of home are connected, can be used to help designers take the user-perspective of temporary low-income dwellers. The specific statements on what people do to make their dwelling more like a home and which meanings of home they relate to, make it easier to imagine for others what someone would do and how behaviour interacts with design. For the results to be applied in practice, the statements relating to design could be grouped in what building element they interact with for example, 'fixed elements' could contain statements concerning windows, which would be further specified per meaning, if necessary. The architect could then look up which statements and meanings relate to which elements, and check or imagine how users would use them in the design. The architect could then decide which meanings need emphasising, and take into account the dimension of time for these activities.

Including meanings and what people do in the design, could affect decision-making, which would hopefully lead to home designs that are more responsive to the dweller. A further step might be necessary to make the results quicker to interpret for a designer who is not familiar with the background of this study; this could possibly be done by providing design examples for the statements with short explanations (or design variations) of how the design would be used by residents for different meanings. Ideally, these design examples should be checked with architects to be certain the results are helpful at the right time in the design process.

5.5 Conclusions

The study showed that meanings of home do not exist in a psychological vacuum, but interrelate with the home environment. Understanding these relations could result in making better home designs because what people do at home relates to what home means to them. When designing homes, it is important to know 'why' people do things, as there might be more solutions to provide options to do that, than when only 'what' is known. For example, if someone says they would like to have a dinner table, this table might look and be placed differently depending on whether it would be used for work, dinner parties, or a hobby. Likewise, someone whose home is related to privacy would use the home differently than someone whose home is related to representation. Which meanings are important can have an effect on what choices the residents make and what choices they want to have. Furthermore, it can be important to consider the dimension of time; activities can be immediate (managing), longer-term (organising), or without a beginning or end (familiarising).

This research was a first step towards linking these meanings of home to what people do. Further research should be aimed at translating these links into practical information for designers. When designers can form a better image of what future residents want to do at home and why, they should be able to make better designs. This research was done to help answer some of those 'why's', so that architects have more information when designing for user groups that are different from them and who cannot be consulted.

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6 How architects could add ‘home’ to temporary housing design for urgent home seekers

Related publication:
Overtoom, M., & Bluyssen, P. (2019). A game to determine preferences and needs for an indoor environment. Paper presented at CLIMA, Bucharest, Romania, 26-29 May 2019.

6.1 Introduction

What home means is different for different people. If temporary housing is supposed to fit users who are not known beforehand, the different meanings they might have for home and how they might wish to realise those within the dwelling should be taken into account. However, even though there are differences in what home means to someone, there are some commonalities, which were identified in this thesis. Three axes, namely those of Representation – Appropriation, Rootedness – Future, and Privacy – Sociability, can be distinguished. Furthermore, there are three categories of activities when it comes to what people do at home, each focused on a different time frame; Familiarising (limitless), Organising (long-term), and Managing (short-term). From here on out, these will be referred to as FOM-activities. There are connections between the above meanings and activities and these can be organised visually (see Figure 6.1 for a visualisation based on the research in this thesis).

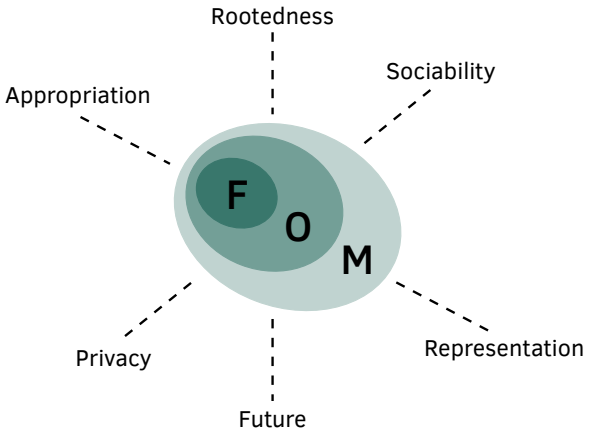

FIG. 6.1 Visualisation of how the axes for meanings of home and what people do at home connect.

These outcomes can be used by designers and, in the rest of this chapter, I will describe three different approaches as to how.

The activities people engage in, can be organised according to the FOM-activities, which relate to different and sometimes multiple meanings of home. The time perspective also differs, depending on the activity. The frequency with which effortful activities are carried out by people, or are expected to be carried out by them, depends on the time frame they belong to. For example, drawing an image on a wall

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takes time and effort, and is only likely to happen when the emotional and physical investment is deemed to be worth it, such as when the dwelling is expected to be used for another few years and when the drawing will not have to be removed once moving somewhere else. Activities related to Familiarising can require the most effort but may only need to happen once. It is possible to think of designations, such as: how will I divide responsibility for the dishes and the laundry, where do my possessions go, how do I make the space resemble me more?

Activities related to Organising might take a little less effort and require a little less thinking; where do I want to receive guests, where do I put my most meaningful possessions, where should the furniture be to support what I want or need to be doing?

Activities related to Managing are mostly commonplace but short activities, and more easy to change; how do I make myself comfortable, where do I put the things I use daily, how do I change or adapt the indoor environmental quality?

Depending on which meanings someone finds important, the answers to these questions will differ and as such require a different interaction with the built environment. For example, someone who values privacy above all will be more bothered by noise from neighbours or be more worried about creating noise that could be overheard by others. As a consequence, a person prioritising privacy will favour different moments for the opening up of windows and doors than a person prioritising sociability. Additionally, the place inside a dwelling where activities are carried out could be affected; there might be a wish to separate the private areas from the more public areas and the relative size of the private area might have to be larger for someone valuing privacy. The view from windows might also be directed in a different way and there might be more of a need to hang curtains, not just for darkness when sleeping, but also for preventing others from looking inside.

Many daily, commonplace, not often thought about activities are affected by the place we are in. We only think about such activities when they are not simple to do, and it is the task of designers to make them simple once more. Knowing how meanings of home relate to what people do to make a place into a home, can thus help designers understand what users need.

Making a home is not only about being able to paint the walls in the colour you prefer, it is also about being able to put your dishes away, having a friend over for dinner, playing your instrument, hearing the birds outside, putting your grandmother's rug on the floor, and being able to control the temperature.

To create better homes, we need to think about the meaning of those ‘simple’ things. This research made a start with that, by linking meanings of home to what people do to make it so. The logical next step will be to present this information in a useful way. There are different ways to do this, for example through a serious game, an infographic, or a design guide. These are briefly discussed below.

6.2 Example serious game

Re-designing a vacant building into temporary housing is teamwork and involves a group of professionals. Design ideas are generated and discussed, often while sketching and working with models. This makes serious games particularly suitable for focus groups (Breen, 2006). Serious gaming can also help with resolving design conflicts and constructing a shared understanding and solution for urban design problems (Beattie et al., 2020). And for housing, gamification can act as a way to include prospective residents in the design process (Lo et al., 2017). A serious game could be a great start to explore a new project with different stakeholders, if there is time available. Therefore, I made a concept design for a cooperative serious game, based on the outcomes of the research.

There are multiple activities people engage in to make a temporary house into a home. Not all of these are design related or could be done by someone other than the resident (for example, spending time there). Fourteen interviews were conducted with residents of temporary homes. They were asked about the objects they brought, if and why they made any changes to the environment, and what behaviours and specific activities they do at home, and if these related to indoor environmental quality. From this data, a table with quotes from the interviews was created and organised according to what the residents had done to make it a home. The quotes were grouped according to three categories of activities (Familiarising, Organising, and Managing) and if they related to an activity that required interacting with the physical environment they were furthermore included in a subtheme. Then, from each subtheme one summarising activity was formulated to put on a card. For example, one of the interviewees talked about not liking traces of previous residents on the walls and that he had therefore repainted the wall. Others indicated that, when they moved in, the walls had been freshly painted which was nice. Another interviewee mentioned that she did not like white walls and wanted to paint her walls yellow but was not allowed to do so. All these quotes relate to familiarising oneself

with the home but they elicit different behaviours and feelings from the residents. From this, it could be concluded that there is a need for personalising the walls, which can be done in different ways (by painting, wallpapering, or any other means), each with pros and cons. Some of these ways might be more realistic than others, because of costs, time available, or the existing features of the building. That is why the focus will be on design solutions that are likely to be easy to install, take low effort, and be of minimal cost. The designed solutions are elements that a player can put on the board of the game to satisfy user-perspectives and behaviours. (see Figure 6.2 and 6.3, and Appendix D for all the cards)

FIG. 6.2 The game could consist of (from left to right) building elements, furniture, and cards

6.2.1 Board

The board is the playing field of the exercise. It consists of rectangular pieces that can be connected like pieces of a puzzle to roughly represent a floor plan of a building of interest. Each rectangle has a surface of 30m^2, with lines (which are on a raster of 1x1m) to insert walls. The game board has a scale of 1:100 to make it easier to relate (the results of) the game to design drawings.

6.2.2 Basic building elements

The building elements are the essential parts for people to be able to live in the building. They are the walls (with or without doors and windows) and basic pieces of furniture (including the kitchen and bathroom). The walls fit in the 1x1m raster, so that the game board can be used in 3D which makes it easier to imagine what the building would be like.

6.2.3 User cards

The user cards are based on the people who are meant to live in the building, in this case students, refugees accepted for permanent residency, and starters on the housing market. The cards indicate which meanings of home (Representation, Privacy, Sociability, Rootedness, Future, and Appropriation) are important to someone and to what extent.

Each group of residents (students, refugees accepted for permanent residency, and starters on the housing market) is represented in the game by eight users, with gender distributed evenly. They are each given a name so that the players of the game are more likely to see each user as a person rather than a number. Furthermore, each group has one gender-neutral name and at least one name that is less common in Dutch to better represent social diversity.

The meanings of home that are marked as important for a resident are based on the mean and spread of quantitative research ((141 university students, 58 refugees accepted for permanent residency, and 23 persons who were working four days and studying one day per week; henceforth named starters)). The questionnaire measured to what extent certain meanings of home were important to someone and how the variation between persons could be explained, focussing on these three groups.

The users in the game are designed using the results above. When the mean was higher for a group, that group has more residents who find that meaning important; if the spread is wider, there are more extremes. Overall, for each group, the variation between the residents adds up to the average that was found for each meaning.

Lastly, there are three residents, one from each group, who have the same score to reflect that it can be the case that there is no difference in meanings prioritised between users in different groups. See appendix D for all cards.

6.2.4 Design cards

These cards show the design options that can be added to the basic building elements, to make the place feel like a home. The design options relate to how people use the place they use as a home and/or how it affects their perceived indoor environmental quality. The options are intended to be low cost as well as easy to install and remove.

The design cards are based on qualitative research and connected to the meanings of home. Interviews with a total of 14 people, evenly distributed between the groups of interest, were analysed following the method for interpretative phenomenological analysis. Three themes emerged from the transcripts of the interviews: the young adults made a home by 1) Familiarising the place with objects and "normal" activities, 2) Organising where things are and when they happen, and 3) Managing the indoor environmental quality through activities and objects. These results, together with the results from the questionnaire, were used to develop a set of relatively simple and practical design solutions (see Appendix D for more details).

Some designs relate to more than one meaning of home, because it can affect the indoor environment in different ways, depending on how the resident uses it. The designs are thought of as flexible in such a way that they can be turned 'on' or 'off' by the residents or they can be left unused without being in the way. However, whether this is the case depends on how the game board is filled.

There are two main categories of design: some designs concern lay-out only, some concern a 'thing' that might otherwise not be installed or included in the design. What exactly the effect on the costs is, was not part of this research.

6.2.5 Quality cubes

The cubes indicate whether the composed design of basic building elements and arrangement of design cards fulfils a meaning of home for the users. If a space does, a cube can be placed there. The game is successful when the quality cubes add up to all the users' meanings of home.

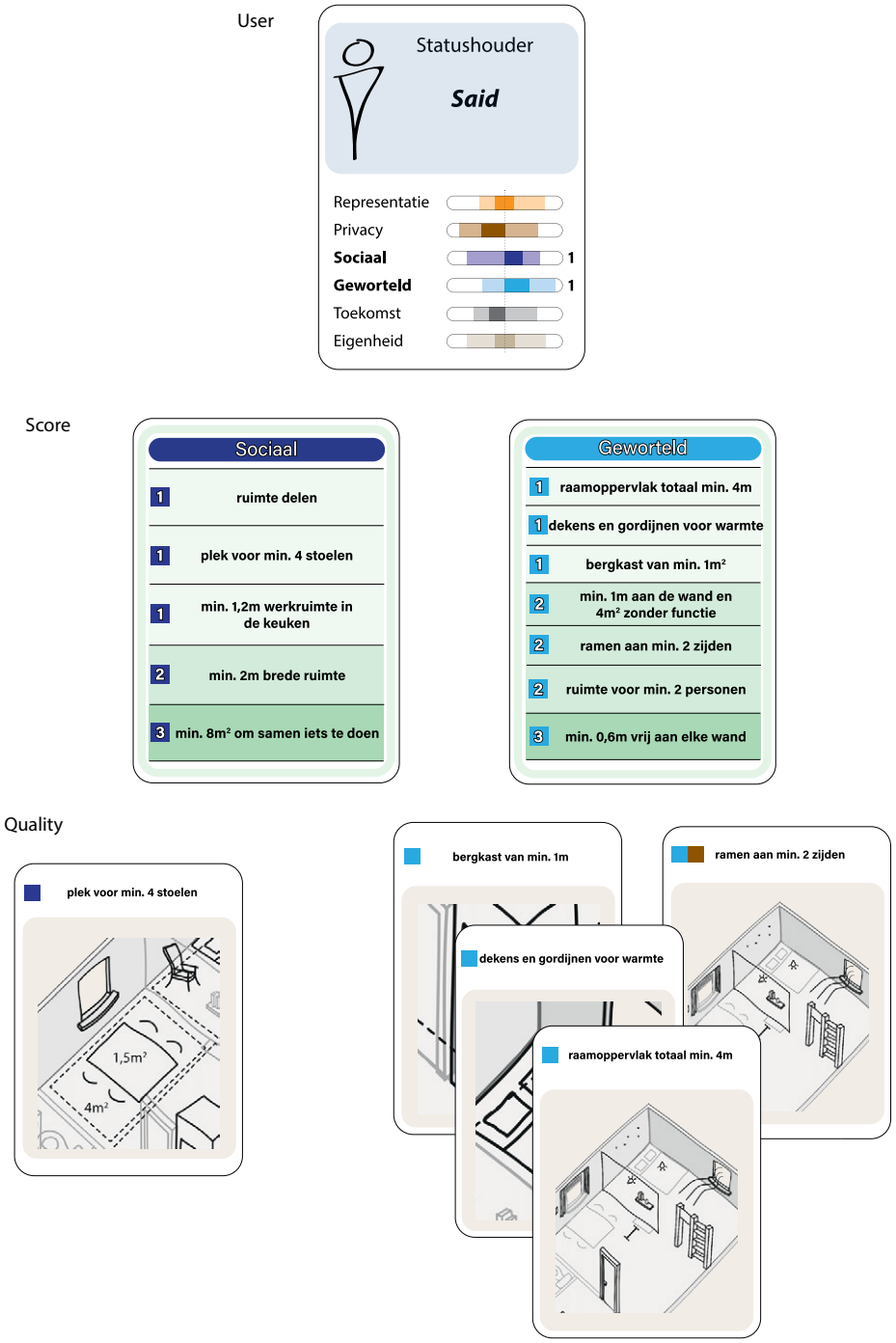

FIG. 6.3 Cards in the game

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6.3 Example infographic

A less time-consuming and more targeted method for the designer could be an infographic; an image that contains information and can be understood on its own. To create an infographic, the meanings of home and how they can vary (also discussed in example 1 – this Chapter) are displayed as a typical user, using the data from the questionnaire from Chapter 3. The distribution of each meaning for a student, starter, and refugee accepted for permanent residency, was calculated. Along with each of these, the average on questions concerning preferences for a dwelling were also used, specifically the size, number of rooms, number of residents, and location. The design solutions described in example 1 can be displayed with an example of a quote from the interviews that relates to the design solution. In a way, that would be a summary of part of the research that could give designers answers to some design questions (see Figures 6.4 and 6.5).

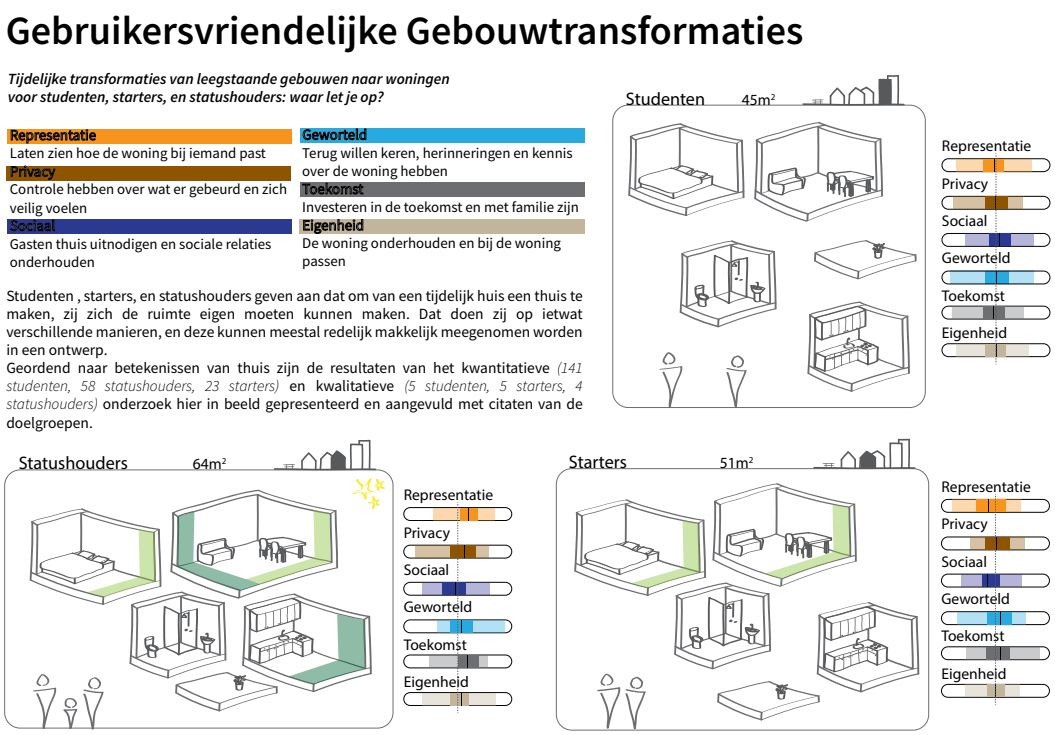

FIG. 6.4 Example of the infographic on user groups

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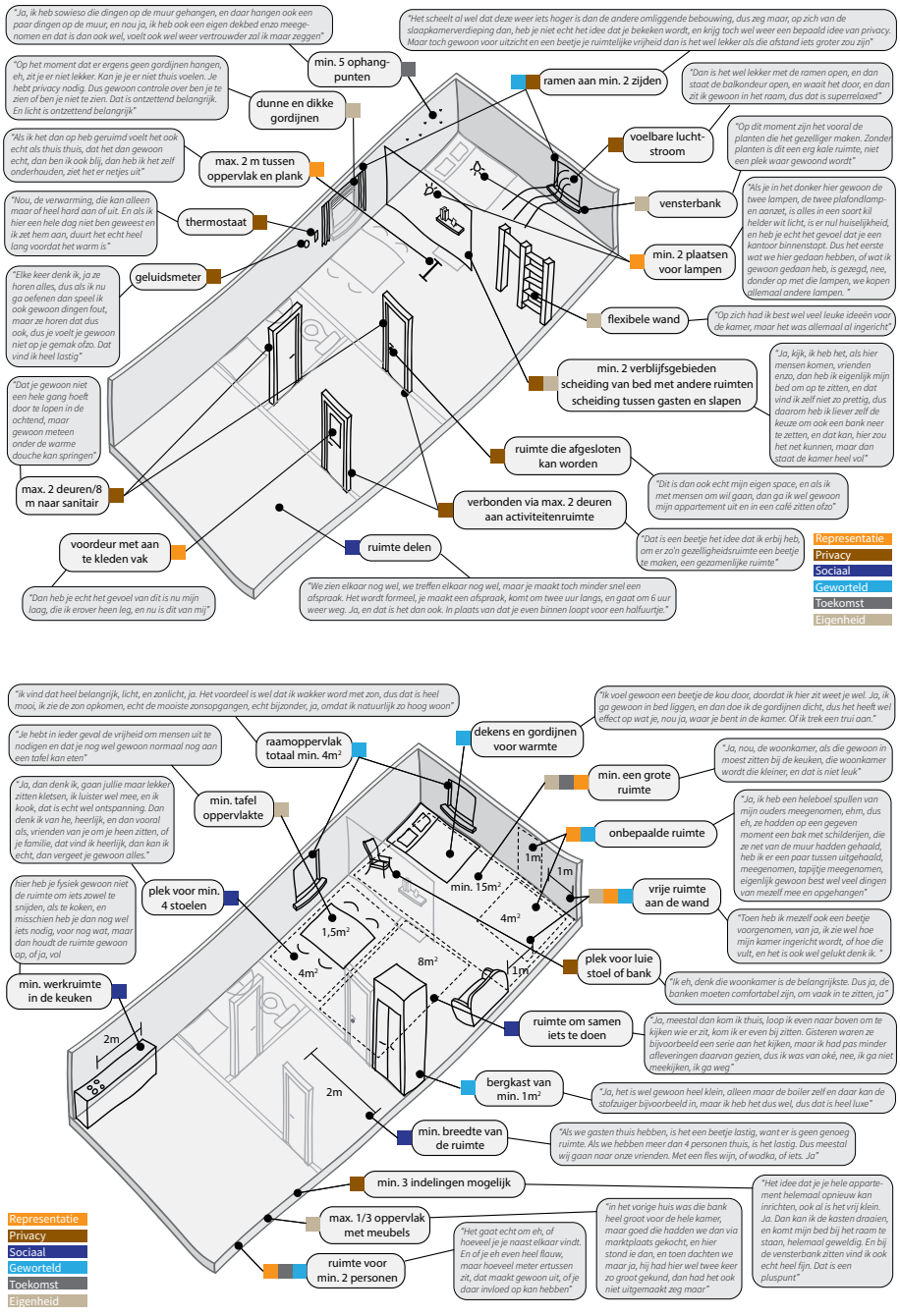

FIG. 6.5 Example of the infographic with quotes and design ideas

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6.4 Example design guide

A third option is to create a design guide, similar to a combination of ‘a pattern language’ (Alexander et al., 1977) and ‘Neufert’s Architects’ data’ (Neufert et al., 2012), focused on home and the interaction of the residents with that environment. Designers can look up specific topics they are interested in or look through it for inspiration.

The three categories of behaviours with their respective subthemes of what people do that make a dwelling into a home (Familiarising, Organising, and Managing) could constitute the main chapters. These categories can be understood to have a different time frame and, as such, have a different interaction pattern which could affect the design approach. Familiarising is more related to what the place can look like; Organising to how the place can be divided physically and conceptually; and Managing to reoccurring interactions with specific elements within the dwelling to gain control over the environment.

For each subtheme and statement within a subtheme, a visual representation should be made, highlighting the problem and/or solution space. Then there should be an explanation for how meanings of home relate to the statements, explaining in more detail the motivation of a user who values that meaning of home and how the interaction with the meaning and with the action is shaped. This specifically addresses how similar actions can be guided by different meanings and how similar meanings might lead to very different actions. If possible, visual representations per meaning could also be added. See Figure 6.6 for an example.

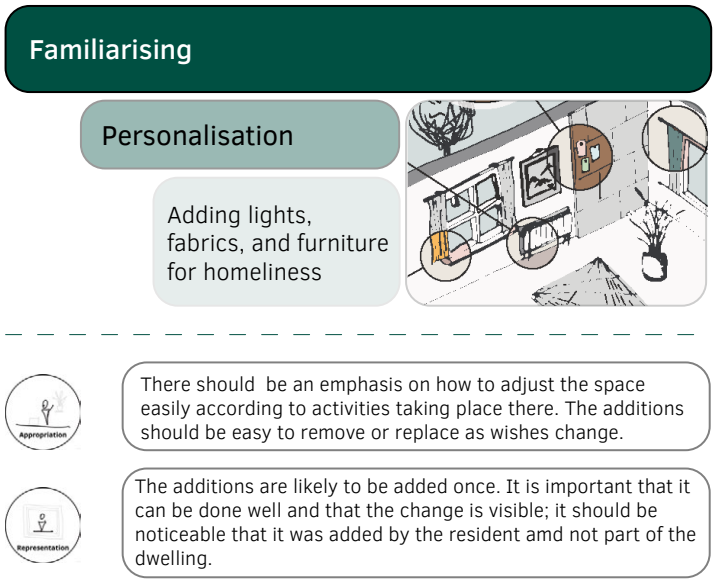

FIG. 6.6 Example of a page from the Design Guide.

6.5 Discussion and conclusion

Three examples have been presented which have illustrated how meanings and activities related to the home environment could be made useful for architects. Each of these have their own downsides and benefits and it depends on the purpose which example will work best in any given situation. Possibly, a combination of these examples may ultimately prove to achieve the best results. An architect could consult the design guide to get ideas for the first concept design, and test and discuss this with other stakeholders using the serious game, which is set up to imitate the design as much as possible. This would allow the stakeholders and the designer to see how the different parts of the design interact, depending on different future users. An infographic could be used to highlight the specific features that were most important for a particular design.

The examples should be further developed in cooperation with architects before they are used in practice.

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7 Discussion and conclusions

The idea for this thesis originated when the housing 'crisis' and immigration 'crisis' intersected around 2015 and quite a number of buildings ended up becoming vacant. A few years earlier, immigration had already reached a peak, as had the housing shortage, but now both peaked simultaneously and became interconnected. Transforming vacant buildings can be quicker than building new housing; temporary structures and contracts can also be easier to set up. Now, in 2024, the building stock has still not caught up with demand and there are even more people who are in urgent need of housing. The people who cannot afford to wait because they have no other place to go to, are sometimes forced to accept housing that does not suit them. They are, for example, students, starters on the housing market, people coming out of supported housing, and people who have recently divorced. These people do mostly not intend to permanently stay in the housing that is available to them, as it is usually not the type of living space which they have in mind for themselves for the future. Nonetheless, they are living there right now and others will be too, in the future. Therefore, it is important that this living space can be a home for them and a step towards their future.

This thesis is, therefore, about home. What it means, how it is made, and what it should be. The home is the centre of each individual's universe, yet so little is known about how to help people create one. We know how to shoot satellites into space, how brain cells communicate, and how to see underneath the top-layers of the 'Nightwatch' from Rembrandt, but we do not know with the same detail how people make their home and how it affects their well-being. Thus, the goal of this thesis is to help designers better understand home; so they can help other people create one, giving them a solid base from which they can explore and contribute to the world.

7.1 Results

The main question of this PhD-study was:

How can meanings of home and what people do at home contribute to better temporary home design?

To answer this question, the focus was on how meanings of home might vary between people and how these can be linked to the physical environment of urgent home seekers (specifically students, starters on the housing market, and refugees accepted for permanent residency). These people have limited resources and are likely to experience more difficulties when looking for appropriate housing. There is an opportunity in transforming vacant buildings into temporary housing, but then special attention must be paid to the experience of living there: for example, are there variations in preferences for indoor environmental quality for specific spaces inside the home; what do people do at home to make the place feel like home; and how do meanings of home relate to what people do?

In Chapters 2 to 5 the context was mapped and meanings and activities were explored. Chapter 6 described examples of how to make the results useful for designers and where to go from there, and the current chapter answers the main question.

7.1.1 Research questions for the literature review

A1 What can be learned from the literature that can benefit the design of temporary housing? (from the perspective of architecture, housing studies, indoor environment, and environmental psychology)

The literature review indicated that there are guidelines on when it makes sense to transform buildings, that the environment has an effect on people, that there are differences in preferences for indoor environmental quality, and that home means something. However, this information comes from different disciplines and using this information for design is therefore not straightforward. When it concerns the design of temporary housing for urgent home seekers, the experience of and interaction with the home requires more attention.

A2 How does the transformation of vacant buildings work in practice in the Netherlands? (a preliminary exploration of some cases)

In practice, a similar image appears. Visits to eight case studies, guided by someone related to the realisation of each project and sometimes residents, led to the following conclusions:

Temporary homes are designed without the possibility to consult the residents and they are often not known before the project is realised. Additionally, the residents do not always stay for the duration of the whole temporary period; sometimes they move elsewhere within a year, to a, hopefully, less temporary place. Depending on the project and possible future investments, the residents are allowed to make certain changes. The more likely it is that the project will be used for something else in the future, the less likely it is that residents are allowed to make changes to their dwelling place. Usually, the less it matters what the state of the building is after the temporary use for housing, the more residents are offered the opportunity to bond with the space by interacting with it and experiencing ownership.

7.1.2 Research questions for the questionnaire

B1 How can meanings of home be operationalised?

Meanings of home have been explored for different groups of people, but differences between individual people have not. To explore how different meanings of home might be related to different preferences within the home for activities and/or indoor environmental quality, distinguishing between meanings of home is necessary. Therefore, existing qualitative research on meanings of home was analysed and used to create statements identifying different aspects of the meaning of home. These statements were first tested with a pilot questionnaire. The results of a factor analysis led to 21 statements divided into six different meanings of home: Representation, Appropriation, Privacy, Sociability, Rootedness, and Future (see Figure 7.1).

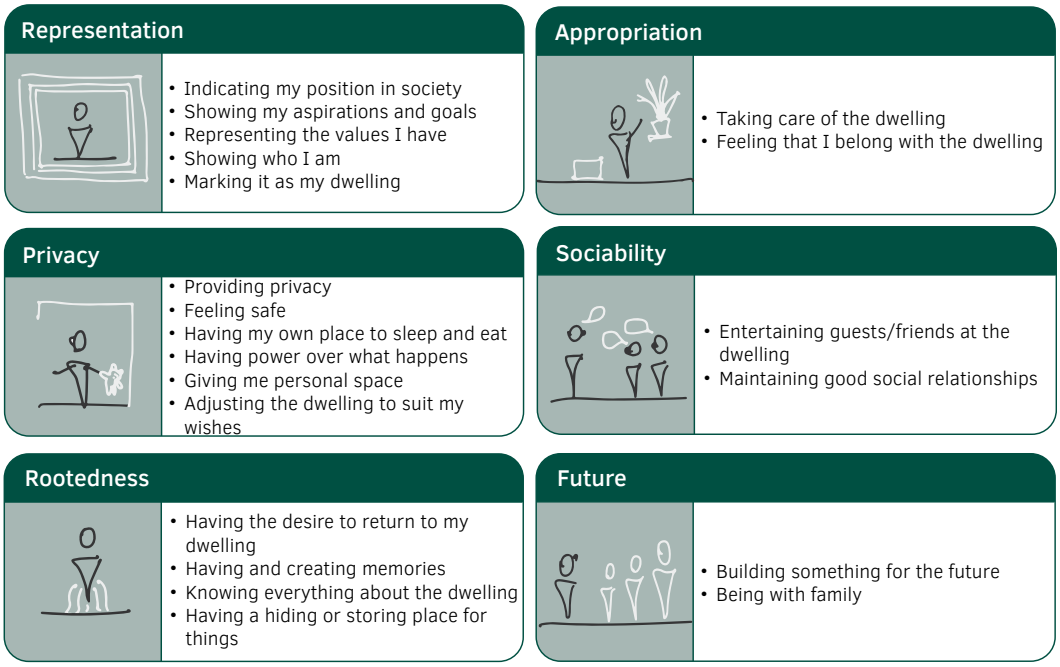

FIG. 7.1 Six meanings of home and their respective statements.

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B2 How do meanings of home relate to home activities and preferred IEQ?

Using the statements on the meanings of home, it was possible to test with multiple regression analyses how each meaning related to different activities carried out in the home and to preferences for indoor environmental quality in specific places inside the home. Representation was linked to cleanliness and light for most activities, Privacy to receiving guests less often but Sociability to more, Rootedness was linked to receiving guests and relaxing, Future to light and cleanliness for the bathroom, and Appropriation to having different activities in close proximity. Valuing different meanings of home, then, seems to lead to a different use and preference for what that place should be like in order to accommodate certain activities (see Figure 7.2).

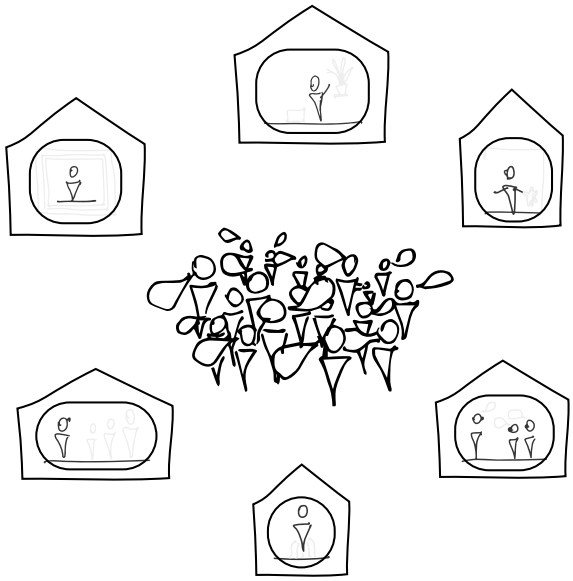

FIG. 7.2 Different people value meanings of home differently

B3 What recommendations can improve the design of temporary dwellings for students, refugees accepted for permanent residency, and starters on the housing market?

The results from the factor analysis and multiple regression analyses indicate that there are differences in which meanings of home are more or less important to someone. Moreover, differences in meanings can also be linked to differences in preferences for indoor environmental quality for different activities. Designing temporary homes that all look and function the same, with one type of imagined resident in mind, is not the right direction. The variation in users and thus in uses should be reflected in the design. Recommendations are related to providing options to manage a space, so that it can match someone's preferences; make it look clean, control lighting, have space to receive guests, adjust the indoor climate, and have space for more than merely eating and sleeping.

7.1.3 Research questions for the interviews

More in-depth information on how residents turn their dwelling into a home would help to explain not just what they do or did, but also why they do or did certain things. Fourteen semi-structured interviews were carried out with young temporary dwellers. Interpretative Phenomenological Analysis was used to dive into the experience of the residents to understand how they made sense of their home-making actions.

C1 How do young temporary dwellers experience their temporary home?

The interviewees experience their home as part of a process and not as the end result. Regardless of whether it was rented for a fixed period or even bought, all residents considered the place as temporary in the sense that it was the best option available to them at that moment, but did not see it as their ideal home. All of them were already thinking of the next place they would live and how that would be better than their current home. Some considered their place as more temporary than others, which was not only related to the type of ownership but also to how their dwelling place matched with where they thought they ought to be in life. If they would see that one day the place were no longer able to change with them, with that day approaching, the desire to move seemed to increase (see Figure 7.3).

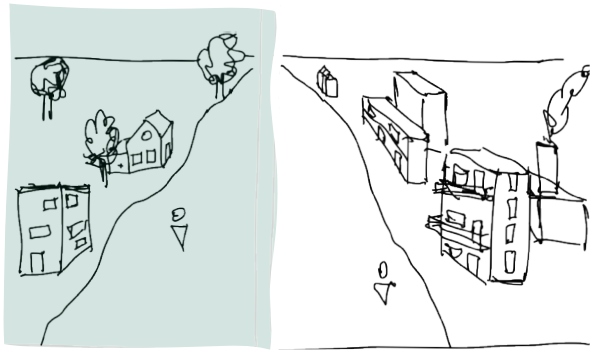

FIG. 7.3 Concept image of someone's expected and real housing timeline

C2 How do they interact with the physical qualities of the home?

The ways in which the interviewees interacted with their home could be grouped in three categories of activities: Familiarising, Organising, and Managing. Familiarising consists of home, sharing activities, personalisation, and owned objects; these are the things that mostly have to do with what the place should be like. Organising consists of meaningful objects, filled space, favourite activities, and the dinner table; and has to do with how and where things take place in the home. Lastly, Managing consists of cleanliness, indoor environment, and comfort; to take care of what the place feels like and what it should be like in that moment.

Thus, the interaction with the home depends on the options the dwelling provides to the residents to make the place as much as possible like a home to them. With less options to do this, someone will feel less at home and will look for another place that affords them more interaction (see Figure 7.4).

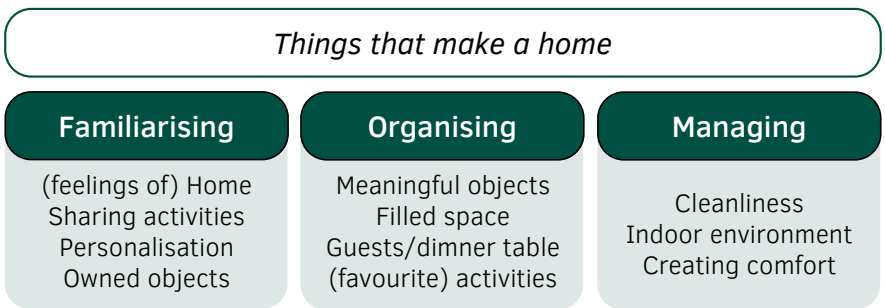

FIG. 7.4 Three themes of what people do to make a home

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7.1.4 Research question for the workshop

D How are (meaningful) activities in the dwelling associated with meanings of home?

People differ in what meanings of home they find most important (Representation, Appropriation, Future, Rootedness, Sociability, and Privacy), and there are some links to what activities they do and what the indoor environment should be like (Chapter 3). Furthermore, people engage in activities that can be grouped in Familiarising, Organising, and Managing. To better understand the variation in user experience and connect that with design, professionals associated activities with meanings in a workshop.

One of the results was that the meanings of home could be organised along three axes: Appropriation and Representation, Privacy and Sociability, and Rootedness and Future. The appropriation-representation axis relates mostly to activities in the group of familiarising. The privacy-sociability axis relates the most to organising. The group of managing relates mostly to the appropriation-representation axis, but the difference with the other axes seems smaller than for familiarising. In conclusion, there seems to be a relationship between specific meanings of home and what activities are carried out the most to make a place more like home (see Figure 7.5).

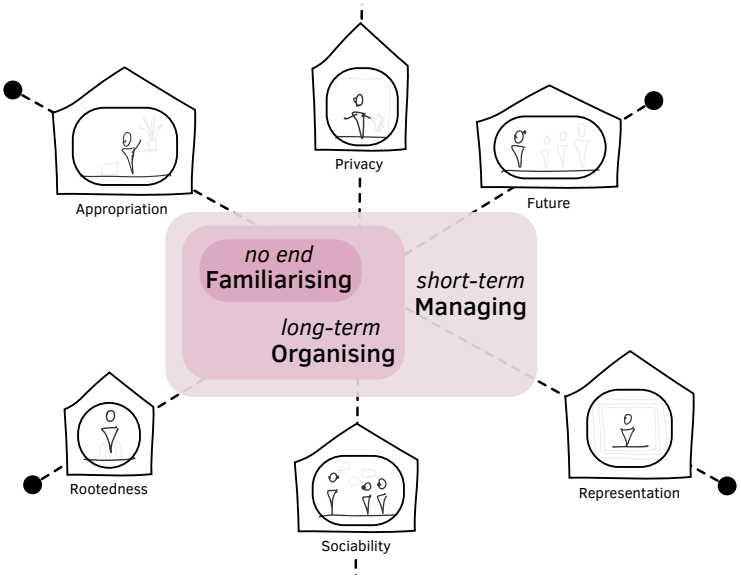

FIG. 7.5 The three axes of meanings and how this relates to behaviours to make a home

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7.1.5 Research question for the communication of the results

E How can the results be communicated to architects?

Knowledge of meanings and interactions with the home environment should be presented in ways that are useful for designers. In chapter 6, three examples were described. Serious games can be useful to help designers and other stakeholders think as a user and understand how different users might fit in the same building. Infographics can provide a quick overview of things that matter to residents and how those things interact with the built environment. Design tools can help designers with finding solutions when they are working on specific problems. In conclusion, meanings of home and what people do at home can help designers with designing more responsive environments, depending on how the information is presented.

7.2 Main research question

How can meanings of home and what people do at home contribute to better temporary home design?

Home is a functional as well as a meaningful place, and functions and meanings interact. Moreover, depending on the person, these functions and meanings vary. Having some idea of the variation of how homes are used could make a difference for the design of temporary housing for people of low-income who are not part of the design process. Especially when there are few resources available, it is important that the ones that are, are of good quality. It is difficult to imagine how others would go about doing something when they act differently than you would yourself. This research has provided contexts, motivations, and sometimes explanations of why things are done a certain way by someone. Realising and mapping the extent of the variations in what home means to someone and what people do when at home, should make it easier to imagine how someone else would use a home, and consequently, how design can help them with achieving their goals.

7.3 Relevance

The results of the research are relevant for both science and society. For science, for example, a measurement tool is now available to differentiate between individuals in terms of what home means to them as well as the ways in which these variations relate to what people do inside their homes. For society, for example, a better understanding of how different people use their homes can help professionals design better temporary homes which could improve the residents' wellbeing.

7.3.1 Scientific relevance

This research focused on the user experience of living in temporary housing, located in a transformed building, with the aim of improving the design of such buildings to create a better user experience. The first and second study showed that it is useful and possible to explore how meanings of home vary between people (see questions A and B in Figure 7.6). The second, third, and fourth study were directed at finding relations between what home means and what people do to make a dwelling place into a home (see questions C and D in Figure 7.6). Meanings and activities have been studied in the past, though not really in connection to one another. This is strange, because people live *in* a place. There are models that try to represent how the meaning of home is built up; or which meanings are part of the concept. However, these are not linked to what people do and as such it helps with understanding what home means, but not with creating a home. In Chapter 6 of this thesis some first steps were taken to make the gathered information usable in the design process (see question E in Figure 7.6).

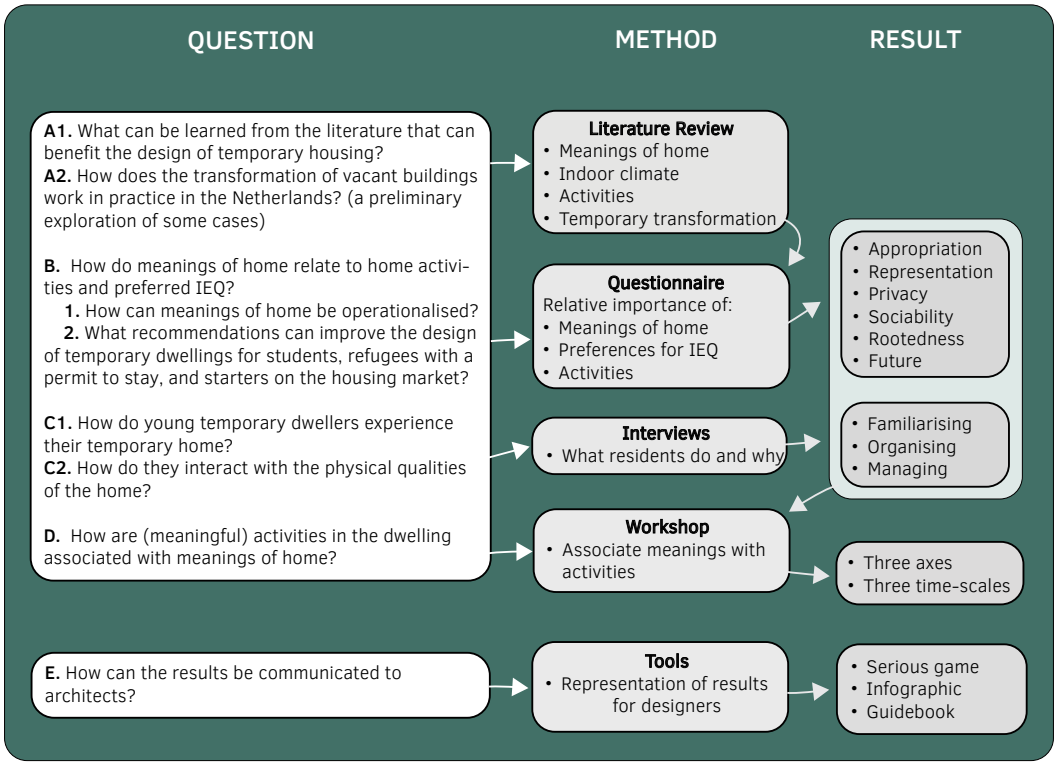

FIG. 7.6 Research overview

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7.3.1.1 Measuring meanings of home

That home has different meanings was not new information and qualitative research on the meanings of home for specific user groups had already discovered differences that emphasise the existence of these multiple meanings (Easthope, 2014; Lewinson et al., 2012; Soaita & McKee, 2019; Tester & Wingfield, 2013; Woodhall-Melnik et al., 2017). However, researchers have not specifically looked at the differences existing within a user group, which is probably because most research on meanings of home is qualitative. Quantifying meanings of home is therefore a method of looking more in-depth at how meanings of home can vary between individuals and what type of interaction can be expected. As such, this thesis builds on existing research from environmental psychology. When quantified, differences in meanings of home can be connected to other topics, such as sustainable behaviour within the home (Wang et al., 2020). When the motivations behind a behaviour have been made known, it might become possible to retain that meaning even when the behaviour or the outcome are changed. This, in turn, makes it possible to tailor sustainability campaigns that might be more effective than asking people to reduce their energy use. Meanings of home could also be used to better describe motivations for housing choice and satisfaction, investments, and other behaviours. Additionally, this research has compiled empirical evidence concerning the home and activities of residents with a low-income residing in temporary housing; a group that is under-represented in research on housing design and preferences.

7.3.1.2 Relating meanings to activities

Behaviours have meanings and activities have an effect on the environment around us. As such, this research explored with qualitative methods how patterns of meanings and activities relate to the physical environment of temporary dwellings, with the intention to use this information to improve the design of home environments.

Relating meanings to activities resulted in three axes (Appropriation – Representation, Privacy - Sociability, and Rootedness – Future) which could be connected to activities with different time-scales (short-term, long-term, limitless). Adding the dimension of time to activities that turn a place into a home, implies that activities which may seem irrelevant and small can still contribute greatly to the creation of a home. Activities such as controlling the temperature, having a place to put away the vacuum cleaner, having space for a dining table, or choosing which curtains to put up, could theoretically make the difference in being able to create a

home or not. Everyday activities might seem mundane, but that does not make them any less meaningful or relevant. Researching the mundane might even turn out to be one of the more meaningful types of research that can be done, because its results are relevant to everyone. Linking meanings to activities helps us understand how people interact with their environment and what kind of responses these activities can elicit. In addition, qualitative methods enable us to see the contexts of everyday activities which would otherwise continue to go unnoticed.

7.3.1.3 Connecting psychology to design

In Architecture, the design of a house is the result of a process that the architect has gone through, sometimes in consultation with the user, but usually not. The architect uses their knowledge – derived from studies, own experiences, and architectural styles – to create a design that should benefit the user(s). In this process, the information about the user(s) remains very limited and abstract.

In Psychology, and specifically Environmental Psychology, the attachment someone has to their dwelling place is studied both qualitatively and quantitatively, and such studies have helped psychologists to more fully understand the relationships people have with their dwelling places. However, this understanding is not transferred to the field of Architecture. Consequently, the available knowledge about people's relationships with and attachments to their dwelling places goes untapped and unused; even though architects are in the business of designing housing that must be suitable for all types of users, they have very little user information to draw from.

Establishing a connection between what psychologists know about people's attachment to their dwelling places and the ways in which architectural design comes about, is a necessary step to take if, one day, housing truly is to be designed for everyone. This thesis connects what people do to their home environments and what they experience while within it, with the purpose of extracting information that might be useful for architects. This requires a somewhat different approach for both the fields of Psychology and Architecture. To connect them on an interdisciplinary level, data deduced from photos and floorplans was used in addition to data taken from questionnaires and interviews. Then, to give those data sets proper contexts, observed interactions with the home environment were related to meanings of home in order to find which elements within that environment were interacted with differently. The resulting connections can be used by architects to design homes, rather than storage spaces. To bridge the gap between the user's experience and the architect's design, it is important to use research and presentation methods

which can be readily understood by psychologists and architects alike. This requires a different approach than usual, but it can lead to more useful results; for example, information might be conveyed in the shape of a serious game, an infographic, or a tool to quickly look up information. Because the bulk of this information is drawn from psychological research, it is important that a genuine effort is made by experts from within the field of Psychology to present these results in an accessible manner to outsiders. However, architects have a wealth of experience with visualising complex information, so cooperation between the two fields should be stimulated in order to convey the message properly and deepen existing knowledge. This includes, but is not limited to, using, creating, and mixing research methods.

7.3.2 Societal relevance

Given society's pressing needs and the current housing crisis, it is important to design housing that can be built quickly and is a good fit for its residents. Transforming vacant buildings and temporarily renting these out can help reduce the immediate housing need. There is a risk, though, that, because of the necessary speed of development and construction, all these dwellings will come out looking the same. It is very unlikely that every single person in need of housing will be able to have some influence on the design of their house. Therefore, understanding how users differ in what home means to them and what they do to turn their temporary dwelling places into a home, should help architects with grasping what a home looks like for different people and working that knowledge into their designs.

7.3.2.1 Variations in housing design

Currently, developers and designers only have tools available to them that determine preferences for a certain façade style and for general trends of preferences and fashion within the housing market. Including the meaning of home into this picture can help to make a dwelling's interior more personal or adjustable. Understanding how the meaning of home can vary between people provides an extra, more in-depth, layer of information to creating fitting designs. It can explain why people have certain preferences and what room there is for variation, which could mean that more buildings are deemed suitable for transformation than when only style preferences or general housing market trends are taken into consideration. While there are differences in which meanings of home are valued most, all meanings are of some importance. Therefore, if all meanings of home are, in one way or another,

incorporated into the design, the residents can choose which ones to highlight. This should make housing more flexible, both for residency and development. Better housing can increase well-being and attachment to a place, which can ultimately also affect the cohesion of a community.

The three axes, Appropriation – Representation, Privacy – Sociability, and Rootedness – Future, along with their connected time perspectives (short-term, long-term, and limitless) are helpful when it comes to the design of buildings, even when existing buildings are transformed into temporary housing. Differences in how students, starters on the housing market, and refugees accepted for permanent residency engage with their home can be traced back to what home means to them. Similarly, what they look for and need from a home can also be traced back to what home means to them. Having active knowledge of these meanings, motivations, and activities can help architects to better understand and imagine how unknown future users will use the housing designs.

7.3.2.2 Building transformations

Buildings that are transformed temporarily into housing for people with a low income, are often designed as repetitive new studios situated in the most economical manner within a given structure. However, even though this approach might lead to a design that will house a greater number of residents, it might not be the most beneficial option for said residents. The repetition could decrease their chances of connecting with the dwelling as individuals, both from an identity perspective as well as from the perspective of feeling able to engage in the activities necessary to move ahead in life. Cloned studios often leave little opportunity for activities other than the basic ones of sleeping, eating, and washing. More importantly, a home is more than that; it is a place for manifesting oneself, making oneself comfortable, connecting oneself to the past and looking towards the future, feeling safe, and enjoying moments with others. So maybe the best design is not the one that holds the largest degree of repetition and reduces the costs most economically. However, this is not to say that a good design is automatically an expensive design. Less straightforward shapes, less finishings, and more re-used materials can all add high value and construction quality to a building, while simultaneously incorporating possibilities for diversification that allow residents to make their temporary dwelling place a genuine home.

Thinking along these lines could improve housing design, but, amongst others, it could also reduce the need for environmental resources. For example, if the goal of changing one's kitchen is to personalise it, then the inclusion of parts that can be easily switched out in ready-made kitchens could reduce the risk of having to replace the entire kitchen with a completely new system, thus saving resources. Another example could be setting up a type of mini-marketplace, where residents of a certain building can drop off discarded furniture and pick up something that someone else left behind. It is also possible to create a space where broken or old furniture can be fixed and updated. In the apartments and studios of low-income housing projects, there is no designated space for activities like that and the residents do not have the resources to easily obtain furniture for their dwelling. An initiative like this could help residents make a house their own while re-using furniture and reducing transport needs.

7.3.2.3 User-perspectives for architects

This research is a first step towards translating differences in what home means from a user-perspective into bits of information that will make it easier for designers of temporary low-income housing to understand the users and their interaction with the design. It is unlikely that all designers will read all available research on the concept of home through fully and will know exactly how to incorporate the new information into their design process. Because Environmental Psychology stresses the interaction with the built environment, it is critically important to make that connection explicit in the research results; the question is how. Using *research methods* that involve some type of visuals could help, likewise, presenting *results* using some kind of visuals could help. Framing the results of this thesis so that they become more than a mere verbal description is beneficial to society, as it would become easier to translate them into accessible bits of information. By emphasising the different meanings behind the concept of home and tracing their interaction with the built environment, it becomes possible to paint a more realistic picture of 'the' user. When cooperation between researchers and designers is streamlined, it should also become easier to design for unknown users and, as such, increase the availability and durability of the housing stock, while at the same time keeping the users' experience at the centre of attention.

7.3.3 Limitations and further research

There are a few factors that did not fall within the scope of this research, which could have had an influence on the final results. This research took place in the Netherlands and it was mostly Dutch people who participated in it. Someone's cultural background is often meaningful and, as such, it is likely that cultural heritage has had an effect on the registered variations in meanings of home. In this study, the number of refugees accepted for permanent residency who participated was limited and they too had different cultural backgrounds. Future studies could balance these participation proportions better and investigate possible differences between cultures: for example, between individualistic and collectivistic cultures. There might be interesting differences in how privacy and representation are integrated in the use and meanings of home.

Another factor left out of scope is how home is negotiated when people live together. Most of the people who participated in this research did not live alone; they lived with either a partner, family members, or flatmates. How the responses of cohabitants vary, despite sharing the same living space, could be useful information to better understand the differences between people in how they interact with their environment based on their experiences of their home.

The space directly outside of a home, which could be a garden, balcony, terrace, or just the area around the front door, was also not taken into account during this research. The user group of interested, was 1) less likely to have an outside area because low-income temporary housing usually has less private outdoor space, and 2) architects do not design outdoor spaces the same way as they do the interior spaces. Including outside spaces would have moved the focus of the research onto a different user group and would have been affected by what time of the year it was, as outdoor spaces are used differently depending on the season. Nonetheless, for other parts of the world where a dwelling has a different lay-out than in the Netherlands or Western Europe and the outside space is considered a more integral part of the dwelling's basic living functions, the outdoor area might have to be included.

The locations where someone has lived before can also play a role in how a dwelling place is perceived and the degree to which it can be considered a home. When they move, people are often looking for improvement and congruency with their stage of life; when their new place is worse in some aspects than their old dwelling, this might make the home-making and attachment process more complex. The locations where people lived before was not a focus point in this research, but it did seem to have influenced how respondents and interviewees reflected on meanings of home and where they lived at the time of the research.

Creating user profiles based on meanings of home and what people do to make a home might be another approach to tailor design solutions to individuals (see for example Eijkelenboom & Bluyssen, 2020), though more work is necessary before such a method can be used. The same activity could be carried out for different meanings, and in different ways, within different contexts. For example, the use of the dinner table for work and/or guests was related to four different meanings (Appropriation, Representation, Sociability, and Privacy). For each of these meanings, how and when the dinner table is used exactly can vary quite a bit. These behavioural variations should be distinguished and categorised before making a connection to the meanings of home; if not, there might not be a useful result. After that, specific sets and/or activities should be identified before user profiles can be made.

Another opportunity is the translation of the results into a format that is useful for designers. In chapter 6, three examples were described (a serious game, an infographic, and a design tool), but of course these need more work. They need to be tested and their usefulness will depend on the context within which they will be used. There might also be other, better methods. To make the most use of these research results, it will be necessary to sit down with designers and devise a functional method together.

Looking towards the future, there are some changes that need to be made if we, residents of the Earth, want to keep existing. Re-using existing buildings for housing that can accomodate different residents with fewer building materials is a step in the right direction. However, when designing housing units, it is also important that the units can functionally adjust to the residents because there is more than one way to carry out activities in the home. When there was a nationwide lockdown during Covid-19, it became clear, especially for people residing in low-income housing and apartment buildings, that the possibilities offered by a living space (or lack thereof) had an impact on the residents' health and psychological wellbeing. I do not believe that these negative effects were new. I believe they had always been there, but became more pronounced when the order came to stay inside, because this cut people off from the coping mechanisms with which they had tended to counter these negative effects. If the housing that is currently being built for people in need truly has such a negative impact on its residents, then the current concepts of good housing design and urban planning need to be revisited. Because the home is such an important basis for people every day, it plays a key role in the transition towards a sustainable, equal, and peaceful society.

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8 Epilogue

People use their own experiences to predict the future. When your parents come to visit, you might offer them tea and/or coffee, and you will know whether or not they will want milk. Now try to imagine this for your neighbour's parents. Would you sit down with them in the kitchen, or the living room? Would they even want a drink? What if they don't eat or drink dairy products? How would you design their living room and kitchen?

Sometimes we only realise that a custom is not homogenous when we experience other people doing things differently than we do. Up until that moment, we never considered another way of going about that exact same thing. Still, we try to predict the outcomes of any given situation. Those predictions will always be made with limited information and will often not be correct. However, when you have a big data sample available to you, then that bigger range will make it easier to imagine the possible variations. You will learn that some people prefer black coffee, while others drink their coffee with milk, and still others do not like coffee at all. You might also learn that coffee can be prepared in different ways, and with that knowledge you could predict in what context which coffee (or no coffee) is deemed appropriate. But what about imagining things you have no personal experience or knowledge of?

When you are expecting a child, you try to imagine what he or she will be like; even if you can form a picture in your mind, reality will always be different. When you are about to have another child, you cannot possibly imagine the ways in which the second will be different from the first; when you have a third child, you cannot imagine how the third will be different from the first two. However, when your data range becomes bigger, there will be some similarities and differences that can be pointed out.

We are asking designers of housing to predict how someone else will use the house they design, while the only experiences they can draw from are their own. We are asking them to imagine how other people, who might not be at all like them and have different experiences than they do, will end up using their home design. 'Home' is a meaningful entity, but in what way exactly, varies from person to person. Because of this thesis, the range of imaginable variations has grown. I hope that this will help people to imagine what someone else's 'normal' looks like, without feeling the need to judge that 'normal' for being better or worse.

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Appendices

APPENDIX A

Visits of the case-studies

Design

The eight case studies showed a number of interesting design elements in relation to the lay-out, fit of floorplans, end- users wishes, and space (Figures A.1–A.14).

The lay-out of the rooms and hallways seems to be optimised economically, by maximising the amount of studios/ rooms within the building regulations (which are often lower for transformed and temporary buildings (Ton et al., 2014), for as little costs as possible (based on information from documents on the projects and talks with people involved).

Except for Mixx-Inn, the floorplans are all rectangles that fit within the original structure of offices or previous rooms and have no direct access to shared or private outside space (Figure A.7 and A.8). Most hallways and sometimes shared spaces like living rooms and kitchens are without daylight or windows. The hallways with front doors provide access to often around 18 or more studios or rooms, although it is known that less units are better for creating a sense of community, with the accompanying benefits of feeling secure and attached (Newman, 1973).

When the residents would like to make any changes to the unit which is more than paint the walls in a neutral colour, they need to get permission from the housing association first, or it needs to be unmade when they move out (as is the case with most rental contracts). Sometimes the walls in the shared areas and rooms could be painted as desired, though usually only in the more temporary projects (ACTA, SHS).

Figure A.14 shows the space syntax diagrams of three of the buildings. ACTA is low-cost student housing, Strijp S is for starters and is owned by a housing association, Blue-Gray is student housing planned for a longer period than ACTA (design made by the same architect as ACTA).

The transformed buildings do not, or barely, have private or shared outside spaces to use that are within easy reach of their room or studio, excluding some areas that are outside of the building and accessible for all residents.

The experience of the residents

During the visits, the experience of the occupants was not investigated. Sometimes the person giving the tour gave some (personal) information about experiences. In research on user experiences in other transformation projects in the Netherlands, three points were identified (Scholtens et al., 2015):

- *Residents of transformed buildings who bought their dwelling were more satisfied than renters*
- *Costs, location, and waiting time were more important reasons to move to a transformed building than the fact that it was a transformed building*
- *Most complaints were about issues that cannot be controlled by the residents (noise from surroundings, thermal insulation, daylight access, and ease of opening windows/ventilation)*

A similar experience can be expected for the eight case studies visited for this paper.

The building transformations fit with the current trend of reuse and showing construction materials in buildings. It can also be said that it is sustainable because the materials used for the building will be used for longer, compared to demolition (Remøy et al., 2007). The service installations are updated to more energy efficient versions, and the building skin is sometimes insulated, reducing energy use compared to similar pre-transformation use.

Case study visit: De Strijp S

Guide 1	
Name:	Jack
Function:	Developer/owner/initiator

Partijen bij elkaar brengen voor realisatie bij aanvang project

Activiteiten in gebied opstarten, eerst maandelijks, dan wekelijks, dan nog vaker. Goedkope werkruimtes verhuren. Advertentie in kranten en social media voor inschrijven van woningen. 800 reacties, snel gevuld. Bewoners hebben zelf de woningen 'woonklaar' gemaakt, Trudo heeft gezorgd voor de basis (keuken/wc/badkamer), bewoner kon kiezen waar deze geplaatst werd. Toewijzing woningen via loting, allen sociale huurwoningen. Op de begane grond zijn commerciële ruimtes te vinden, van een deel hiervan woont de bewoner boven in het gebouw. Doel was om het talent uit Eindhoven niet allemaal (meteen) te laten vertrekken uit de stad richting Amsterdam.

Bepalen van functies i.r.t. bewoners van gebouwen en openbare ruimte

Afhankelijk van geschiktheid gebouwen (draagconstructie, hoogte plafonds (gebouw voor opslag als parkeergarage). Ook de achterliggende spoorbaan heeft de functie bepaald, vanwege veiligheidsredenen mogen in dat gebouw geen woningen gerealiseerd worden, wel werkplaatsen en een hotel. Over een paar jaar veranderd de spoorbaan en worden in dat gebouw alsnog een aantal woningen gebouwd voor mensen die ook een werkruimte hebben daar. Bovenop het 'opslag'-gebouw worden laten extra verdiepingen gebouwd voor woningbouw, de verdiepingen in het huidige gebouw zijn daarvoor te laag en er waren geen partijen in geïnteresseerd.
Het huidige kantoor wordt over een paar jaar ook getransformeerd naar woningen, net als de andere twee voornamelijk woongebouwen. Over de huidige skatehal wordt volgend jaar gestart met de bouw van meer woningen. De containers worden dan naar een andere plaats verplaatst, wel binnen hetzelfde gebied.
De woongebouwen worden hopelijk als de markt daar ruimte voor heeft meer gemixt; niet alleen sociale huur, maar ook particuliere huur en koop. De units zijn zo ontworpen dat ze erg makkelijk gecombineerd kunnen worden door een tussenmuur weg te halen. Doordat de keuken/wc/badkamer in blokken zijn geplaatst, zijn deze ook heel makkelijk de verplaatsen of weg te halen.

Situatie specifiek en algemeen/ vergelijking andere projecten

Hele gebied was leeg, en zelfs verboden om binnen te gaan voor niet werknemers voordat Philips de gebouwen verkocht. Eindhovenaren waren daarom erg onbekend met het gebied, in ieder geval in de zin dat zij er iets te doen zouden kunnen hebben. Door het aantrekken van mensen door het organiseren van verschillende activiteiten en evenementen is dit project de start geweest van de ontwikkeling van het gebied als geheel.
De samenstelling van de bewoners is een tikje anders dan bij andere sociale huurprojecten, omdat het hier voornamelijk jonge mensen betreft. Hierdoor zijn er wat meer problemen met geluidsoverlast van feesten binnen de woongebouwen, omdat de aanpassing van student naar werkend niet altijd even snel gaat. Behalve dat zijn er geen echte verschillen met andere projecten. De sfeer in het ene gebouw is anders dan in het andere, dit kan te maken hebben met het ontwerp van de trap in de entree (rond met doorkijkjes, of recht en afgesloten).

Verwachtingen en realiteit gehele proces

De woningen waren veel sneller verhuurd dan verwacht, ook is er geen leegstand. Dit heeft ook te maken met de toewijzing; wie het eerst komt, die het eerst maalt.
Voor de commerciële ruimtes is het anders. Omdat het hele gebied opgestart moest worden, was er voornamelijk in het begin weinig aanloop en was het nodig om voldoende evenementen te organiseren zodat er mensen kwamen. Nu, na vier jaar, begint het te lopen en kunnen de meeste zaken zelfstandig voldoende omzet draaien. Ook al is het gebied niet ver van het centrum (7min fietsen), voor de meeste Eindhovenaren voelt het ver weg en zullen zij op dit moment nog niet zomaar naar de Strijp S komen.

Other

Aan de andere kant van de hoofdstraat (Torenallee) worden op dit moment nieuwe gebouwen neergezet, voornamelijk koopappartementen. Ook wordt er een MBO-design schol gebouwd, welke dit schooljaar (2016) in gebruik wordt genomen. Het installeren van zonnepanelen op het dak van de woongebouwen is lastig doordat de bewoners niet meewerken; de energiekosten worden nu verrekend zonder individuele inzage in het verbruik. Hoe dit voordelig is voor de bewoners is nu onduidelijk en houd de plaatsing tegen.

FIG. APP.A.1 Strijp S text.

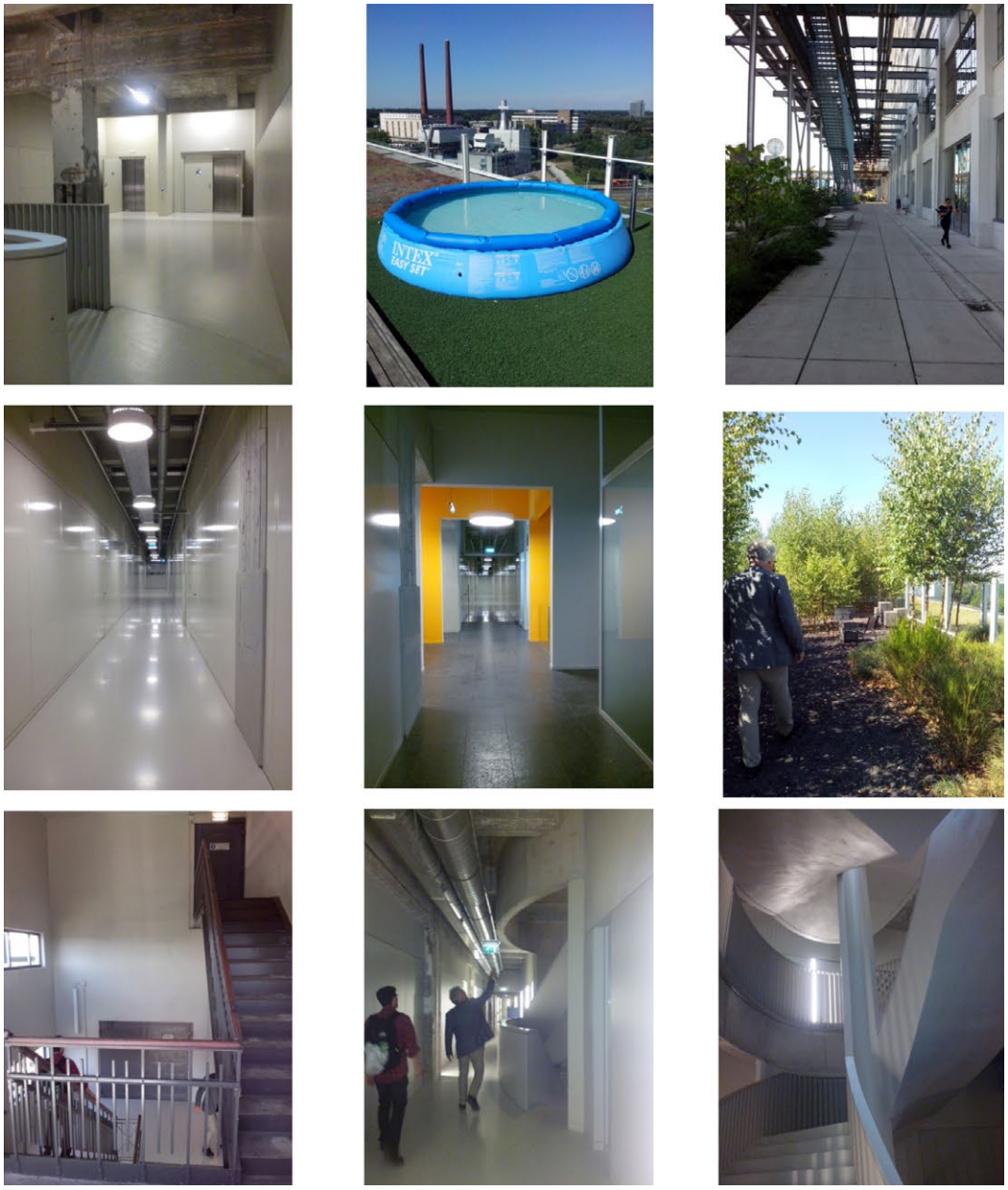

FIG. APP.A.2 Strijp S photos.

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Case study visit: Acta/go-west & blue-gray

Guide 1:		Guide 2:	Guide 3:
Name:	Jean-Baptiste Benraad	Name: Sophie	Name: Arjen
Function:	Ontwikkelaar/ontwerper	Function: Socius beheer	Function: Complexbeheerder
other			“Sociaal”

Partijen bij elkaar brengen voor realisatie bij aanvang project	
Gebouw stond op de lijst om gesloopt te worden, daarvoor in de plaats containers, maar waarom slopen en nieuw bouwen? Plan gemaakt voor verbouwing; kostenraming, vooral besparing op beheerkosten en door hergebruik van materialen.	Dit gebouw stond ook op de lijst om gesloopt te worden, nadat ABN Amro het niet meer nodig had als noodgebouw. Een investeerder zag kansen voornamelijk door de locatie, en heeft het transformatieproces in gang gezet.
Bepalen van functies i.r.t. bewoners van gebouwen en openbare ruimte	
Grote behoefte aan studentenkamers, bovendien nemen zijn genoegen met hoe het gebouw is en het delen van keuken/woonkamer/sanitair. Aansluiting met de buurt door de discotheek (Radion) en bijbehorend cafe dat 24 uur per dag open is. Daarnaast zijn er op de begane grond en 1e verdieping ruimtes voor ateliers. Door deze functies en het organiseren van evenementen wordt de buurt meer betrokken bij het gebouw en levert het hen ook wat op. Van tevoren stond vast dat alle installaties zouden worden vervangen, goede nooduitgangen, en elke kamer moest een raam hebben dat open kan.	Opnieuw de behoefte aan studentenkamers, dit keer in combinatie met het AMC aan de overkant, maakte dit gebouw uitermate geschikt voor studenten met een medische richting. De opzet van het gebouw is hetzelfde als het ACTA, maar hier is het voor 15 jaar getransformeerd. Door de aard van het gebouw en deze langere levensduur is de afwerking van een duidelijk hogere kwaliteit. Ook is er elke dag een complexbeheerder aanwezig (vanuit Camelot), die de meeste studenten direct kan helpen met eventuele problemen. In dit gebouw zijn er studio's gerealiseerd, niet kamers met gedeeld sanitair en keuken.
Situatie specifiek en algemeen/ vergelijking andere projecten	
Het Beheer wordt grotendeels gedaan door de studenten zelf, wel ondersteund door Socius. Daarnaast worden er ook statushouders in te leeftijd van 18 tot 23 en kansrijke jongeren in stabiele ‘gangen’ geplaatst. De bewoners zijn erg vrij om decoratie aan te brengen, in zowel de algemene ruimtes als in hun kamers. Wel wordt er extra aandacht besteed aan de brandveiligheid. Per gang is er een gangbeheerder die dit in de gaten moet houden en aanspreekpunt is voor andere problemen.	Volgens de complexbeheerder is er meer sociale binding omdat het beheer anders geregeld is.
Verwachtingen en realiteit gehele proces	
Het beheer wordt niet zoveel als van tevoren bedacht was gedaan door de studenten. Door de grootte van het gebouw (460 kamers) en de onervarenheid van de studenten was hier hulp bij nodig. Nu met Socius erbij loopt het prima. Studenten blijven langer hangen dan verwacht omdat de sociale contacten die worden gemaakt zeer gewaardeerd worden. Ondanks de nieuwe installaties is het in de winter vaak koud; hoge plafonds zijn fijn omdat een entresol gebouwd kan worden, maar de warmte verdwijnt ook naar boven.	Parkeerplaatsen voor tijdelijk gebruik van het gebouw werden eerst bezet door mensen van buitenaf, nu is dat afgesloten en is er een sleutel nodig. Echter, meer plekken zijn nodig maar zijn er niet. Er wordt geen afval opgehaald omdat het volgens de gemeente niet in een woonwijk staat, maar er wordt wel afvalstoffenheffing betaald door de studenten.
Other	
Hoewel het in eerste instantie tien jaar tijdelijk gebruikt zou worden als studenthuisvesting, is nu na vier jaar besloten dat ze hierna nog tien jaar mogen blijven. De reden hiervoor is dat op hetzelfde terrein voor tien jaar containers geplaats zullen worden, waarvan de helft voor studenten wordt, en de andere helft voor statushouders in dezelfde leeftijd.	Doordat dit gebouw weer in gebruik is, wordt langzamerhand ook meer gedaan met de leegstaande gebouwen eromheen; een gebouw wordt getransformeerd naar kleine kantoor-units, een ander gebouw wordt gesloopt na een groot aantal jaren en daar zal iets nieuws komen.

FIG. APP.A.3 ACTA/Go-West & Blue-Gray text.

FIG. APP.A.4 ACTA/Go-West & Blue-Gray photos.

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Case study visit: Aan ‘t verlaat

Guide 1:		Guide 2:	Guide 3:
Name:	Bente Bast	Name:	Name:
Function:	Secretaris SHS	Function:	Function:

Partijen bij elkaar brengen voor realisatie bij aanvang project

Studenten van de universiteit wilden iets doen aan de hoge nood aan studentenhuisvesting, en hebben een lijst opgesteld met geschikte gebouwen. Uiteindelijk in een gesprek met de gemeente werden ze gewezen op dit gebouw van GGZ Delfland, dat al tien jaar leegstand en een probleem was in hun portefeuille. Omdat de gebouwen oorspronkelijk bedoeld waren voor bewoning door personeel (de flat) en door patiënten (de paviljoens) waren de plattegronden zeer geschikt. Door de lange leegstand was echter al het koper van het leidingwerk gestolen en was er een ernstige onderhouds-achterstand. De investeerder is een individueel persoon die tussen SHS, de bewoners en de eigenaar (GGZ) instaat. Na tien jaar moet SHS eruit en worden de gebouwen zeer waarschijnlijk verkocht en gesloopt voor nieuwbouwwoningen.

Bepalen van functies i.r.t. bewoners van gebouwen en openbare ruimte

De indeling van beide gebouwen was eigenlijk al ideaal, alleen het achterstallige onderhoud moest worden aangepakt en vervangen van de installaties. In de flat is op elke verdieping een slaapkamer opgeofferd om als gedeelde woonkamer gebruikt te worden, en sommige kamers zijn samengevoegd zodat studenten kunnen doorverhuizen binnen het gebouw (gewoonte van studentenhuizen in Delft; nieuwere bewoners hebben een kleinere kamer dan oudere). Op de begane grond zijn twee ruimtes waar evenementen georganiseerd kunnen worden.

In het gebouw van de paviljoens is de algemene gang erg breed dus zou gezien kunnen worden als zonde van de ruimte, tegelijkertijd geeft het het gebouw ook karakter en extra mogelijkheden voor activiteiten zoals tafeltennis.

In de paviljoens is de helft van de ‘huizen’ voor internationale studenten bedoeld, omdat de instroom aan internationale studenten de afgelopen jaren sterk is gestegen. Deze huizen worden gemeubileerd verhuurd. Over het algemeen zijn de studenten erg blij met de mix, met zowel Nederlandse als andere internationale studenten; hierdoor maakt men veel sneller contacten.

Situatie specifiek en algemeen/ vergelijking andere projecten

In de flat konden studenten een huurkorting krijgen als ze hielpen met schilderen, vloerbedekking eruit halen, etc. Een groot aantal studenten heeft hiervan gebruik gemaakt en dat heeft de kosten voor transformatie gedrukt. Ook is verder zoveel mogelijk gebruikt van wat er al was. SHS managet het project, ook is er een bewonerscommissie die ook als klankbord functioneert. In de flat is er een complexbeheerder aanwezig op dinsdag, maar hier zijn veel klachten over omdat deze niet zichtbaar genoeg is voor bewoners. In de paviljoens is dit opgelost door twee bewoners aan te wijzen als complexbeheerder in ruil voor een huurkorting.

De leegstandswet/tijdelijk gebruik laat het toe dat niet aan alle eisen voor nieuwbouw voldaan hoeft te worden. Met betrekking tot geluidsoverlast van de snelweg zou het anders een probleem geweest zijn.

Verwachtingen en realiteit gehele proces

Doel van SHS is behalve nieuwe woonruimte voor studenten realiseren ook ervaringsplaatsen bieden voor studenten in de projectontwikkeling.

Beide flats waren zo goed als binnen een dag verhuurd. Studenten zijn over het algemeen heel erg tevreden, voornamelijk over de locatie (erg groen, dicht bij de stad, dicht bij de Delftse hout). Er zijn nog geen problemen voorgekomen. De gangen in de flat van de ‘huizen’ zijn van de studenten, en regels voor brandveiligheid worden niet altijd gehandhaafd omdat dit lastig blijkt.

FIG. APP.A.5 Aan ’t Verlaat text.

FIG. APP.A.6 Aan 't Verlaat photos

TOC

Case study visit: Mixx-inn

Guide 1:		Guide 2:	Guide 3:
Name:	Tineke van Reeuwijk	Name:	Name:
Function:	Commercieel adviseur Haagwonen	Function:	Function:

Partijen bij elkaar brengen voor realisatie bij aanvang project

Gebouw was al in eigendom van Haagwonen, maar in gebruik als zorgcentrum. Het gebouw is getransformeerd nadat er met verschillende partijen was afgesproken dat zij in het gebouw zouden komen, waaronder vooral organisaties met sociale functies (tienermoeders, wonen met begeleiding, restaurant + hotel voor opleiding, tijdelijke huisvesting voor werknemers uitzendbureau).
Anderhalf jaar na oplevering trekt het restaurant zich terug, afspraken over de bezetting van de receptie moeten aangepast worden (omdat het hotel deze op zich nam) en opeens staat een deel leeg. Het restaurant had te hoge prijzen voor de doelgroep en de buurt, en werd niet zo goed bezocht als gepland. Daarna hebben verschillende andere partijen de ruimtes gehuurd, maar geen van allen succesvol (bv. Leger des heils). Er zijn nu onderhandelingen over een restaurant met halal (afhaal-) maaltijden, wat beter bij de buurt past.
Het gebouw staat te koop (in verhuurde staat) omdat de huidige functie van het gebouw niet past bij het takenpakket van een sociale woningcorporatie en daarom afgestoten moet worden.

Bepalen van functies i.r.t. bewoners van gebouwen en openbare ruimte

Er moest een sociale functie in het gebouw komen, die ook paste bij de nood op dat moment. Door de wisselingen van huurders en dus gebruikers, is er nu een hele andere mix dan eerst het plan was. Het grootste gedeelte van de Mixx-Inn wordt verhuurd aan een uitzendbureau dat de kamers gebruikt voor de tijdelijke huisvesting van Poolse seizoenarbeiders. De twee verdiepingen die oorspronkelijk van het hotel waren zijn later ook door het uitzendbureau overgenomen. Behalve de Polen, zit er ook een stichting die jongeren met een milde handicap begeleid met zelfstandig wonen. Zij zitten gespikkeld door het gebouw.
In de plint beneden zit en dagbesteding en binnenkort ook een kinderdagverblijf. Er is ook een vergaderruimte op de begane grond maar deze heeft geen eigen voorzieningen voor koffie/thee en is daardoor erg moeilijk verhuurbaar. Elke verdieping heeft een eigen kleurschema.

Situatie specifiek en algemeen/ vergelijking andere projecten

Door de hoge doorstroom van de Polen, en omdat het er relatief veel zijn op een kleine ruimte, is er streng toezicht en zijn er strenge regels van toepassing. In principe zijn er geen bezoekers toegestaan, er mag niet gerookt of gedronken worden in de algemene ruimtes (wel in de eigen kamer). Als de regels overtreden worden, is er in het geval van een kleine overtreding een waarschuwing, daarna of als het een grote overtreding was, moeten direct de spullen gepakt worden en wordt uit het gebouw gezet (en teruggestuurd).
Voor de jongeren is er eveneens een streng beleid. Deze bewoners wonen hier gemiddeld langer dan een jaar, wat wel een verschil is met de meeste Polen, die er een paar maanden zitten (maar soms ook 2 dagen of 2 jaar).
Elke kamer heeft een eigen adres en brievenbus, en bewoners kunnen zich daarom ook inschrijven bij de gemeente op het adres.

Verwachtingen en realiteit gehele proces

Het Mixx-Inn gebouw is een van de eerste getransformeerde gebouwen, en staat er nu zo'n 7 jaar. Ondanks de veranderingen in bezetting, is het gebouw flexibel gebleken om te kunnen voldoen aan de vraag. De buurt noemt het gebouw ook af en toe het 'Polen-hotel', maar er zijn tegenwoordig goede afspraken gemaakt met de buurt en de wijkagent om overlast te voorkomen. De bus die de Polen 's ochtends ophaalt wacht nu bijvoorbeeld niet direct voor het gebouw maar op de hoek van de straat.
Afspraken met andere partijen over het huren van delen van het gebouw bleken niet altijd duurzaam. Door het opvullen van de leegstand kwamen er soms partijen die niet de beste combinatie waren met andere partijen in het gebouw of met de buurt (leger des heils), of omdat subsidies van de gemeente werden ingetrokken (LUNA).

Other

Woningcorporaties hebben door regelgeving zo goed als geen mogelijkheid meer om nieuwe sociale woningen te bouwen, ondanks de hoge nood aan betaalbare woningen.

FIG. APP.A.7 Mixx-inn text.

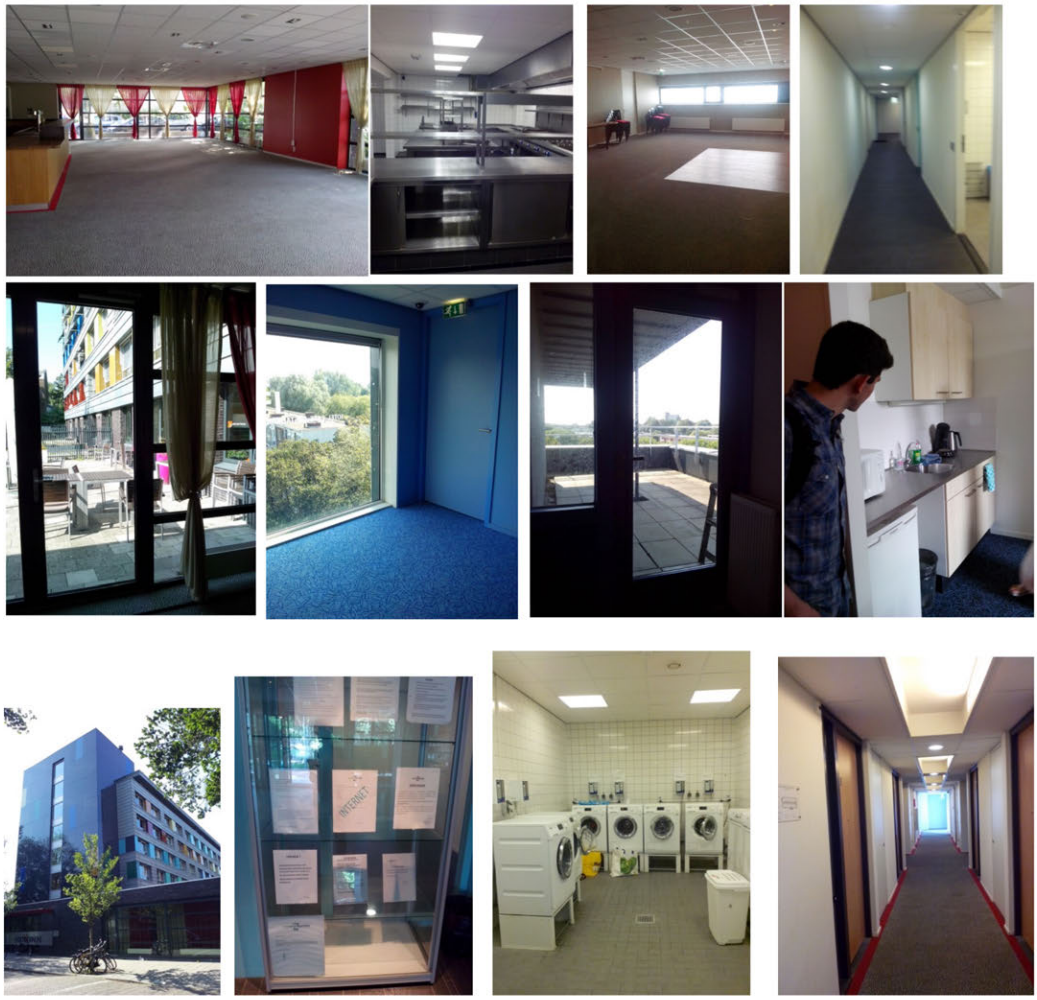

FIG. APP.A.8 Mixx-in photos

TOC

Case study visit: Junoblok

Guide 1:		Guide 2:	Guide 3:
Name:	Ineke Hulshof	Name: Richard Ham	Name:
Function:	Architect	Function: Aannemer	Function:

Partijen bij elkaar brengen voor realisatie bij aanvang project

Het kantoor gebouw stond op de lijst voor de sloop, maar goed gelukte eerdere transformatieprojecten (Rotterdam, klushuizen) dienden als voorbeeld waarna contact opgenomen werd met Ineke, de ontwerper van die gebouwen. Er werd een plan gemaakt voor het gebouw, inclusief bouwwijzer en participatie proces.
De kavels in het gebouw werden verkocht (niet meer dan 1 verdieping per eigenaar) en zouden kunnen worden samengevoegd of opgedeeld. Er was geen bewoningsplicht in opgenomen, wat heeft geresulteerd in een eigenaar (gedeeld in 3) die een groot aantal kavels zo klein mogelijk heeft opgedeeld om er verhuurbare studio's van te maken.
Op de begane grond zitten twee niet-woonruimtes, namelijk een werkplaats, en een nog in te richten horeca ruimte of kantoorruimte.

Bepalen van functies i.r.t. bewoners van gebouwen en openbare ruimte

Het dak is vervangen en opgehoogd, op zo'n manier dat de eigenaren zelf alle openingen kunnen maken (a.d.h.v. de bouwwijzer) en eventueel nog een verdieping erop kunnen zetten. Behalve dat is het gebouw ook intern 'klus klaar' gemaakt, wat inhoudt dat de leidingen en voorzieningen zijn aangelegd voor het verwachte aantal bewoners, 62. Doordat er twee ontwikkelaars tussen de eigenaren zitten, wordt het aantal units bijna verdubbeld naar +/- 140. Hierdoor komt op sommige plekken de veiligheid in gevaar, doordat er bijvoorbeeld veel meer deuren op de vluchtroutes uitkomen.
De eigenaren zijn verenigd in een vereniging van eigenaren, maar opnieuw doordat er twee ontwikkelaars tussen zitten die hele andere belangen hebben, worden er beslissingen genomen over de gedeelde ruimtes en over andere gedeelde zaken die in het nadeel van de eigenaar-bewoners zijn.
In het oorspronkelijke plan van de wijk zou het gebouw gesloopt worden en zou de wijk worden her ontwikkeld met voornamelijk woningen. Dat plan ging niet door, dus er staan nu nog vooral kantoren, maar er wordt aan de wijk gewerkt. Door een tekort aan woningen en de wens om een vrij kavel te kunnen indelen, is dit gebouw daarvoor aangesteld. De ligging aan de Schie maakt het gebouw aantrekkelijk.

Situatie specifiek en algemeen/ vergelijking andere projecten

De bouwwijzer is opgesteld in aanvulling op het bouwbesluit, omdat elke eigenaar zelf de woning moet indelen. Door de variatie is het moeilijk om te controleren of er aan alle eisen voldaan wordt, ook omdat er verschillende tussenpersonen zijn. De hoeveelheid aan keuzes maakt het complex om te controleren of er niet alleen individueel maar ook als geheel aan de eisen wordt voldaan. De verscheidenheid aan eigenaren en plannen maakt het project als geheel onoverzichtelijk.
Communicatie loopt langzaam omdat er verschillende personen bij zijn betrokken. Voordat een eigenaar de sleutel krijgt, moeten alle bouwplannen goedgekeurd zijn en een vergunning hebben. In maart 2016 is het gebouw opgeleverd, nu, eind augustus, zijn er maar een paar eigenaren begonnen met bouwen.
Pas als het grootste deel van het bouwen af is, wordt de openbare ruimte buiten ingericht.

Verwachtingen en realiteit gehele proces

Het gebouw is nog niet in gebruik, slechts een paar eigenaren zijn begonnen met verbouwen. Omdat de verhouding tussen eigenaar-bewoners en eigenaar-verhuurders heel anders is dan van tevoren was gepland, zal oorspronkelijke doelgroep niet hier wonen. Voor de eigenaar-bewoners is dit erg vervelend, omdat het beeld dat zij hadden bij de koop niet gerealiseerd zal worden.
Vanuit het ontwerpersperspectief is er veel aandacht besteed aan de bouwwijzer om de eigenaren te helpen met het maken van plannen en om het hele proces te stroomlijnen. Op die manier is ook de kwaliteit van (de uitstraling van) het gebouw als geheel gewaarborgd. Door de afwijkingen daarvan is het nu afwachten of dat inderdaad lukt.
De verkoop van de kavels was liefst met bewonersverplichting uitgegeven, maar de gemeente vreesde niet alle kavels te verkopen als dat het geval was, waardoor ze flexibeler om zijn gegaan met de regels voor uitgifte. Dit lijkt nu nadelig uit te pakken.

FIG. APP.A.9 Junoblok text.

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FIG. APP.A.10 Junoblok photos

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Case study visit: Riekerhaven

Guide 1:		Guide 2:	Guide 3:
Name:	Fleur, Rik, Louise	Name:	Name:
Function:	PR, de Key, huurders	Function:	Function:

Partijen bij elkaar brengen voor realisatie bij aanvang project

Het complex van gebouwen stond eerst op de Houthaven in Amsterdam, maar omdat er nu een permanent plan ligt voor die buurt moesten de gebouwen weg van de gemeente Amsterdam. Woningcorporatie de Key had ze daarom over, en ging op zoek naar ene nieuwe locatie. Die vonden ze op sportpark Riekerhaven, waar na overleg met een wethouder van het stadsdeel besloten werd om de gebouwen te bestemmen voor 50% studenten en 50% statushouders. Hierdoor kwam er een beperking op de huurcontracten; het zijn jongerencontracten voor bewoners van 18 tot 27 jaar, en met een duur van maximaal 5 jaar. Daarna moet men zelf een andere woning gevonden hebben. De inschrijfduur bij woningcorporatie wordt niet aangetast door op dit complex te wonen.

Bepalen van functies i.r.t. bewoners van gebouwen en openbare ruimte

De gebouwen staan ruim opgesteld en daardoor is er veel groen tussen de gebouwen in. Wat er precies met die binnenruimtes gedaan gaat worden, wordt nog bepaald door de bewoners.
Het complex bestaat voornamelijk uit studio's van 23m2, er zijn een aantal appartementen van 65m2. De studio's zitten aan een gedeelde gang, met een woonkamer, keuken, en wasvoorziening.
Het complex is in zelfbeheer, met supervisie van Socius. Dit houdt in dat elke gang twee 'gangmakers' heeft die de bewoners aan de gang met elkaar moeten laten leven, inclusief afspraken voor schoonmaken van de gezamenlijke ruimtes etc.

Situatie specifiek en algemeen/ vergelijking andere projecten

Omdat de helft van de bewoners statushouder (alleen mannen) is en een van de doelen van het project van elkaar leren (integratie) is, zijn de studio's om en om verdeeld. Ook is een zo divers mogelijke afspiegeling van de Nederlands bevolking (jongeren) uitgezocht door informatieavonden, demografische kenmerken en het schrijven van een motivatiebrief.
Vanwege de gemixte bewonersgroep worden er veel meer activiteiten georganiseerd voor en door bewoners dan anders het geval zou zijn. Zo is er bijvoorbeeld een language exchange, poëzie avond, festivals, of en voetbaltoernooi. Ook wordt een 'maatjes-systeem' opgezet, waarbij een Nederlander en een statushouder gekoppeld worden die eenzelfde (persoonlijke) doel hebben, en gedurende een jaar dat moeten proberen te bereiken onder begeleiding van een coach.

Verwachtingen en realiteit gehele proces

Other

FIG. APP.A.11 Riekerhaven text.

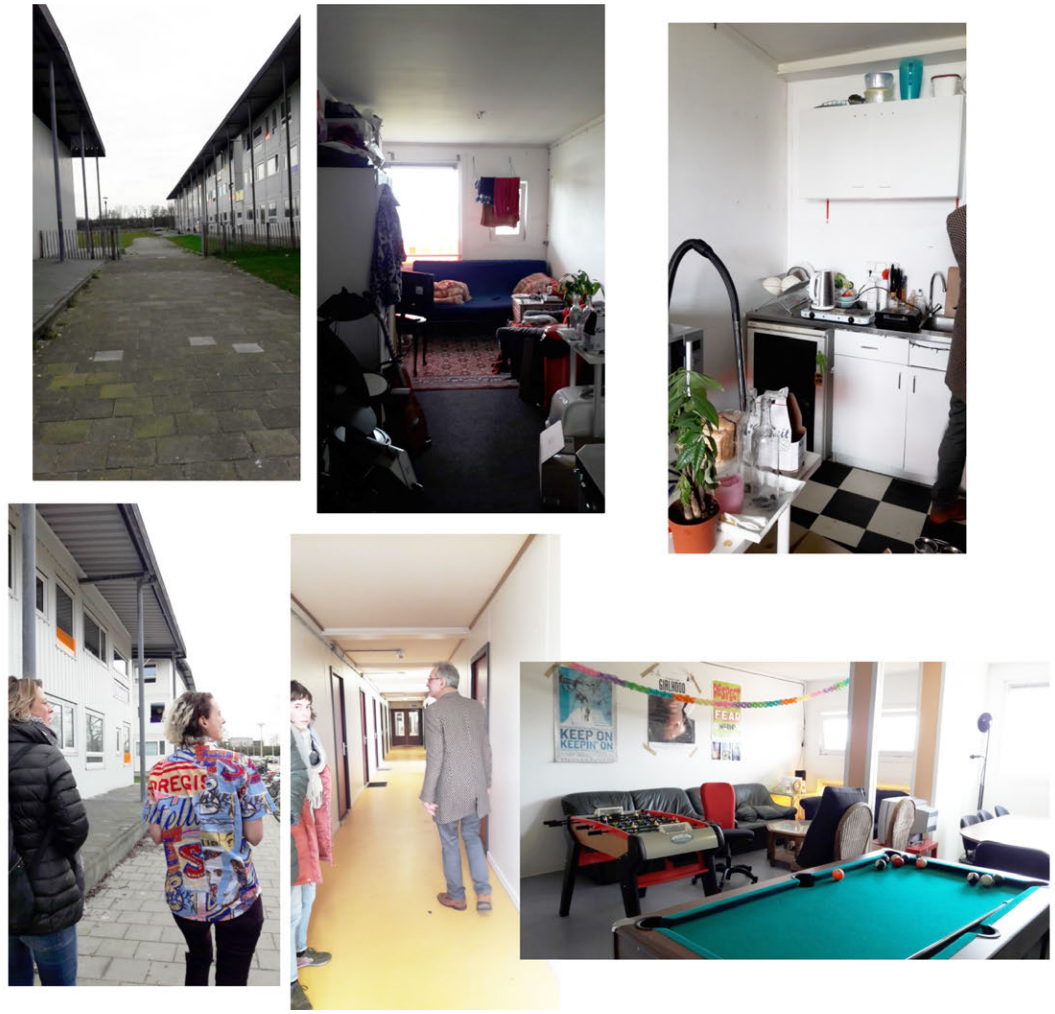

FIG. APP.A.12 Riekerhaven photos

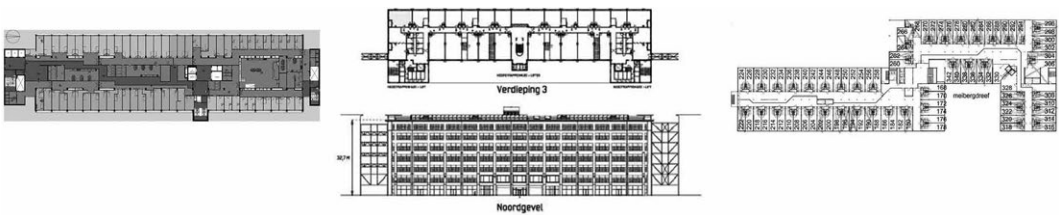

FIG. APP.A.13 Floor plans of ACTA/Go-West & Blue-Gray.

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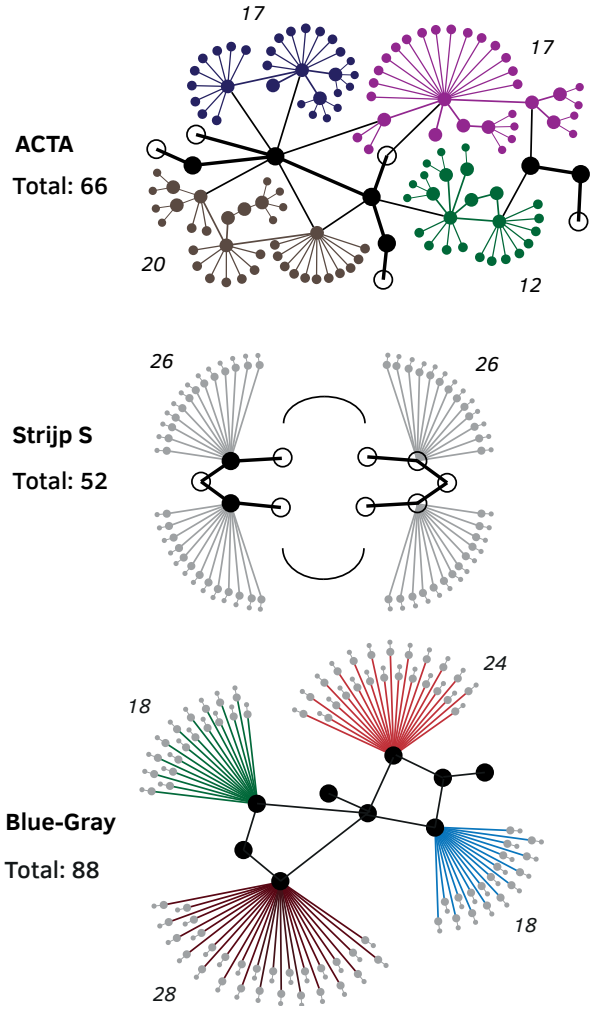

FIG. 8.1 Space Syntax diagrams of three cases (numbers indicate total of rooms/studio's).

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APPENDIX B

Questionnaire

Welcome to this survey!

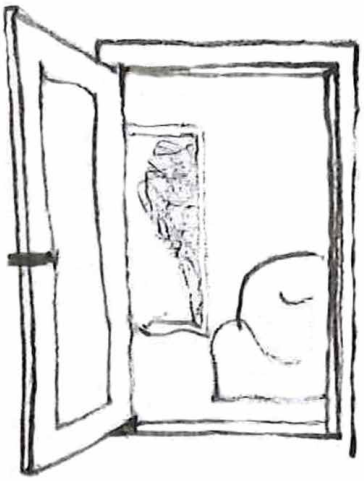
This survey is part of a PhD-project about building transformation. More information is needed on what makes a house a good home. Your help is greatly appreciated.

The survey consists of three parts:

1. *The composition of your household and home (5 min.)*
2. *Your preferences for a small apartment and ideas of home (5 min.)*
3. *Your thoughts on activities in the home and the indoor environment (5 min.)*

All the answers are anonymous, so it is not possible to trace your answers back to you.

By writing your answers down and handing in the survey, you confirm your participation in the questionnaire.



TOC

Part 1: You and your home

1 What describes your current household best?

- ☐ just me -> Go to question 3
- ☐ with parent(s)
- ☐ with partner
- ☐ with partner and child(ren)
- ☐ with child(ren)
- ☐ with friends/flat mates
- ☐ other:

_____

2 How many people are in your household (your family and/or partner, and yourself)?

_____

3 Do you live in shared housing? (so, with people who are not your family or your partner)

- ☐ no -> Go to question 5
- ☐ yes

4 How many other people (excluding your household) live there?

_____

5 How likely is it that your housing situation will change within one or two years?

- ☐ unlikely
- ☐ maybe
- ☐ likely

6 Can you describe into what household it would change? (for example, because of cohabitation, children, divorce,...)

- ☐ no change
- ☐ single person household
- ☐ with parent(s)
- ☐ with partner
- ☐ with partner and child(ren)
- ☐ with partner and more children
- ☐ with child(ren)
- ☐ with friends/flat mates
- ☐ other

_____

7 Where do you see yourself on the housing market?

- ☐ not on it yet and not interested
- ☐ looking for (other) student housing
- ☐ looking for (other) rental housing
- ☐ looking for the 1st place to buy
- ☐ looking for a 2nd place to buy (within 3 years of moving into the 1st one)
- ☐ experienced or settled (I do not feel the need to move)
- ☐ super advanced! (living in my dreamhouse!)
- ☐ other: _____

8 I am:

- ☐ female
- ☐ male

9 What is your age?

_____

10 Which country/countries best describe(s) your nationality?

_____

11 What is your highest level of *completed* education?

- ☐ high school
- ☐ vocational education (MBO)
- ☐ applied university education, BSc (HBO)
- ☐ applied university education, MSc (HBO)
- ☐ university, BSc
- ☐ university, MSc
- ☐ other: _____

12 Are you currently enrolled at a school?

- ☐ no
- ☐ yes, at university
- ☐ yes, at an applied university (HBO)
- ☐ yes, at a vocational school (MBO)
- ☐ other: _____

These questions are about your current home.

13 For your current dwelling, please indicate how much you agree with the statements:

	strongly disagree (1)	Disagree (2)	neither agree nor disagree (3)	Agree (4)	strongly agree (5)
I have made my dwelling mine					
I identify with my dwelling					
I have more social connections because of my dwelling					
I feel comfortable in my dwelling					
I feel secure in my dwelling					
I get stressed by my dwelling					
I have enough storage space in my dwelling					
I have made my dwelling mine					
I want to personalize my dwelling		13a			
Fill in the statements below only if you live in shared housing					
I feel comfortable using the shared bathroom		13b			
I feel comfortable using the shared kitchen		13c			
I experience conflict with my flat mates					13d

13.a Why do you not want to personalise your dwelling?

13.b Why do you not feel comfortable in the shared bathroom?

13.c Why do you not feel comfortable in the shared kitchen?

13.d What kind of conflict do you experience?

14 Is your current dwelling rented or owned?

- ☐ I own my home (I bought it) -> Go to question 16
- ☐ I rent my home from the private market
- ☐ I live in social rental housing
- ☐ I live in student housing
- ☐ other:

_____

15 Do you have a temporary rental contract (for example a campus contract)?

- ☐ yes
- ☐ no

16 Would you like to stay in your current dwelling?

- ☐ no
- ☐ yes, for about a year
- ☐ yes, for a longer time -> Go to question 18

17 Why would you want to move?

_____

Part 2: Preferences and ideas of home

18 **Indicate how important the following items are to you, to make a dwelling feel like home.**

	not at all important (1)	slightly important (2)	moderately important (3)	very important (4)	extremely important (5)
Building something for the future					
Taking care of the dwelling					
Feeling that I belong with the dwelling					
Having the desire to return to my dwelling					
Adjusting the dwelling to suit my wishes					
Marking it as my dwelling					
Having power over what happens					
Showing who I am					
Giving me personal space					
Providing privacy					
Feeling safe					
Knowing everything about the dwelling					
Having and creating memories					
Having a hiding or storing place for things					
Maintaining good social relationships					
Having my own place to sleep and eat					
Entertaining guests/friends at the dwelling					
Showing my aspirations and goals					
Representing the values I have					
Indicating my position in society					
Being with family					

Imagine that you need to move to a very small apartment, with a private kitchen and bathroom.

19 How many people would live in this small apartment, including you?

20 What size in m^2 does it need to be, to be acceptable?

21 What type of building should the small apartment be in:

	Row house		Existing		No outside space
	Semi-detached		New		Balcony
	Detached				Garden
	Flat				
	Other				

22 In how many rooms would the small apartment be divided (the bathroom excluded)?

- ☐ 1 room (studio)
- ☐ 2 rooms (of which one contains the kitchen)
- ☐ 3 rooms (of which one contains the kitchen)

23 Would it be acceptable to:

- ☐ share the kitchen (if)
- ☐ share the bathroom (if)
- ☐ would not accept an apartment with shared spaces.

24 **In the small apartment, what would you want to be *allowed* to change yourself?**

- ☐ furniture (pieces and/or arrangement)
- ☐ wall covering (paint/wallpaper)
- ☐ floor covering
- ☐ kitchen cabinets/appliances
- ☐ bathroom appliances (shower, taps, etc)
- ☐ area outside the front door
- ☐ placement of electrical plugs
- ☐ insulation
- ☐ remove or add walls
- ☐ renew heating system
- ☐ add rooms
- ☐ other:

25 **Do you have a preference for what material the outside walls of the building should be?**

- ☐ no
- ☐ yes, brick
- ☐ yes, wood
- ☐ yes, concrete
- ☐ yes, other:

26 **How would you characterise the area you would like to have the building in?**

- ☐ rural
- ☐ village or town
- ☐ urban
- ☐ city centre
- ☐ other:

27 **Can you order the services and facilities based on how important it is for you to have them close to the small apartment (5min biking or 15min walking)?**

Give the most important service the number 1, then continue with a 2 for second most important, etc.
Services that do not need to be close, can be ticked in the second column (and remain empty in the first column)

should definitely be close		does not need to be close	
	supermarket/groceries		supermarket/groceries
	childcare		childcare
	dining/take away		dining/take away
	culture (cinema/theater)		culture (cinema/theater)
	park		park
	playground		playground
	health services		health services
	cafe/bar		cafe/bar
	sports facilities		sports facilities
	educational/school (all types)		educational/school (all types)
	work		work

Part 3: Activities and indoor environment

28 How many days per week (or an estimate) do you do the following activities *at home*?

	nr. of days per week
study or work	1 2 3 4 5 6 7
cook	1 2 3 4 5 6 7
eat a meal	1 2 3 4 5 6 7
receive guests	1 2 3 4 5 6 7
relax	1 2 3 4 5 6 7
sleep	1 2 3 4 5 6 7
shower or bathe	1 2 3 4 5 6 7

29 Which activities are in your opinion close or related to *cooking*?

- ☐ studying/working
- ☐ eating
- ☐ receiving guests
- ☐ relaxing

30 Which activities are in your opinion close or related to *sleeping*?

- ☐ studying/working
- ☐ receiving guests
- ☐ relaxing
- ☐ shower/bathe

31 What activities do you do at home to relax?

32 How often do you rearrange your furniture?

- ☐ once a month
- ☐ once every few months
- ☐ once a year
- ☐ less than once a year
- ☐ (almost) never

Next are some questions asking about the indoor climate for the activities you would do more than once per week in the small apartment. These are the last questions of the survey.

33 How important is it to have *sun or natural light* in the space where you:

n.a.		not needed	would be nice	impossible without
	study or work			
	cook			
	eat a meal			
	receive guests			
	relax			
	sleep			
	shower or bathe			

34 How important is it *that it is quiet* (from outside or inside noise) in the space where you:

n.a.		not needed	would be nice	impossible without
	study or work			
	cook			
	eat a meal			
	receive guests			
	relax			
	sleep			
	shower or bathe			

35 How important is it to *have clean, empty surfaces* (tables etc.) in the space where you:

n.a.		not needed	would be nice	impossible without
	study or work			
	cook			
	eat a meal			
	receive guests			
	relax			
	sleep			
	shower or bathe			

36 How important is it to *feel fresh air* in the space where you:

n.a.		not needed	would be nice	impossible without
	study or work			
	cook			
	eat a meal			
	receive guests			
	relax			
	sleep			
	shower or bathe			

37 How important is it that it *is warm* in the space where you:

n.a.		not needed	would be nice	impossible without
	study or work			
	cook			
	eat a meal			
	receive guests			
	relax			
	sleep			
	shower or bathe			

38 Do you have any comments on the survey?

A Would you be interested to participate in a follow-up study? This would consist of an interview and a visit to your home.

☐ no

☐ yes -> Then fill in B

B Could you enter your e-mail address so I am able to contact you for the follow-up? This e-mail address will not be connected to the answers you gave on this survey.

Thank you for your time!

APPENDIX C

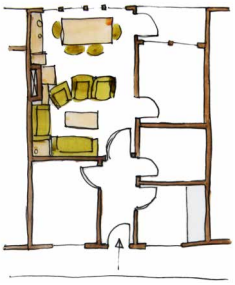
Supplementary material interviews

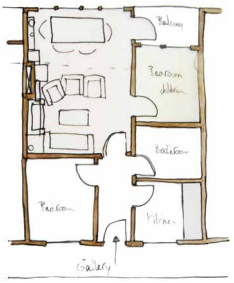
TOC

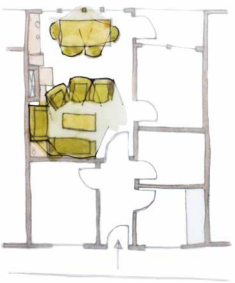
Ali		
Refugee with a permit to stay | Social housing, Living with 'aunt' & kids, 35+		
Zones guests; work/study; eat; play; sleep; cook	**Added objects** plant, flowers, books, cloths, photos in frames, papers, speaker, jacket/cardigan	**IEQ problems** too cold or warm due to single glazing, a lot of sun in the summer, from gas heater to central heating, bad air extraction
Direction of view towards each other	**Adjustments** buy furniture, appliances, curtains, laminate flooring	

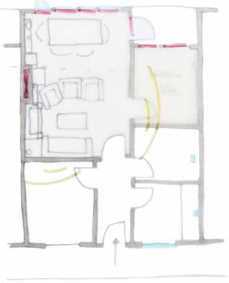
Added objects

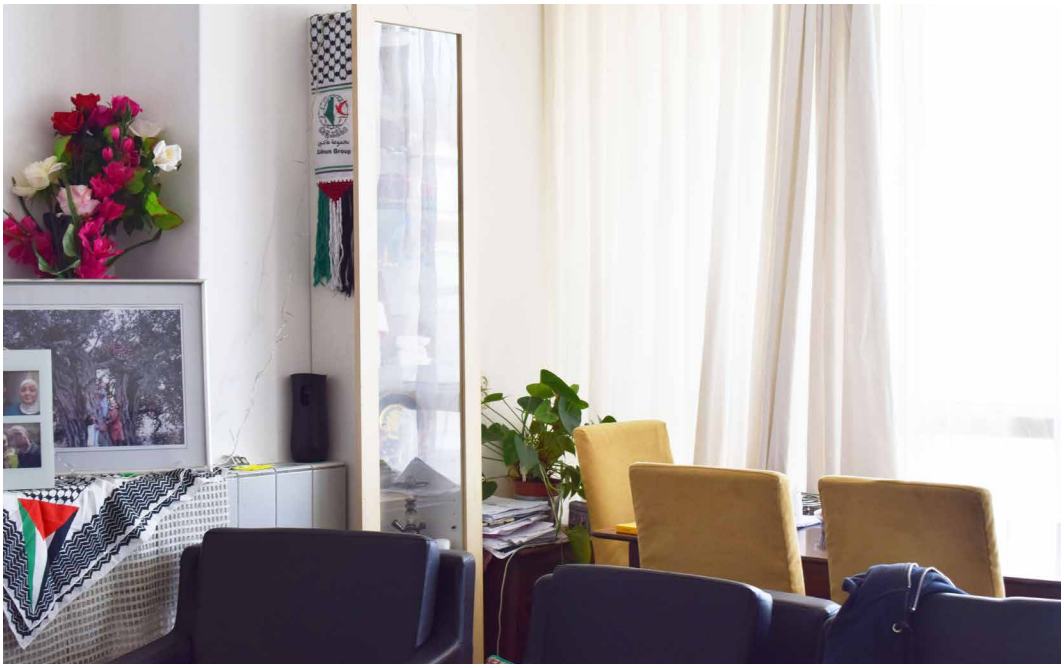
IEQ comments







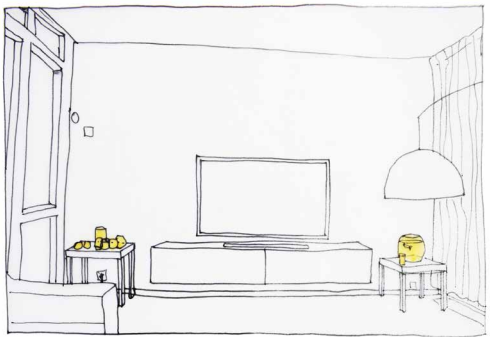




Most proud

Most used

Tannaz		
Immigrant | Living with partner, Housing via work partner, Employed, 35+		
Zones relax, be together, eat, sleep; study; cook, breakfast	**Added objects** painting, pillows, candles (holders), vase with flowers, cookies, tea, phone	**IEQ problems** temperature light/dark
Direction of view	**Adjustments** wallpaper, paint, furniture, closed off a door, storage in old bathroom, extra kitchen cupboard	



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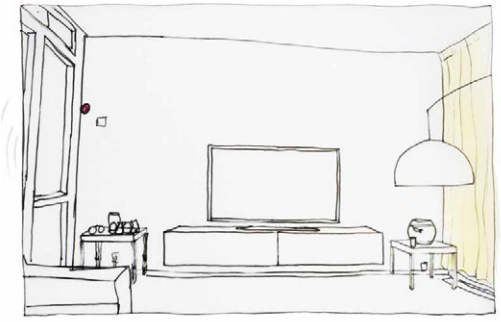
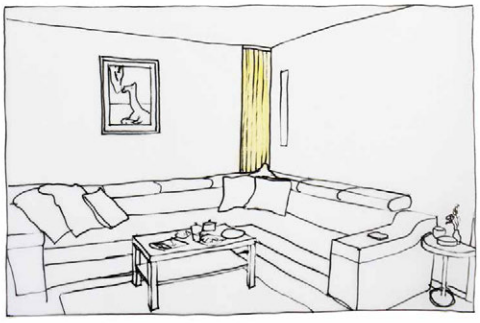
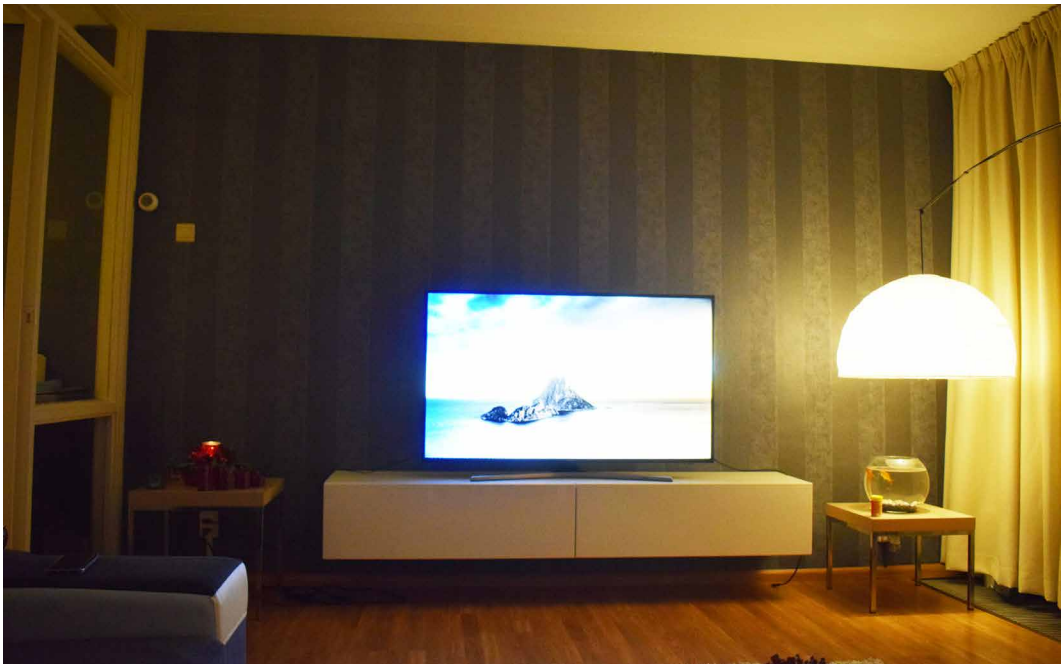




IEQ comments

TOC



Most proud

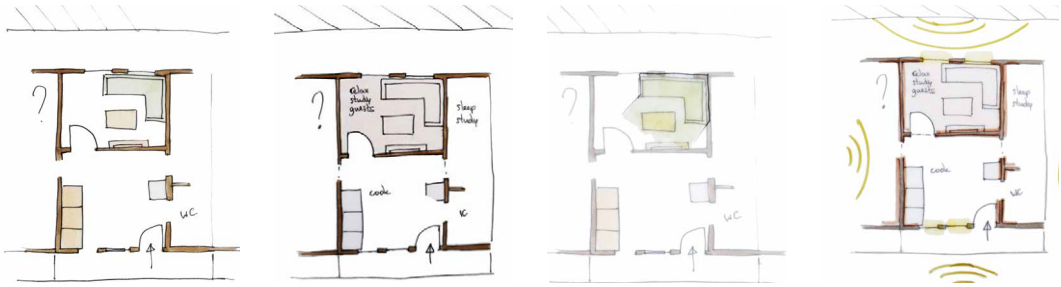
Most used

TOC

Yashar		
Refugee with a permit to stay | Social housing (container dwelling), Living with his brother, 25+		
Nothing he is proud of in the house		
Zones relax, study, receive guests; cook; sleep, study	**Added objects** drinks, tea/coffee, remote control, laptop, study book	**IEQ problems** noise from factory and neighbours, inside the house, not enough light, no view
Direction of view towards tv, away from the window	**Adjustments** furniture, tv, fridge	

Added objects

IEQ comments



TOC

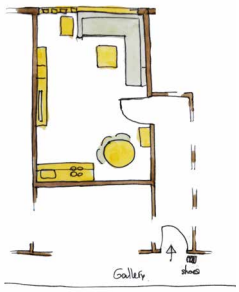
Overview

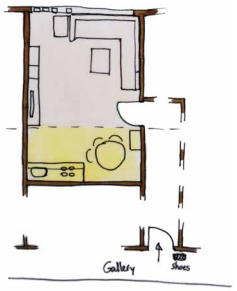
Most used

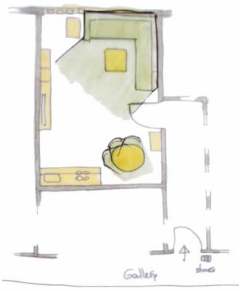
Zaid		
Refugee with a permit to stay | Social housing, Living with sister, 20+		
Zones relax, watch tv, receive guests; cook, eat	**Added objects** blankets, plants, cups, food, clock, pillow, game console	**IEQ problems** Smells from cooking
Direction of view towards the inside	**Adjustments** buy furniture, curtains, tv, appliances, carpet	

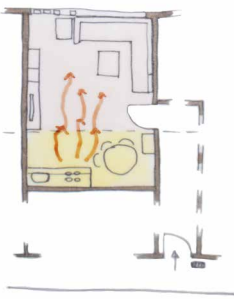
Added objects

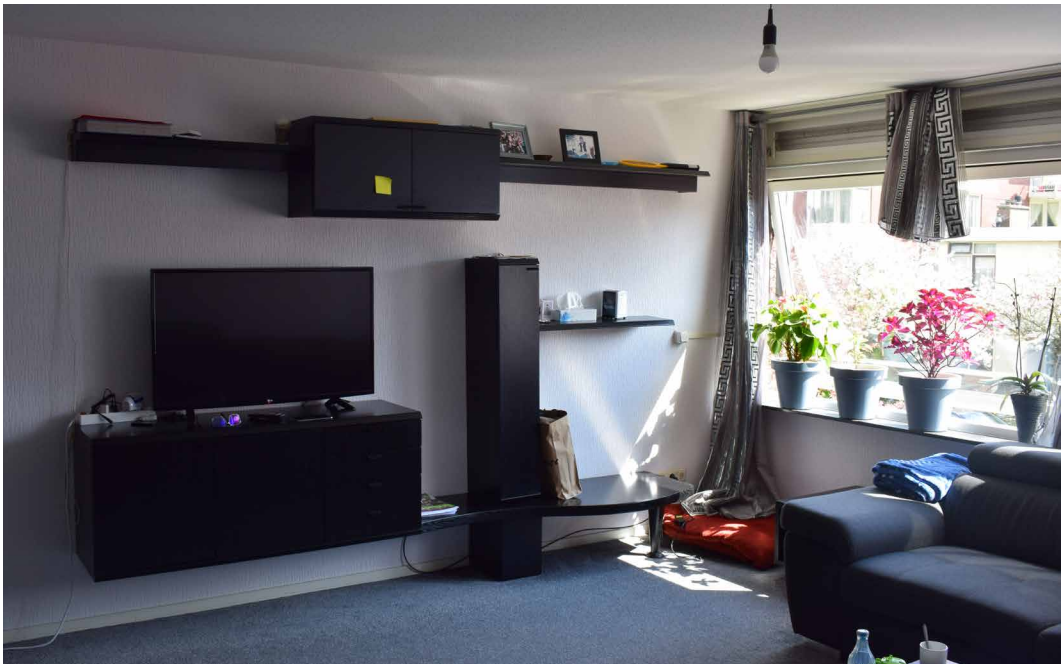
IEQ comments











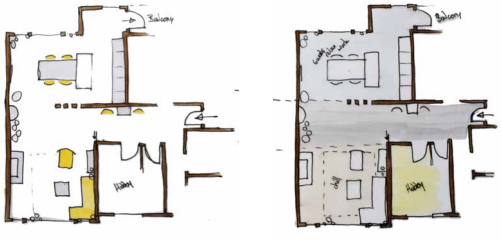
Most proud

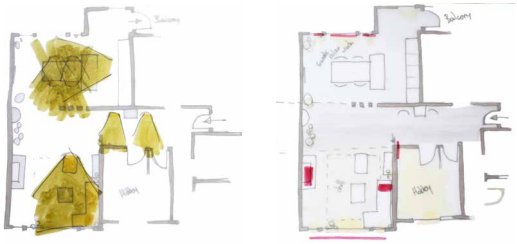
Most used

Marie		
House owner | Living with husband, 25+		
Zones relax; hobby; receive guests, relax, work, cook; display	**Added objects** plants, decoration, books, pillows, blanket	**IEQ problems** cold from windows, curtains or warmth, door open for air in the bedroom and other side for bad air from cars, floor heating, extra insulation for noise, blanket
Direction of view towards each other and outside	**Adjustments** kitchen, floor, walls, ceiling, furniture, heating, lighting, almost everything	

Added objects

IEQ comments





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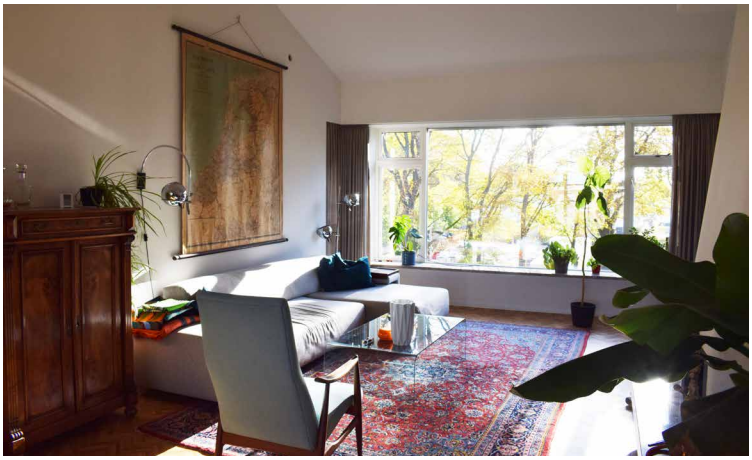

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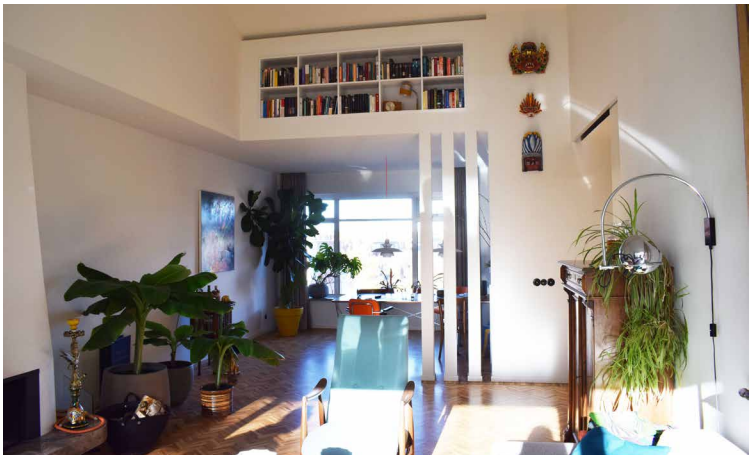


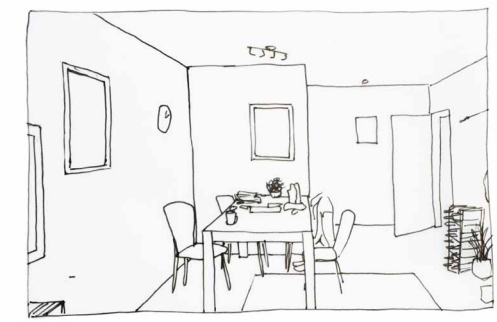
Most proud

Most used

TOC

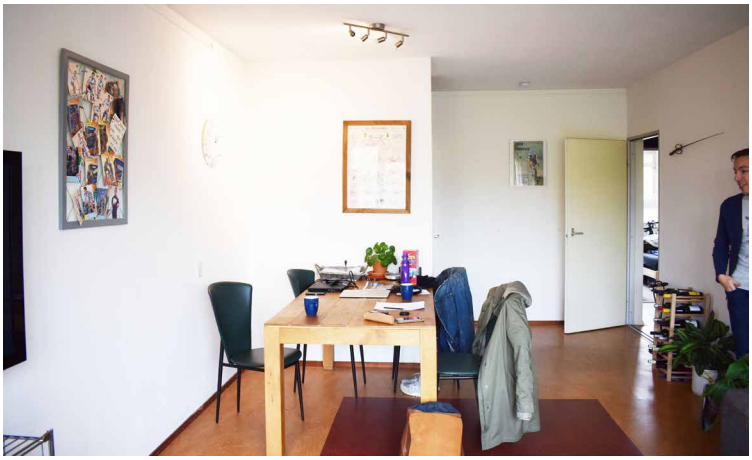
Fabio		
Working and studying | Private rental, Living with friend, 25+		
Zones hobby; sitting, relax; work, eat, receive guests; eat; 'buffer' room	**Added objects** Posters, clock, carpet, plants, curtains, jacket, wine bottles in cupboard	**IEQ problems** unhomely lighting, big windows so warm in the summer, a lot of light is nice
Direction of view towards each other	**Adjustments** curtains, lighting, furniture	

Added objects



IEQ comments

TOC



Overview

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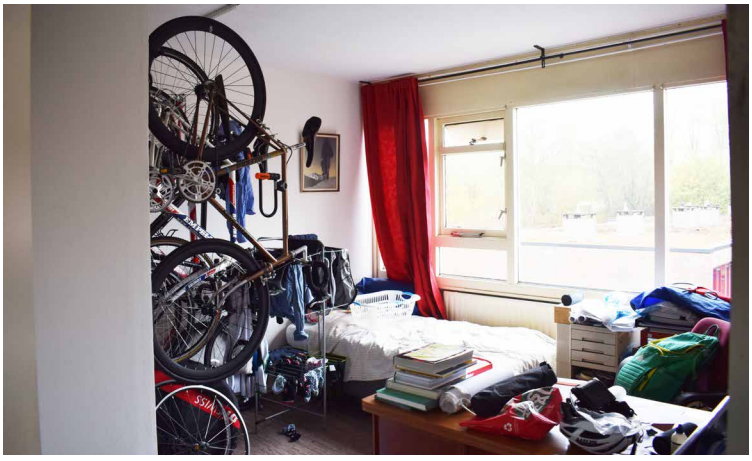
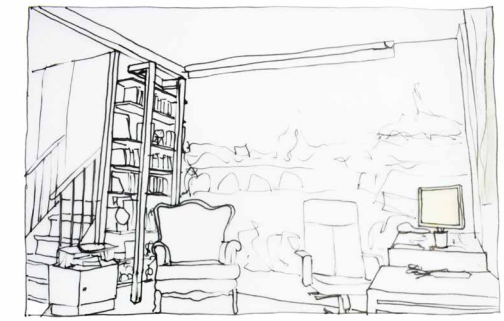


Most used

TOC

Richard		
Working and studying | House owner, Living with girlfriend, 25+		
Zones cook; receive guests, work; eat, relax; work, relax	**Added objects** books, papers, plants, shelves, painting, mural	**IEQ problems** double glazing, glare on screen
Direction of view towards each other, towards room	**Adjustments** paint, laminate flooring, kitchen, bookcase, furniture, mural	

Added objects



IEQ comments

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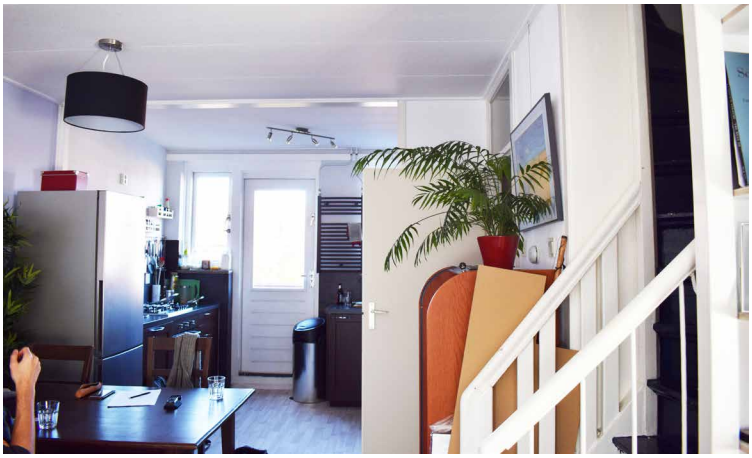
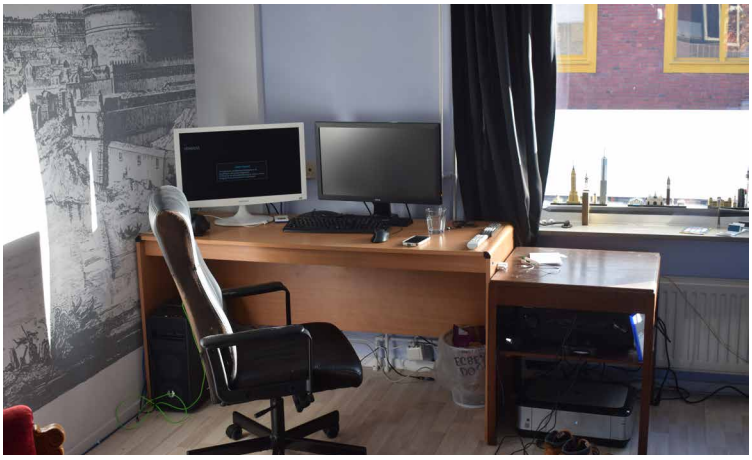


Overview

Most proud

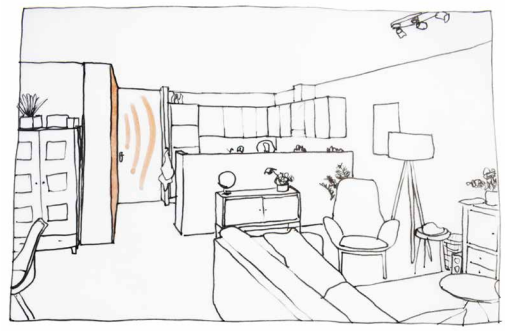


Most used

TOC

Adam		
Working and studying | Private rental, Living with boyfriend, 25+		
Zones relax; work, eat; cook; work; sleep	**Added objects** plants, pillows, decoration, box	**IEQ problems** noise from next door restaurant, heating only on or off
Direction of view towards each other	**Adjustments** painted walls, furniture, objects/stuff	

Added objects



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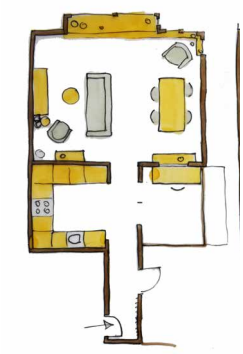

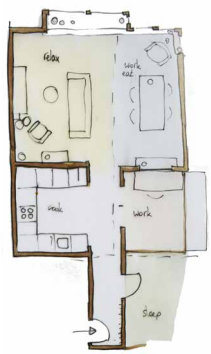

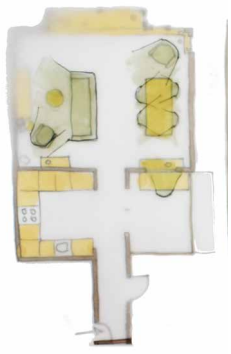

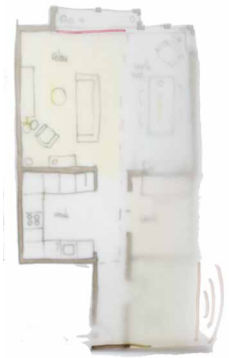

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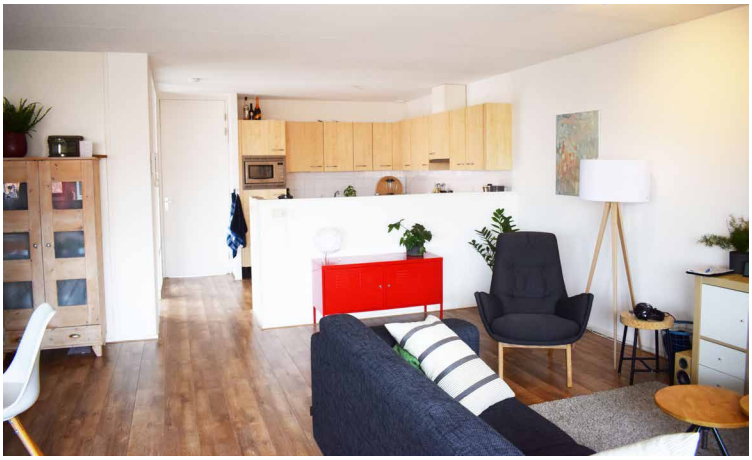
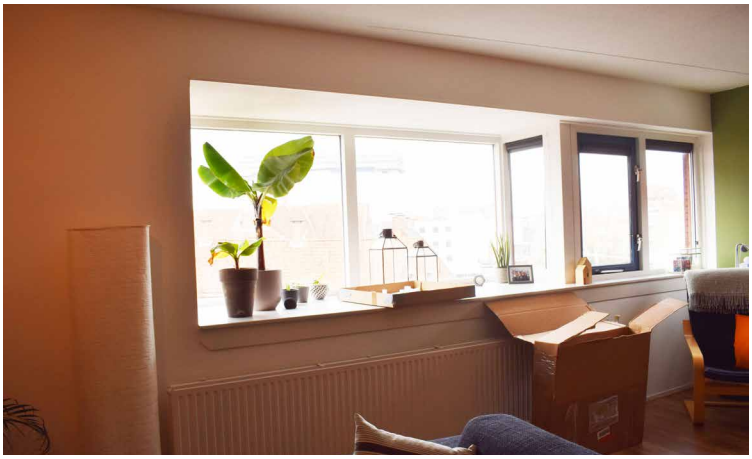


Overview



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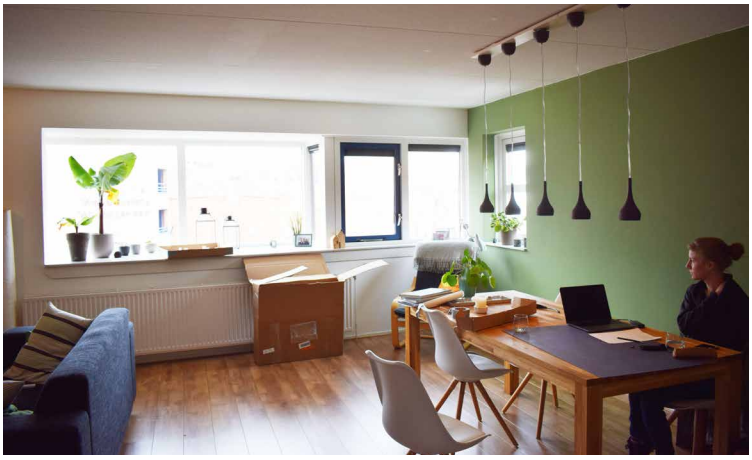
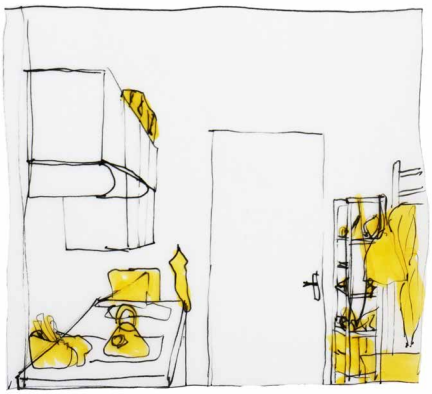


Most used

TOC

Frida		
BSc student | Social housing, Living alone, 20+		
Zones sit, eat, draw; cook; sleep, relax; storage, refresh	**Added objects** flowers, plants, music player, lights, papers, posters, things	**IEQ problems** smell from cooking, not much sun inside
Direction of view towards outside, plants	**Adjustments** furniture, things	



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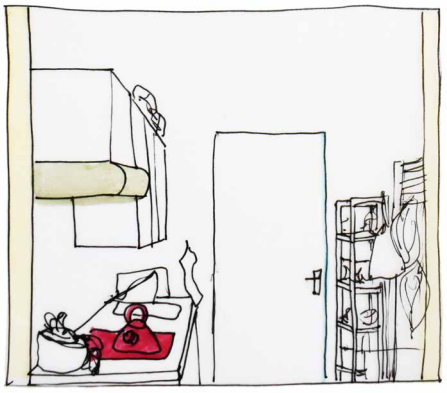
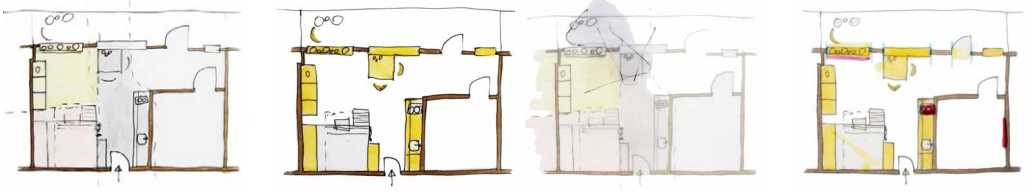


IEQ comments



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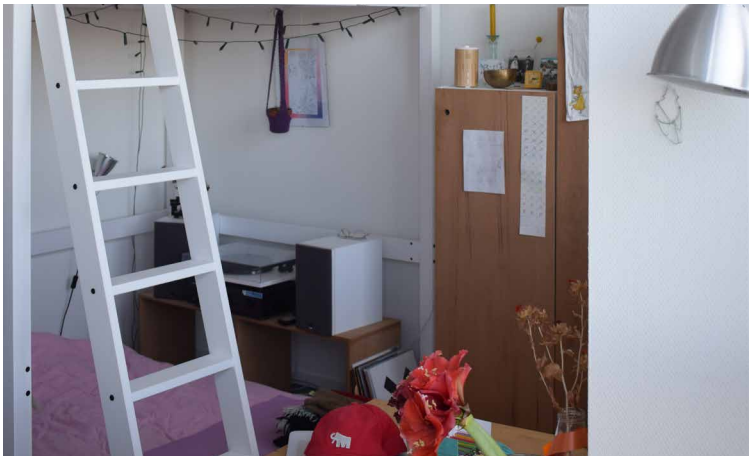

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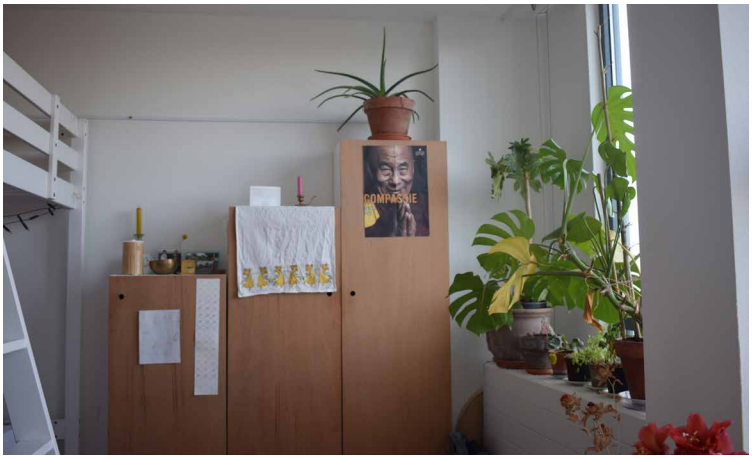
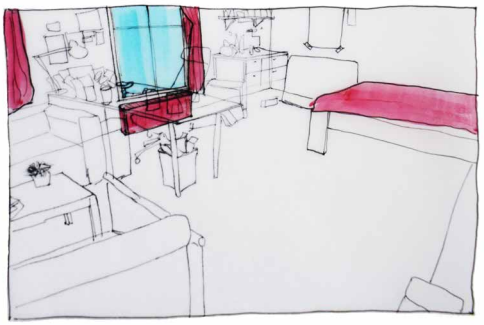


Most proud

Most used

TOC

Noelle		
BSc student | Student house, Living with housemates Temporary (2 months), 20+		
Zones sleep, relax; study; receive guests	**Added objects** Plant, bags, duvet personal hygiene, study stuff, bin, headphones	**IEQ problems** cold due to single glazing heating only on or off, curtains against cold, or under duvet, noise from outside and the hallway
Direction of view towards inside, each other	**Adjustments** plant, duvet	



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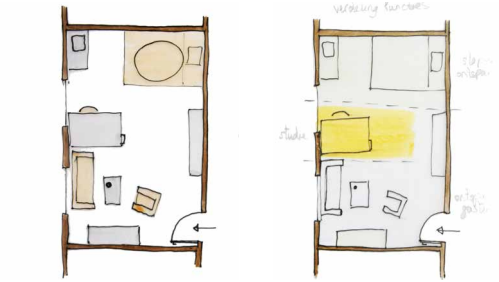

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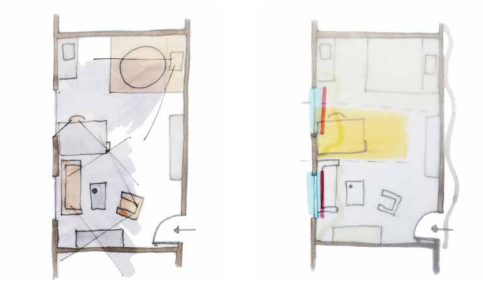
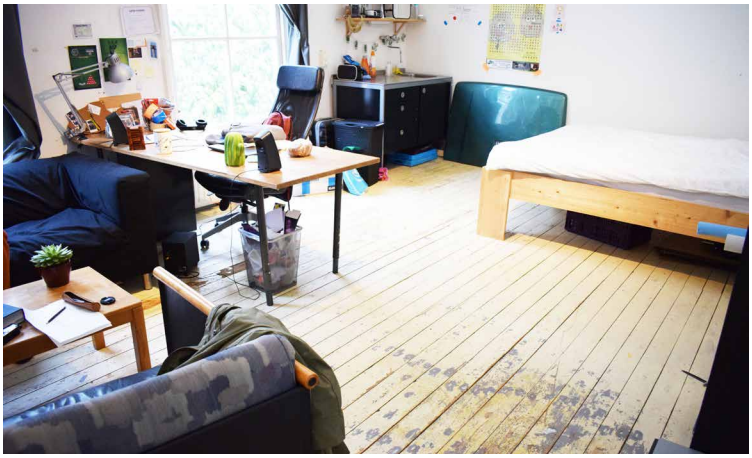




Overview

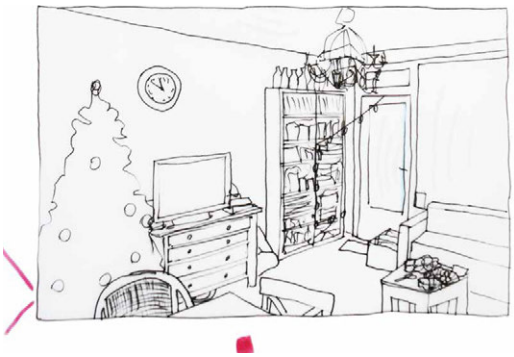
Most proud

Most used

TOC

Peter		
BSc student | Private rental, Living with housemates, 20+		
Zones study, eat, play a game; relax, social; sleep, study, relax	**Added objects** xbox, books, games, fruit, christmas tree, lights, papers, heat controls	**IEQ problems** control temperature, hot or cold, noise inside the house
Direction of view towards each other	**Adjustments** curtains, furniture	

Added objects



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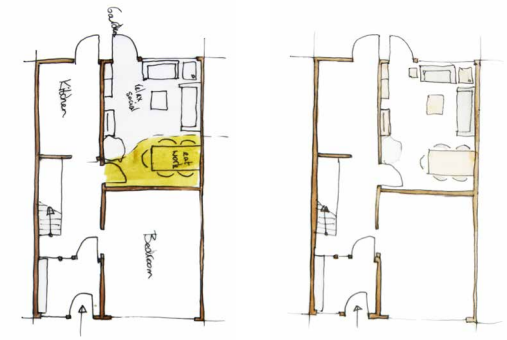

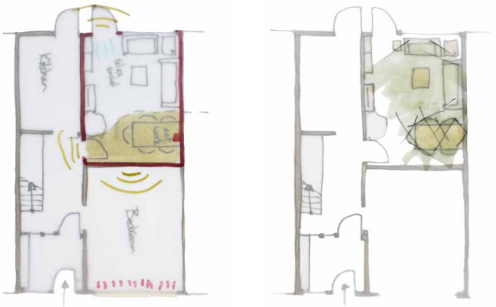

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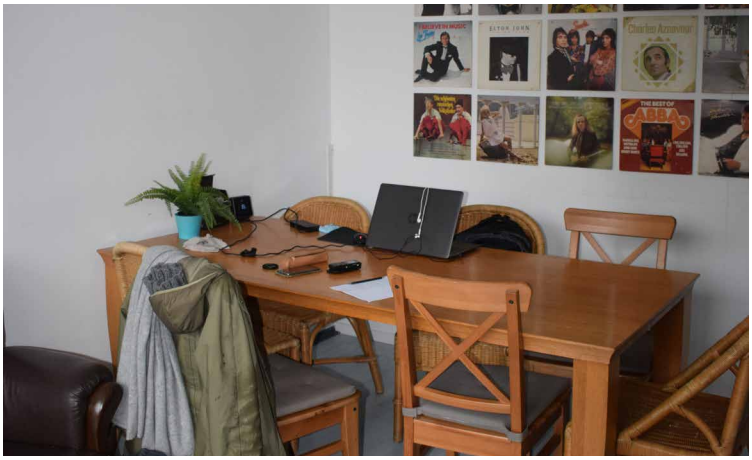

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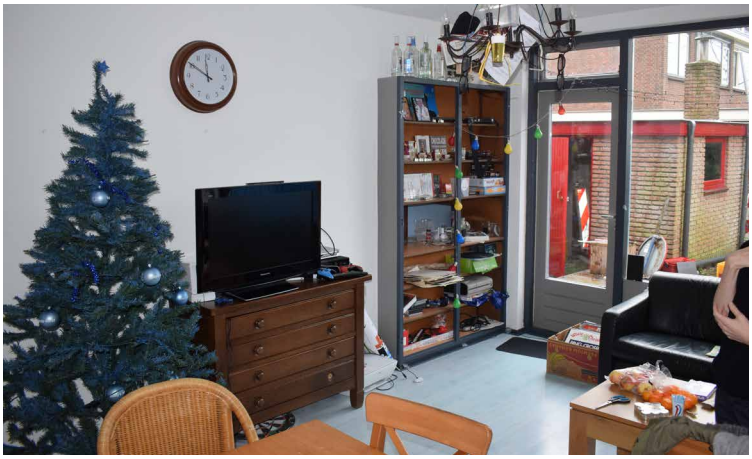

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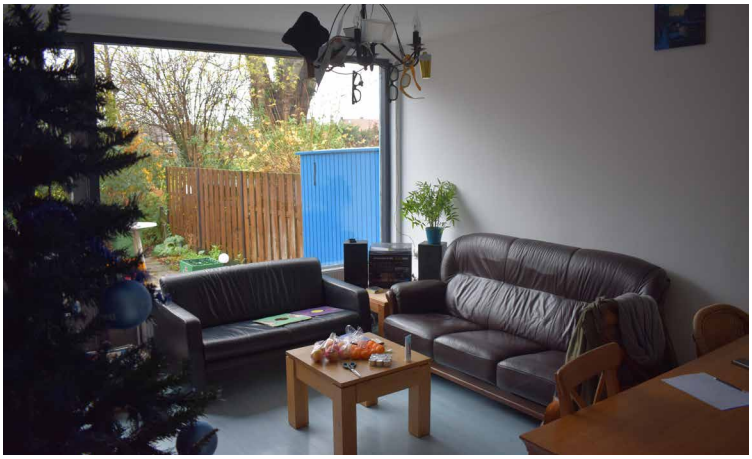
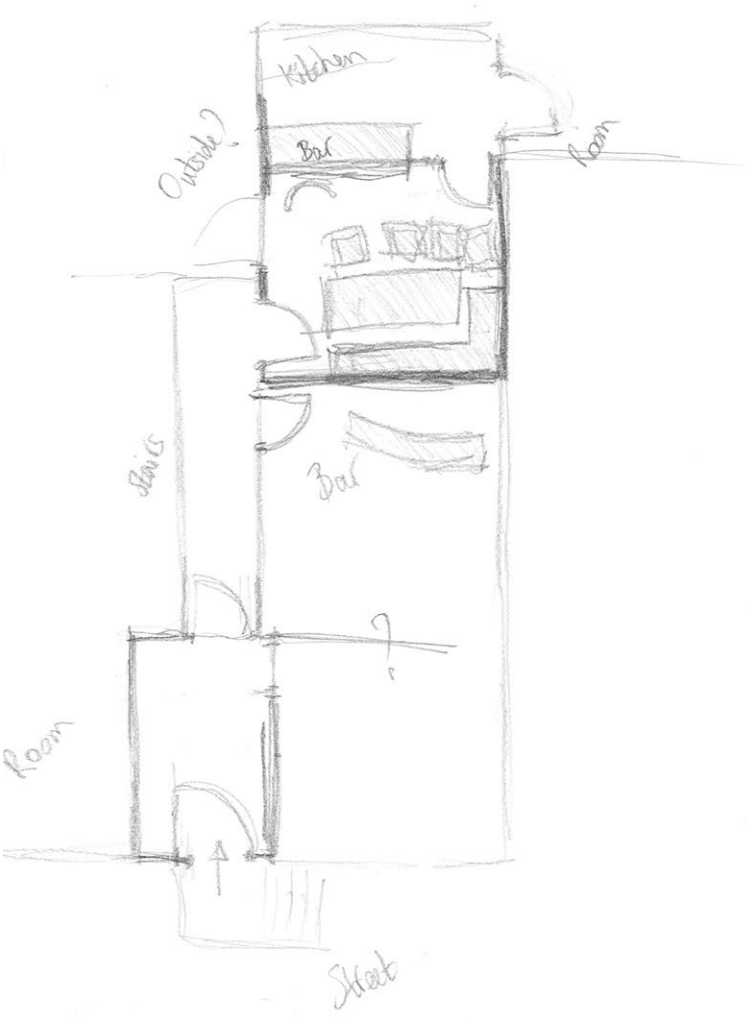


Most used

TOC

John
BSc student | Student house, Living with housemates, 20+
No added objects in these spaces, or complaints specific for the room the interview was in.



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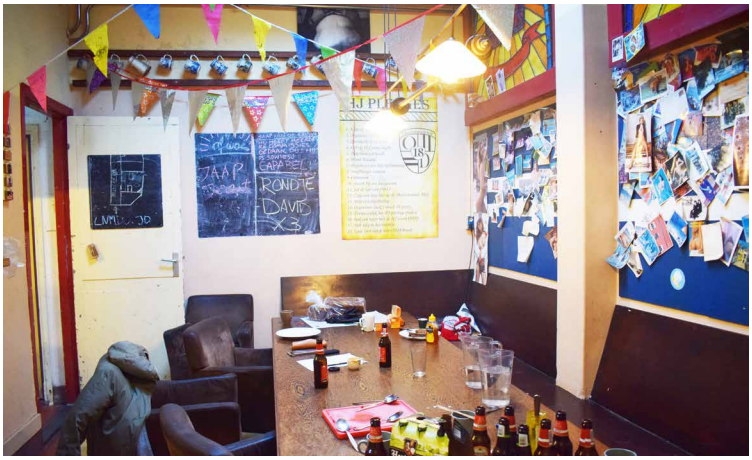


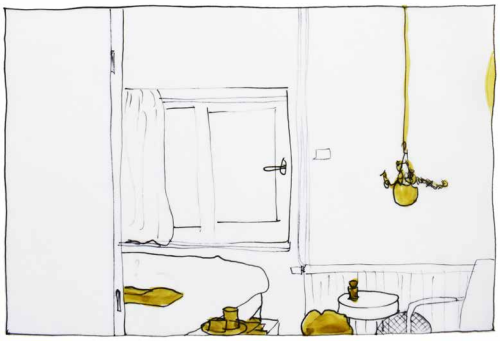
Overview

Most proud

Most used

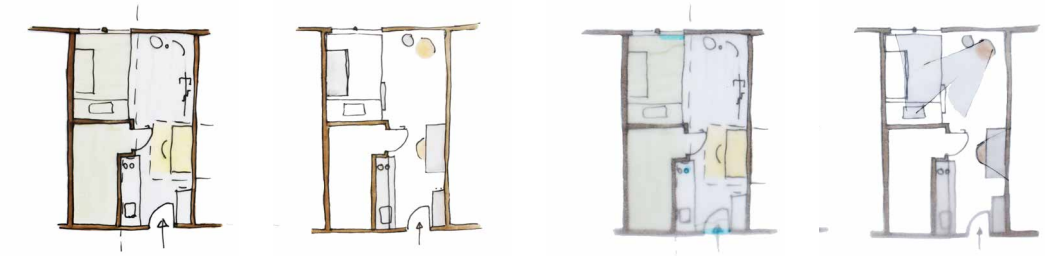
TOC

Mark		
BSc student | Student housing including furniture, Living alone, 20+		
Zones study, eat; cook; relax; sleep	**Added objects** Poster, papers, kitchen stuff, jacket plant, bike bag	**IEQ problems** open window and door for fresh air air extraction not sufficient when cooking or exercising, curtain for the sun
Direction of view towards each other	**Adjustments** put up bike and plant from the ceiling, poster on the door	



Added objects

IEQ comments



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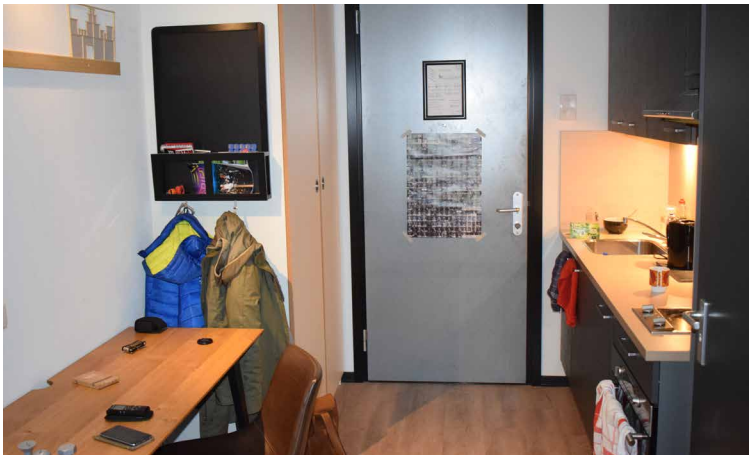
Overview

Most proud



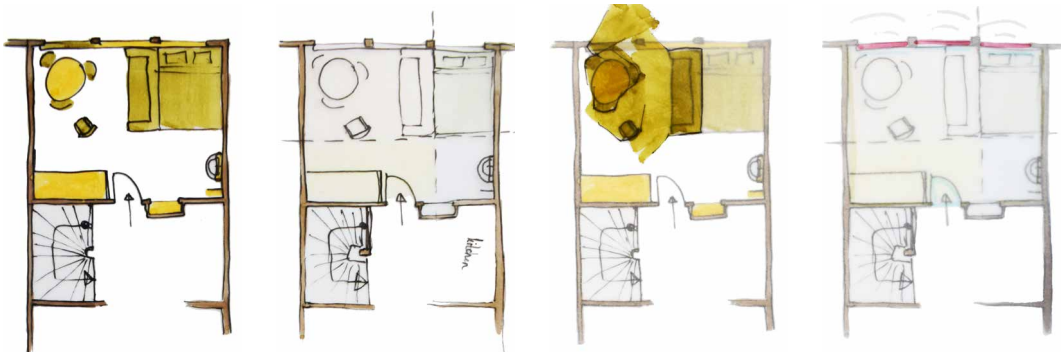
Most used

TOC

Tim		
MSc student | Private rental, Living with housemates, 25+		
Zones bed, sit, sofa, relax, table, receive guests; chairs relax, sleep; store; hygiene	**Added objects** books, clothes, papers, personal care, things	**IEQ problems** hot/cold, mice in the ceiling, windows open/closed, noise from outside
Direction of view towards each other, outside	**Adjustments** none	

Added objects

IEQ comments



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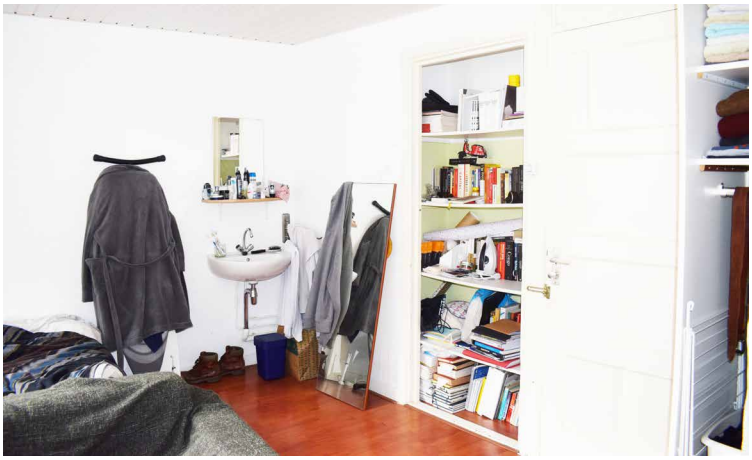
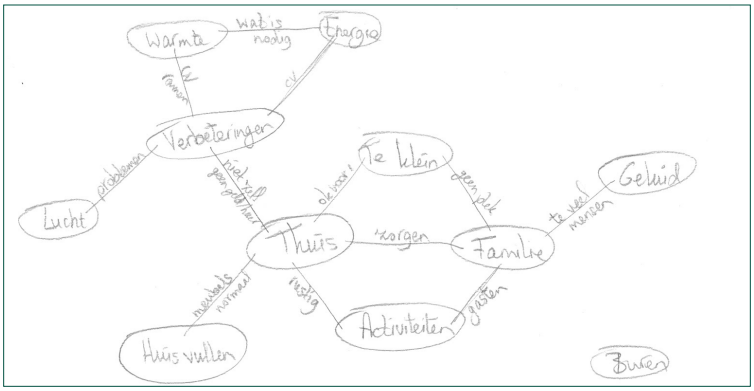


Overview

Most proud

Most used

TOC



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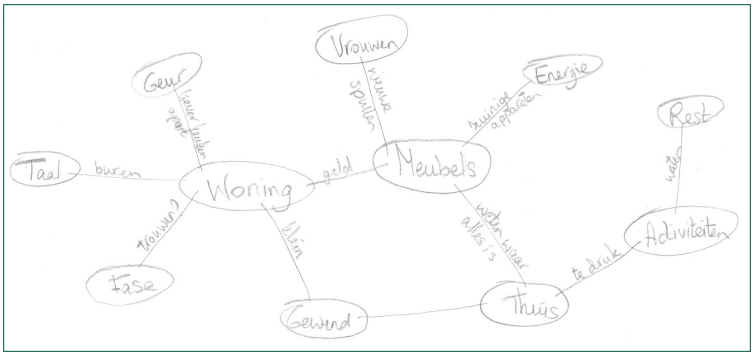

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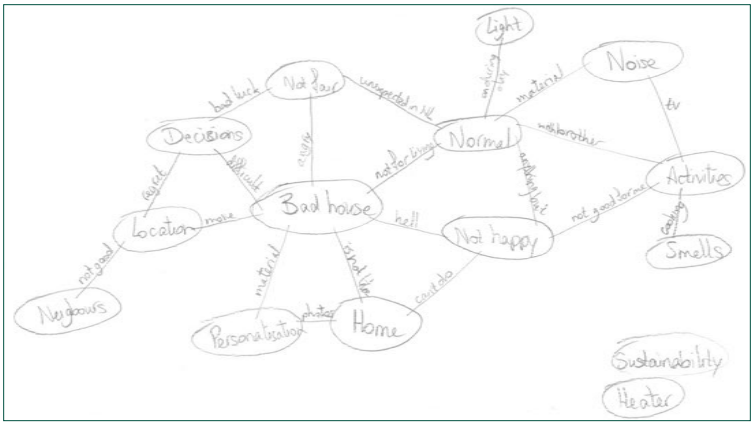

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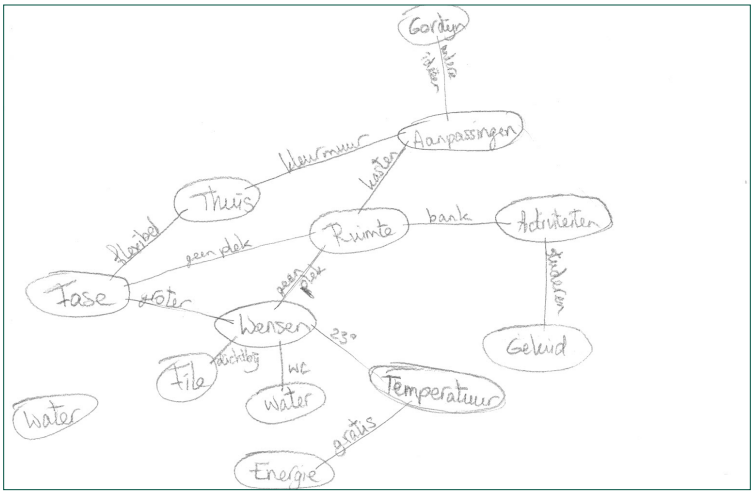

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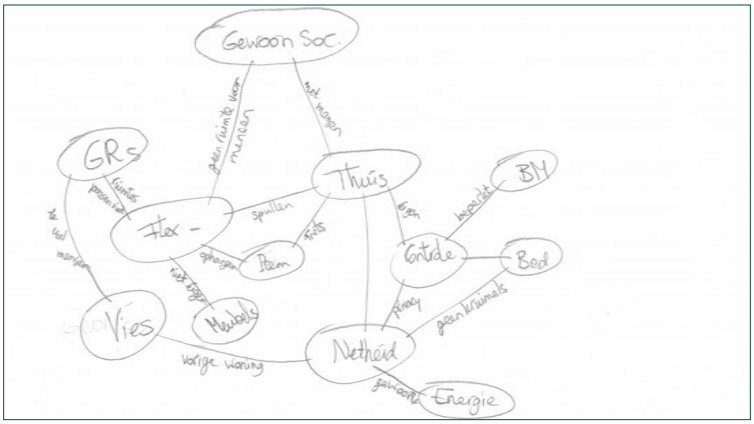

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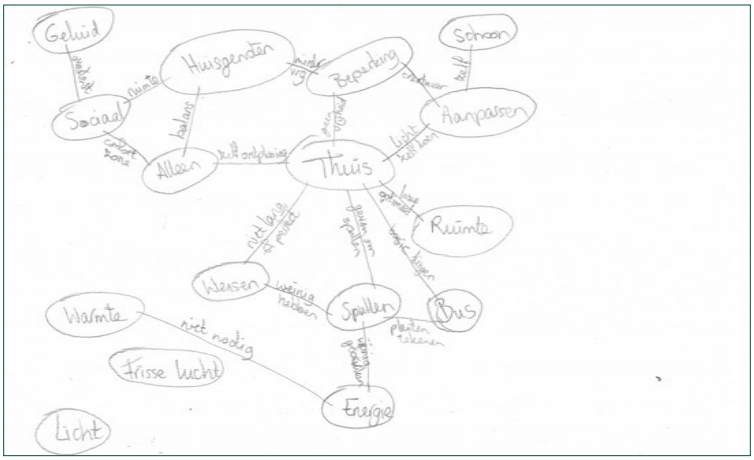

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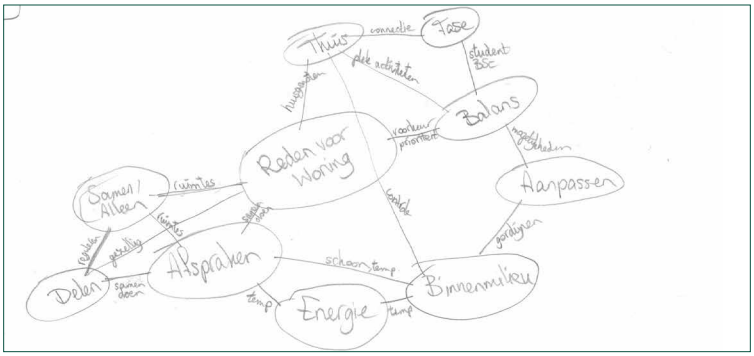

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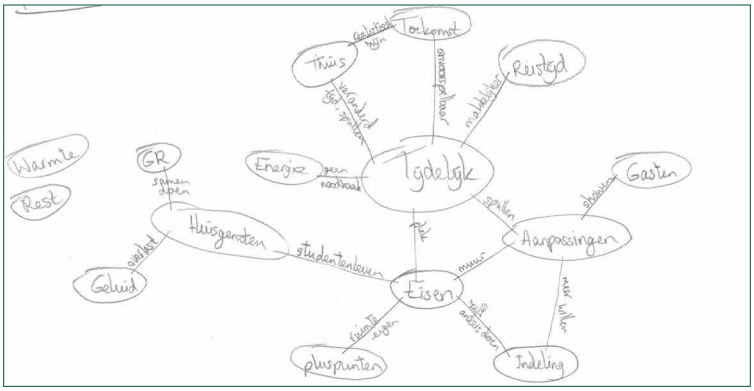

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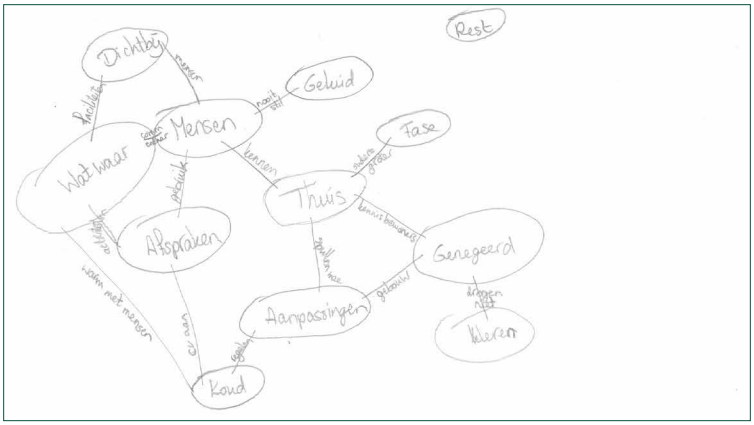

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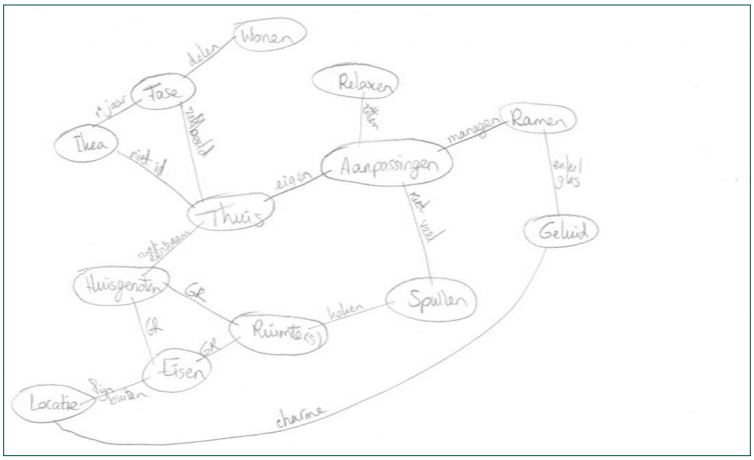

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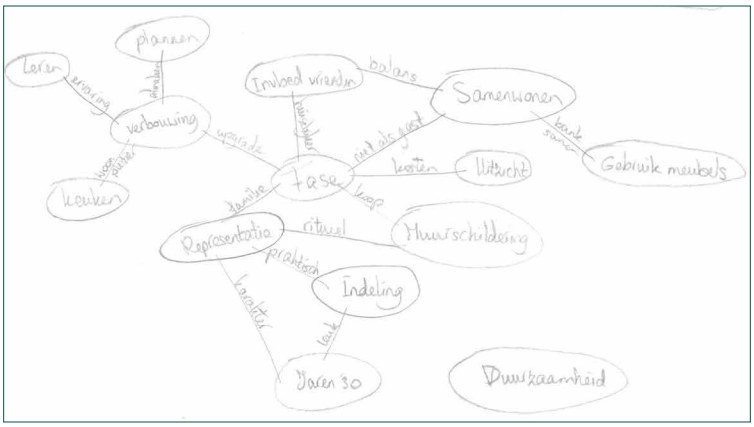

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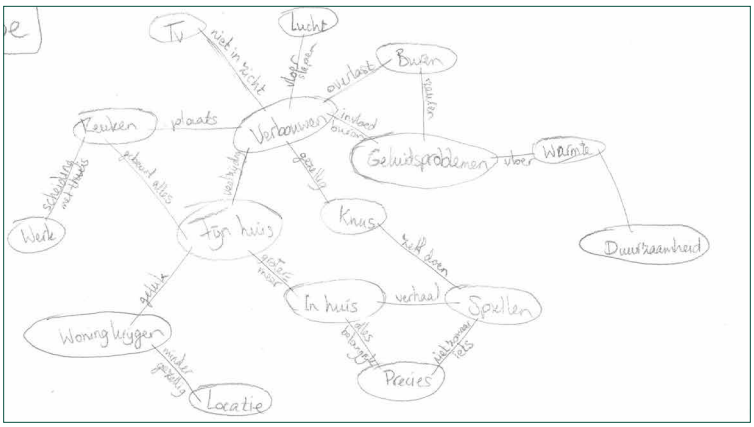

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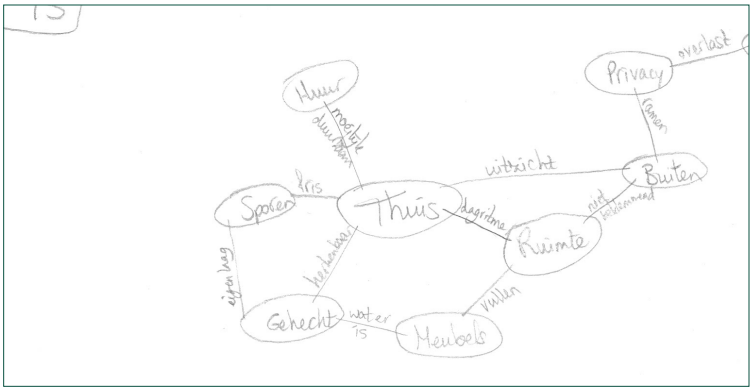

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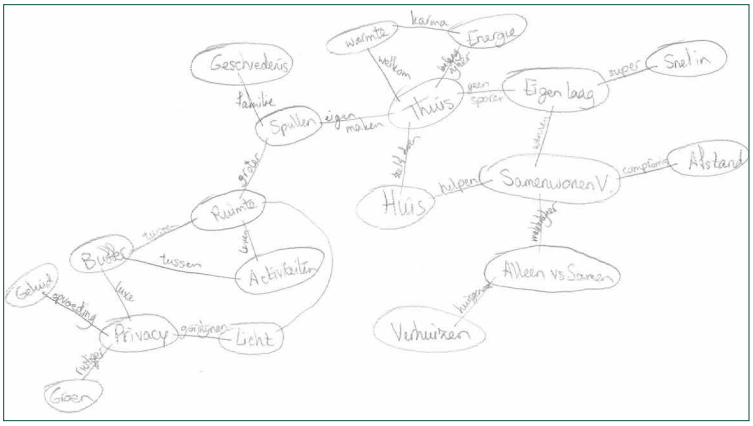

Fabio

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APPENDIX D

Cards for serious game

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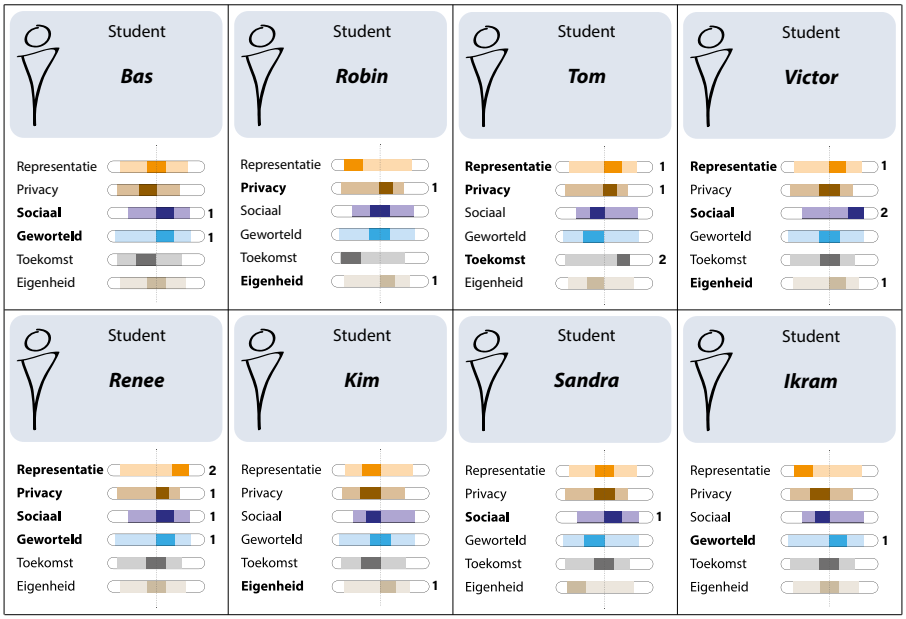
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Toekomst
Eigenheid 1
Student
Tom
Representatie 1
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Toekomst 2
Eigenheid
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Victor
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Geworteld
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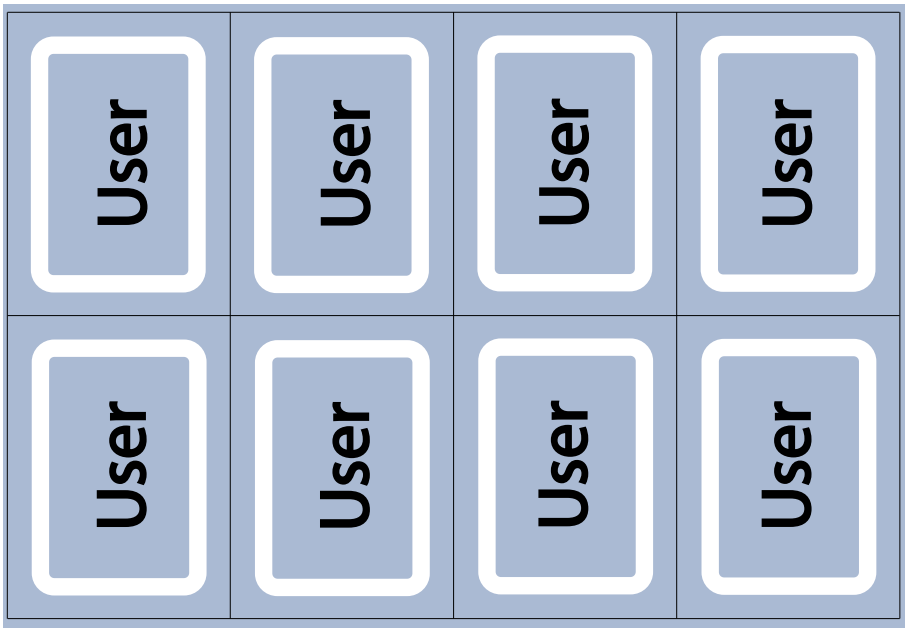
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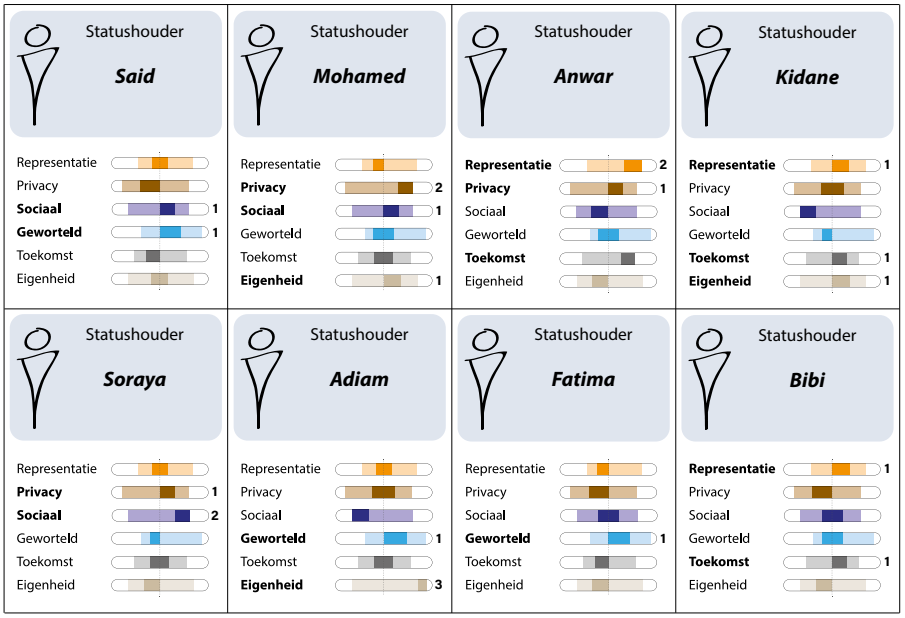
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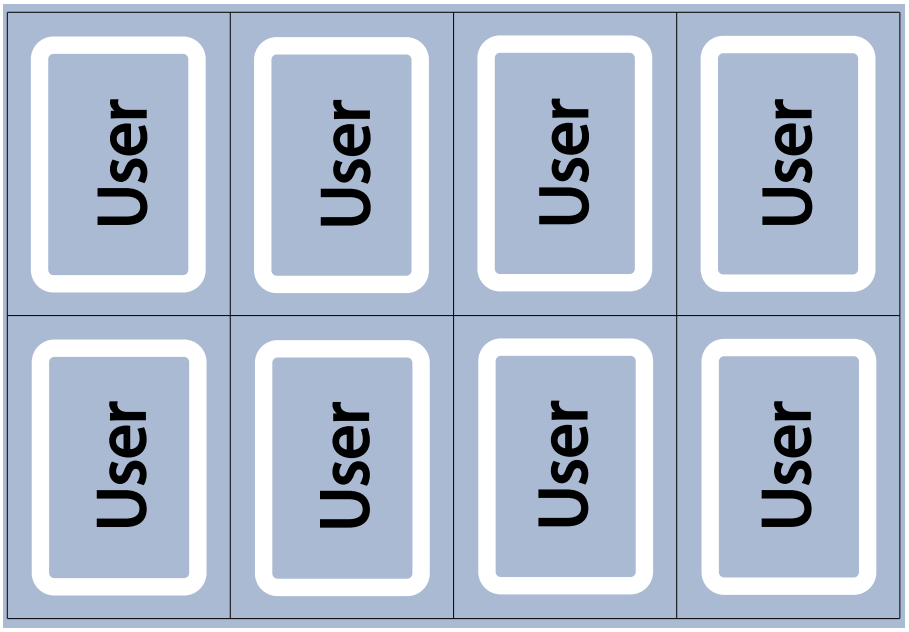
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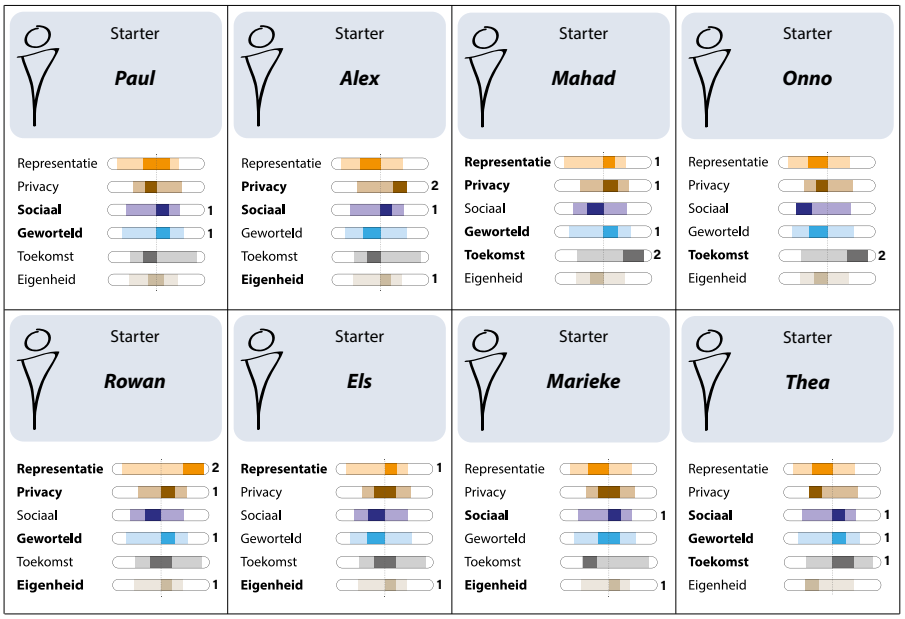
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Mahad
Representatie 1
Privacy 1
Sociaal
Geworteld 1
Toekomst 2
Eigenheid
Starter
Onno
Representatie
Privacy
Sociaal
Geworteld
Toekomst 2
Eigenheid
Starter
Rowan
Representatie 2
Privacy 1
Sociaal
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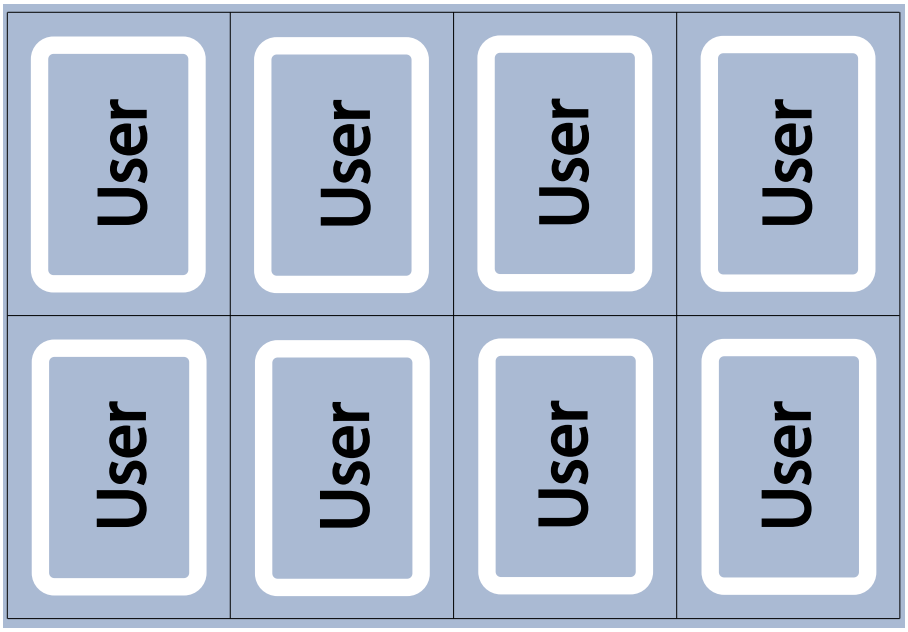
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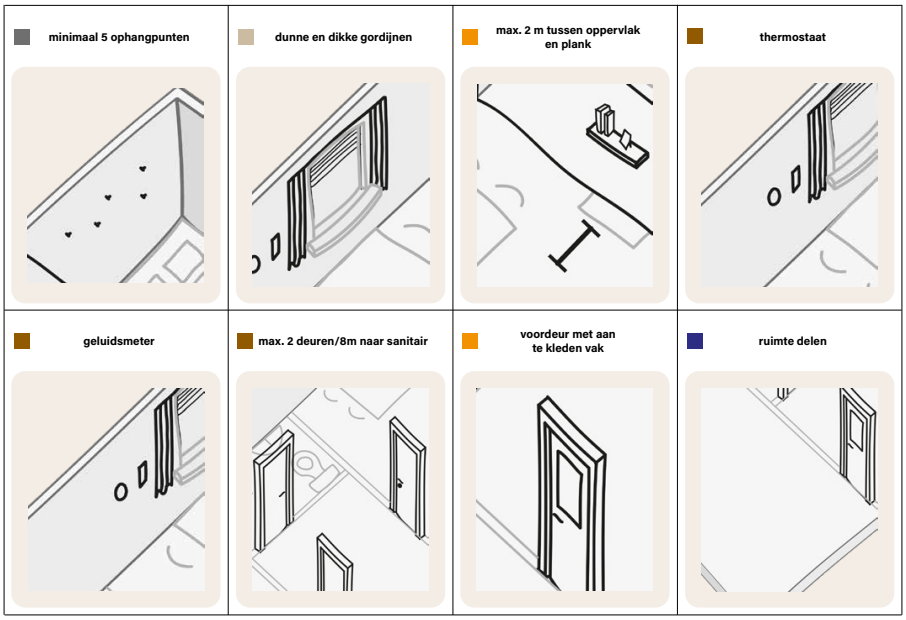
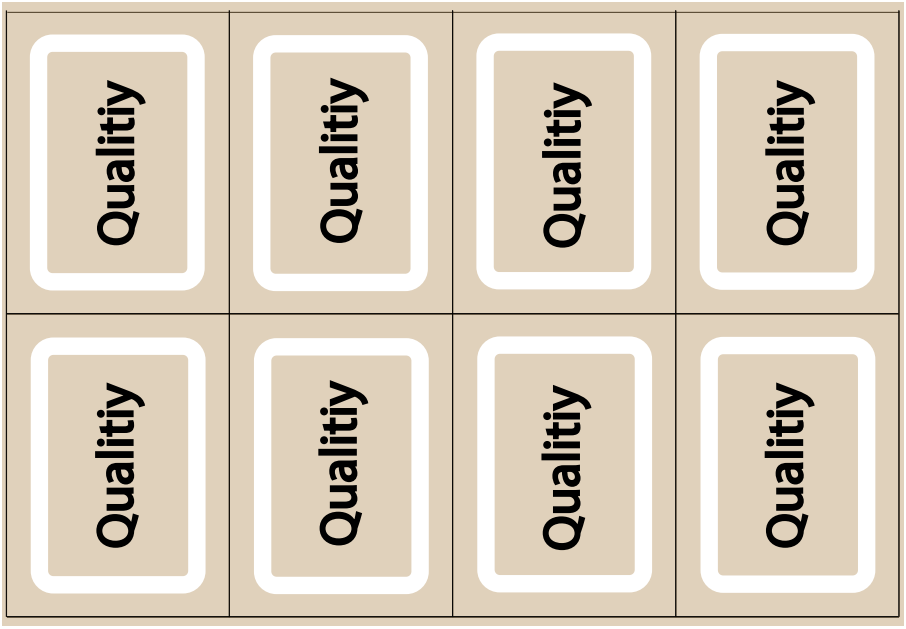

minimaal 5 ophangpunten
dunne en dikke gordijnen
max. 2 m tussen oppervlak en plank
thermostaat
geluidsmeter
max. 2 deuren/8m naar sanitair
voordeur met aan te kleden vak
ruimte delen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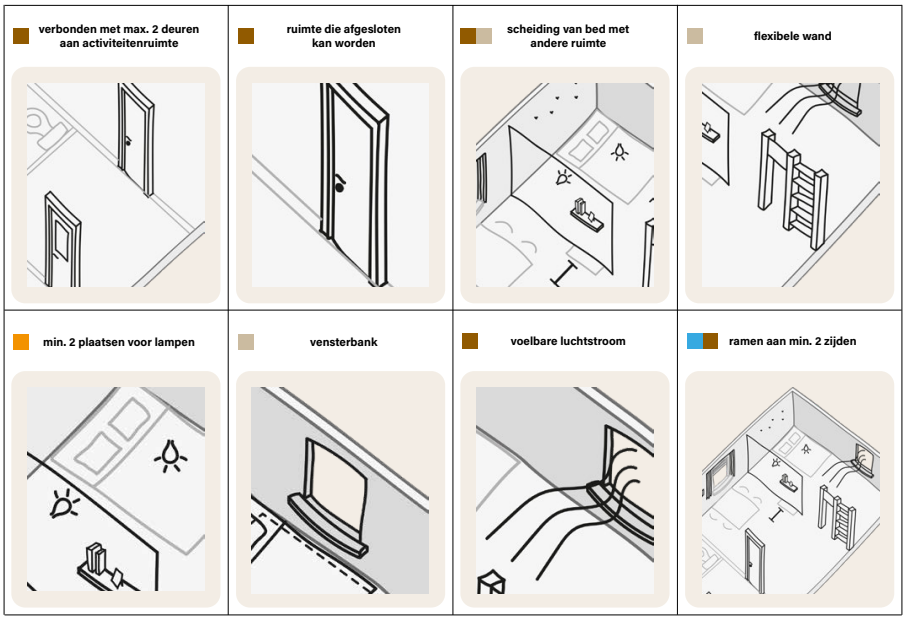
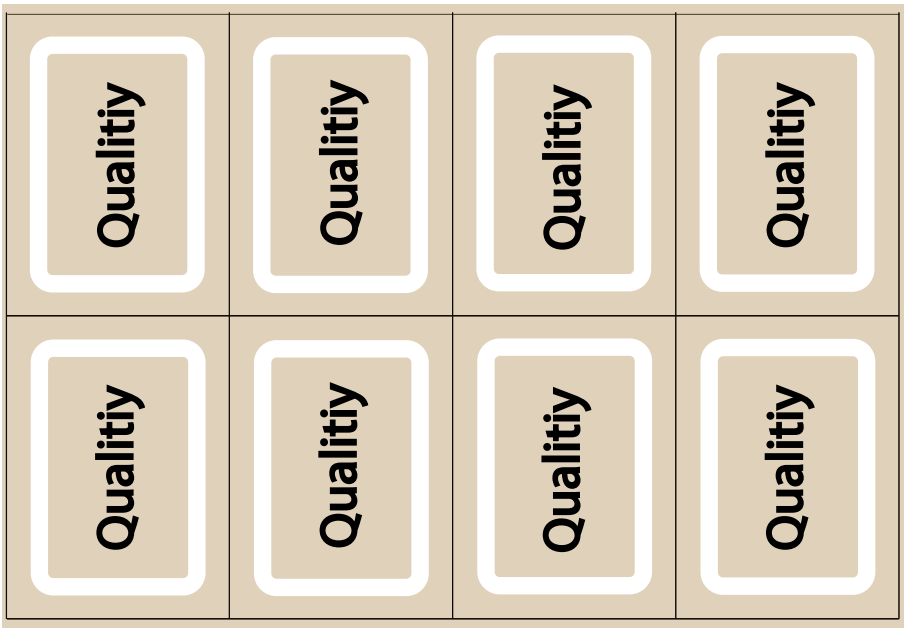

verbonden met max. 2 deuren aan activiteitenruimte
ruimte die afgesloten kan worden
scheiding van bed met andere ruimte
flexibele wand
min. 2 plaatsen voor lampen
vensterbank
voelbare luchtstroom
ramen aan min. 2 zijden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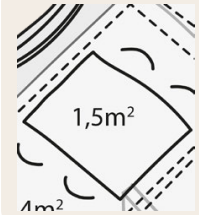
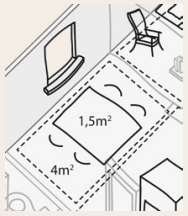
raamoppervlak totaal min. 4m

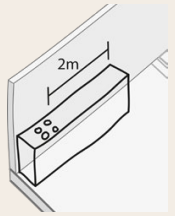
tafel van min. 1,5m² oppervlak



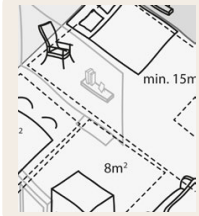
plek voor min. 4 stoelen



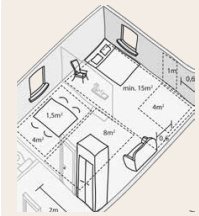
min. 2m werkruimte in de keuken



ruimte voor min. 2 personen

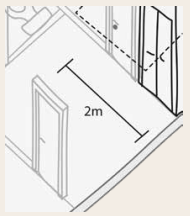


max. 1/3 met meubels



min. 3 indelingen mogelijk

min. 2m brede ruimte



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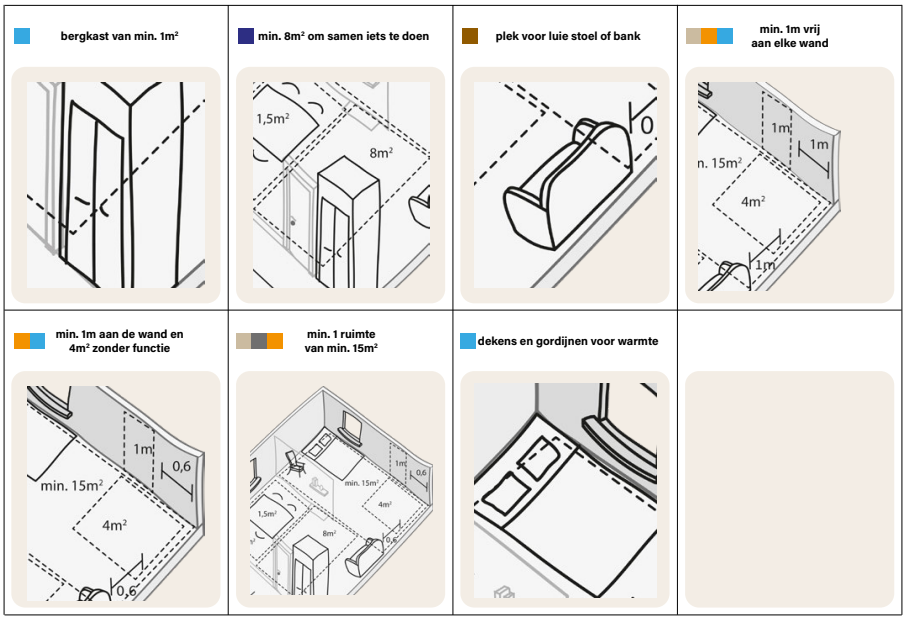
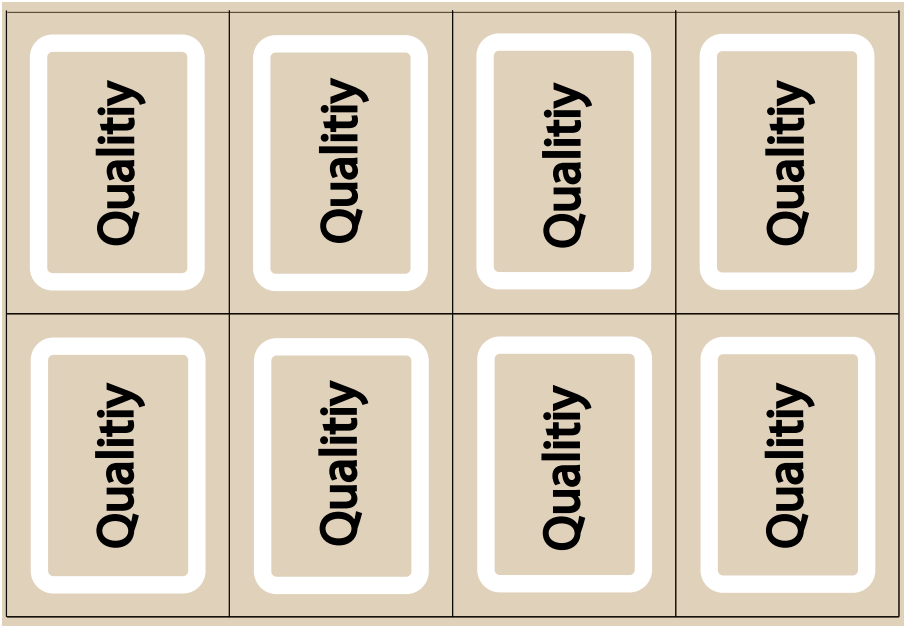

bergkast van min. 1m²
min. 8m² om samen iets te doen
1,5m²
8m²
plek voor luie stoel of bank
min. 1m vrij aan elke wand
1m
1m
n. 15m²
4m²
1m
min. 1m aan de wand en 4m² zonder functie
1m
0,6
min. 15m²
4m²
0,6
min. 1 ruimte van min. 15m²
dekens en gordijnen voor warmte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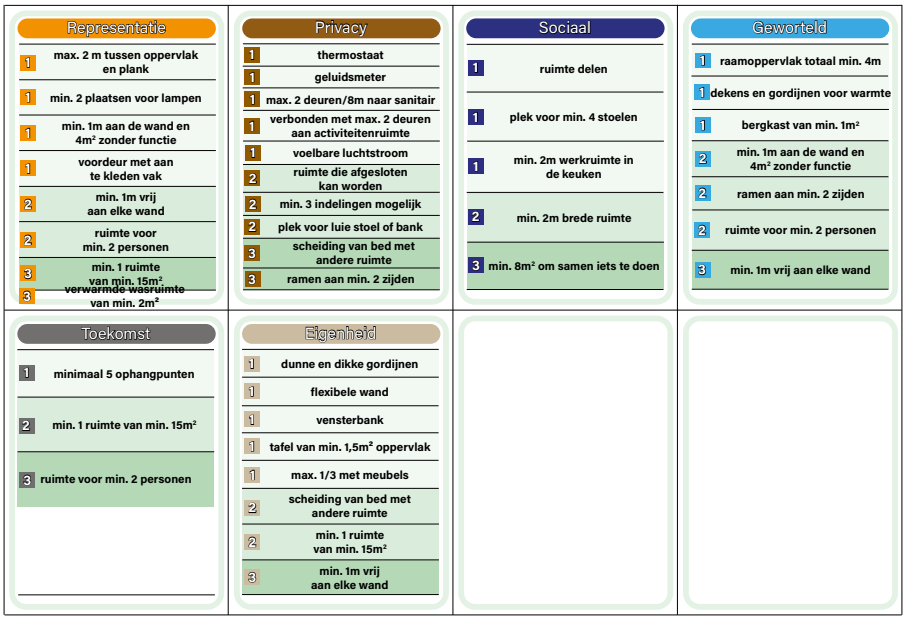
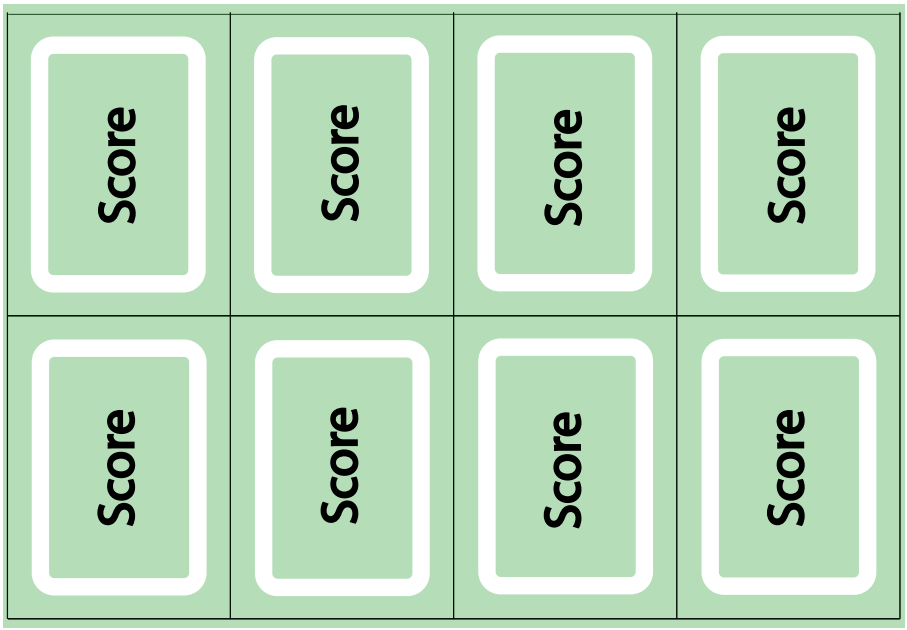

Representatie
1 max. 2 m tussen oppervlak en plank
1 min. 2 plaatsen voor lampen
1 min. 1m aan de wand en 4m² zonder functie
1 voordeur met aan te kleden vak
2 min. 1m vrij aan elke wand
2 ruimte voor min. 2 personen
3 min. 1 ruimte van min. 15m²
3 verwarmde wasruimte van min. 2m²
Privacy
1 thermostaat
1 geluidsmeter
1 max. 2 deuren/8m naar sanitair
1 verbonden met max. 2 deuren aan activiteitenruimte
1 voelbare luchtstroom
2 ruimte die afgesloten kan worden
2 min. 3 indelingen mogelijk
2 plek voor luie stoel of bank
3 scheiding van bed met andere ruimte
3 ramen aan min. 2 zijden
Sociaal
1 ruimte delen
1 plek voor min. 4 stoelen
1 min. 2m werkruimte in de keuken
2 min. 2m brede ruimte
3 min. 8m² om samen iets te doen
Geworteld
1 raamoppervlak totaal min. 4m
1 dekens en gordijnen voor warmte
1 bergkast van min. 1m²
2 min. 1m aan de wand en 4m² zonder functie
2 ramen aan min. 2 zijden
2 ruimte voor min. 2 personen
3 min. 1m vrij aan elke wand
Toekomst
1 minimaal 5 ophangpunten
2 min. 1 ruimte van min. 15m²
3 ruimte voor min. 2 personen
Eigenheid
1 dunne en dikke gordijnen
1 flexibele wand
1 vensterbank
1 tafel van min. 1,5m² oppervlak
1 max. 1/3 met meubels
2 scheiding van bed met andere ruimte
2 min. 1 ruimte van min. 15m²
3 min. 1m vrij aan elke wand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Curriculum vitae

Marjolein Overtoom

I grew up in a small town and did not like school, but I needed to go anyway. When I was asked what I wanted to be, I would say ballerina. Without motivation it is easy to slip down in the Dutch education system, so my parents motivated me to sign up for a small high school with just one level; a gymnasium for which I only just matched the requirements. Halfway through, the teachers thought I was doing my utmost best but my grades were bad, and instead of repeating a year they suggested to go down a level. In truth, I barely did a thing. I did not change schools but repeated the year. When I figured out that I wanted to study architecture, it was too late to switch subjects and my teachers did not allow me to catch up on those subjects, so I took those after graduating.

With the first design studio in Architecture, we had to design a house for someone, a someone that we had to imagine. But how can you learn to design for someone if all the information you use is your own imagination? I found out you could enroll for free for a second bachelor so I enrolled for psychology in Leiden to learn about people.

In the second year of architecture, I visited a study counsellor to ask what would be a good moment to redo a design studio, and the advice was to not do it simultaneously with other design studios. That was before I mentioned I also studied psychology. I managed to finish both bachelors four years after I first started, including different types of committee work. During the last year of my bachelors, I found out that there was such a thing as environmental psychology, and that there was a master's degree for that. When I graduated from that a year later, I realised that architects would not hire a psychologist, so I did the master of architecture.

Now, with the completion of the PhD, and having been in a 'school' for 34 years and alive for 38, I realise I have learned a lot but not nearly enough.

Date and place of birth

May 14th 1986, Heesch

Education

2016 - 2024 PhD Delft University of Technology, Hanze university of Applied Sciences

2011 - 2013 MSc Architecture Delft University of Technology

2010 - 2011 MSc Environmental Psychology University of Surrey (UK)

2007 - 2010 BSc Psychology Leiden University

2006 - 2010 BSc Architecture Delft University of Technology

2005 - 2006 VWO certificates mathematics B1,2 and Physics 1, ROC 's Hertogenbosch

1998 - 2005 Gymnasium (economy & society, + biology1 and management & organisation) Gymnasium Bernrode, Heeswijk-Dinther

Work

2021- 2022 Design + Research (part-time)
Alternance, Reykjavik, Iceland
Assisting with European research project (SMOTIES), and making some architectural drawings.

2015 – 2016 Tutor Psychology (part-time)
Erasmus University Rotterdam, The Netherlands
Teach 1st year international psychology students in groups of 10 to 12 students, by moderating their discussions

2014 - 2016 Researcher Urbanism (part-time)
Delft University of Technology, The Netherlands
European research project, 'City-Zen' on sustainable behaviour in social housing that needed to be retrofitted. Quantitative research and research setup. Brand administrator and helpdesk for online survey software (Qualtrics). Research mentor for urbanism and landscape graduate students.

Publications

Book chapter

2025 (to be published)

- Building(s) for home. Overtoom, M.E., exp. in 2025. In: Handbook of Home, eds. Walsh, Katie & Stratford, Elaine. Routledge.

Journal articles

2023

- Experiencing Temporary Home Design for Young Urban Dwellers: “We Can’t Put Anything on the Wall”, Overtoom, M.E., Elsinga, M.G. & Bluyssen, P.M., 2023, In: Buildings. 13, 5, 1318.

2022

- Towards better home design for people in temporary accommodation: exploring relationships between meanings of home, activities, and indoor environmental quality Overtoom, M.E., Elsinga, M.G. & Bluyssen, P.M., 2022, In: Journal of Housing and the Built Environment. 27 p.

- Unlocking Grey Scientific Data on Resident Behaviour to Increase the Climate Impact of Dutch Sustainable Housing Sanders, F. & Overtoom, M.E., 2022, In: Urban Planning. 7, 2, p. 70-80 11 p.

2021

- Success factors in the realization of large ice projects in education Pronk, A., Luo, P., Li, Q., Sanders, F., Overtoom, M., Coar, L., Fakhrzarei, M. & Ashrafi, A., 2021, In: International Journal of Space Structures. 36, 1, p. 4-12 9 p.

2018

- Making a home out of a temporary dwelling: a literature review and building transformation case studies
  Overtoom, M., Elsinga, M., Oostra, M. & Bluyssen, P.M., 2018,
  In: Intelligent Buildings International. 11 (2019), 1, p. 46-6217 p.

- Self-reported health and comfort of school children in 54 classrooms of 21 Dutch school buildings
  Bluyssen, P.M., Zhang, D., Kurvers, S., Overtoom, M. & Ortiz Sanchez, M., 2018,
  In: Building and Environment. 138, p. 106-123

Conferences

2019

- A game to determine preferences and needs for an indoor environment. Overtoom, M., & Bluyssen, P. (2019). Paper presented at CLIMA, Bucharest, Romania, 26-29 May 2019.

2018

- Including 'Home' in Housing Quality, Overtoom, M.E., 2018, Conference presentation and paper, IAPS 2018

2017

- Solving housing shortages by transforming buildings in comfortable homes, Overtoom, M., Oostra, M., Elsinga, M. & Bluyssen, P.M., 3 Jul 2017, *Proceedings of the international scientific conference Healthy Buildings 2017-Europe.* 6 p. 0105

- Success factors in the realization of large ice projects in education, Pronk, A., Luo, P., Li, Q., Sanders, F., Overtoom, M. & Coar, L., Sep 2017, *Proceedings of the IASS Annual Symposium 2017.* Bögle, A. & Grohmann, M. (eds.). Hamburg, Germany, 10 p.

2016

- ‘Optimal conditions for group-dynamic challenges’: The results of mock-up research on group-dynamics during the January 2014 Juuka Finland ‘Ice Dome’ building by university students initiated by the Eindhoven Technical University, Sanders, F. C. & Overtoom, M.E., 2016,
ISOFF ICE symposium. p. 1-8 p.

Other

2022

- Report: Feeling in control of the public good promotes creative works in remote places, Overtoom, M.E., LeLarge, A., SMOTIES Human Cities, p.83-88, Sep 9, 2022

2021

- Invited panel member: Pakhuis de Zwijger www.youtube.com/watch?v=8BJUeQbJYfE (in Dutch)

2020

- Interview: www.ew-installatietechniek.nl/artikelen/installateur-kan-bewoner-laten-geloven-in-duurzaamheid (in Dutch)

2019

- Invited panel member: NEMO Kennislink https://www.nemokennislink.nl/publicaties/wie-bouwt-jouw-wereld/# (in Dutch)

- Report: Review on how to realise sustainable behaviour change in practice; reports from the gedrags-community. Overtoom, M.E., & Ortiz, M.A. (2019).

2014

- Report: Invloed van bewoners in het ontwerpproces
van Dorst, M.J. & Overtoom, M.E., 2014,
Delft: TU-Delft, faculteit bouwkunde. 52 p.

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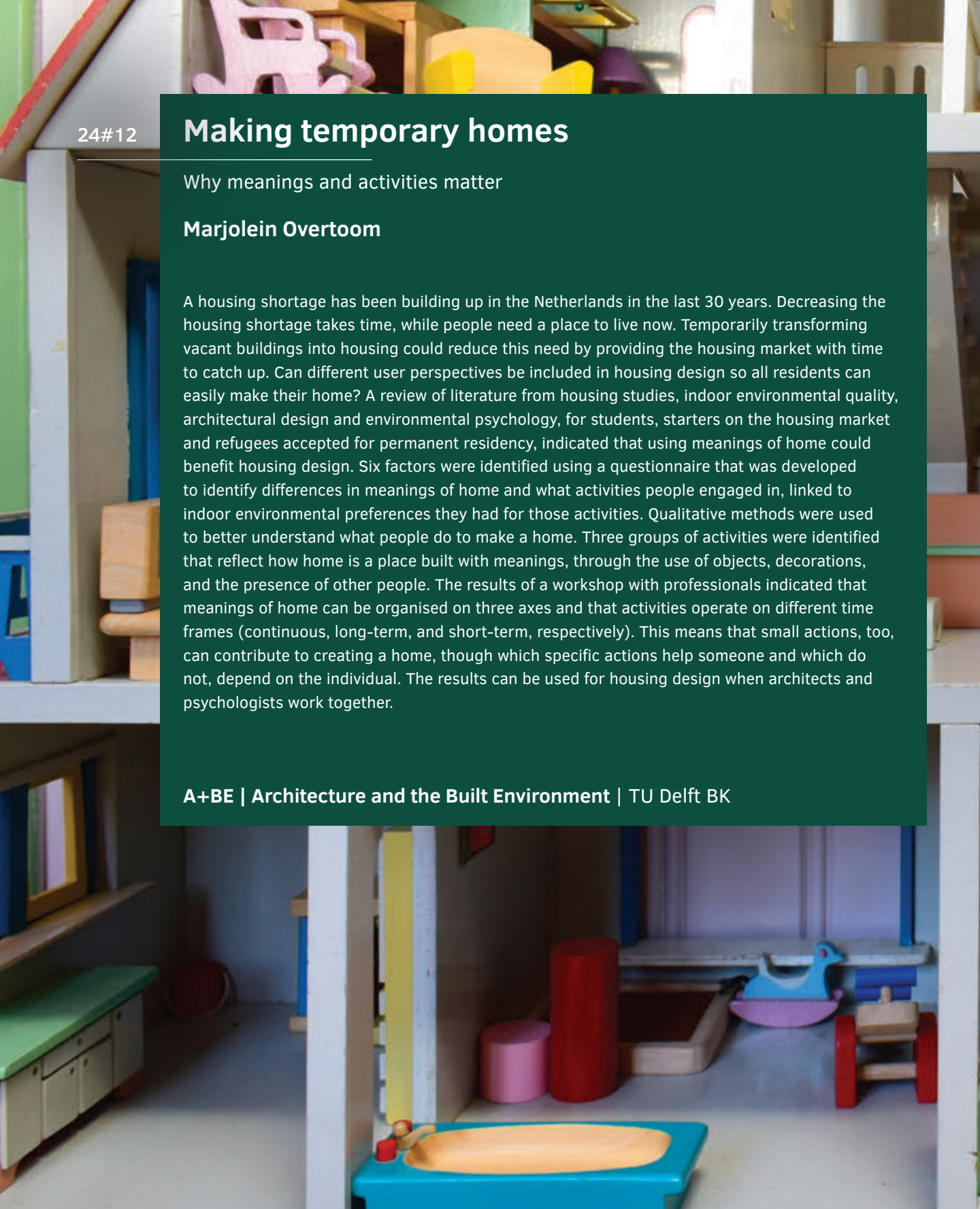

24#12

Making temporary homes

Why meanings and activities matter

Marjolein Overtoom

A housing shortage has been building up in the Netherlands in the last 30 years. Decreasing the housing shortage takes time, while people need a place to live now. Temporarily transforming vacant buildings into housing could reduce this need by providing the housing market with time to catch up. Can different user perspectives be included in housing design so all residents can easily make their home? A review of literature from housing studies, indoor environmental quality, architectural design and environmental psychology, for students, starters on the housing market and refugees accepted for permanent residency, indicated that using meanings of home could benefit housing design. Six factors were identified using a questionnaire that was developed to identify differences in meanings of home and what activities people engaged in, linked to indoor environmental preferences they had for those activities. Qualitative methods were used to better understand what people do to make a home. Three groups of activities were identified that reflect how home is a place built with meanings, through the use of objects, decorations, and the presence of other people. The results of a workshop with professionals indicated that meanings of home can be organised on three axes and that activities operate on different time frames (continuous, long-term, and short-term, respectively). This means that small actions, too, can contribute to creating a home, though which specific actions help someone and which do not, depend on the individual. The results can be used for housing design when architects and psychologists work together.

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